Race, Income and College in 25 Years: Evaluating Justice O'Connor's Conjecture[*]

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ABSTRACT

In *Grutter v. Bollinger*, Justice O'Connor conjectured that in 25 years affirmative action in college admissions will be unnecessary. We project the test score distribution of black and white college applicants 25 years from now, focusing on the role of black-white family income gaps. Economic progress alone is unlikely to narrow the achievement gap enough in 25 years to produce today's racial diversity levels with race-blind admissions. A return to the rapid black-white test score convergence of the 1980s could plausibly cause black representation to approach current levels at moderately selective schools, but not at the most selective schools.

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Even in the absence of continuing bias, the legacies of *de jure* segregation and racial discrimination in the United States create gaps in income and educational attainment between blacks and whites that will persist for at least the near future. Because there are comparatively few black high school graduates with exceptional achievement test scores, the most selective colleges would admit very few black students if admissions criteria relied exclusively on measures of academic achievement currently in use. Many colleges and universities attempt to offset the gaps in the credentials of black and white applicants by giving an advantage in admission to black applicants over white applicants with similar academic records.

The rate at which racial gaps in pre-collegiate academic achievement can plausibly be expected to erode going forward is a matter of considerable uncertainty. Justice O'Connor, in her opinion in the *Grutter v. Bollinger* case (which held affirmative action in college admissions to be a constitutional means of attaining diversity in student populations under some circumstances) takes a firm stand on this question: "We expect that 25 years from now, the use of racial preferences will no longer be necessary to further the interest approved today." Our goal in this paper is to evaluate the plausibility of Justice O'Connor's conjecture.

We project the elite college applicant pool 25 years from now, under assumptions – which we believe are optimistic -- about the rate at which existing racial gaps in economic circumstances and pre-collegiate educational achievement will close. Our analysis focuses on two important margins: Changes in the relative income distributions

of black and white families and narrowing of the test score gap between black and white students with similar family incomes. Progress on each margin can be expected to reduce the racial gap in qualifications among students pursuing admission to the most selective colleges. We use existing estimates of the speed of regression toward the mean income across generations to project the future black-white family income gap, and extrapolate from past trends in test score convergence between black and white students to project the conditional-on-income test score gap. Combining the two projections with a unique national data set on SAT test takers, we predict the distribution of black test scores relative to those of whites in future years.

After projecting the pool of likely applicants, we simulate the effects of alternative admissions policies -- including the current race-conscious system, race-neutral SAT-based admissions, and class-based affirmative action -- on the racial composition of admitted students. We neglect other aspects of the college "pipeline": We consider application rates only as a parameter in our projections, and we make no effort to predict matriculation decisions. We also restrict our attention to black and white students, as immigration and assimilation issues make Hispanic and Asian applicant pools substantially more difficult to define and forecast. In light of the United States' distinct historical legacy of racial policies, the representation of African Americans in elite colleges is of unique interest. Finally, we restrict our analysis to selective institutions, as race-conscious admissions policies are only relevant where admissions are competitive. Thus, we say little about aggregate college attainment trends, which primarily reflect outcomes at non-selective, open access institutions.

Our results represent a baseline expectation in the event that current trends continue, and are obviously sensitive to policy shifts that change relative outcomes of African American and white students. Changes in class size, in school effectiveness, and in income inequality, for example, would all have important effects on black representation among potential applicants, admissions, and matriculants at selective colleges.

The legacy of racial inequality in academic and economic opportunity forms the background of the admissions debate and of this analysis. The first section of this paper outlines the racial gap in outcomes at the elementary and secondary levels. The second section discusses the role of affirmative action policies in college admissions. The third section describes our methods and data and presents our forecasts of test score distributions and admissions outcomes 25 years from now.

Section 1. Racial inequality in pre-collegiate achievement

In 1970, the average 17-year-old black student scored more than one standard deviation below the average white student on the first National Assessment of Education Progress (NAEP) assessment (see Figure 1). Progress since then has been slow and episodic, and essentially stopped around 1990. Trends at the 90th percentile of the black and white distributions, perhaps more relevant for admission to selective colleges, are similar to those at the mean. Today, the black-white gap stands at about three quarters of a standard deviation in reading, and even higher in math.

An obvious partial explanation for the persistence of this gap is the continuing gap in economic resources between black and white students' families. Black workers

earn substantially less, on average, than do whites, though the differential has slowly narrowed. The average black male earned 38% less than the average white male in 1960, 25% less in 1980, and 26% less in 2000.[1]

Improved labor market performance for adult black workers has been slow to translate to improved economic circumstances for black children, as deterioration in black family structures has partially offset increases in individual earnings. In 2002, 35% of black children resided in families with two parents, down from 59% of black children in 1968. The trend was less dramatic for white children, 74% of whom resided in families with two parents in 2002, down from 89% in 1968.[2] As a result, the gap in total family income between black and white children has hardly moved in three decades: The ratio of the median income for black families with one child to the median income for similar white families was 0.63 in 1967 and 0.62 in 2001.[3]

The racial gap in test scores among families with similar incomes also remains sizable. Phillips and coauthors find that only about two-thirds of the black-white gap in young children's scores is explained by even a rich set of family background measures (Phillips et. al., 1998). The source of the black-white gap *within* income groups is not well understood. For the purpose of our primary projections, we treat the within-income test score gap as a black box and consider the likely trends in this unexplained gap. We do, however, explore one potential partial explanation, that black students attend inferior elementary and secondary schools.

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[1] Card and Krueger (1992) and authors' calculations from 2000 Census data. Juhn, Murphy and Pierce (1991) and Card and Krueger (1993) argue that continuing skill convergence during the 1980s was offset by increasing inequality.

[2] http://www.census.gov/population/socdemo/hh-fam/tabCH-3.xls, Tables CH-2 and CH3

[3] http://www.census.gov/hhes/income/histinc/incfamdet.html, Tables F9A and F9B

Section 2. Affirmative Action and College Access for Black Students

Many colleges began instituting affirmative action policies, which give preferences in admissions to minority applicants, in the late 1960s. These policies have been the subject of periodic judicial scrutiny since their inception. In 2003, the Supreme Court handed down decisions in two cases (*Gratz v. Bollinger* and *Grutter v. Bollinger*) challenging the consideration of race in University of Michigan admissions. These decisions upheld the use of some forms of preferences, justified both by the on-campus benefits derived from a racially diverse educational environment and by the societal importance of producing a cadre of minority leaders and professionals (see Goldstein, 2004, for further analysis). The court was hesitant to endorse the use of racial preferences in perpetuity, however, and Justice O'Connor predicted in her *Grutter* opinion that the need for such preferences would disappear within 25 years.

Proactive efforts to recruit and admit students from underrepresented groups have produced sizable gains in the representation of black students at the most selective colleges and universities (Bowen and Bok, 1998). Blackwell (1987) finds that black representation at Ivy League universities increased from 2.3 percent in 1967 to 6.3 percent in 1976; shares in other "prestigious" institutions increased as well, from 1.7 percent to 4.8 percent. Affirmative action preferences could not, however, have had large effects on *overall* college enrollment rates: The vast majority of colleges and universities in the United States do not employ the sorts of selective admission policies that are a precondition for the use of preferences (Kane 1998).

The precise mechanics of admission policies at selective colleges are not widely understood. The courts have prohibited mechanical approaches to affirmative action --

quotas (*Bakke*) or "points" (*Gratz*) -- and most selective colleges employ difficult-to-quantify 'holistic' evaluations. Still, by examining average admissions probabilities among groups defined by important determinants, like SAT scores, it is possible to get an idea of the roles of race and academic qualifications in admissions. Bowen, Kurzweil, and Tobin (2005) have generously provided us extracts from the data used in their study of the role of academic and nonacademic factors in admissions at a number of selective institutions. We present results for four groups of colleges and universities: most selective, highly selective, and moderately selective private institutions, and elite public universities.[4] It must be emphasized that these labels are relative characterizations; even the least selective group in our typology is extremely selective by any national standard.

Admissions profiles are shown in Figure 2. Broadly, the difference between the likelihood of admission of black and white applicants with the same SAT score is largest in the middle of the applicant pool. At the very top – SAT scores over 1500 – both black and white applicants are very likely to gain admission, though racial preferences remain substantial at the most selective colleges; at the bottom, few students of either race are admitted. Adding additional "controls" would not alter the basic pattern of differences in admission by race.

