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Assessing the Potential Impact of a Nationwide Class-Based Affirmative Action System

Alice Xiang and Donald B. Rubin

Abstract. We examine the possible consequences of a change in law school admissions in the United States from an affirmative action system based on race to one based on socioeconomic class. Using data from the 1991–1996 Law School Admission Council Bar Passage Study, students were reassigned attendance by simulation to law school tiers by transferring the affirmative action advantage for black students to students from low socioeconomic backgrounds. The hypothetical academic outcomes for the students were then multiply-imputed to quantify the uncertainty of the resulting estimates. The analysis predicts dramatic decreases in the numbers of black students in top law school tiers, suggesting that class-based affirmative action is insufficient to maintain racial diversity in prestigious law schools. Furthermore, there appear to be no statistically significant changes in the graduation and bar passage rates of students in any demographic group. The results thus provide evidence that, other than increasing their representation in upper tiers, current affirmative action policies relative to a socioeconomic-based system neither substantially help nor harm minority academic outcomes, contradicting the predictions of the "mismatch" hypothesis, which asserts otherwise.

Key words and phrases: Causal inference, multiple imputation, class-based affirmative action, racial affirmative action, law school admissions.

1. INTRODUCTION

Affirmative action in higher education is one of the most contentious social policies of recent decades in the United States, with polarized views that intersect at the heart of modern American values of diversity, meritocracy, and social justice. In the wake of the US Supreme Court rulings on affirmative action in *Fisher v. University of Texas* (2013) and *Schuette v. Coalition to Defend Affirmative Action* (2014), understanding the effects of current affirmative action policies relative to their possible alternatives is especially relevant today. Although an extensive literature discusses the role of fairness and legal precedence in affirmative action, there have been limited empirical studies examining the current system and its alternatives. In particular, affirmative action in which students receive preferential admissions based on their socioeconomic status (SES) has been proposed as an alternative to racial affirmative action (Fallon, 1995; Kahlenberg, 1996; Malamud, 1997), with some studies examining the implementation of SES-based affirmative action (hereafter abbreviated as SES AA) in a few US states, yet little has been done to assess empirically what the nationwide impact of such a change in policy would be. We use the 1991–1996 Law School Admission Council Bar Passage Study data to simulate the outcomes of an SES AA policy and evaluate its potential impact on the demographic composition, graduation rates, rates of attempting the bar, and bar passage rates.

1.1 Existing Empirical Literature

Most of the existing empirical literature on racial affirmative action (racial AA) has suggested that it has a

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positive impact on racial minorities, playing a vital role in placing minorities into more selective schools and leading to better financial aid packages and other advantages for minorities (Wightman, 1997; Wightman and Ramsey, 1998; Epple, Romano and Sieg, 2008; Arcidiacono, 2005). In contrast, the "mismatch hypothesis" has gained traction since the publication of Sander (2004), which contends that students enrolled in schools where they have lower academic credentials than their peers due to admission via affirmative action tend to perform more poorly than they would have performed in environments where they were better matched academically to their peers. Sander (2004) controversially concludes that due to this mismatch in academic credentials, racial AA actually *hurts* black students in terms of their academic performance and bar passage rates and thereby leads to *fewer* black lawyers than there would be without racial AA.

Sander's analysis has been challenged, however, by a number of scholars for its mistakes in causal inference (Ho, 2005; Amicus Brief, 2012). Conclusions regarding the mismatch hypothesis have been contradictory, with some, including Ayres and Brooks (2005), actually finding some evidence that affirmative action improves academic outcomes for black students due to a "reverse mismatch effect," whereby student performance improves due to help and inspiration from their academically more advanced peers and professors.

To assess the effects of racial AA, the studies discussed above compare the current system with a hypothetical counterfactual system without any AA at all, which does not reflect the policy alternatives currently being debated. Even if courts ruled against racial AA, it is likely that schools would continue to implement policies that promote some form of diversity in admissions. Some studies have examined this issue by leveraging state data from Texas and California, which (in the late 1990s) banned racial AA in their public university admissions and essentially implemented SES AA. These studies have generally found dramatic declines of 30–50% in the enrollment of underrepresented racial minorities due to the bans on racial AA as well as evidence for the mismatch effect (Card and Krueger, 2004). According to their analyses, the ban on racial AA led to improvements in graduation rates for minority students, complicating the question whether racial minorities benefit from racial AA (Arcidiacono et al., 2012).

These studies have data from both racial and SES AA and consequently should lend insight into how schools and students respond to bans on racial AA. Nevertheless, it is difficult to say whether their conclusions should be generalizable to a *nationwide* ban on racial AA. California and Texas both have large minority populations and selective public universities. Moreover, considering that their admissions systems still showed strong racial preferences after the ban (Long and Tienda, 2008), it is questionable whether their post-1990s systems can truly be considered SES-based. Finally, although these studies find significant decreases in the numbers of minorities enrolling in schools without racial AA, this result might not hold as strongly if all schools nationally adopted SES AA. With only a few states changing to SES AA systems, minorities can opt to apply to universities that retain racial AA in order to attend more selective schools. Card and Krueger (2004) find some evidence for this change in application behavior among less qualified minority students but not among highly qualified minority students. If a federal ban on racial AA were instituted, however, there would be no advantage to minorities applying to universities in other states.

