Why Do Minority Men Earn Less? A Study of Wage Differentials Among the Highly Educated

by

Dan Black
Center for Policy Research
426 Eggers Hall
Syracuse University
Syracuse, NY 13244-1020
(315) 443-9040
danblack@maxwell.syr.edu

Amelia Haviland
Heinz School and
Department of Statistics
Carnegie Mellon University
Pittsburgh, PA 15213
(412) 268-8601
amelia@stat.cmu.edu

Seth Sanders
Department of Economics
3105 Tydings Hall
University of Maryland
College Park, MD 20742
(301) 405-3497
sanders@econ.umd.edu

Lowell Taylor
Heinz School
Carnegie Mellon University
Pittsburgh, PA 15213
(412) 268-3278
lt20@andrew.cmu.edu

September 2003

We gratefully acknowledge financial support from the NICHD. Stephen Feinberg and Mel Stephens provided helpful comments, as did seminar participants at Houston, Maryland, Purdue, Queens, Rice, SMU, UCLA, Carnegie Mellon, and UCSB.

Why Do Minority Men Earn Less? A Study of Wage Differentials Among the Highly Educated

Abstract

This paper contributes to the literature on minority wage gaps by using data with more detail on education than has been previously used and by using nonparametric matching methods. Our data, the National Survey of College Graduates, provide detailed information on degrees received as well as information on wages. Among the well educated we find substantial unadjusted wage gaps: approximately 19 percent for both blacks and Hispanics, and 10 percent for Asians. Modest portions of the gaps are due to measurement error in the recording of education in the Census. For Hispanic and Asian men, the entire remaining gap is attributable to pre-market factors. For black men, only about one-quarter of the wage gap is attributable to these same factors. However, pre-market factors do account for the black-white wage gap if we restrict attention to a sub-sample: men born outside the South to parents with some college education.

I. Introduction

Men in several minority groups in the U.S. have wages that are substantially lower than those of the benchmark majority group—non-Hispanic white men. Several generations of labor economists have sought to understand the forces that drive these disparities. This research program is potentially important for the purpose of determining whether minority wage gaps are likely to be narrowed more effectively by increasing enforcement of anti-discrimination laws or by implementing policies that reduce inequity in educational opportunity.

Existing work shows that there are large racial and ethnic differences in pre-market factors, especially formal schooling, and suggests that these differences play a key role in shaping wage differences. One example is Trejo (1997), who finds that third- and higher-generation Mexican American men earn 21 percent less than non-Hispanic white men. Approximately three-quarters of the earnings gap is found to be attributable to the Mexican Americans' relative youth and to differences in English language proficiency and years of schooling. A second example is Neal and Johnson (1996), who find that black men earn 24 percent less than do non-Hispanic white men. Differences in schooling account for only about one fifth of this gap. When the authors condition on performance on a basic verbal and math skills test, the Armed Forces Qualification Test (AFQT), though, the differential between wages of blacks and whites declines to about one-third of its unadjusted level.[1]

The Trejo (1997) study is nice example of the "traditional" approach to studying race/ethnicity wage gaps—traditional in the sense that the explanatory variables in the study are conventional "objective" measures of human capital—such as years of schooling and language ability. Neal and Johnson (1996) depart from the traditional approach by including a measure of academic achievement, performance on the AFQT, in their wage regressions (see also O'Neil, 1990). A reasonable motivation for use of the AFQT score as a measure of human capital stems from a problem that is lurking in the background of the wage gap literature: the primary human capital variable typically used in wage regressions—years of schooling—is a very crude measure. It fails to account, for example, for differences in quality or intensity of education. Thus, owing to large disparities in U.S. primary and

[1] Many other examples along these lines are found in the Altonji and Blank's (1999) important review of wage disparities.

secondary education, a black with 12 years of education will often have a lower level of relevant human capital than a corresponding white. Neal and Johnson argue that the AFQT achievement score is a better summary measure of pre-market human capital than is years of schooling and is thus more helpful in empirical analyses that examine the role of pre-market factors on the race wage gap.

The use of the AFQT as a proxy for human capital is controversial. The literature discusses at least three related concerns. The first issue is fundamental: what precisely is being measured by the AFQT? While there are good reasons to doubt claims by Hernstein and Murray (1994) that the score is best thought of as a measure of native intelligence, neither is measured performance on a short achievement test an entirely satisfactory indicator of an individual's investment in human capital.[2] Thus, while the test might be helpful in measuring such valued traits as vocabulary retention and capacity for abstract reasoning, it surely misses other valued traits that one might learn in school, e.g., specific domain knowledge, computer skills, persistence in completing tasks, or the ability to work with others. Second, as discussed by Rodgers and Spriggs (1996), if the AFQT suffers from racial bias or if there are differences in test-taking ability (or inclination to perform well on tests) that are correlated with race, the test score would disproportionately underestimate the "true" level of human capital for blacks. The resulting empirical analysis would tend to overstate the role of pre-market factors in accounting for the black-white wage gap.[3] Third, there are econometric issues that arise when one thinks about the AFQT as an imperfect measure of human capital.[4]

In short, while we would surely prefer a measure of human capital that is more detailed than the years-of-schooling variable usually used in wage regressions (e.g., a measure that incorporates differences in school curriculum, teacher expertise, level of individual attention, etc.), we might also prefer that such a measure *not* rely in a serious way on individual "test-taking ability." Such a measure is of course not readily available.

---

[2] For example, performance on AFQT is affected by schooling. Altonji and Blank (1999) provide a discussion and references to other relevant literature.

[3] Neal and Johnson (1996) provide a thoughtful discussion of this issue; race bias in testing is a difficult issue to resolve.

[4] Bollinger (2003) treats the issue as an errors-in-variables problem, suggesting that Neal and Johnson (1996) actually underestimate the importance of human capital in explaining the black-white wage difference among men.

Against this backdrop we present here a new empirical examination of minority wage gaps that focuses on college educated men. Like Neal and Johnson (1996), we are interested in the role of pre-market factors in shaping labor market outcomes. Thus, in our analyses we do not condition on experience or occupation. Our concern is that discrimination may be responsible for some of the racial differences in occupation (e.g., if employers disproportionately assign minority men to lower ranking occupations while paying all men equally within the employer-labeled roles) or in experience (e.g., if minority workers are more likely than other men to be laid off). Unlike Neal and Johnson (1996), however, we adopt the "traditional" approach of relying on non-test measures of pre-market human capital, as the data we use for our analysis, the National Survey of College Graduates (NSCG), have no test-based measures of achievement. We do have, though, data on degree level (bachelor's, master's, professional, Ph.D.) and exceptionally detailed data on field associated with the highest degree. To the extent that the cumulative educational disadvantage experienced by many minority youth in the U.S. is manifest in an inability and/or disinclination to tackle difficult, but subsequently lucrative, courses of study in college, our detailed data are likely to be more helpful in accounting for relevant heterogeneity in schooling opportunity than are data that simply provide years of schooling (or highest degree).[5]

Beyond the availability of suitable data, two additional factors motivate our focus on the college educated. First, approximately 9 of 10 young Americans now complete at least a high school education so much of the variation in completed education is at the college level. Because years of completed education are generally rising, we can expect the highly educated to become an increasingly important part of any explanation of minority wage disparities. Second, there is independent interest in the role of

[5] Of course some of the observed racial/ethnic differences in human capital we observe may themselves be the consequence of discrimination. This can appear at the college level (e.g., if minority college students are steered away from lucrative majors) or at the elementary and secondary level (e.g., when minority students are discouraged from taking honors courses, or if fewer resources are made available to schools with high numbers of minority students). Such differences are said to be "pre-market" in our analysis. Our use of detailed college-level educational outcomes parallels Brown and Corcoran's (1997) analysis of male-female wage differentials. The authors use the National Longitudinal Survey Class of 1972 and the third wave of the 1984 Panel of the Survey of Income and Program Participation to examine the impact of differences in the type of schooling acquired on gender differences in wages. By comparison with our data set, these data provide a small number of observations of respondents with a college education—far too few to study race/ethnicity differentials. Also, the NSCG data have the advantage of providing greater detail on college programs. There are 14 and 19 majors, respectively, in Brown and Corcoran's NLS and PSID data sets, but up to 144 different major categories in the NSCG.

discrimination at the top end of the labor market.[6] Evidence on this issue is most likely to appear in a study that focuses on well educated individuals.