Without the preferences indicated by Figure 2, there would be many fewer black students admitted to the Expanded College and Beyond (ECB) institutions. The policy question at the center of our empirical analysis is whether there will be enough black

[4] These data are from the Expanded College and Beyond (ECB) study assembled by the Andrew W. Mellon Foundation, and describe the 1995 admissions cycle. The most selective private institutions are Harvard, Princeton, and Yale; the highly selective are Columbia, the University of Pennsylvania, Swarthmore, and Williams; and the moderately selective are Barnard, Bowdoin, Middlebury, Oberlin, Pomona, and Wellesley. Public universities are Pennsylvania State University, UCLA, and the University of Virginia. Confidentiality requirements prevent a more disaggregated presentation.

students among the highest scorers 25 years from now to yield a critical mass of minority students under race-blind admissions criteria. In effect, if the same admissions profiles are applied to black and white applicants, what will be the representation of black students in the pool of students likely to receive admission offers in 25 years?

Section 3. Projections

A. *Methods and Data*

Our approach to projecting the pool of applicants to selective colleges and universities takes into consideration expected changes in the relative distributions of black and white family incomes and in the pre-collegiate achievement of black and white youth over the next quarter century. We begin by projecting the relative distributions of black and white family income, which are likely to converge somewhat in coming years. As SATs depend heavily on family income, increases in black families' relative incomes will lead to increases in black students' relative scores. This will, however, almost certainly understate the overall progress in black relative test scores.

The black-white gap in test scores among children with the same family incomes is large (Jencks and Phillips, 1998) but mutable. In one set of estimates, we assume that the conditional (on income) gap will fall at the same rate over the next 25 years as has the unconditional gap over the last quarter century. This is almost certainly too optimistic, as the entire gain over the last 25 years occurred in the first ten years of that period; more recent data indicate a *growing* black-white test-score gap. We also present somewhat less optimistic estimates based on simulations in which we assume that the school quality gap

between black and white students is equalized.[5] Again, reasonable people may differ in their projections of the likely rate of future convergence in black-white achievement; our estimates are meant to indicate what sort of assumptions one would need to make in order to obtain desired admissions results.

Using data on current application behavior and admissions probabilities by student race and qualifying test score, we simulate admissions to the four groups of selective colleges, with both current test score distributions and our simulated distributions with alternative admission rules. These simulations allow us to assess whether it is plausible, as Justice O'Connor conjectured, that there will be enough high-scoring blacks in 25 years that race-blind admissions rules will produce as diverse a class as is admitted using affirmative action today.

We rely on several data sources. For our estimate of the baseline distribution of college preparedness by race and family income, we use a data set containing observations on approximately one-third of students from the high school class of 2000 who took the SAT college entrance exam. We use the public-use microdata sample of the 2000 Census (from IPUMS—Ruggles et. al., 2004) as our source for current family income distributions and as the basis for our projections of future distributions. Our estimates of the rates of change in black-white test score gaps derive from the NAEP Long-Term Trend data (NCES, 1999), a time-series of scores on an unchanging test over the last quarter century. Finally, application and admission outcomes for a set of

[5] The school quality gap might be closed, for example, by perfectly integrating the schools. Even in such an implausible scenario, our estimates overstate the impact on black-white gaps: Income affects test scores in part by purchasing access to better schools, so we double-count by combining income-based progress and integration gains. Across-the-board increases in school quality are also possible. Black students may be more sensitive to school quality than are whites (Krueger and Whitmore, 2002), though we judge the prospects for substantial closing of the black-white gap through this channel as limited.

selective colleges and universities are calculated from the aforementioned Expanded College and Beyond data set, which describes the cohort entering college in the fall of 1995; we compute denominators for application rates by comparing these data to data on 1995 SAT-takers.

B. *Projections of Test Score Distributions*

Figure 3 displays the distribution of SAT scores for blacks and whites in 2000. While the distributions are similar in shape, the mean for black students is about 200 points lower than that for white students, resulting in extreme underrepresentation of black students at the highest scores. The bottom panel of the figure shows the fraction of students at each SAT score who are black. Blacks are 14.3% of (black and white) SAT-takers, but are substantially underrepresented at every score above the grand mean of 1000. This underrepresentation is most severe at the rightmost tail: In the 2000 cohort depicted here, there were about 250 white students who earned perfect scores of 1600 on the SAT, but only 2 black students. Similarly, there were nearly 22,000 white test-takers with scores of 1400 or above but only 322 black test-takers. To maintain the current representation of black students at the most selective schools—where 65% of admitted students have SAT scores above 1400—under admission policies that do not consider race directly, black academic progress must substantially reduce the under representation in Figure 3.

Income convergence

Among families with children aged 15-17 in the 2000 Census, the average black family's income is about $34,500 less than the average white family's, and the median

black family falls below the 25th percentile in the white family income distribution.[6] This gap is attributable partly to differences in family structure between races—57% of black families and 24% of white families containing a 15 to 17-year-old child have only one parent present—and partly to differences in labor market participation and outcomes.

Estimates of the intergenerational transmission of incomes indicate that, on average, somewhere between 40 and 60 percent of the gap between a father's (log) income and the mean (log) income will be closed by his son (Mazumder, 2000, is at the low end of this range; Solon, 1999 is at the high end). Estimates of the correlation of income or wealth across generations at the *family* level are within the same range (Chadwick and Solon, 2002; Solon, 2002). We do not separately model changes in family structure and in incomes conditional on family structure, though the estimates cited here for the intergenerational correlation of family incomes reflect both. To the extent that black family structures converge toward white structures more quickly than would be expected given current income gaps, we will tend to understate the potential for family income convergence.

While it is between-group convergence that is the focus of our analysis, most current estimates of the intergenerational transmission of income derive from samples of blacks and whites, and assume no distinction between within-group and between-group parameters. There are several reasons to expect that this might be unreasonable. First, black incomes did not converge toward those of whites for the first several centuries of black presence in North America, although the correlation in income between fathers and sons was undoubtedly well below 1. This indicates that mean regression can go on

[6] We have also estimated our projections using as the relevant universe families with one member between the ages of 36 and 50, with similar results.

within groups even when—for reasons of discrimination or otherwise—there is little or no convergence between groups. Second, the rate of within-group convergence may well be different for blacks than for whites.[7] Hertz (2005) argues that persistent poverty among very low income black families drags down estimates of intergenerational mean reversion, suggesting that pooled estimates may overstate between-group convergence. Finally, even if we accept the accuracy of current estimates for between-group convergence, there is no guarantee that the rate of intergenerational transmission of income in the future will be the same as it was in the past. For example, an increase in the return to skill could cause intergenerational mean reversion to slow.

Nonetheless, we would not have gone too far astray had we used a 0.40 to 0.60 coefficient of intergenerational mobility to project the black-white income gap in the recent past. Consider the following: In 1969, the average 30- to 39-year-old black male worker — who had attended separate and unequal schools and entered the labor force before the Civil Rights Act of 1964 barred discrimination — earned 37 percent less than the average white worker. Based on the coefficient of intergenerational transmission of earnings alone, this gap would have been expected to close to 15 to 22 percent for the next generation. The actual earnings gap for men in their 30's in 1999 — roughly one generation beyond the same age range in 1969— was 19 percent, well within the range of the forecast.[8] This accurate forecast may just be a coincidence, but at least it was not wildly off. Applying it to another generation, the black-white earnings gap would be projected to close to 6 to 13 percent when members of the third generation reach their 30's, around a quarter century from now.

[7] Mazumder (2000) finds little indication of differences, though his estimates are imprecise.
[8] This example is from Krueger (2003).

For our projections, we take the middle of the consensus range, and assume that the gap in mean log incomes between white and black families will shrink by one half over the next generation. We believe that this is more likely to overstate than to understate the rate of convergence.