1.2 Overview: Simulating SES AA

Given the lack of direct empirical evidence about the possible nationwide impact of switching to SES AA, we simulate the changes in enrollment across law school tiers (levels of prestige) and in student academic outcomes (graduation and bar passage attempts and success rates) under SES AA using data from the 1991–1996 Law School Admission Council (LSAC) National Longitudinal Bar Passage Study (BPS). Law school admissions are particularly appropriate for such a simulation because they are more "numbers-driven" than admissions for most other programs in higher education, depending heavily on applicants' LSAT scores and undergraduate GPAs, thereby decreasing the role of unobserved applicant factors, such as extracurricular activities, personal statements, and letters of recommendation. Also, because a standard goal of law school students is to pass the bar exam, the bar passage rate provides a consistent metric for student success.

Here we focus on the impact of a switch from racial AA to SES AA. We take a potential outcomes, or Rubin Causal Model (Holland, 1986), approach to this problem. In particular, we consider two possible treatment assignments being applied to admit students to law schools: the first is the actual racial AA, and the second is a counterfactual SES AA where the same numbers of low SES students are admitted in each tier as there were

black students admitted under the racial AA. We have data on background characteristics and outcomes such as tier attended, graduation, and bar attempts and passage under the actual racial AA; our task is to predict what those outcomes would have been under the alternative treatment, the counterfactual SES AA. These predictions will combine explicit assumptions with relationships between outcomes and covariates estimated from the racial AA data. Because only two treatment assignments are being considered, all students get subjected either to racial AA or to SES AA, and, as a result, some common assumptions like the Stable Unit Treatment Value Assumption (SUTVA, Rubin, 1980) are not relevant. All assumptions are embedded within the imputation model being used to predict the missing potential outcomes under SES AA. In this sense, our framework is fully Bayesian.

We model the current AA system by estimating separate "tier enrollment functions" for black students and white students, where "tiers" capture the relative ranking of law schools. For the SES AA system, students are reassigned to tiers by applying the black and white student enrollment functions in each tier to the low and high SES students, respectively, thus replacing race with SES as the selection factor for AA. Based on these new tier assignments, the students' graduation rates and bar passage rates were imputed. This process was repeated forty times to multiply-impute the quantities of interest, as recommended by Graham, Olchowski and Gilreath (2007) for multiple imputation of 50% missing data (we have all of the results for racial AA but are missing the results for SES AA). Thus, we were able to compare the actual results of the current race-based system with the counterfactual results of a hypothetical SES-based system to assess, first, whether the latter would yield similar racial diversity across tiers and, second, whether it would impact the graduation and bar passage rates of students across demographic groups.

Our analysis addresses the mismatch effect where the source of mismatch is discrepancies in relative entering academic credentials (due to racial AA), which is consistent with the definition of mismatch as used in previous academic studies, but it does not address students' feelings of mismatch stemming from being part of underrepresented racial groups. Although there is reason to believe that diversity, in terms of the proportion of black or low SES students in each institution, would have an impact on minority performance, the available data do not allow us to capture such effects in our model. The data only specify the tier, not the particular institution, each student attended, so the only data possibly relevant to diversity are the proportions of minorities in the tiers. With only five tiers, however, such analyses would be too crude to allow any meaningful conclusions about the effects of diversity without making heroic and unwarranted assumptions.

2. THE DATA

The BPS data were collected by LSAC from 1991 to 1996 from over 27,000 law school students, comprising 70% of the entire incoming law school class of 1991 in the US. Although it would be ideal to use more recent data, unfortunately the study only spanned these years, and (as of this writing) no comparable nationwide study with individual-level data has been conducted since. The BPS includes the students' undergraduate GPA (UGPA) and LSAT scores and the students' outcomes of law school tier attended, law school graduation status, and bar passage status, all obtained from the law schools and American Bar Association jurisdictions. Also, all participating students were administered an Entering Student Questionnaire that included self-reported race and socioeconomic background. Although the questionnaire featured five racial categories (white, black, Hispanic, Asian, and other), we focused our analysis on white and black students because the data revealed ambiguities regarding the extent to which the other racial groups received preferential admissions under the current affirmative action system (for further discussion, see Appendix A.1). We used the version of this dataset prepared by Sander (2004).

2.1 SES Categories

The BPS does not include direct data on the family income of students, but it does contain questionnaire responses from students about their parents' occupations, education levels, and general socioeconomic status, specifically, categories of occupation (from manual worker to professional) and educational attainment (from high school dropout to postgraduate degree) for both parents. Also, students ranked their family income relative to American families in general with options ranging from "far below average" to "far above average."

To assign students to SES categories, we first coded the responses for parental characteristics and general SES on a scale from 1 to 5, with larger numbers corresponding to higher SES. In cases where some SES

data were missing for a student, we imputed the missing values. We then used the first principal component of the SES variable as our SES score (for details of the methods used for the SES score, see Appendix A.2). This principal component summarized 60% of the variance of these SES variables. We also assessed the sensitivity of our results by using an alternative score.[1] None of the results using the alternative score significantly differed and thus are not reported here.

To establish an equivalence between the actual AA system and our counterfactual SES one, we made the "low SES" group the same size as the black student population and the "high SES" group the same size as the white student population by using the corresponding SES score percentiles and placing the students with lower SES scores into the "low SES" category. This mapping between racial groups and SES categories ensures that the simulated SES AA system targets the same number of students as the current AA system.

2.2 Law School Tiers

The study clustered the 163 participating law schools into six tiers, with Tier 1 being the most selective and Tier 5 being the least selective; Tier 6 was unique in that it consisted largely of historically black law schools and had disproportionately large representation from minorities. It is unclear how changes in AA policies would impact Tier 6 schools. As shown in Table 1, although the LSAT quartiles for white students in Tier 6 are slightly lower than those in Tier 5, the LSAT quartiles for black students in Tier 6 are higher than those in Tier 5, which suggests that Tier 6 is not less selective than Tier 5 and actually attracts more qualified black students than Tier 5. Tier 6 students appear to value attending schools with larger minority populations, so changing to SES AA seems irrelevant to Tier 6. Thus, we excluded Tier 6 and its students from our analysis.