Because our sample is quite large we are able to examine wages of three distinct minority groups: blacks, Hispanics, and Asians. As we show below, wages of men in each of these groups are lower than those of non-Hispanic white men. Because each of these minority groups has faced a history of discrimination and disadvantage, it is reasonable to look for empirical evidence of the wage disparity owing to such discrimination.

Black Americans face discrimination in the labor market that is surely less pervasive and overt than it was prior to the Civil Rights Act of 1964. Nonetheless, bigotry and racial misunderstanding persist. In addition, a disproportionate number of blacks have had poor access to education. Blacks on average have lower levels of completed education than whites, and there are also large differences in the quality of education available to blacks and whites. As we have emphasized, our analysis allows us to capture one systematic portion of this heterogeneity—heterogeneity that takes the form of racial differences in highest degree and major or field of study. We also make some headway in dealing with the large black-white socioeconomic disparities by using data on region of birth and parent's educational attainment, which may serve as proxies for differences in unobservable premarket factors that are likely to effect educational opportunity and human capital "quality."

Like blacks, Hispanic and Asian men earn less than non-Hispanic white men, though the root causes of these differentials seem likely to differ, to some extent, from those driving the black-white gap. Unlike African Americans, Hispanic and Asian Americans are largely immigrants or children of immigrants. In the sample we study, the majority of both Hispanic and Asian college-educated men speak a language other than English at home. For these ethnic groups, then, the role of English language ability, and assimilation more generally, is likely to be important. Beyond this, Hispanic men, like black men, generally have low levels of pre-market human capital while Asian men typically have quite high levels of human capital accumulation.

---

[6] See, for example, Duleep and Sanders (1992) exploration of this issue for Asian American men.

We can briefly summarize our key findings. Census data, attached to the NSCG records, indicate that college-educated men in each minority group earn less than non-Hispanic white men: unadjusted wage gaps are approximately 19 percent for both blacks and Hispanics and 10 percent for Asians. A modest fraction of these wage gap appears to be the consequence of measurement error in the recording of education in the Census. For Hispanics and Asians, the entire remaining gap is found to be attributable to pre-market factors—differences in age structure, formal education (in specific majors and degrees) and in English language proficiency (as measured by language spoken at home). For blacks in general, only about one-quarter of the wage gap is attributable to observed educational and age differences. Approximately three-quarters of the unadjusted gap, however, is explained when we restrict attention to individuals whose parents have some college education, and the entire gap is explained when we further restrict our focus to blacks who were not born in the South.

II. The Data

We use the 1993 National Survey of College Graduates (NSCG) to examine the degrees and disciplinary majors of college-educated men. The NSCG stems from an initiative of the National Science Foundation (NSF) that compiled information on scientists and engineers in the United States. The NSF and Bureau of Census conducted a survey based on the 1990 Decennial Census Long Form sampling frame, with the sample limited to those who had at least a baccalaureate degree and were 72 or younger as of April 1, 1990. The Census Bureau drew a stratified sample of 214,643 respondents, first contacting individuals with a mail survey, then, if necessary, with a telephone interview or in-person interview. In the collection of these data, a great deal of attention was paid to the accuracy of the education responses, and detailed information was gathered about the majors of the respondents for up to 3 degrees.

From the original selected sample, a few had emigrated from the United States (2,132), died (2,407), were institutionalized (159), or were over 75 years old (211) and were hence of out of the survey's scope. Another 46,487 declined to participate.[7] Surprisingly, 14,319 respondents reported having no four-year college degree despite reporting (or being allocated to) a four-year degree on the

[7] Respondents were considered refusals unless they provided information about their last degree and field of study.

1990 Census.[8] These individuals are excluded from some, though not all, of our analyses. Once the out-of-scope groups are excluded, we have a (weighted) response rate of 80 percent, or a sample of 148,928 respondents. In this paper we examine men only (which reduces the number of observations by 60,899) and because of the small sample size we choose to omit Native Americans men from the analysis (which reduces the sample by 682), giving 87,347 white, black, Hispanic, and Asian respondents.

Because the sampling frame of the NSCG is the 1990 Census, anyone not having a degree by 1990 would not be included in the sample. As a result, we restrict the sample to those at least 25 years of age (in 1990) to insure that most individuals would have had the opportunity to complete their undergraduate education. Similarly, we wish to avoid complications that might arise with differential retirement ages, so we restrict the sample to workers 60 years old and under. These age restrictions reduce the number of observations by 12,200. The data includes questions on sex, race, ethnicity, income from wages, and hours and weeks worked in the previous year. We exclude those who had imputed gender, race, age, or ethnicity (reducing the number of observations by 1,852), who had imputed or zero wage incomes for 1993 (reducing the number by 8,696), or who had imputed labor market experience (reducing the number by 5,813). Workers who reported self-employment income in addition to wage income were not included because there is no way of determining whether the hours and weeks worked refer only to the wage earning job or to the self-employment job also, which would bias the calculated hourly wage (which reduces the number of observations by 6,681). The effects of exclusions based on missing or biased wage data are discussed in the results section. Another 100 respondents reported no major for their highest degree, and we dropped these respondents from most of our analyses. These exclusions leave us with a sample of 52,005 respondents.

For some of our analysis, we matched the NSCG data with Census data. The match was performed using 48 variables from the 1990 Census that were appended to each respondent's NSCG survey results. We were able to establish a unique match for all men for whom we have wage

---

[8] The small number of individuals who were "too old" apparently gave incorrect responses to the age question in the 1990 Census. 25% of those who reported not having a BA in the NSCG had their educational level imputed in the Census. Additional research by the NSF suggests that up to 20% of those who report not having a BA may actually have a BA, but denied having the degree as a mechanism for declining to be in the survey. Even accounting for these groups there is a high level of measurement

information. For these individuals we have detailed data on education from the NSCG, including identification of more than 140 different majors, as well as data from the Census, which includes information on location. We use these data to check for robustness of our reported results, which do not account for differences in location.

III. Wage Differentials: Decomposition Methods

Our aim is to decompose minority wage gaps for highly educated men using pre-market explanatory variables that affect wages and whose distributions differ between the demographic groups. In this section, we discuss our decision to use a nonparametric matching model in forming decompositions, and describe the procedure we use to calculate standard errors for our estimates.

Non-Parametric Decomposition

Let the total wage gap for demographic group G_j be defined by the difference in conditional expected values,

$$\Gamma(G_j) = E(y \mid G_j) - E(y \mid W), \tag{1}$$

where y is the natural logarithm of wages, W indicates that respondents are non-Hispanic white males, and G_j indicates that respondents are a member of the minority group j (black, Hispanic, or Asian). Of course, in addition to minority status, there are other premarket characteristics that affect wages and whose distributions differ between the groups. In attempting to isolate a potential impact of market discrimination, we would like to control for these pre-market characteristics and separate the total wage gap into two components: an amount associated with differences in pre-market attributes and the amount remaining.

Matching provides an intuitively appealing method for estimating the missing counterfactuals: the wage a minority individual would earn if he were treated as a member of the benchmark majority group. To estimate the missing counterfactual for a 32-year-old Asian man with a master's degree in business administration, we use the mean of the wages of non-Hispanic white men of the same age with the same

---

error in education in the 1990 Census (and, by extension, in other similar surveys, such as the CPS), which poses an interesting problem. See Black, Sanders, and Taylor (2003) for a discussion.

highest degree in the same field.[9] Having estimated such counterfactuals for each member of the minority group, the mean gap (conditional on age and education) can be estimated by averaging over the gaps for individuals in the minority group. In the program evaluation literature such as estimator is said to estimate the effect of "treatment on the treated;" in this case "treatment" is minority group membership. The interpretation of the estimate is the average amount less (or more) that members of the minority group earn due to their minority status (or other relevant non-observables that differ by minority status), given the age and education distribution for that minority group.