Figure 4 displays histograms of black and white family incomes in 2000 from the decennial Census. The actual black-white gap in mean log incomes was nearly 0.77 (corresponding to a gap of 54%, or about $13,000, at the mean) in that year, so the above assumptions imply that it will shrink by about 0.38 log points over the next quarter century. Our projections of the future black income distribution (relative to whites), then, are obtained by inflating the income of each black family in the 2000 data by 32% (=ln(1+0.38)). The resulting distribution is indicated by the dotted line on the figure.[9] With this projection, the fraction of black families with incomes between $80,000 and $100,000 will increase by 69% (from 4.7% to 8.0%), while the fraction with incomes between $25,000 and $30,000 will fall by 83% (from 7.6% to 6.3%). These changes provide re-weighting factors that can be used to estimate the effect of economic progress on black test score distributions.

Our SAT sample records students' self-reports of their family income in 13 categories, so we compute re-weighting factors from the census data for each of these categories to represent the projected family income distribution. To illustrate, recall that we project that with a stable white income distribution the number of black families with

[9] Census demographic projections indicate that the population of 17-year-old blacks will grow by 14.9% between 2000 and 2025, while the corresponding white population will shrink by 8.4% (from http://www.census.gov/ipc/www/usinterimproj/). This demographic growth, not incorporated in Figure 4, can be expected to expand the number of blacks (and shrink the number of whites) at each income level. We do not include this in our projections, as expansions of black population shares arguably have commensurate effects on the "equal representation" goalposts.

incomes between $80,000 and $100,000 will rise by 69% over the next quarter century. In our counterfactual SAT distribution, we count each black SAT taker with a family income in this range 1.69 times. This has the expected result that re-weighted black average scores are higher (by about 19 points) than are current averages, as an increase in the fraction of blacks from high-income families produces an upward shift in the SAT distribution. It also implies a small (about 0.7%) increase in the black SAT-taking rate, as SAT-taking rates are higher among higher-income families. The projected test score distribution is shown as the "income counterfactual" series in Figure 5.[10]

The way to interpret our projection is that we have held everything constant – the distribution of white incomes, the distribution of test scores by income and race – except that we increase black families' incomes by the amount predicted from intergenerational convergence. Of course, real income growth will raise both groups' incomes over the next quarter century. This will alter the figures on the x-axis of Figure 5 but, absent changes in inequality, not the shape of the distribution. Our approach implicitly indexes income growth by the mean white family's income growth. Similarly, our models of test scores and admissions treat the white test score distribution as stable. The distribution may well change, but we implicitly assume that admissions standards adjust to maintain current admissions probabilities of students at each percentile of the test score distribution.

[10] One disconnect between our simulation and the educational process is worth noting. Although the reasons why family income affects student performance on the SAT are unclear, it is quite likely that the entire stream of family income over a child's time at home is relevant, not just income in the year he or she takes the SAT. Unfortunately, we lack data on family income in earlier years. Many of the convergence estimates in the literature apply to permanent, not annual, income.

Test Score Convergence

Our first set of estimates assume zero convergence of test scores conditional on family income, which might be thought of as a reasonable lower bound for test score prospects for the next quarter century. An upper bound is provided by assuming that black-white gaps close as much within income groups in the next 25 years as did unconditional gaps over the last 25 years. Referring back to Figure 1, in the long run there has been some narrowing in the gap between black and white test scores among 17 year old students. Linear regression lines fit to the age-17 NAEP black-white difference at the 90th percentile—this is likely most informative about the SAT-taking population—indicate that blacks have gained 0.44% of a standard deviation per year relative to whites on the math exam, and 1.59% of a standard deviation annually on the reading exam.

The verbal and math components of the SAT exam have standard deviations of approximately 100 points each, so the NAEP trend, if it continues at the same rate, would imply that the black-white gap in SAT scores should close by just over 50 points over the next quarter century. To incorporate this trend into our analysis, we simply add this many points to each black student's SAT score in the 2000 data, after re-weighting the data to reflect income convergence. The dashed line in Figure 5 shows the resulting distribution.

This almost certainly overestimates the extent of black score growth over the next quarter century. As Figure 1 indicates, essentially all of the progress over the last twenty five years in NAEP scores occurred in the 1980s, and the gap grew during the 1990s. It would take substantial optimism to assume that future progress will occur at the rate seen over the full NAEP period rather than the much slower rate seen recently, particularly as

we are assuming that this progress will be in addition to that generated by income convergence.

Equalizing school quality

An alternative approach to projecting the distribution of black scores is to imagine specific interventions into the educational process. One particularly ambitious—and, it must be admitted, wholly politically implausible—intervention might be to fully integrate schools. The average black SAT-taker attends a high school where 52% of (black and white) SAT-takers are black, while black students are only 8% of SAT-takers at the average white SAT-taker's school (Card and Rothstein, 2005). Schools are not just separate, but also of unequal quality. It is unlikely that interventions in the educational process can have larger effects on black-white test score gaps than to close this school quality gap. Thus, projections that assume the quality gap will be eliminated provide an alternative optimistic view of the prospects for conditional-on-income progress.

We construct a crude estimate of quality as the school fixed effect in a regression of SAT scores on a rich vector of student background characteristics.[11] Estimated this way, the student-level standard deviation of school quality is 69 SAT points, and the median black SAT-taker attends a school whose quality is 32 points lower than that of the median white SAT-taker's school. To implement the "integration" approach, we match corresponding percentiles of the black, white, and overall school quality distributions, and re-assign the overall quality distribution to both blacks and whites. That is, we assume that black students who currently attend the best schools attended by black

[11] The regression includes full interactions of individual gender, race, and 13 family income dummies and of race with 100 (10 mother's by 10 father's) parental education dummies. Our approach ascribes both peer groups and any other school-level components of test score variation to school quality (Rothstein, 2004). In particular, we overstate the importance of schools if there are any important unobserved aspects of individual background that vary across schools.

students will, in the integrated counterfactual, attend the best schools overall, and the same for whites. Our re-assignment has the effect of closing the black-white gap in mean scores (in the income-reweighted data) by 30 points, the gap in median scores by 34, and the gap at the 90th percentile by 24.

Figure 6 shows the fraction of students at each score who are black in each of the counterfactual simulations (presented in Figure 5): Income growth only, income growth plus NAEP convergence, and income growth plus integration. By construction, the first simulation has the smallest effect, increasing the number of high-scoring (1400 or above) blacks by about 54% over its current low level. The integration scenario is next, producing (in combination with income convergence) a 109% increase in high-scoring blacks. The most optimistic scenario is the one using NAEP trends, in which the number of high-scoring blacks increases by 225%. Even under this counterfactual, however, the proportion of blacks scoring above 1400 will be about one quarter of the corresponding proportion of whites, with more extreme underrepresentation at higher scores.

C. Admissions Projections

Our interest is in how the projected changes in the relative distribution of the academic achievement (measured by test scores) of black and white students will alter the relative representation of black and white students among those likely to be admitted to selective colleges and universities under race-blind admission policies. To address this, we must convert SAT distributions to admissions rates. The observed admissions decisions of colleges and universities provide admission profiles, by SAT, for composite institutions of varying selectivity. We focus on four composite profiles of admissions outcomes defined as: *Most selective private* (*Selective 1*: Harvard, Princeton, and Yale),

highly selective private (*Selective 2*: Columbia, the University of Pennsylvania, Swarthmore, and Williams), *moderately selective private* (*Selective 3:* Barnard, Bowdoin, Middlebury, Oberlin, Pomona, and Wellesley) and *selective public* (UCLA, University of Virginia and Pennsylvania State). We model expected admission to each of these "composite" schools, rather than to the individual institutions.

To calculate expected admissions under each of our simulations, we simply multiply:

$$\textit{Expected admissions}_r = \Sigma_j(\textit{Number of test takers}_{jr} \times \textit{Application Rate}_{jr} \times \textit{Admission Rate}_{jr})$$

for each race (r) and SAT level (j). Under the current regime both application rates and admission rates differ by race. Under a race-neutral policy, blacks and whites with the same test scores would face the same probability of admission, conditional on application. We implement this by assigning the admission profile observed for whites to blacks, in effect assuming that both black and white students will face the admission probabilities indicated by the solid line in Figure 2.[12] We also consider alternative policies that provide admissions advantages to students from the lowest income families (what some have called "class-based affirmative action").