TABLE 1
LSAT score quartiles for Tiers 5 *and* 6

Quartile	Tier 5 white	Tier 6 white	Tier 5 black	Tier 6 black
25%	30	27	21	21
50%	33	30	24	25
75%	35	35	27	30

Note: Black students in Tier 6, comprising most of the Tier 6 population, have higher scores than the black students in Tier 5, whereas white students in Tier 5 have higher scores than the white students in Tier 6. It is thus difficult to rank Tier 6 relative to the other tiers.

[1] $SES\_Score = fam\_inc^2 + occ\_mom \cdot ed\_mom + occ\_dad \cdot ed\_dad$, where *occ* is the parent's occupation category, *ed* is the parent's educational attainment, and *fam_inc* is the student's response to the general SES question. The *occ* and *ed* for each parent were multiplied to capture the fact that the two factors carry complementary information.

3. THE GENERAL MODEL FOR LAW SCHOOL ATTENDANCE

In our simulation, we assume students will attend the highest tier school to which they are admitted, and the number of students attending each tier under SES AA is the same under racial AA. The relevant student characteristics for admissions that are observed in the dataset are LSAT, UGPA, race, and SES. In our model predicting the results of SES AA, law schools switch from valuing racial diversity to valuing socioeconomic diversity but do not change the extent to which they value academic factors. To provide more structure to the model, each law school tier is modeled as having a diversity quota, such that the number of low SES students attending each tier under SES AA is the same as the number of black students attending each tier under racial AA (see Appendices A.4 and A.5 for more details of the diversity quota model).

We assume that the change from racial to SES AA would not lead to a change in the population of law students nationwide. Although it is possible that some students would decide not to attend law school at all under SES AA and that others who did not actually attend law school would under SES AA, we are unable to infer these results based on the BPS data.

3.1 Enrollment Probability Functions

Because the BPS only includes data on enrollment and not on admissions, instead of estimating each student's admissions probabilities to each tier, we estimated each student's probability of enrollment into each tier. Specifically, we estimated the probability of a student being in a given tier versus a lower ranked tier to obtain conditional tier enrollment probability functions. To the extent that students enroll in the best tier to which they are admitted, modeling affirmative action's effects through the conditional enrollment probabilities is equivalent to modeling them through admissions probabilities.

Ten separate enrollment functions were estimated, one for each of the two racial groups in each of the five

tiers. Within a racial group, a student's tier enrollment probability was modeled as only depending on the student's LSAT and UGPA. The conditional probability of student i enrolling in tier t was estimated using a sequence of logistic regressions by first comparing those enrolled in Tier 1 versus those in Tiers 2–5, followed by those in Tier 2 versus those in Tiers 3–5, and so on, where, for student i of race r (b for black or w for white),

$$p^r_{i,t} = \text{logit}^{-1}(\alpha^r_{t,0} + \alpha^r_{t,1} \cdot \text{LSAT}_i + \alpha^r_{t,2} \cdot \text{UGPA}_i).$$

We estimated the logistic regressions using the *bayesglm* function in R with the default recommended prior distributions (Gelman et al., 2006).[2]

The results from these regressions are shown in Table 2. For more details about the algorithm used to estimate these tier enrollment probability functions, see Appendix B.1. The admissions boost from racial AA is revealed for every tier by larger values for $\alpha^b_{t,0}$ than for $\alpha^w_{t,0}$ (intercepts) for all t, implying that black students have higher conditional enrollment probabilities in each tier than white students with equivalent academic credentials. The values of the LSAT and UGPA coefficients for black and white students are relatively similar across Tiers 1, 2, 4, and 5. All of the coefficients for Tier 3 significantly differ between black and white students, though this seems to be driven by the particularly large difference in intercept values.

TABLE 2
Regression coefficients for probabilities of enrolling in given tier versus lower tier

Tier		Black coefficients (SE)	White coefficients (SE)	T-statistic of difference
1	Intercept	−12.95 (0.97)	−16.46 (0.33)	3.43
	LSAT	0.20 (0.02)	0.22 (0.006)	1.39
	UGPA	1.47 (0.23)	1.57 (0.07)	0.41
2	Intercept	−7.51 (0.67)	−8.17 (0.20)	0.95
	LSAT	0.12 (0.01)	0.12 (0.004)	0.14
	UGPA	0.91 (0.17)	0.73 (0.05)	1.02
3	Intercept	−3.11 (0.58)	−10.57 (0.21)	12.04
	LSAT	0.09 (0.01)	0.15 (0.004)	4.45
	UGPA	0.20 (0.15)	1.44 (0.04)	7.80
4	Intercept	−4.12 (1.04)	−4.72 (0.29)	0.56
	LSAT	0.14 (0.02)	0.14 (0.006)	0.01
	UGPA	0.71 (0.28)	0.48 (0.06)	0.83

Note: Coefficients from logistic regressions where the outcome variable is whether the student was enrolled in the given tier or a lower tier. As expected, the coefficients for LSAT and UGPA are positive and significant. Larger intercepts confirm uniform boosts in enrollment probabilities, whereas larger coefficients on LSAT and UGPA imply greater increases in enrollment probability per increase in academic qualifications. Given that LSAT scores are on a scale roughly 10 times that of UGPA (11–48 vs. 1.0–4.0), it appears that LSAT generally contributes more to the tier enrollment probabilities than UGPA.