In our application, the covariates we use in decomposing the wage gaps—such as age (in years), highest degree, and major associated with highest degree—are discrete. This allows us to sort individuals into cells based upon these characteristics. Then we can express the overall average log wages of men in minority group G_j as

$$E\left(y \mid G_j\right) = \sum_X p_{jx} E\left(y \mid G_j, X = x\right),$$

where $E\left(y \mid G_j, X = x\right)$ is the expected earnings of men in group G_j with characteristic $X = x$ and p_{jx} is the proportion of men in group G_j with characteristic $X = x$. These values can be consistently estimated using the cell proportions and cell means for men in group G_j. Similarly, for non-Hispanic white men we can write

$$E\left(y \mid W\right) = \sum_X p_{Wx} E\left(y \mid W, X = x\right).$$

Substituting into (1) gives

$$E\left(y \mid G_j\right) - E\left(y \mid W\right) = \sum_X p_{jx} E\left(y \mid G_j, X = x\right) - \sum_X p_{Wx} E\left(y \mid W, X = x\right). \quad (2)$$

We can further decompose this equation through the use of a term that estimates the missing counterfactual: what would we expect the earnings of minority men to be if they kept the same distribution of covariates but were treated as non-Hispanic white men in the labor market? This is estimated using the average earnings of non-Hispanic white men, with their average earnings in each cell

[9] See Heckman et al. (1998) for a helpful discussion of the assumptions implicit in this method.

staying the same but their proportions across cells changed to the proportions for men in group G_j. We can add and subtract this term

$$\sum_X p_{jx}\left\{E\left(y \mid W, X=x\right)\right\},$$

to equation (2), giving

$$\begin{aligned} E\left(y \mid G_j\right)-E\left(y \mid W\right) = & \sum_X p_{jx}\left\{E\left(y \mid G_j, X=x\right)-E\left(y \mid W, X=x\right)\right\} \\ & -\sum_X\left\{p_{Wx}-p_{jx}\right\}E\left(y \mid W, X=x\right) \end{aligned} \tag{3}$$

The first term is the effect of "treatment on the treated" as described previously—the portion of the gap that is "unexplained" by the covariates. The second term is associated with group differences in the proportions of individuals across cells, i.e., the portion of the gap that is "explained" by the covariates.

Thus our decompositions are very much in the spirit of the Blinder-Oaxaca decomposition traditionally used in studies of gender, racial and ethnic wage gaps; see Altonji and Blank (1999) for a review and discussion. There are, however, two distinctive aspects of our work we wish to emphasize.

First, we focus on the effect of "treatment on the treated" by averaging over the supports of the characteristics of interest within the minority group for which we are estimating a wage gap, not the non-Hispanic white distribution or a pooled distribution. As noted above, our framework could also be used to generate a parallel decomposition,

$$\begin{aligned} E\left(y \mid W\right)-E\left(y \mid G_j\right) = & \sum_X p_{Wx}\left\{E\left(y \mid W, X=x\right)-E\left(y \mid G_j, X=x\right)\right\} \\ & -\sum_X\left\{p_{jx}-p_{Wx}\right\}E\left(y \mid G_j, X=x\right), \end{aligned}$$

in which the majority group covariate distribution is used to estimate the "unexplained" portion of the gap. This unexplained portion could be interpreted as the average difference in wages that non-Hispanic white men would experience if they were members of the minority group (i.e., "treatment on the untreated"). Often estimates from both of these two parallel decompositions are presented; the result is said to be the "indeterminacy" of the Blinder-Oaxaca decompositions, though we find such terminology to be misleading. The two decompositions are estimating potentially different parameters—the "treatment on the treated" and the "treatment on the untreated." The first of these decompositions seems more intuitively appealing if the goal of the exercise is to determine the effect of market discrimination on

the people being discriminated against. There is an additional practical consideration: given our non-parametric approach and that we use detailed education measures (highest degree *and* major), we would encounter very serious lack of support if we were to undertake the alternative decomposition. This decomposition would require estimates of the missing counterfactual for non-Hispanic white men: the expected wage of white men if they instead were members of each minority group. These estimates require data on minority men with similar characteristics to white men. In our data, there are substantial areas of the white distribution for which there is no support in the minority distributions.[10]

Second, by adopting a nonparametric approach, we avoid problems that can arise in the use of the usual parametric Blinder-Oaxaca decomposition models. The issue at hand receives careful treatment in recent work by Barsky, Bound, Charles, and Lupton (2002), in which the authors demonstrate that the typical parametric Blinder-Oaxaca approach leads to serious errors in estimating the portion of the black-white wealth gap that is due to differences in earnings. These errors occur as the consequence of two problems. The first problem is one of support; virtually all of the households with high levels of assets are white, while black households are over-represented among households with very low levels of assets. The second problem is the misspecification of the parametric model of the relationship between earnings and wealth. The wealth equation for whites is heavily influenced by values at the high end of the income distribution, whereas blacks with high levels of wealth are sparse enough that the model is not well estimated in that region of the income distribution. Thus parameters from the black equation are used to make predictions outside the support of the data, while parameters from the white model do not provide a good fit to the white data over regions of the income distribution where the support for black households lies. Barsky et al. (2002) demonstrate that these factors combine to create serious errors in estimates of the wealth gap and the amount of the gap "explained" by the racial differences in income distribution.[11]

Similar concerns may well pertain in our problem. By using a matching model, we avoid assumptions that may be difficult to sustain, such as the parametric assumption that the age-wage profile

---

[10] If we were content to match on highest degree only (not field of study), this problem would not arise. In the decomposition that we do present, there is an occasional problem with support, but it is not usually serious because the number of non-Hispanic white men in the sample is very large.

is the same for each highest degree/major category within demographic group. The recent work of Racine and Greene (2002) and Heckman, Lochner, and Todd (2003) demonstrate that standard parametric models do not fit earnings or wage data well.

Some studies of minority wage gaps include extensive controls that we do not include, e.g., family structure indicators, experience, and occupation or job characteristics. As mentioned in the introduction, because many of these variables may be endogenous with respect to labor market outcomes and because our goal is to focus explicitly on pre-market characteristics, we leave these variables out of our analysis (see the related discussion of Altonji and Blank, 1999).

Standard Errors

To estimate standard errors for the results of the matching model we use a nonparametric bootstrap which has two advantages. First, it allows us to incorporate the variability of the matching cell sizes due to random sampling and nonresponse. Second, it allows us to take advantage of the variance reducing attributes of the stratified sampling design of the NSCG. In order to estimate the effect of "treatment on the treated" we average the differences in mean log wages over the distribution of age, highest degree, and field of study for each minority group of interest. The weighted counts within each of the discrete cells of this distribution are random variables, and the bootstrap allows us incorporate the variance of these cell sizes into the overall variance estimate. In addition, the matching cell sizes are affected by unit and item nonresponse. These sources of variation are accounted for by resampling the original sample, before any exclusions are made from unit or item nonresponse or from being out of scope for the survey or this analysis. Then, the exclusions are applied to each resampled data set resulting in a random effective sample size and a random matching cell size. This procedure is an alternative to that presented by Canty and Davison (1999), who also recommend resampling the full original sample but then reestimating the adjusted sampling weights within each resampled data set (so that the final sampling weights are random variables).[12] As is common for large public use data sets, we did not have the

---

[11] Similarly, Racine and Green (2002) test standard parametric assumptions for estimating union and gender wage gaps and find they are rejected by their data.

[12] Canty and Davison (1999) found that incorporating the variance of these random adjusted sampling weights substantially changed their variance estimates when estimating common labor force outcomes.

information necessary to recreate the adjustments. Our alternative leaves the individual sampling weights fixed but varies the sum and thus the relative weight of each sampled person in the resampled data sets.

Stratified sample designs are variance reducing as long as the variance within sampling strata is smaller than the variance between sampling strata. The variance is reduced by calculating the overall variance as the (weighted) sum of the variance within each stratum so that the between strata variance is omitted. This variance reduction property is incorporated into the bootstrap by resampling independently within each stratum to create each resampled data set. Because this simple within-strata procedure has been shown to be biased with simple parameters when some of the strata are small, we use a modified bootstrap method referred to as the "with-replacement bootstrap" in Shao and Tu (1995, p. 247). The modification consists of resampling $n_h - 1$ observations instead of n_h observations from each stratum, with replacement, where the stratum size is n_h for stratum h. The standard errors presented here are based on one thousand bootstrap iterations.