It is important to emphasize that our calculations are inherently static, as we do not explicitly model the changes in individual application behavior and college admissions policies that a shift to race-neutral admissions would entail. Most

[12] If application behavior is unchanged, the elimination of racial preferences will reduce the total number of admittees. As the share of students admitted under affirmative action is small, this effect is as well. Nevertheless, to the extent that colleges lower the race-blind admissions standards to compensate, we will very slightly overestimate the effect of affirmative action on black admissions shares.

importantly, a large shift in admissions probabilities would likely lead to responses in black students' decisions about where to apply. At each SAT score, black students currently are substantially more likely than are whites to apply to the most selective institutions (see Figure 7, using the institutional data). This disparity is smaller at less selective institutions, where it largely disappears at the highest SAT scores.

Substantial increases in the rate at which high-scoring black students apply to elite colleges are unlikely: As Figure 7 indicates, application rates among these students are already quite high. Indeed, using the SAT data, we calculate that well over half of blacks with SATs above 1500 send their scores—a proxy for application—to Harvard alone.[13] This does not speak well for the prospects for increasing minority representation through better outreach to potential applicants, and we therefore focus on changes in the number of high-scoring blacks as the primary potential source of black-white convergence in the number of qualified applicants.

A plausible explanation for the existing racial differences in application rates is that black students respond to their admissions advantages at selective colleges and universities. If this is indeed the explanation, one might expect application rates to converge as admissions probabilities do. One piece of evidence that weighs against this expectation, however, is that at least in the short-run the elimination of race-conscious admission policies in Texas and California appears not to have altered the pattern of applications of high-achieving black students (Card and Krueger, 2005). In any event, in addition to estimates based on current race-specific application rates, we also consider a scenario in which black application rates come to resemble those of whites.

[13] Card and Krueger (2005) found substantial similarity between patterns seen in actual applications and those obtained by examining score reports.

Table 1 presents simulations based on the assumption that black application behavior remains as it is today. The first row shows the actual representation of black students among those admitted at the four institutional composites in 2000.[14] We define representation as the number of black students divided by the number of black students plus white, non-Hispanic students. This omits students of other races and ethnic groups. Thus, where we calculate that 16.1% of black and white students admitted to *Selective 1* institutions are black, a more inclusive calculation would indicate that only 10.4% of all students admitted to these schools are black (and 54.5% are white, non-Hispanic).

The second row of the table shows the black share of admissions under the "race neutral" counterfactual, in which the observed white admission profile is applied to both blacks and whites. With current test score distributions, this would reduce the representation of black students by more than two-thirds, from 17.1% to 5.1%, at the most selective private institutions (*Selective 1*). Projected declines in the representation of black students are by no means limited to the most selective institutions, and are estimated at 55% for public institutions, 58% for the highly selective private institutions and 46% for the moderately selective private institutions. These are the gaps which black relative academic progress must close in order to realize Justice O'Connor's prediction that race preferences will no longer be necessary to accomplish what affirmative action is needed to accomplish today.

Row 3 of Table 1 applies the same race-neutral admissions rule to the first counterfactual SAT distribution, assuming income convergence but no additional

[14] Note that our analysis focuses on the pool of students admitted to composite institution types, not the actual representation of students in the entering cohort. There are presently substantial differences between black and white students in matriculation, which we expect would change with policy shifts such as the elimination of race-conscious admissions. We believe the most judicious strategy is to avoid projections of enrollment which necessarily rely on parameters that are difficult to project.

progress in test scores. This produces small gains in the representation of black students relative to what would be seen today with the same admissions rules. For each institutional composite, we show the share of the gap between current representation of black students and that which would be seen with race-neutral admissions that our projected income-driven convergence would close. Only about one fifth of this gap is closed at the public, most selective and highly selective composite institutions. Gains are slightly larger at the moderately selective private institutions, closing a quarter of the gap. *It appears that reasonable income convergence will not, on its own, allow for the abolition of affirmative action without severely affecting the representation of African American students at elite colleges.*

When we allow for progress via reductions in the black-white test score gap, the expected representation of black students among those admitted expands considerably. These shares are shown in rows (4) and (5) of Table 1, first without and then with expected income convergence (which may involve some double counting, as part of past test score convergence may be attributable to income changes). For public and less-selective institutions, narrowing of the test score gap combined with income convergence would go a considerable distance toward reproducing today's levels of diversity, if it can be assumed that application behavior does not change. This is less true at the most selective private institutions, where the black share would remain substantially lower than is observed today.

The last two rows of the table present estimates of the representation of black students relative to white students under the alternative counterfactual of school integration (or of equalization in school quality). As one might infer from Figures 5 and

6, these projections are between the estimates with income convergence alone and those with both income and historical test score convergence, closing about 30% of the gap created by the shift to race-neutral admissions. Given the extent of progress that the school integration scenario entails, the degree to which it is surpassed by the test score convergence scenario underscores the optimism inherent in the latter.

Table 2 presents an identical analysis under the assumption that black application rates come to resemble those seen today among whites with similar SAT scores. Any declines in application rates of high scoring black students would exacerbate the drop in black representation produced by moving to a race-neutral admission policy. Black shares are lower in each simulation in this table, but the effects of income and test score convergence are similar.[15]

D. Alternative Admissions Rules

Racial minorities are not the only underrepresented group in elite colleges. Students from middle- and lower-income families, regardless of race, are also less likely to have the SAT scores needed for admission under current admissions rules. Some observers (e.g. Kahlenberg, 1996) have proposed that elite colleges implement "class based affirmative action" (hereafter "CBAA"), giving preferences to low-income students akin to those now given to racial minorities. As blacks (and Hispanics) tend to have lower incomes than whites, some have even suggested that income-sensitive policies could be a means of admitting more black students without the legally tenuous consideration of race *per se*. It is not clear, however, whether the race-income correlation is strong enough to make family income a useful proxy for race. If it is not, CBAA will

[15] If the elimination of affirmative action causes black application rates to become like those of whites, the appropriate comparison is of row 1 in Table 1 to rows 2 through 8 of Table 2.

be a blunt tool for achieving racial diversity. What is more, it can only become blunter in the future, as ongoing narrowing of black-white income gaps will make black students even less identifiable in the income distribution and further worsen income's efficacy as a proxy for race.

To illustrate the potential effects of class-based affirmative action both today and in the future, we apply this type of admissions rule to our simulated SAT distributions. Twenty-one percent of SAT-takers report family incomes of $35,000 or less, roughly comparable to the 15% who are black. We thus model a CBAA admissions rule as giving the same admissions advantage to students with family incomes below $35,000 as is today given to black students. The results are illustrated in Table 3.[16] Consideration of family income does, indeed, increase the representation of black students. However, because black students are only moderately overrepresented among the additional students admitted under income-based preferences, and because the students brought in under these preferences comprise only a small share of the baseline class, the effect on total black representation is relatively modest. Under our baseline assumption, with no convergence in income or test scores, the black share rises from 5.1% to 7.0% at the most selective private institutions and from 5.3% to 7.2% at public institutions.

When we turn to the simulation with income convergence, black overrepresentation among low-income SAT-takers shrinks, as does the effect of CBAA on black admissions shares. This is partially offset when we add to the simulation test

[16] More low-income students than black students have SATs in the middle of the distribution, where preferences have the largest effects (Figure 3). As a result, a shift from race- to income-based admissions would, if the size of the preference is held constant, lead to more total admissions. To the extent that colleges respond to this by tightening admissions standards across the board (the alternative would be to expand the admissions pool, by as much as one quarter), black admissions shares will be lower than those shown in the tables, as more black than white admittees are marginal admits.

score convergence, which produces substantial increases in the number of low-income blacks with mid-range scores, where preferences are strong. The share of black students among the additional students admitted under an income-based policy rises to nearly 22.1% at the most selective universities, 26.9% at schools in the next selectivity band, 25% at moderately selective schools and 22.6% at public universities. The CBAA beneficiary pool remains small, however, so we see relatively modest changes in the representation of black students.

Section 4. Discussion

Affirmative action is a significant feature of admissions policies at the nation's most selective colleges today, but it may not be in the future. The legacies of separate and unequal schooling and of labor market discrimination are reflected in the academic preparation of the current generation of black students. In an equal opportunity society, the effects of past discrimination on current generations will eventually asymptote to zero, though there is substantial uncertainty about the rate at which this might be expected to occur. In *Grutter*, Justice O'Connor suggests that affirmative action in admissions can only be considered constitutional as a temporary policy, and she forecasts it will not be necessary 25 years hence.