[2]We used Student-t prior distributions with mean 0 and scale 2.5 for the coefficients. The prior distribution for the constant term was set so it applied to the value when all predictors are set to their mean values.

As shown in Figures 1 and 2, the model exhibits trends following the basic mechanisms of the existing AA system: black students have boosted probabilities of being in higher tiers. For example, the probability of a black student with a 40 on the LSAT enrolling in Tier 1 is around 35%, whereas it is only about 10% for white students with the same LSAT score. Figure 1 shows that for Tiers 1 and 2, the enrollment lines for the black students are generally higher than those for the white students, and for Tiers 3–5, the peak of their enrollment functions are centered on lower LSAT values. To further check the model fit, we used the model to simulate the current AA system and to impute the academic outcomes. The results, displayed in Appendix D, show that the model accurately predicted all the quantities of interest.

3.2 Reassigning Tiers

To simulate SES AA, we assigned enrollment probabilities by considering low SES and high SES students separately and applying, for each tier, the estimated black student function to low SES students and the estimated white student function to high SES students, with SES indicators replacing the race indicators. The results are plotted in Figures 3 and 4, along with the fitted curves from the original data under racial AA. Comparing these curves shows the estimated impact of changing from racial to SES AA on the students' probabilities of being enrolled in each tier. Starting with Figure 3, under SES AA, the curves for the black students now look similar to those for the white students. On the other hand, Figure 4 illustrates a significant boost for low SES students under SES AA, comparable to that given to black students, meaning that the shapes of the curves for black and low SES students essentially switched between the racial and SES AA systems.

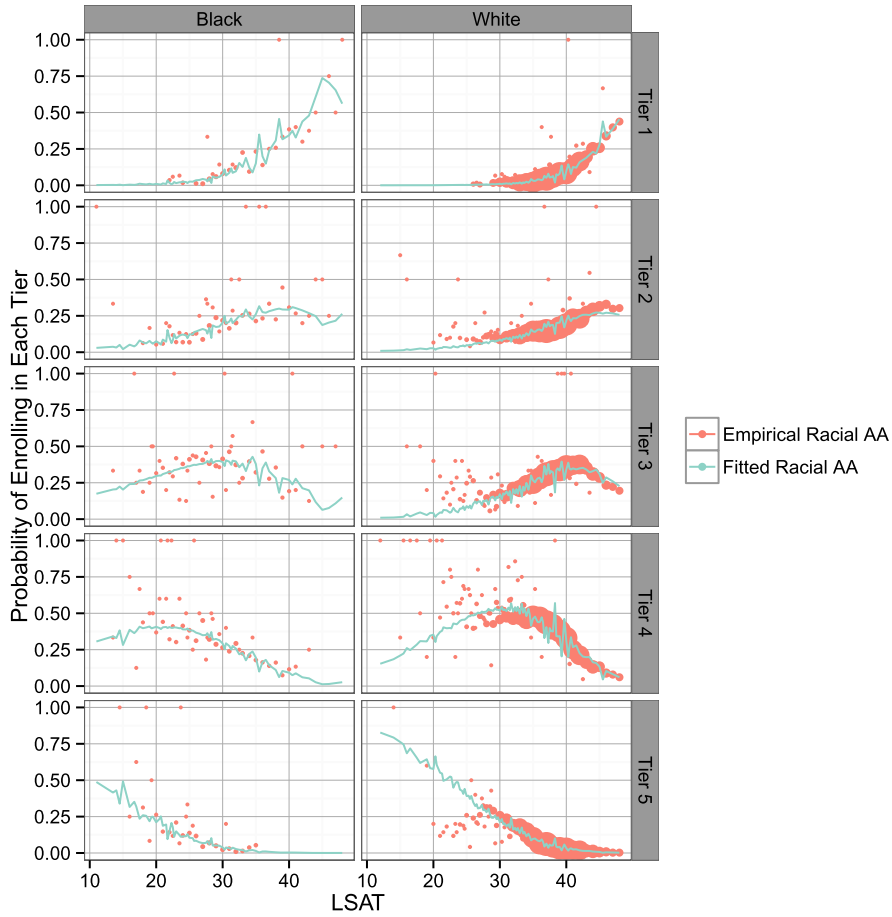

FIG. 1. *Fit of model by race to current data. Empirical proportions of students of each race with a given LSAT score enrolled in a given tier (red dots), along with the fitted enrollment probabilities for those students (green lines). The size of each dot reflects the number of students with the corresponding LSAT score in the tier. The fitted lines appear jagged because LSAT scores are not continuous and because the functions depend not only on LSAT but also on UGPA, a variable not displayed in these graphs.*

The students were next assigned to tiers using these counterfactual SES AA conditional enrollment probabilities. Students were first assigned to Tier 1 by drawing from Bernoulli random variables with their probabilities of enrolling in Tier 1. Once Tier 1 was full, Tier 2 was next filled using the analogous procedure for the remaining applicants, and so on until all students were assigned to tiers. The full algorithm for assigning students to new tiers is described in Appendix B.2.

3.3 Changes in Demographic Composition

The results from the simulation predict substantial reductions in the numbers of black students in top tiers as a result of changing from racial AA to SES AA: from 147 to an estimated 29 black students in Tier 1 and from 278 to an estimated 141 black students in Tier 2 (Figure 5). These dramatic changes stem from the fact that low SES white students typically have higher LSAT scores than high SES black students (see Figure 7), suggesting that the switch from racial AA to SES AA replaces black students with low SES white students. Even though low SES black students get the same AA boost under either AA system, some of the black students currently admitted are displaced by lower SES white students under SES AA.