IV. Results

Table 1 provides our first piece of evidence concerning the heterogeneity of college education, and the potential for these differences to influence observed minority wage differentials. Panel A shows that among the college educated, Asians are more likely than non-Hispanic whites to pursue graduate degrees, while black and Hispanic men are somewhat less likely. Among Hispanics who do pursue graduate degrees, however, an especially high fraction earn a professional degree (these are primarily JDs and MDs, but include also a few smaller degree categories such as DDS and DVM). Panel B shows large racial/ethnic differences in choices of college major at the bachelor's level.[13] The index of dissimilarity indicates that approximately 14% of Hispanic men, 20% of black men, and 31% of Asian men would need to change their major to match the distribution of majors among whites. While Hispanic men have a major distribution similar to non-Hispanic whites, Asians are considerably more likely to major in engineering, while black men tend to be underrepresented in engineering and over represented in

[13] In Panel B of Table 1 we aggregate our major categories. Our subsequent analysis exploits data on more than 140 majors; we aggregate only a group of (very small) majors that the Census Bureau suppressed to keep the identities of the respondents confidential.

education. These patterns are seen again in Panel C, which shows the mean fraction of females within undergraduate major for each group.[14] This table shows that Asian men choose majors that on average have a lower fraction of women than non-Hispanic white men's majors, while black men choose majors that on average have a higher fraction of women.

A key goal of our empirical analysis is to discover how much of the observed racial/ethnic differences in wages are attributable to educational factors—differences in college degrees and major (along with age). As a starting point we present, on the first line of Table 2, the raw gap as measured using wage data from the 1990 Census provided by the men who were selected for the NSCG sample (men who reported having a bachelor's degree or higher in their 1990 Census returns and who were selected to be in the NSCG).[15] Even though we are restricting attention to individuals who report a college degree or higher in the Census, substantial gaps are found. In comparison to non-Hispanic white men, black and Hispanic men earn approximately 19 percent less, and Asians earn approximately 10 percent less.

The second line of Panel A of Table 2 provides estimates of the gap remaining after matching on age and educational levels as reported on the Census data. Differences in age and highest degree account for none of the observed Asian-white wage gap, and account for only 0.019 log points of the black-white wage gap and 0.029 log points of the wage gap between Hispanics and non-Hispanic whites.

Our first interesting finding comes from comparing the wage gaps as estimated with Census data (the first line of Panel A) with the wage gaps as estimated with education-level data drawn by the NSCG itself (the first line of Panel C). The estimated wage gap falls modestly for blacks (from 0.194 to 0.170), but substantially for Hispanics (from 0.193 to 0.119) and for Asians (from 0.095 to 0.053). The first line of Panel B shows that some of this drop is due to the lower wages of Hispanic and Asian men who did not respond to the NSCG or were found to be out of scope due to issues such as misreported age or emigration. Elsewhere (Black, Sanders, and Taylor, 2003) we argue that the remainder of the drop is due

---

[14] Brown and Corcoran (1997) use this mean fraction female variable in their wage regressions as a univariate alternative to a set of dummy variable for majors. It is calculated by first obtaining the fraction female within each major represented in the sample and then taking the mean of these fractions over the individuals within each demographic group.

to very substantial measurement error in the reporting of education in the U.S. Census. As we have mentioned, in collecting the NSCG, the NSF and Census Bureau were particularly concerned about the respondents' education, and devoted much effort to insuring the accuracy of the education responses, asking about the respondents' college or university and about the major and minor fields of study. Because the information is sufficiently detailed, it seems plausible that the education-level data reported by college educated men in the NSCG are essentially correct. By comparing the NSCG education reports and the Census reports, we discover substantial measurement error. Indeed, 7.4 percent of those reporting a bachelor's degree in the Census, 2.3 percent of those reporting a Ph.D. in the Census, and 17.0 percent those reporting a professional degree in the Census report having no college degree in the NSCG.[16] More importantly, education misreports are more common among minority groups than among non-Hispanic whites. Misreports were especially common for Hispanics and Asians.[17] The consequence is that a disproportionate fraction of Hispanic and Asian men in the U.S. Census who report having a college degree in fact have no such degree. On average these latter men have low earnings, and this in turn leads to an overestimate of the race/ethnicity wage gap.

Panel C of Table 2 shows that only a modest part of the wage gap is explained for blacks and Hispanics by differences in highest degree and age, and for Asians the unexplained gap actually increases (by 0.020 log points). Comparing Panel D with Panel C, we notice that conditioning on college major does not greatly affect inferences drawn about Hispanic men; the log point gap explained increases only slightly, from 0.025 to 0.034. For blacks, in contrast, the log point gap explained rises from 0.009 to 0.036. American Asians disproportionately earn degrees in fields that are well compensated. Thus, the "unexplained" gap (i.e., that gap that remains when we compare men with identical ages, degrees, and majors) is *higher* than the initial gap.

---

[15] The raw gap is obtained by taking the (weighted) average of the log wages for the demographic group of interest and subtracting the (weighted) average of the log wages for white, non-Hispanic men.

[16] These percents do not include respondents whose educational level was imputed on the Census or those who did not complete the NSCG survey. The percents are weighted to reflect the stratified sampling of the NSCG.

[17] In Black, Sanders, and Taylor (2003) we provide strong evidence that education misreports in the Census are more common for those with poorer self-reported language ability. Thus it is not surprising that misreports are more common among Asians and Hispanics, as these groups include a disproportionate number of immigrants.

Panel E restricts attention to individuals who indicate that they "speak English at home." The striking results from the Panel E are for Hispanics and Asians. For Hispanics and Asians who speak English at home, the unexplained wage gaps are almost exactly zero; these men have wages that equal those of same-aged white men who have similar degrees and majors. For blacks a substantial gap, approximately 13 percentage points, remains. We explore each of these findings in more detail below.

Before turning to further explorations, it is worth mentioning one issue that holds some prominence in recent analyses of race/ethnicity wage gaps. The concern is that the "real" or "potential" wage gap will differ from the "observed" wage gap if a disproportionate fraction of minority workers are not working, and if moreover non-working individuals in general are those who would likely report low wages if they were working (see, e.g., Butler and Heckman, 1977, Brown, 1984, and Neal and Johnson, 1997). Because we focus on college-educated men under age 60, this concern is perhaps less relevant than in studies that examine the entire labor force. Nonetheless there are some notable racial/ethnic differences: In the NSCG, among men who speak English at home, the rates at which men fail to report earning positive wages are approximately 15 percent for non-Hispanic white men, Hispanic men and Asian men, and 21 percent for black men. Only a small part of this disparity owes to differences in the proportion that is not working (2.2 percent of non-Hispanic white men, 3.9 percent of black men, 2.9 percent of Hispanic men, and 2.4 percent of Asian men). The larger difference is among those in the NSCG choosing to not report their wages on the 1990 Census—6.5 percent of non-Hispanic white men, 13.3 percent of black men, 6.8 percent of Hispanic men, and 5.7 percent of Asian men.

To address the concern that the potential wages of these men may differ systematically by race, potential wages were nonparametrically imputed for those not reporting positive wages and then the wage gaps reported in Table 2 Panel E were re-estimated using both reported and imputed wages. The wages were imputed by matching those without wages with those with wages of the same race, age, highest degree, and major associated with the highest degree and assigning them the mean wage among their

matched group.[18] This method does not address whether those not working or not reporting wages have wage incomes or potential wage incomes that differ from others of the same age, race, highest degree and major associated with the highest degree. It does address whether those not working or not reporting wages have a different distribution across age, highest degree, and major by race. The potential wage gap relative to non-Hispanic whites (found using both those who reported positive wages and the imputed potential wages for those who did not) was well within one standard deviation of the estimates reported in Table 2. This provides some evidence that the estimates reported in Table 2 may not be substantially biased by the exclusion of those not working, those reporting zero wages, or not reporting wages.

Hispanics and Asians: The Role of Speaking English at Home

A striking finding reported on the bottom line of Table 2 is that among workers who solely speak English at home, Asian and Hispanic men's wages are virtually identical to those of comparable white men. In contrast, men who do not speak English at home earn considerably less than their English speaking white counterparts, or their counterparts from the same ethnic group who do solely speak English at home—individuals who presumably have stronger English skills and possibly higher levels of assimilation. Our result mirrors Trejo (1997), who finds very large returns to English ability among Mexican Americans.