To provide a quantitative assessment of Justice O'Connor's speculation, we consider the racial composition of today's admitted students as a baseline, and ask whether foreseeable progress in black economic and educational success can plausibly be expected to permit race-blind admissions rules to reproduce today's race-conscious results in a quarter century.

We are most confident in predicting that economic progress alone will not yield as much racial diversity as is generated with today's race-sensitive admissions policies. Under plausible assumptions about changes in the income distribution of black families in the next 25 years, the representation of black students at selective colleges under race-blind admissions will be only 42% of the status quo. Put another way, black economic gains over the next quarter century can be expected to provide only about 17% of the incremental representation that is provided by affirmative action today.

This conclusion is not much changed if the future admissions policy is assumed to incorporate "class-based" affirmative action, in which students from families with low incomes are given preferences analogous to those given to racial minorities today. The correlation between race and family income, while strong, is not strong enough to permit the latter to function as a useful proxy for race in the pursuit of diversity. Moreover, the value of income as a proxy for race can only decline with increases in black incomes.

Similarly, we judge it unlikely that universities will be able to compensate for the abolition of race-based preferences through increased outreach toward and recruitment of minority students. Our exercise suggests that there are simply be too few high-scoring black students, and that they already apply to the most selective colleges at rates far exceeding those of white students with similar scores.

We do find some reason for optimism, however, in our projections incorporating an extrapolation of past increases in black students' test scores relative to whites'. Our most hopeful simulations assume that, conditional on income, black students' scores relative to white students' will rise at the same rate over the next quarter century as a linear trend fit to the 1970-1998 experience. As part of the past progress in narrowing the

test score gap may reflect income convergence, these projections probably involve some double counting. Nevertheless, in this scenario, and if black student application behavior is assumed stable, we find that race-blind admission policies may approach the black representation achieved by affirmative action, at least in some categories of colleges. This projection is likely upwardly biased because the last 25 years saw two distinct regimes, with rapidly closing black-white gaps in the first period and deterioration in black relative performance since 1990. To extrapolate a linear trend a full quarter century into the future is to assume a dramatic turnaround from recent patterns and sustained growth over a long period. On the other hand, if we could somehow return to and sustain the rapid rate of progress seen in the 1980s, the future will be much brighter than even our optimistic forecasts.

As an indication of the difficulty of achieving racial diversity on highly-selective college campuses without affirmative action, we consider the effects of a wholly implausible intervention producing the complete integration of the nation's secondary schools. This, we estimate, would produce only a small fraction of the test score gains that would be needed to make Justice O'Connor's prediction a reality. Clearly, substantial progress in increasing black students' pre-collegiate performance is critical to any hope of eliminating the need for affirmative action within the next generation. Absent such progress, the elimination of racial preferences in admissions, today or twenty five years from now, will lead to substantial declines in black representation at the nation's most selective colleges and universities. Our simulations, crude as they are, lead us to agree with Justice Ruth Bader Ginsburg's concurring opinion in *Grutter*, "From today's vantage point, one may hope, but not firmly forecast, that over the next

generation's span, progress toward nondiscrimination and genuinely equal opportunity will make it safe to sunset affirmative action."

References

Blackwell, James. 1987. *Mainstreaming Outsiders: The Production of Black Professionals.* 2d edition. Dix Hills, NY: General Hall.

Bowen, William, and Derek Bok. 1998. *The Shape of the River: Long Term Consequences of Considering Race in College and University Admission*. Princeton University Press.

Bowen, William, Martin Kurzweil, and Eugene Tobin. 2005. *Equity and Excellence in Higher Education*. Charlottesville: University of Virginia Press.

Card, David, and Alan Krueger. 1992. "School Quality and Black-White Relative Earnings: A Direct Assessment" *The Quarterly Journal of Economics*, Vol. 107, No. 1. (Feb.), pp. 151-200.

Card, David, and Alan Krueger. 1993. "Trends in Black-White Earnings Revisited." *American Economic Review*, Vol. 83, No. 2, Papers and Proceedings of the Hundred and Fifth Annual Meeting of the American Economic Association. (May), pp. 85-91.

Card, David, and Alan Krueger. 2005. "Would the Elimination of Affirmative Action Affect Highly Qualified Minority Applicants? Evidence from California and Texas." *Industrial and Labor Relations Review,* Vol. 58, No. 3 (April), pp. 416-434.

Card, David, and Jesse Rothstein. 2005. "Racial Segregation and the Black-White Test Score Gap." Princeton University Industrial Relations Section Working Paper #500.

Chadwick, Laura, and Gary Solon. 2002. "Intergenerational Income Mobility among Daughters." *American Economic Review*, Vol. 92, No. 1. (March), pp. 335-44.

Drewry, Henry, and Humphrey Doermann. 2001. *Stand and Prosper: Private Black Colleges and Their Students*. Princeton University Press.

Goldstein, Joel. 2004. "Beyond Bakke: Grutter-Gratz and the Promise of Brown." *Saint Louis Law Journal*, v. 48, n. 899.

Hertz, Tom. 2005. "Rags, Riches and Race: The Intergenerational Economic Mobility of Black and White Families in the United States." In S. Bowles, H. Gintis and M. Osborne, eds., *Unequal Chances: Family Background and Economic Success*. Princeton, NJ: Russell Sage Foundation and Princeton University Press.

Jencks, Christopher, and Phillips, Meredith, eds. 1998. *The Black-White Test Score Gap*. Washington, D.C.: The Brookings Institution.

Juhn, Chinhui, Kevin M. Murphy and Brooks Pierce. 1991. "Accounting for the Slowdown in Black-White Wage Convergence," in Marvin Kosters, ed. *Workers and Their Wages*. Washington, D.C.: AEI Press, pp. 107–43.

Kahlenberg, Richard D. 1996. *The Remedy : Class, Race, and Affirmative Action*. Basic Books.

Kane, Thomas J. 1998. "Misconceptions in the Debate over Affirmative Action in College Admissions." In Gary Orfield and Edward Miller, eds., *Chilling Admissions: The Affirmative Action Crisis and the Search for Alternatives*. Cambridge, MA: Harvard Education Publishing Group.

Krueger, Alan. 2003. "The Supreme Court finds the 'mushball middle' on affirmative action" *New York Times* (July 23).

Krueger, Alan, and Diane Whitmore. 2002. "Would Smaller Classes Help Close the Black-White Achievement Gap?" In John Chubb and Tom Loveless, eds., *Bridging the Achievement Gap*. Washington, DC: Brookings Institute Press.

Mazumder, Bhashkar. 2000. "Earnings Mobility in the US: a New Look at Intergenerational Mobility", mimeo.

National Center for Education Statistics (NCES). 1999. "Results Over Time--NAEP 1999 Long-Term Trend Summary Data Tables," http://nces.ed.gov/nationsreportcard/tables/Ltt1999/

Phillips, Meredith, Jeanne Brooks-Gunn, Greg Duncan, Pamela Klebanov, and Jonathan Crane. 1998. "Family Background, Parenting Practices, and the Black-White Test Score Gap," in Christopher Jencks and Meredith Phillips, eds., *The Black-White Test Score Gap*. Washington, DC: Brookings Institution Press.