Moreover, under the SES AA system, the total estimated decrease in the number of black students in Tiers 1–3 (506) substantially exceeds the increase in the number of low SES students predicted to be admitted to Tiers 1–3 (200), as illustrated in Figure 6, which can be attributed to the fact that the achievement gap (i.e., differences in LSAT distributions) between black and white students exceeds the gap between low and high SES students (Figure 9). Thus, when low SES students are given the AA boost rather than black stu-

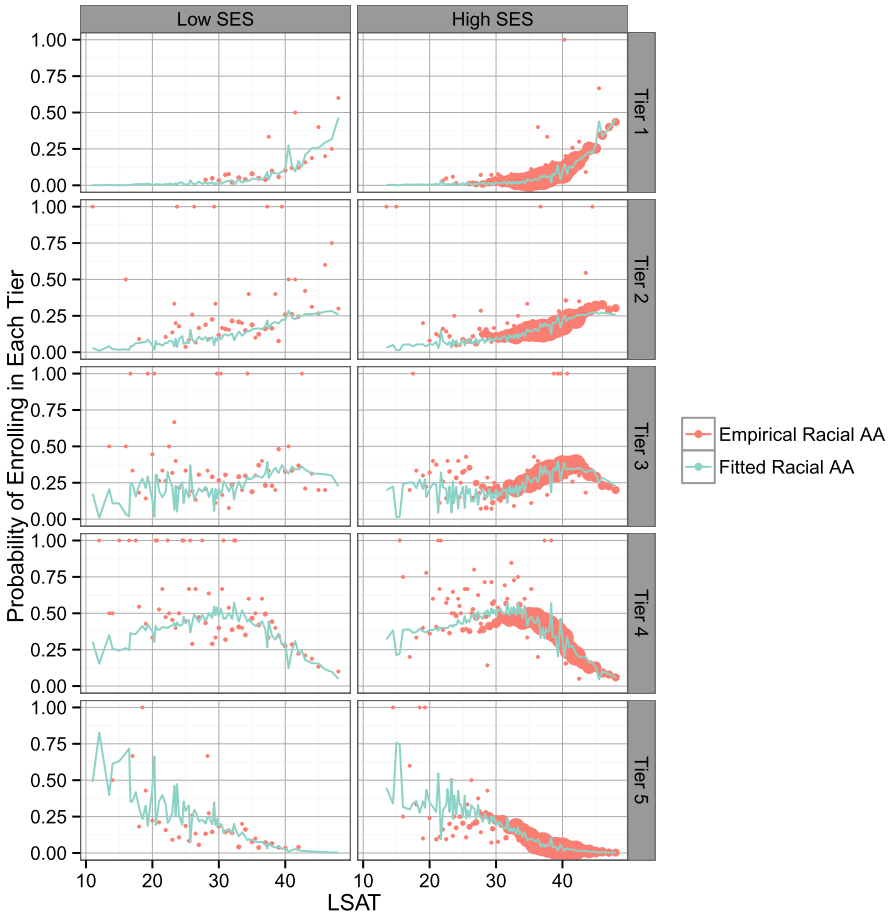

FIG. 2. *Fit of model by SES to current data. Empirical proportions of students of each SES group with a given LSAT score enrolled in a given tier (red dots), along with the fitted enrollment probabilities for those students (green lines). The size of each dot reflects the number of students with the corresponding LSAT score in the tier. The fitted lines appear jagged because LSAT scores are not continuous and because the functions depend not only on LSAT but also UGPA, which is not shown in the graphs. Given that the estimated probabilities fit the data quite well, these graphs suggest that there is no substantial discrepancy between the enrollment functions of low vs. high SES students, supporting our assumption that under the current system, only racial minorities benefit from affirmative action.*

dents, the low SES students do not benefit as dramatically as the black students did under racial AA. Under SES AA, low SES students principally benefit from an increase in representation in Tier 1 (from 87 to an estimated 147). Their numbers in Tier 2 are virtually unchanged (from 270 to an estimated 278), and they only see a moderate increase in representation in Tier 3 (from 406 to an estimated 538) and moderate decreases in Tiers 4 and 5 (from 600 to an estimated 442, and from 147 to an estimated 105, resp.), in contrast with the dramatic tier composition changes experienced by black students under the two systems.

It is noteworthy, however, that the sizable increases in the numbers of low SES students in Tiers 1 and 3 did little to mitigate the significant declines in the numbers of black students in those tiers, which indicates that although SES and race are correlated (17% of black students are low SES, compared with 5% of white students), there is insufficient overlap to allow SES to serve as an effective proxy for race: only 251 students are black *and* low SES, out of 1510 black students and 1510 low SES students. This presents a significant policy issue, because it suggests that it would be difficult to achieve racial diversity without AA policies specifically targeted to admit black students who are not low SES.