We explore this finding in greater detail by dividing the sample, for each race/ethnicity group, into four mutually exclusive subgroups: by immigration status (immigrant or non-immigrant) and by language spoken at home (English or language other than English). Panel A of Table 3 shows the distribution for each group. A large number of Hispanics—both immigrant and non-immigrant—speak a language other than English at home. Most immigrant Asian men speak a language other than English at home while most non-immigrant Asian men speak only English at home.

Panel B of Table 3 reports the "unexplained" wage gaps for each race/ethnic minority relative to a new baseline majority—non-Hispanic white men who speak English at home. Among those who speak English at home, estimated wage gaps are quite similar for non-Hispanic whites, Hispanics and Asians—

[18] The Census Bureau imputes wages for those who leave the wages question blank. The imputation is based on age, race, educational level and several other variables. Our imputations may be better because the NSCG likely has less misreporting of

immigrant and non-immigrant alike. Non-Hispanic white immigrants who speak English at home in fact earn slightly more than non-immigrant whites. Those who speak a language other than English at home generally earn less.[19]

When we restrict attention to men who speak English at home, Asian and Hispanic men earn the same as non-Hispanic white men. One natural interpretation is that the observed wage gaps between Asian and Hispanic men and non-Hispanic white men are in general the result of differences in productive skills, not discrimination. In this view, the earnings gap for Asian and Hispanic men who speak a language *other* than English at home is the result of differences in language skills (and perhaps unobserved differences in other forms of human capital). Alternatively, the relevant form of discrimination may not be based primarily on race or ethnicity, but may instead stem from discrimination based on cultural differences. The majority group may not object to employing or working with Hispanics or Asians as long as they have adopted the culture of the majority group.[20]

Blacks: Parental Education and Regional Differences

As the results from Table 2 indicate, wages of black men are approximately 13 percentage points lower than wages of similarly aged white men with the same college degree and major. While this is a substantial reduction from the mean differential estimated from the Census data, less than a third of the differential is explained by racial differences in age, degree, and major (or measurement error in recording highest degree). It is clearly important to understand the source of this unexplained black-white gap.

Our first approach is to examine the wage gap by the education of respondents' parents. For this analysis, we divide respondents into three groups according to the education level of their least educated parent (usually the respondent's mother): less than high school, high school graduate, and at least some college. The issue of pre-college preparation raises a more general point. Card and Krueger (1992a)

---

education than the Census and because we use information on majors not reported in the Census.

[19] While there is an active debate on whether the skills of recent immigrants to the U.S. have declined recently, the literature uniformly documents improvements in earnings of immigrants as they increase time spent in the U.S. and, presumably, their English skills improve (Borjas, 1994, reviews the literature). Our results seem consistent with this generalization.

[20] A third possibility is that the geographical distributions of Hispanic and Asian men who speak English at home may contribute to their wage being higher than otherwise comparable white men. To explore this possibility we matched these Hispanic and Asian men to non-Hispanic white men of the same age, highest degree, and major who additionally lived in the same large city, or same state if they did not live in a large city. Although there was a substantial lack of support (we could not match almost half

document that especially for school children born prior to 1940, the quality of the segregated public schools in much of the Southern United States was much worse for blacks than for whites. For example, blacks in the 1920-1929 birth cohort who attended schools in Alabama, Georgia, Louisiana, Mississippi, or South Carolina typically were in classes that were 30 to 50 percent larger than those of white students and received instruction from teachers who earned less than half as much as teachers in white schools. Many of the older Southern-born black men in our sample were likely educated in conditions of extreme educational inequality. Many of the younger Southern-born black men have parents who were educated in these segregated schools.

With this background in mind, we also divide out sample into those born in the South and those not born in the South.[21] In this analysis, we use as the benchmark group men who have the following characteristics: they are non-Hispanic white, not born in the South, and have at least one parent with some college education.[22] From Panels A of Table 4 we notice Southern-born men generally earn less than men in this benchmark group. For both black and white Southern-born men, we see only a weak relationship between parents' education and wages (that is not statistically significant for black men).

For blacks not born in the South, however, a different and intriguing pattern emerges. Black men with well-educated parents have much smaller average wage gaps than men with poorly educated parents. For black men born to college-educated parents, we cannot reject the hypothesis that wages are the same as for comparable white men. Black men with poorly educated parents, in contrast, earn considerably less. Indeed, from Panel B we notice for Northern-born men, the "class wage gap" between black men

---

of the Hispanic and Asian men) the average gaps for those with matches were also not statistically significantly different from zero. It seems that location is not driving these results.

[21] We define Southern states as Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, and Virginia. We refer to individuals born elsewhere as being "not born in the South" or as "Northern-born."

[22] With this smaller reference group, the proportion of the other groups who do not have exact matches is larger than in any of our other results. For this reason, we also estimated the results using a propensity score matching model where the educational characteristics were still matched exactly but the estimates for white men were smoothed (using an Epanechnikov kernel of bandwidth 3 years) on age. While the point estimates from this model differ from those obtained from the exact match, the differences were almost all within twice the standard errors. More importantly, the observed patterns in our results did not change.

with parents who had some college and those whose parents did not graduate high school, is larger than the overall "race wage gap."[23]

Ascertaining the proper interpretation of these results is difficult. A few points, however, merit mention. First, these results may also pose difficulties for those who view discrimination as arising solely from the color of workers' skin. Northern-born black men who have college-educated parents appear to have wages that are very similar to comparable white men. Of course, as we mentioned above (in our discussion of wage gaps for Asians and Hispanics), the predominant form of discrimination may not be racial *per se*, but rather cultural; the dominant majority group may not object to employing or working with black workers as long as these workers are viewed as having adapted to the majority's culture. Such discrimination may then have less of an effect on wages of "second generation" college-educated blacks born in the North than for other groups of black Americans. An alternative explanation is that these patterns stem primarily from unobserved differences in the accumulation of productive human capital, e.g., from unobserved differences in the value of productive skills possessed by Southern-born and Northern-born college-educated black men.

While our data do not allow us to distinguish the explanations discussed in the preceding paragraph, we can make observations that place the North-South contrast into some historical perspective. Our focus here is on the large wage gap between Northern-born and Southern-born black men whose parents had some college education. Most of the black men born to college-educated parents in our sample were born between 1945 and 1965.[24] When these men were school-aged children, the labor market for their college-educated parents was very different in the South than in the North. To illustrate this point we use data from the 1-percent PUMS of the 1960 U.S. Census to list, in Table 5, the occupations of college-educated black men aged 30 to 40 in 1960 for both the South and the North.[25] We list all occupations that accounted for at least one percent of the college-educated black men in the sample. In the South over one-half of college-educated black men were schoolteachers (who likely were

---

[23] One implication of our findings is that parents' education is not a suitable instrument for a child's education in regressions that attempt to estimate the causal effect of education on earnings. (While parents' education *is* surely correlated with the child's education, it is also likely correlated with the error term in the regression as well.)

[24] Over 86 percent of the Southern-born black men and 89 percent of those born elsewhere were born between 1945 and 1965.

employed in segregated schools), compared with approximately one-fifth in the North. In the South there were *no* social workers, lawyers or judges, physicians or surgeons, accountants or auditors, or electrical engineers in the 1-percent sample. In contrast, for our non-Southern sample, these occupations comprised nearly 14 percent of all college-educated black men. Among blacks, a college education led to an upper-middle class occupation far more frequently in the North than in the South.

A final issue concerning the contrast between outcomes for Northern- and Southern-born college-educated black men centers on the quality of the colleges these men attended. We have already noted that many of the Southern-born men were likely educated in low-quality primary and secondary public schools.[26] They may also have been more likely than others in our sample to attend low-quality colleges. Our data set does not allow us to identify the exact colleges attended by respondents, nor do we have any direct information about the quality of the schools from which respondents graduated. Work by Daniel, Black and Smith (2001), however, confirm that many historically black institutions of higher education, particularly in the South, rank very low along a number of traditional measures of school quality. Using evidence provided in Ehrenberg and Rothstein (1993, Table 2) from the NLS Class of 1972, we calculate that among blacks attending college, 66 percent of those born in the South attended a historically black institution, compared to 26 percent of those who were not born in the South.