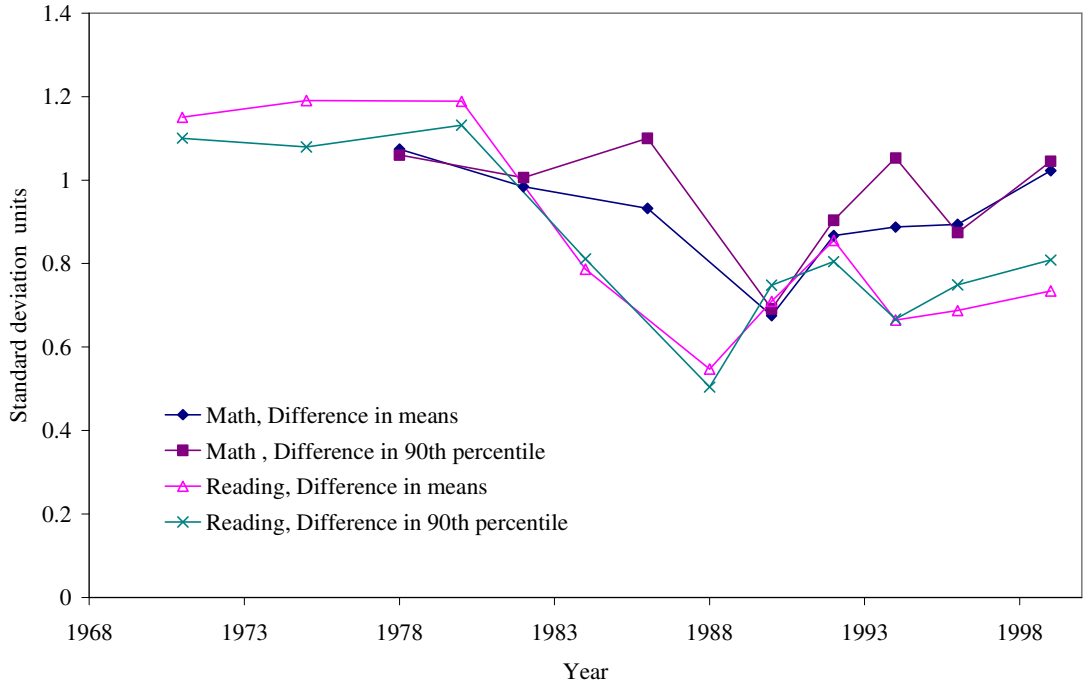
Ruggles, Steven, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. 2004. *Integrated Public Use Microdata Series: Version 3.0* [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], www.ipums.org.

Rothstein, Jesse. 2004. "Good Principals or Good Peers? Parental Valuation of School Characteristics, Tiebout Equilibrium, and the Incentive Effects of Competition Among Jurisdictions." Working Paper #10666. Cambridge, MA: National Bureau of Economic Research.

Solon, Gary. 1999. "Intergenerational Mobility in the Labor Market," in *Handbook of Labor Economics*, vol. 3A, 1761-1800.

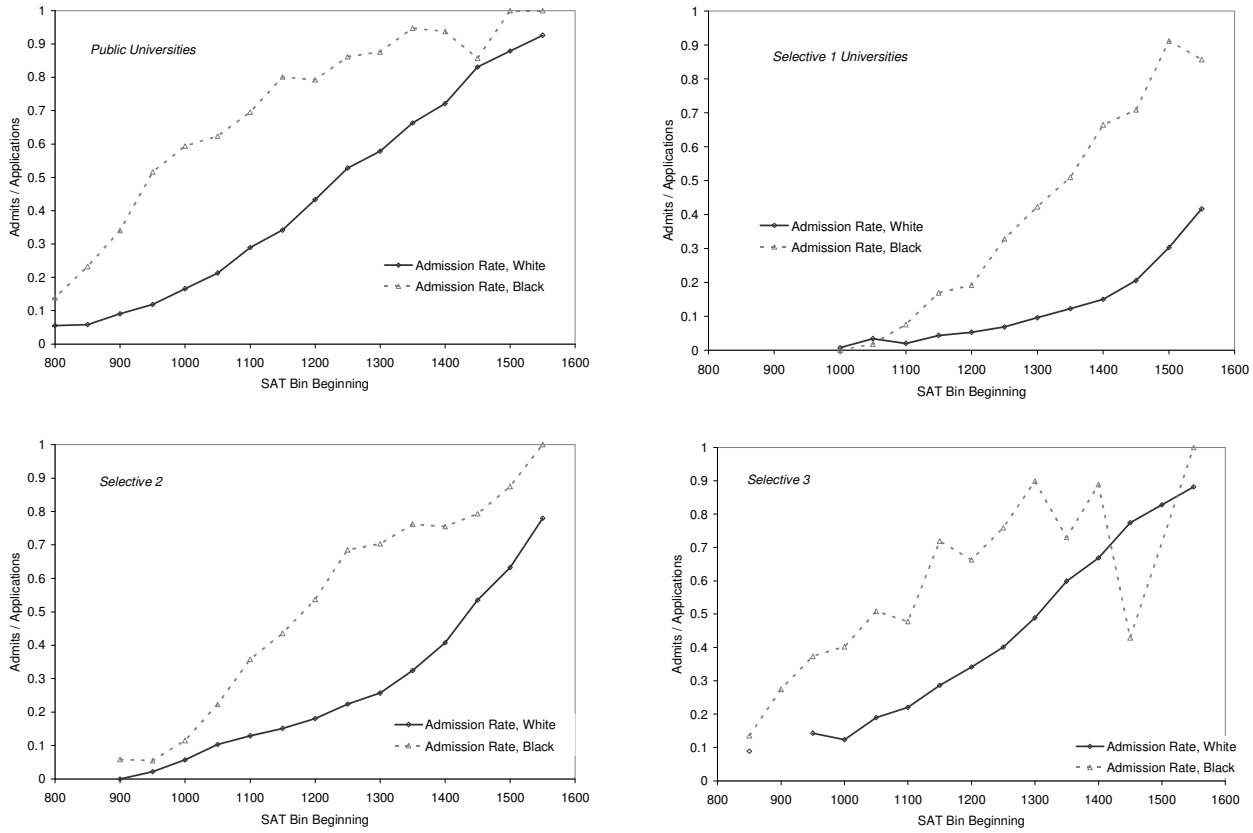
Solon, Gary. 2002. "Cross-Country Differences in Intergenerational Earnings Mobility." *Journal of Economic Perspectives*, Vol. 16, No. 3 (Summer), pp. 59-66.

Figure 1: Trends in Black-White gaps in Student Achievement, NAEP Test, Age 17



Source: National Center for Education Statistics, 1999.

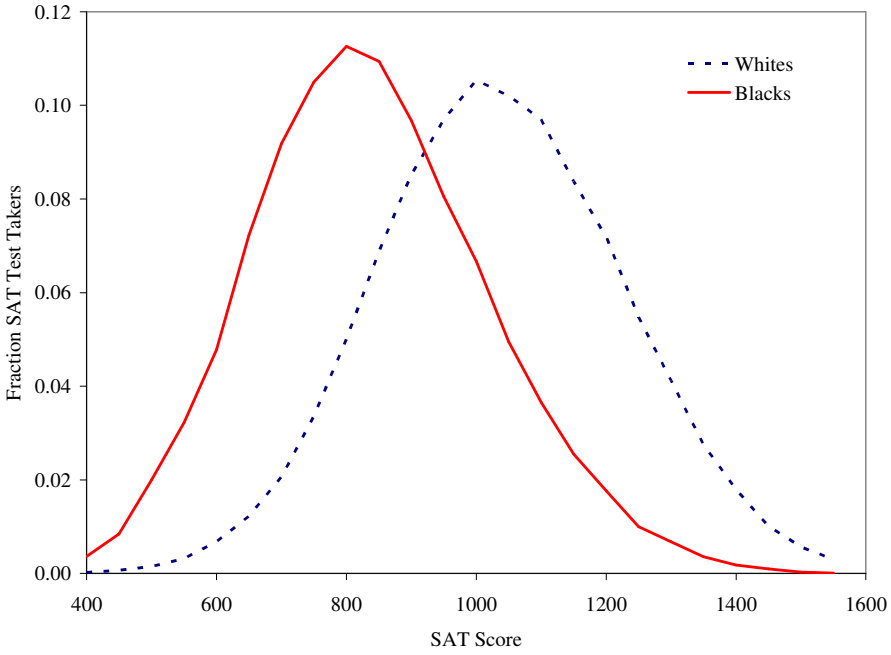
Figure 2: Admission rates by type of institution and race



Source: Authors' calculations from Expanded College and Beyond.