4. ACADEMIC OUTCOMES

In addition to demographic composition, we estimated the predicted academic outcomes under the SES AA system, simulating whether each student would:

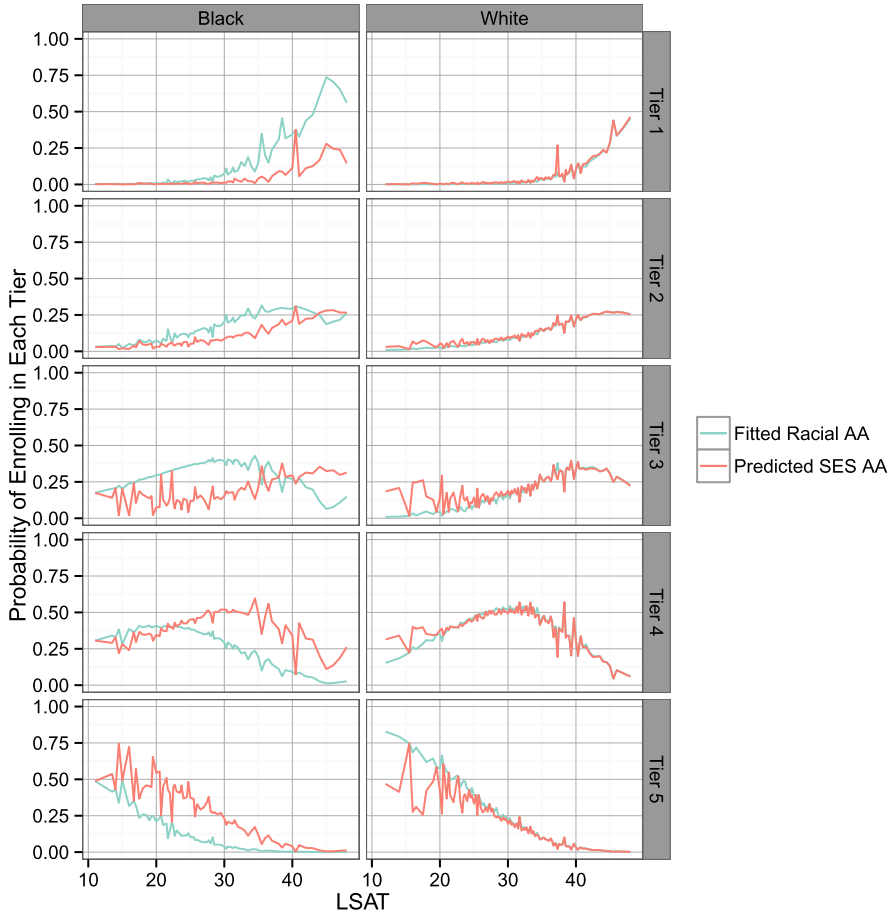

FIG. 3. *Impact of SES AA on tier enrollment probabilities for students by race. Fitted probabilities for each student enrolling into each tier under racial AA (green lines) and the estimated probabilities of enrollment under SES AA (red lines). The lines appear jagged because LSAT scores are not continuous and because the functions depend not only on LSAT but also UGPA, which is not shown in these graphs.*

i. Graduate from law school,
ii. Attempt the bar exam,
iii. Pass the bar the first time,
iv. Pass the bar on a later try, or
v. Fail the bar.

We assumed that dropping out of law school implied not attempting the bar, and thus not passing the bar.

4.1 Imputing Graduation and Bar Passage Outcomes under SES AA

The graduation and bar passage outcomes were imputed using a series of logistic regressions. First, whether the students graduated law school was imputed by fitting a logistic regression to the current data's dropout outcomes, using sex, LSAT score, LSAT percentile within tier, race, and SES as predictors. Separate functions were estimated for each tier so that imputing the students' new academic outcomes simply involved applying the function corresponding to their SES AA tier assignment:

$$\begin{aligned} d_{i,t} = \operatorname{logit}^{-1}(&\alpha_0^t + \alpha_1^t \cdot \text{female}_i + \alpha_2^t \cdot \text{LSAT}_i \\ &+ \alpha_3^t \cdot \text{LSATperc}_i + \alpha_4^t \cdot \text{UGPA}_i \\ &+ \alpha_5^t \cdot \text{LSATperc}_i \cdot \text{black}_i \\ &+ \alpha_6^t \cdot \text{LSATperc} \cdot \text{lowSES}_i \\ &+ \alpha_7^t \cdot \text{black}_i + \alpha_8^t \cdot \text{lowSES}_i), \end{aligned}$$

where d_{i_t} is the probability of student i in Tier t not graduating (i.e., dropping out of) law school.

We included both LSAT score and LSAT percentile in order to better detect any potential mismatch effect. Under the mismatch hypothesis, we would expect that LSAT percentile might have a significant negative effect on the chances of undesirable outcomes (dropping out and failing the bar) and a significant positive ef-