In short, on average blacks born in the South had access to schools with relatively poor resources—at both the pre-college and college levels—in comparison to Southern-born whites and in comparison to blacks born elsewhere (especially, one might surmise, in comparison to Northern-born blacks whose parents were themselves college-educated). To the extent that school quality matters for future earnings, it is not surprising that the "unexplained" race wage gap is notably higher for Southern-born blacks than for other minorities, including blacks not born in the South.[27]

---

[25] These men are roughly the age we would expect of parents for NSCG respondents who were born between 1945 and 1965.
[26] Card and Krueger (1992a) point out that most Southern states continued to operate segregated schools well into the 1960s, long after the landmark 1954 decision Brown v. Board of Education.
[27] See Card and Krueger (1992b) for persuasive evidence that the quality of schools affect individuals' future earnings.

Differences in Income Distribution

Returning to our primary findings, reported on the last line of Table 2, recall that among men who speak English at home, the *mean* gap in log wages (relative to non-Hispanic white men) is approximately zero for Asian men and Hispanic men and is 13 points for black men. Because our matching procedure is non-parametric, a comparison at the mean is only one of many ways in which we could have presented the contrast between wages of a minority group and the majority. In Figure 1 we present the entire probability distribution functions.

Panel A plots results for the black men. Recall that for each of 2835 black men we calculate the difference between that individual's log wage and the average of the log wages of non-Hispanic white men who have identical observed characteristics. The line labeled "black pdf" plots these differences. For sake of comparison we conduct an analogous exercise for the non-Hispanic white men; we calculate for each of these men the difference between his log wage and the average of the log wage of all *other* non-Hispanic white men who have identical observed characteristics. To make results comparable we then weight these latter differences by age/degree/major weights calculated using the *black* distribution. In Panels B and C we conduct analogous exercises for the Hispanic men and Asian men.

The shape of black distribution appears to be quite similar to the non-Hispanic white distribution—lying to the left by approximately 0.13 log points fairly consistently throughout the range of the distribution. While the mean of the Hispanic distribution is the same as the non-Hispanic white distribution, the Hispanic distribution appears to have slightly thicker tails. The entire Asian distribution is very similar to the non-Hispanic white distribution.

VI. Concluding Remarks

Our study documents substantial unadjusted wage gaps between college-educated minority men—black, Hispanic, and Asian—and non-Hispanic white men. We find that these wage differences generally appear to be the consequence of differences in pre-market factors: age, the levels and types of education, and English fluency and/or assimilation. In particular, among college-educated men who speak English at home, our estimated wage gaps are very close to zero for Hispanic and Asian men. Similarly, the unexplained wage gap is approximately zero for black men with college-educated parents

not born in the South. We provide fragmentary evidence that the unexplained gap for other black men—Southern-born men and those born elsewhere to poorly-educated parents—is related to the generally poor quality of education afforded these men at the pre-college and college level.

A natural interpretation of our results is that in the U.S. market for college-educated men rewards for productive skills are the same for minority men as for the majority. It is important, though, to repeat the caveat expressed above. We cannot rule out the possibility that the reduced wages associated with speaking a language other than English at home (for Hispanics and Asians) or with being born in the South (for blacks) are the consequence of "cultural or class" prejudice. Perhaps skin color or ethnicity *per se* is not the key factor in discriminatory practice, but rather prejudice aimed at minority men who are seen as "not fitting in" in the majority culture.

More generally, our research underscores a theme that is frequently expressed in the recent literature—that the key to reducing existing race and ethnicity wage disparities is the removal of obstacles that impede skill acquisition by minority children and youth. The literature has noted large race and ethnicity wage gaps among college-educated men—evidence that has led some to conclude that improved educational opportunities for minorities cannot be the solution to reducing wage disparities. Our work suggests, to the contrary, that even among the most highly educated, minority wage gaps are in large measure the consequence of differential acquisition of productive skills. An important goal for research and policy is to identify and implement effective ways of reducing this disparity.

References

Altonji, Joseph and Rebecca Blank, 1999. "Gender and Race in the Labor Market," in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics*, volume 3. New York: Elsevier Science Press.

Barsky, Robert, John Bound, Kerwin Charles, and Joe Lupton, 2002. "Accounting for the Black-White Wealth Gap: A Nonparametric Approach." *Journal of the American Statistical Asso*ciation, 97 663-673.

Black, Dan, Seth Sanders, and Lowell Taylor, 2003. "Measurement of Higher Education in the Census and CPS." *Journal of the American Statistical Association* 98:463.

Bollinger, Christopher, 2003. "Measurement Error in Human Capital and Black-White Wage Gap" *Review of Economics and Statistics* 85:3 (2003) 578-85.

Brown, Charles, 1984. "Black-White Earnings Ratios since the Civil Rights Act of 1964: The Importance of Labor Market Dropouts," *Quarterly Journal of Economics*, 99, 31-44.

Brown, Charles and Mary Corcoran, 1997. "Sex-Based Differences in School Content and the Male/Female Wage Gap," *Journal of Labor Economics* 15, 431-65.

Borjas, George J., 1994. "The Economics of Immigration," *Journal of Economic Literature*, 32, 1667-1717.

Butler, Richard, and James J. Heckman, 1977. "The Government's Impact on the Labor Market Status of Black Americans: A Critical Review," in *Equal Rights and Industrial Relations*, by Farrell E. Bloch, *et al.*, Madison, Wisconsin: Industrial Relations Research Association.

Canty, Angelo, and A.C. Davison, 1999. "Resampling-based Variance Estimation for Labour Force Surveys," *The Statistician* 48(3), 379-391.

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

Card, David, and Alan B. Kruger, 1992b. "Does School Quality Matter? Return to Education and the Characteristics of Public Schools in the United States," *Journal Political of Economy* 100, 1-40.

Constantine, Jill M., 1995. "The Effect of Attending Historically Black Colleges and Universities on Future Wages of Black Students," *Industrial and Labor Relations Review* 48(3), April, 515-46.

Daniel, Kermit, Dan Black, and Jeff Smith, 2001. "Does Affirmative Action Raise Wages? Racial Differences in the Effects of College Quality and Student Body Diversity on Wages," in Gary Orfield, ed., *Diversity Challenged.* Cambridge: Harvard Education Publishing Group.

Duleep, Harriet and Seth Sanders, 1992. "Discrimination at the Top: American-Born Asian and White Men," *Industrial Relations* 31, 416-432.

Ehrenberg, Ronald and Donna Rothstein, 1993. "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students: An Initial Analysis," NBER Working Paper 4356.

Heckman, James J., Hidehiko Ichimura, and Petra Todd, 1998. "Matching As An Econometric Evaluation Estimator," *Review of Economic Studies*, 65, 261-294.

Heckman, James J., Lance Lochner, and Petra Todd, 2003. "Fifty Years of Mincer Earnings Regressions," NBER Working Paper #9732.

Herrnstein, Richard, and Charles Murray, 1994. *The Bell Curve: Intelligence and Class Structure in American Life.* New York: Free Press.

Neal, Derek, and William Johnson, 1996. "The Role of Premarket Factors in Black-White Wage Differences," *Journal of Political Economy,* 104, 869-95.

O'Neil, June, 1990. "The Role of Human Capital in Earnings Differences Between Black and White Men," *Journal of Economic Perspectives,* 4, 25-45.

Racine, Jeffrey S., and Carole A. Green, 2002. "Nonparametric Estimation of Union and Gender Wage Gaps," Unpublished paper, Syracuse University.

Rodgers, William and William Spriggs, 1996. "What Does the AFQT Really Measure? Race, Wages, Schooling and the AFQT Score," *Review of Black Political Economy,* 24(4), 13-46.

Shao, Jun, and Dongsheng Tu, 1995. *The Jackknife and Bootstrap*. New York: Springer-Verlag.

Trejo, Stephen, 1997. "Why Do Mexican Americans Earn Low Wages?" *Journal of Political Economy*, 105(6), 1235-68.