Figure 3: Distribution of SAT scores, black and white test takers

Panel A



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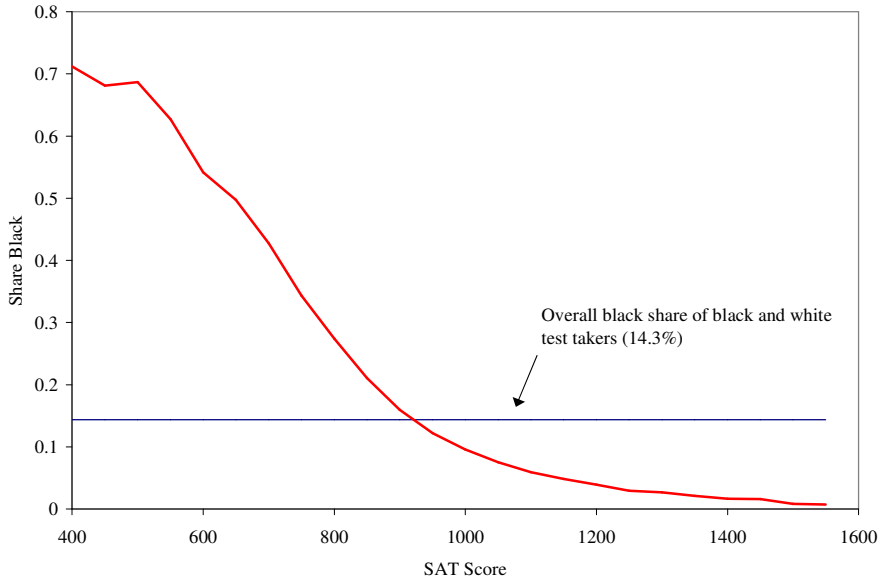
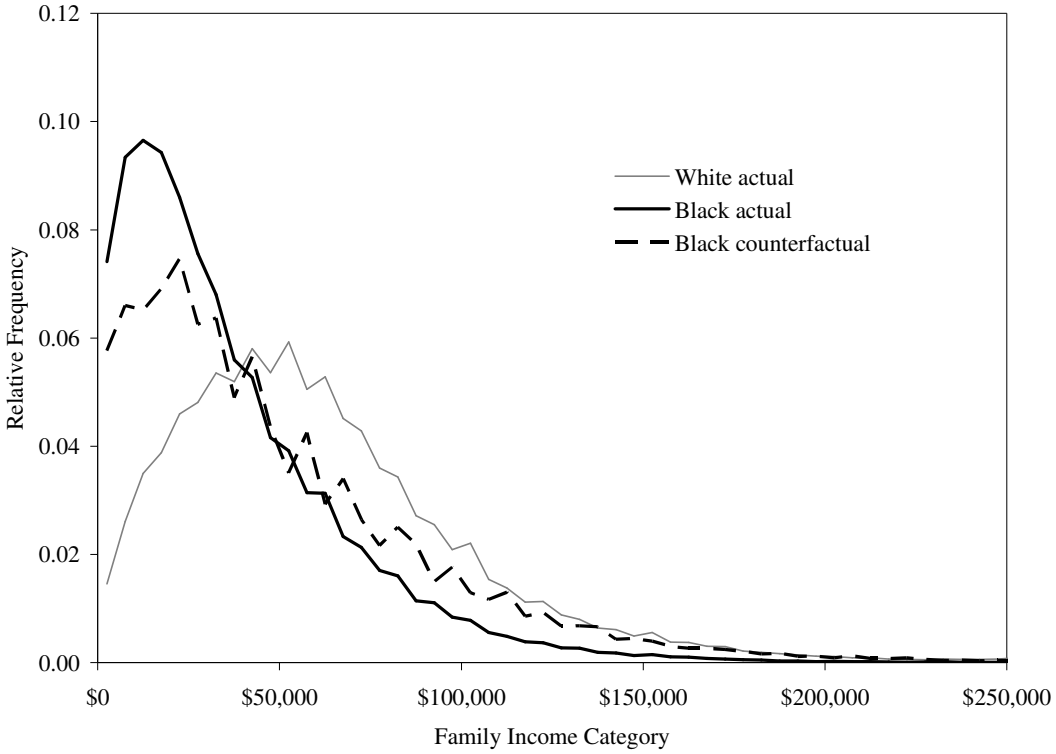


Source: Authors' calculations from Test Takers Database, 2000 cohort.

Figure 4: Black and white family income distributions, 2000 Census



Source: Authors' calculations from 2000 Decennial Census Public Use Microdata Sample (Ruggles et al., 2004).

Figure 5: Predicted effects of income growth on the distribution of test scores of blacks