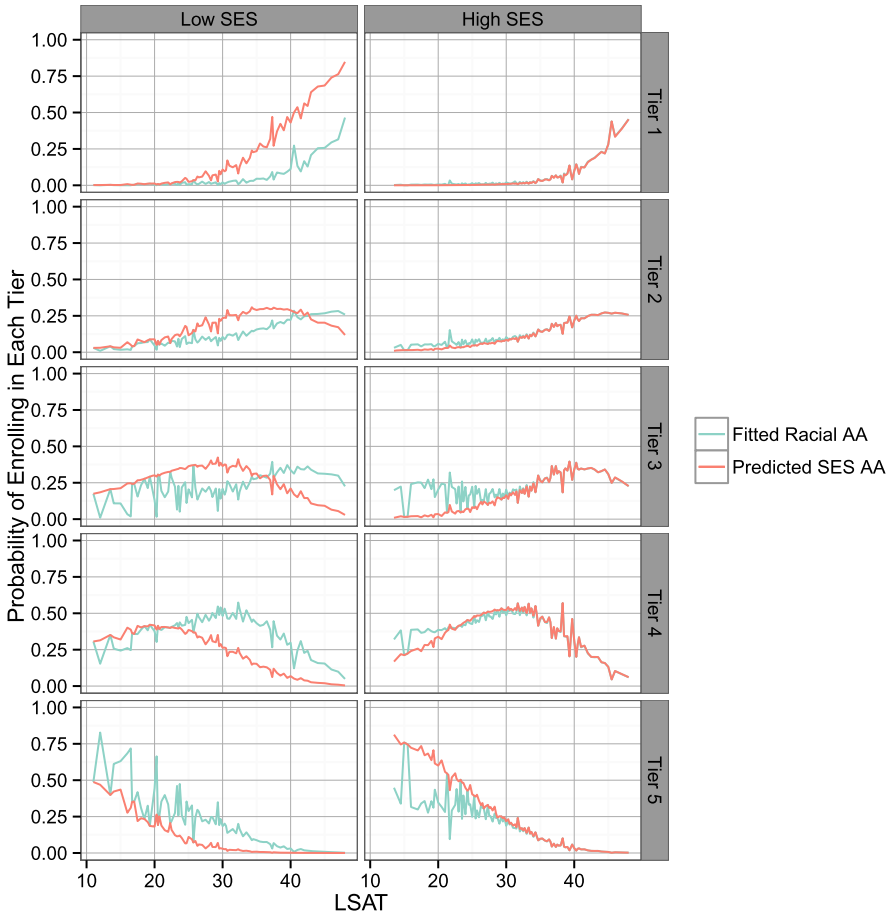

FIG. 4. *Impact of SES AA on tier enrollment probabilities for students by SES. Fitted probabilities for each student enrolling into each tier under racial AA (green lines) and the estimated probabilities of enrollment under SES AA (red lines). The lines appear jagged because LSAT scores are not continuous and because the functions depend not only on LSAT but also UGPA, which is not shown in these graphs.*

fect on desirable outcomes (passing the bar), because students with lower LSAT percentiles within their tier would perform more poorly even given identical LSAT scores. What we find, however, is that almost all of the coefficients on LSAT percentile and its interaction with the black indicator variable are insignificant (see regression coefficients in Appendix E). Moreover, the few significant coefficients and most of the nonsignificant coefficients have the opposite signs from what would be expected under mismatch.

For each of the bar passage outcomes, the same methodology was employed, removing students in each subsequent step once their outcomes had been imputed (the complete algorithm is described in Appendix B.3). In order to attain estimates of the uncertainty for these predictions, multiple imputation (Rubin, 1987) was used by repeating the entire procedure forty times.

5. RESULTS FOR ACADEMIC OUTCOMES

The results show that there are no substantial changes overall for the student academic outcomes in going from racial AA to SES AA. Figure 8, which summarizes the academic outcomes for each demographic group under both AA systems, shows that all of the results for the SES system are predicted to be within 95% intervals of the outcomes under the current racial AA system. Moreover, the magnitudes of these effects appear to be mixed and minimal in the aggregate, suggesting either that the mechanisms behind them are limited in effect or that they operate in opposite directions and cancel each other out. The results by demographic group are shown in Appendix C.2 and by tier in Appendix C.3.

Although the primary purpose of our simulation was not to estimate mismatch effects, the changes in minority students' relative academic credentials under SES AA in comparison to racial AA should allow

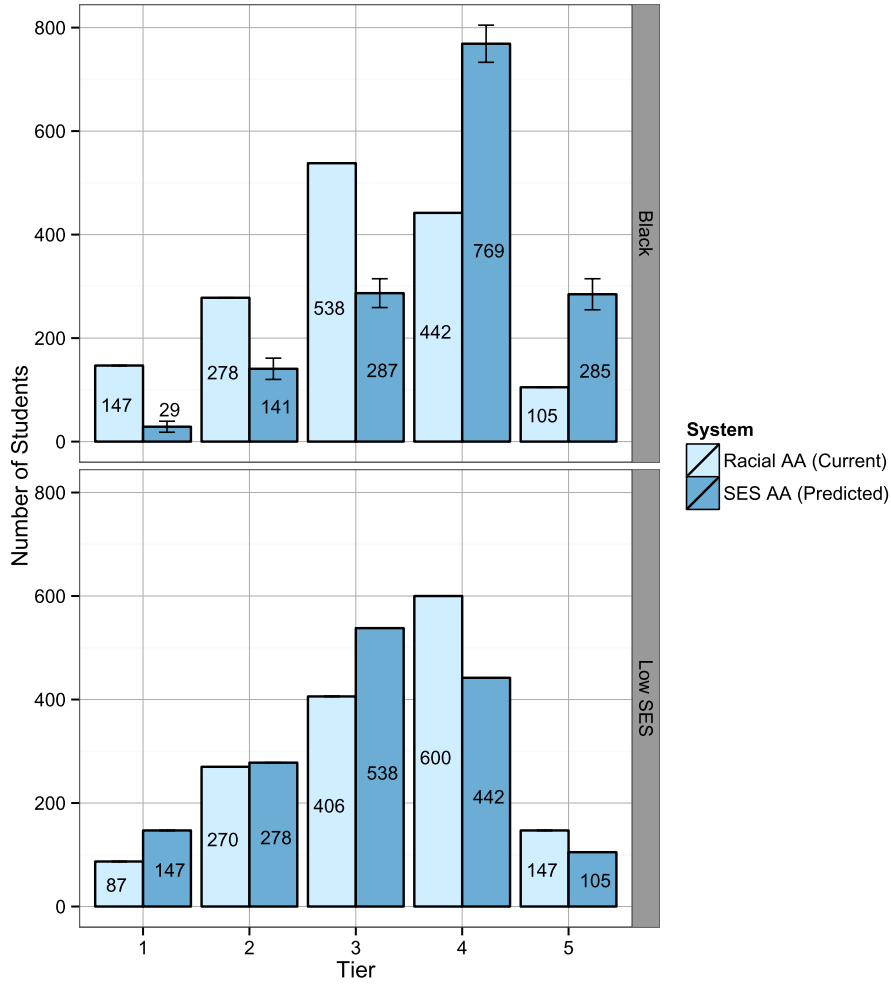

FIG. 5. *Impact of SES AA on demographic composition across tiers. Predicted changes in demographic composition by tier with SES AA. There are predicted to be substantial decreases in the numbers of black students in Tiers* 1–3 *and increases in Tiers* 4–5, *when switching from racial AA* (*light blue*) *to SES AA* (*dark blue*). *The enrollment numbers for low SES students under SES AA were fixed to equal those of black students under racial AA. Generally, there are increases in the numbers of low SES students in Tiers* 1–3 *and decreases in Tiers* 4–5.