Table 1
Degrees and College Major Among Men aged 25 to 60

A. Highest degree	**White**	**Black**	**Hispanic**	**Asian**
Bachelor's	63.34	68.28	65.44	54.24
Master's	22.89	22.57	20.90	27.13
Professional degree	9.00	5.69	9.58	10.02
Ph.D.	4.76	3.46	4.08	8.62
N	56,524	4,887	4,103	7,633

B. Bachelor's Major	**Mean Wage of Bachelor's Degree**	**White**	**Black**	**Hispanic**	**Asian**
Engineering	$24.73	12.72%	5.97%	13.73%	29.75%
Mathematical sciences	21.75	2.53	2.70	2.10	3.28
Business & economics	21.38	28.10	25.16	23.79	21.07
Physical sciences	19.74	4.57	3.05	3.50	7.33
Social sciences	19.24	13.91	17.89	13.79	7.42
Health professions	19.09	2.61	2.48	3.53	5.20
Engineering technology	19.00	1.88	2.41	2.12	2.45
Computer sciences	18.49	1.75	1.25	2.48	3.64
Life Sciences	17.44	4.94	4.54	6.04	5.22
Humanities	17.14	6.76	5.15	7.38	4.43
Education	17.05	8.10	14.04	8.80	2.39
Professional degrees	17.01	5.33	8.08	5.96	2.18
Agricultural sciences	16.47	2.58	1.88	2.82	2.68
Fine arts	16.13	3.30	3.50	3.01	1.77
Major not elsewhere classified	---	0.91	0.92	0.96	1.20
Dissimilarity Index		**0.00%**	**20.03%**	**13.55%**	**31.27%**

C. Mean Fraction Female Within Undergraduate Major	**White**	**Black**	**Hispanic**	**Asian**
Men	33.89%	39.15%	35.11%	26.45%
Women	61.44%	59.84%	57.60%	51.99%

Notes: The data are weighted to account for sample stratification. Wage estimates are for all men whose highest degree is a bachelor's reporting positive earnings for the year with non-imputed data on earnings, weeks worked, and usual hours of work per week. Other estimates are based on the sample of men (or men and women) with non-imputed gender, highest degree, and major who were in the NSCG.

Table 2
Minority Wage Gaps

	Black	Hispanic	Asian
A. Census education measure			
Wage gap (relative to whites)	-0.194	-0.193	-0.095
	(0.0092)	(0.0108)	(0.0093)
Gap not explained by differences in highest degree and age	-0.175	-0.164	-0.101
	(0.0089)	(0.0105)	(0.0089)
N	5,547	4,585	8,019
B. Census education measure, drop NSCG non-response and out of scope			
Wage gap (relative to whites)	-0.177	-0.154	-0.082
	(0.0103)	(0.0124)	(0.0097)
Gap not explained by differences in highest degree and age	-0.166	-0.129	-0.096
	(0.0098)	(0.0120)	(0.0093)
N	3,788	3,306	5,888
C. NSCG education measure			
Wage gap (relative to whites)	-0.170	-0.119	-0.053
	(0.0104)	(0.0126)	(0.0099)
Gap not explained by differences in highest degree and age	-0.161	-0.094	-0.073
	(0.0099)	(0.0122)	(0.0096)
N	3,471	2,949	5,503
D. NSCG education measure and major			
Wage gap (relative to whites)	-0.170	-0.114	-0.066
	(0.0111)	(0.0133)	(0.0112)
Gap not explained by differences in highest degree, majors, and age	-0.134	-0.080	-0.162
	(0.0130)	(0.0141)	(0.0121)
N	3,198	2,712	4,939
E. NSCG education measure and major, speak English at home			
Wage gap (relative to whites who speak English at home)	-0.169	-0.058	0.006
	(0.0114)	(0.0218)	(0.0174)
Not explained by differences in degree, majors, and age	-0.130	-0.005	-0.010
	(0.0134)	(0.0227)	(0.0178)
Estimated without individual sampling weights	-0.122	-0.001	-0.007
	(0.0129)	(0.0217)	(0.0168)
N	2,845	996	1,317

Notes: All differentials are computed relative to white non-Hispanic men. In Panels A and B, workers are matched on their age and Census-reported highest degree. In Panel C, workers are matched on their age and NSCG-reported highest degree. In Panel D, we additionally match workers on their highest degree major field of study. Finally, in Panel E, we match workers as in Panel D, but report differences only for those workers who speak only English at home. Bootstrapped standard errors are reported in parentheses. In Panels A-C all minority men have exact matches. In Panel D the percents of minority men with exact matches and thus retained in the sample are 92.1%, 92.0%, and 89.8% for black, Hispanic, and Asian men respectively. In Panel E the rates are 91.9%, 92.3% and 92.3%

Table 3
Language and Immigration Status

A. Language Spoken at Home and Immigration Status by Race and Ethnicity

	Non-immigrants		Immigrant		
	Speaks only English at home	Speaks language other than English at home	Speaks only English at home	Speaks language other than English at home	**Total**
Whites	93.81%	2.16%	2.36%	1.67%	100.00%
Blacks	85.08	3.35	5.87	5.70	100.00
Hispanics	28.85	28.02	6.47	36.65	100.00
Asians	17.96	3.40	8.37	70.28	100.00

Note: The data are weighted to account for sample stratification.

B. Wage Gaps by Language Spoken at Home, Immigration Status, and Race and Ethnicity

	Non-immigrants		Immigrant	
	Speaks only English at home	Speaks language other than English at home	Speaks only English at home	Speaks language other than English at home
Whites	-0.001	-0.077	0.028	-0.127
	(0.0003)	(0.0341)	(0.0122)	(0.0209)
	[n=34,958]	[n=789]	[n=2,116]	[n=1,641]
Blacks	-0.126	-0.072	-0.201	-0.334
	(0.0131)	(0.0576)	(0.0494)	(0.0681)
	[n=2,627]	[n=103]	[n=211]	[n=205]
Hispanics	-0.007	-0.093	-0.007	-0.157
	(0.0233)	(0.0221)	(0.0610)	(0.0293)
	[n=828]	[n=795]	[n=158]	[n=872]
Asians	-0.006	-0.049	-0.017	-0.234
	(0.0199)	(0.0502)	(0.0381)	(0.0157)
	[n=933]	[n=175]	[n=376]	[n=3,318]

Notes: Estimates are from nonparametric regressions. All differentials are computed relative to white non-Hispanic men who speak English at home. The point estimates for white men are non-zero because the comparison group contains both immigrants and non-immigrants. We match workers on their age, NSCG-reported highest degree, and their highest degree major field of study. Bootstrapped standard errors are reported in parentheses. Going across the rows the rates matched are: 100%, 90.0%, 100%, 86.8%; 92.1%, 89.6%, 88.7%, 86.1%; 92.7%, 92.4%, 89.8%, 89.4%; 93.0%, 92.1%, 90.4%, 86.8%.

Table 4
Racial Wage Gaps by Parents' Education, and Region of Birth

A. <u>Southern Born</u>: Wage Gap Not Explained by Differences in Age, Degree, and College Major, English Speaking only

Education of the Least Educated Parent	Black	White
Less than high school	-0.242 (0.0361) [n=649]	-0.090 (0.0301) [n=1,376]
High school	-0.206 (0.0486) [n=277]	-0.058 (0.0227) [n=2,075]
Some college or more	-0.184 (0.0537) [n=173]	-0.036 (0.0236) [n=1,853]

B. <u>Not Southern Born</u>:

Education of the Least Educated Parent	Black	White
Less than high school	-0.205 (0.0488) [n=333]	-0.074 (0.0191) [n=4,972]
High school	-0.125 (0.0466) [n=355]	-0.014 (0.0121) [n=9,427]
Some college or more	+0.020 (0.0464) [n=247]	0 (--) [n=9,390]

Notes: Estimates are from nonparametric regressions. All differentials are computed relative to white, non-Hispanic men who were not born in the South and whose parents had attended at least some college. In both panels, we match workers on their age, NSCG-reported highest degree, and their highest degree major field of study. Sample limited to those who speak English at home. Bootstrapped standard errors are reported in parentheses. In Panel A, the matching rates for men whose parents have increasing education levels are 67.4%, 76.5%, and 77.6% for black men and 67.9%, 76.7% and 78.5% for white men. In Panel B, the matching rates are 68.4%, 71.6%, and 77.2% for black men and 67.0%, 76.7%, and 100% for white men.