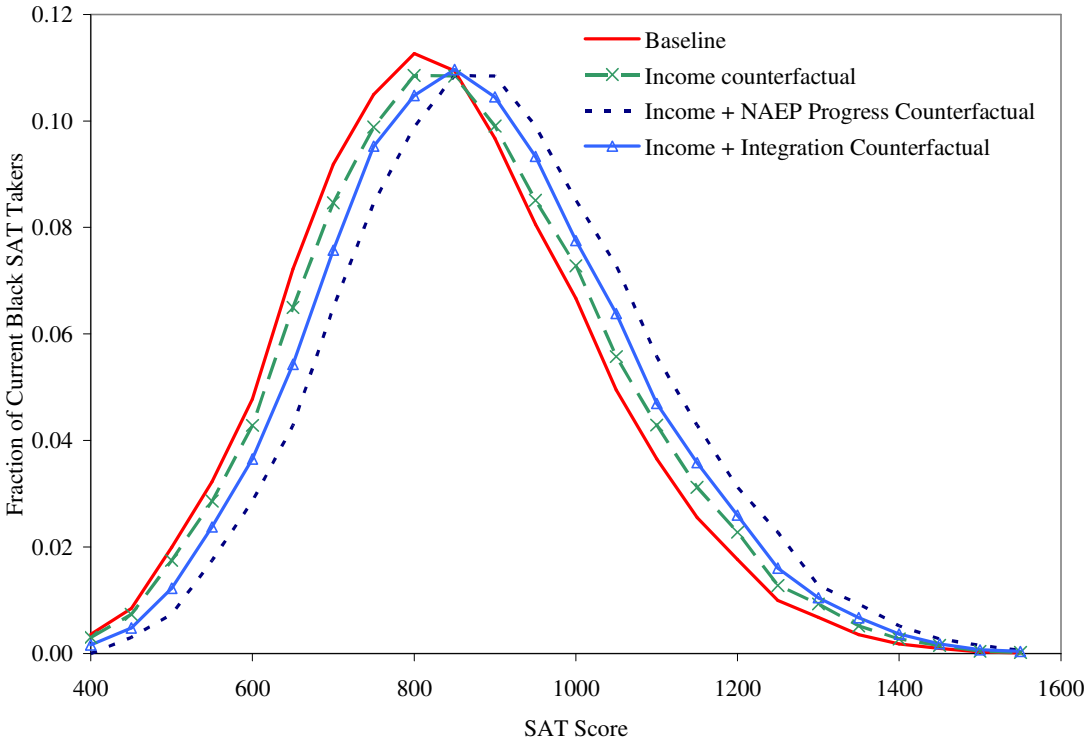


Figure 6: Black share of (Black and White) SAT-takers, by SAT Score

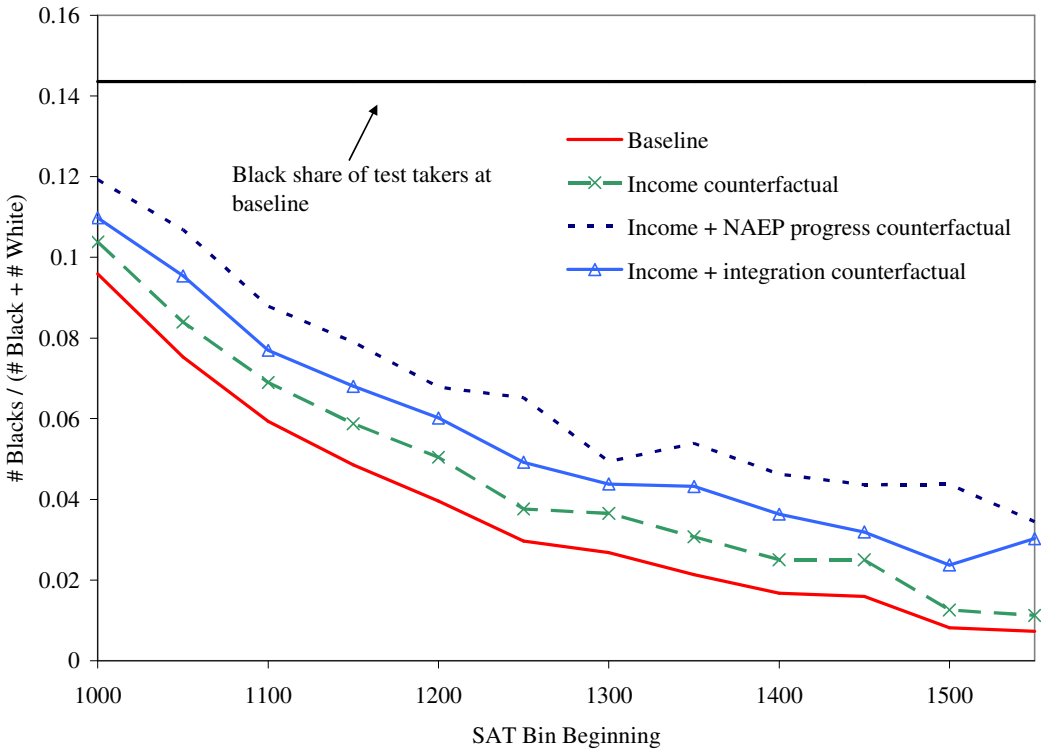
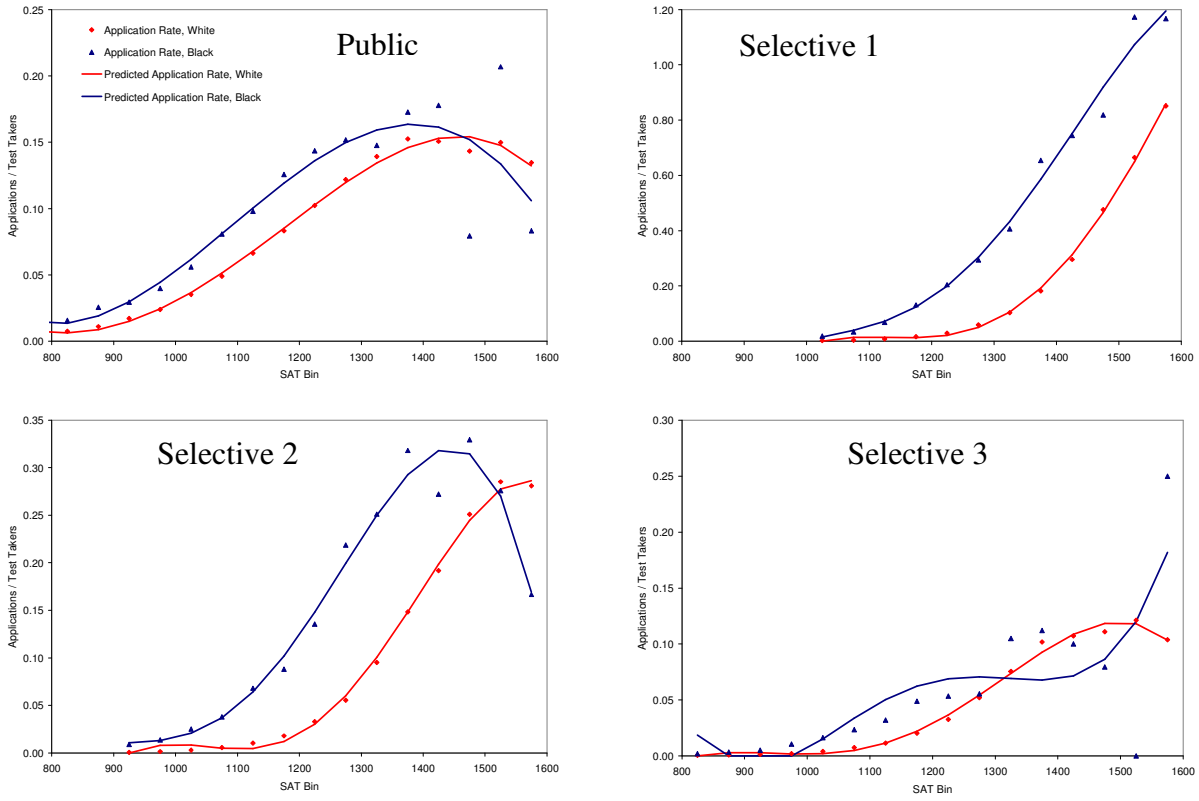


Figure 7: Application rates by type of institution



Source: Authors' calculations from Expanded College and Beyond.

Table 1: Expected share of black students relative to white students, alternative income and test score distributions, maintaining current black application patterns

	Public (P)		Most Selective (S1)		Highly Selective (S2)		Moderately Selective (S3)	
	B / B+W	Sh of Gap Closed	B / B+W	Sh of Gap Closed	B / B+W	Sh of Gap Closed	B / B+W	Sh of Gap Closed
Status quo admissions rates (with race preferences)								
Observed income distribution	0.118		0.171		0.142		0.094	
Projected race neutral admissions (using current white admissions rates)								
Observed income distribution	0.053	0.000	0.051	0.000	0.060	0.000	0.051	0.000
Counterfactual income distribution for families with children	0.064	0.169	0.069	0.153	0.078	0.214	0.062	0.254
Observed income distribution, NAEP progress	0.075	0.336	0.089	0.316	0.094	0.410	0.072	0.504
Counterfactual income distribution, NAEP progress	0.088	0.545	0.118	0.557	0.117	0.700	0.087	0.835
School quality convergence	0.061	0.125	0.064	0.110	0.072	0.146	0.059	0.182
Counterfactual income distribution, school quality convergence	0.073	0.308	0.086	0.293	0.092	0.386	0.071	0.463

Table 2: Expected share of black students relative to white students, alternative income and test score distributions, assuming blacks adopt current white application patterns

	Public (P)		Most Selective (S1)		Highly Selective (S2)		Moderately Selective (S3)	
	B / B+W	Sh. of Gap Closed	B / B+W	Sh. of Gap Closed	B / B+W	Sh. of Gap Closed	B / B+W	Sh. of Gap Closed
Status quo admissions rates (with race preferences)								
Observed income distribution (current application rates)	0.118		0.171		0.142		0.094	
Observed income distribution (white application rates)	0.083		0.057		0.048		0.047	
Projected race neutral admissions (using current white admissions rates)								
Observed income distribution	0.038	0.000	0.016	0.000	0.021	0.000	0.028	0.000
Counterfactual income distribution for families with children	0.047	0.112	0.023	0.046	0.029	0.067	0.037	0.132
Observed income distribution, NAEP progress	0.056	0.222	0.033	0.106	0.038	0.137	0.045	0.255
Counterfactual income distribution, NAEP progress	0.068	0.366	0.046	0.194	0.051	0.246	0.057	0.446
School quality convergence	0.045	0.081	0.022	0.036	0.027	0.047	0.034	0.090
Counterfactual income distribution, school quality convergence	0.055	0.205	0.031	0.095	0.037	0.128	0.044	0.242

Note: Share of gap closed is computed relative to simulations using current race-specific application rates (row 1).

Table 3: Projections of admission pool with income-based affirmative action

	Baseline		Income Convergence		Inc. + Test Score Convergence	
	# of Admits	% Black	# of Admits	% Black	# of Admits	% Black
Selective 1						
No preferences	3,426	5.1%	3,494	6.9%	3,686	11.8%
Income preferences (< $35k)						
Additional Admits	773	15.3%	752	13.0%	840	22.1%
Total Admits	4,199	7.0%	4,246	8.0%	4,526	13.7%
Selective 2						
No preferences	5,266	6.0%	5,366	7.8%	5,609	11.7%
Income preferences (< $35k)						
Additional Admits	686	21.2%	660	18.0%	740	26.9%
Total Admits	5,952	7.7%	6,026	8.9%	6,349	13.5%
Selective 3						
No preferences	5,764	5.1%	5,831	6.2%	5,991	8.7%
Income preferences (< $35k)						
Additional Admits	438	20.9%	421	17.7%	462	25.0%
Total Admits	6,201	6.2%	6,252	6.9%	6,453	9.8%
Public						
No preferences	14,817	5.3%	14,992	6.4%	15,395	8.8%
Income preferences (< $35k)						
Additional Admits	2,091	20.5%	2,009	17.2%	2,149	22.6%
Total Admits	16,908	7.2%	17,001	7.7%	17,544	10.5%

Note: Simulations assume status quo application behavior.