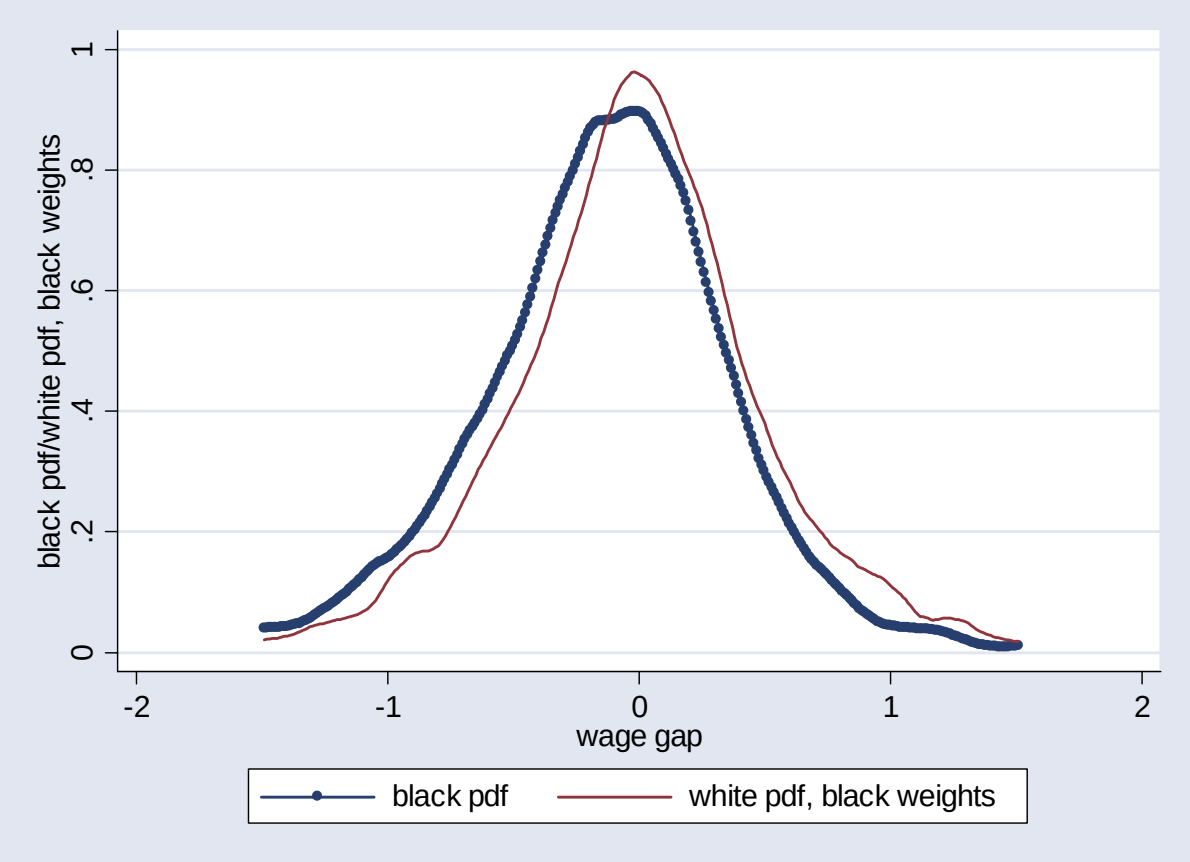
Table 5
Occupations of College-Educated Black Men Aged 30 to 40 by Region, 1960 Census

Occupation	Northern Percentage	Southern Percentage
Teachers	19.25%	50.68%
Clerical workers	10.88	6.16
Sports instructors and instructors	2.09	6.16
Social and welfare workers	**5.02**	**0.00**
Operatives	3.35	2.05
Professional and technical workers	2.93	0.68
Managers, officials, and proprietors	2.93	0.68
Mail carriers	0.42	4.11
Lawyers and judges	**2.51**	**0.00**
Physicians and surgeons	**2.51**	**0.00**
Salesmen and sales clerks	1.67	1.37
Accountants and auditors	**2.09**	**0.00**
Member of armed forces	1.67	0.68
Electrical engineers	**1.67**	**0.00**
Insurance Agents and brokers	1.26	0.68
Musicians and music teachers	0.84	1.37
Policeman and detectives	0.84	1.37
Testing technicians	1.26	0.68
Cumulative Percentage	63.18%	76.71%

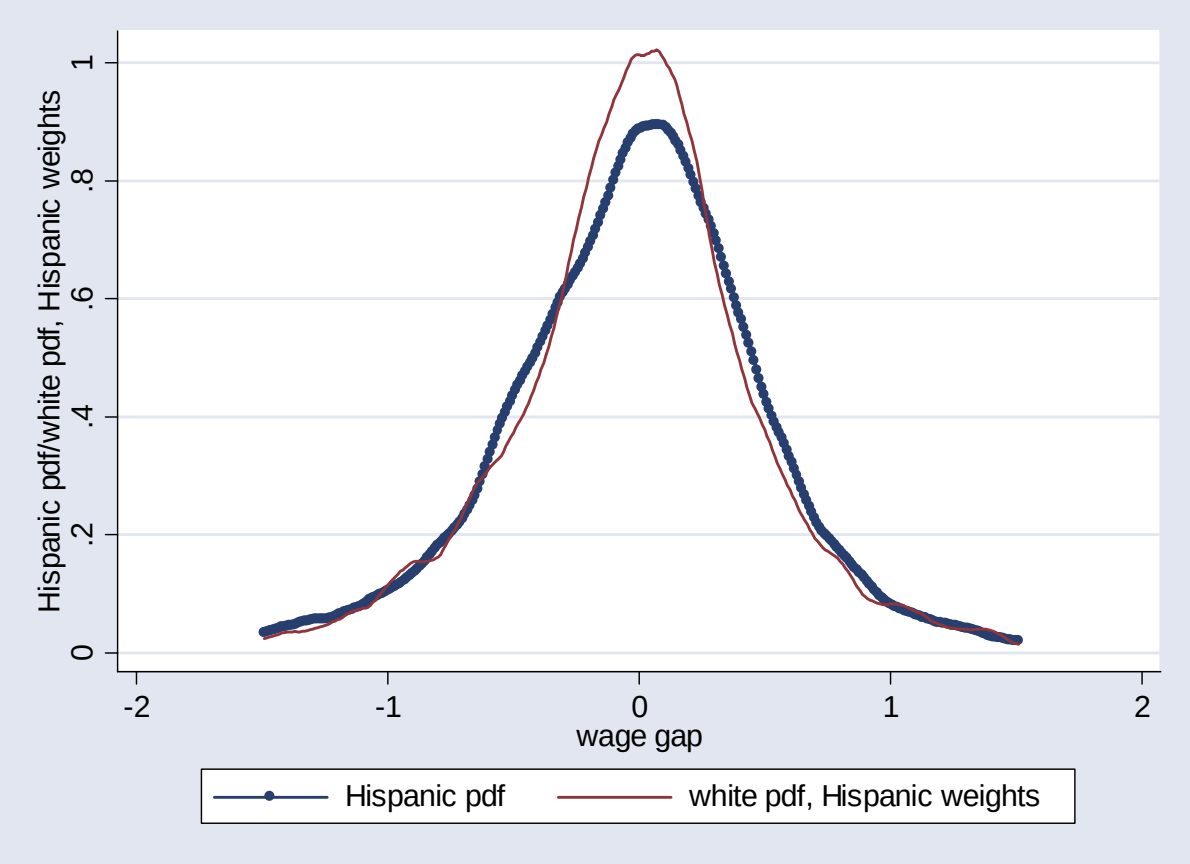
Notes: The sample is all college-educated black men from the 1% PUMS of the 1960 Census between 30 and 40 years of age. There are 239 Northern college-educated black men and 146 Southern college educated black men. The table lists all occupations that account for at least 1% of the total sample.

Figure 1: Probability Density Functions of Estimated Wage Gaps

Panel A: Black Men



Panel B: Hispanic Men



Panel C: Asian Men