us to detect mismatch. Based on the figures in Appendix C.1, the overall LSAT distributions for Tiers 1–3, the tiers where the mismatch effect should be apparent, remained the same, although the LSAT distributions for black students within each tier were shifted toward higher scores and the LSAT distributions for low SES students were shifted toward lower scores. Thus, black students under SES AA were more academically qualified within each tier than they were under racial AA, and low SES students were less academically qualified. Under these circumstances, the mismatch effect predicts that the low SES students should have worse academic outcomes and the black students should have better academic outcomes in going from racial to SES AA.

Given that bar passage outcomes generally did not improve for black students or worsen for low SES students under the SES AA system, these results suggest that incoming student characteristics are more important in shaping academic outcomes than the tier boosts conferred by affirmative action. Although differences in the regression coefficients across tiers (Tables 9–12) indicate that the specific tier a given student is in may have a slight impact on academic outcomes, these impacts do not yield substantial changes in aggregate performance.

5.1 Dropout Rates

For dropout rates, our simulation predicts no substantial changes overall or on a tier-by-tier basis (see Figure 18 in Appendix C.3). Nonetheless, if we examine the direction of the changes by tier, we see that predicted dropout rates for black students increased for Tier 1 (from 4.8% to 9.1%, though with very large

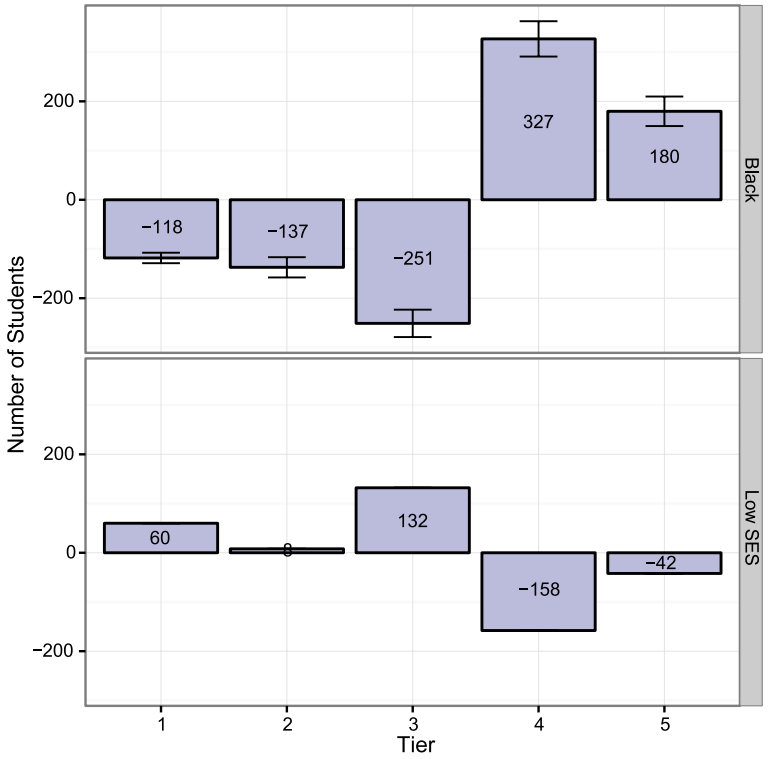

FIG. 6. *Changes in demographic composition across tiers. Predicted effect on black and low SES students when switching to SES AA from racial AA. The result is a decrease in black students in Tiers* 1–3 *that is far greater than the increase in low SES students in these tiers, a consequence of the larger achievement gap, as measured by LSAT and UGPA, between black and white students than between low SES and high SES students.*

standard errors), stayed roughly the same for Tiers 2 and 3, and decreased for Tiers 4 and 5 (from 23.1% to 21.3%, resp.). For low SES students, predicted dropout rates slightly increased for Tier 1 (from 6.9% to 8.8%), stayed virtually the same for Tiers 2–4, and increased for Tier 5 (from 27.9% to 30.6%). Thus, with the exception of the Tier 1 prediction for black students, on a tier-by-tier level, black students have slightly better predicted dropout rates under SES AA, whereas low SES students have slightly worse predicted dropout rates.[3]

5.2 Rates of Not Taking the Bar

For rates of not taking the bar exam, there are no predicted significant changes overall and no apparent trends between tiers from switching to SES AA from racial AA (Figure 19 in Appendix C.3). For example, for black students, there is a decrease in the proportion taking the bar in Tier 1 (4.2%), increases for Tier 2 (0.2%) and Tier 3 (0.8%), and decreases for Tier 4 (0.4%) and Tier 5 (0.6%). This lack of a consistent pattern across tiers is understandable given that there are many factors influencing a student's decision not to take the bar exam. Some students might not take the bar if they find better nonlegal job opportunities, whereas others might not take the bar if they are worried about their ability to pass.

5.3 Bar Passage Rates

As shown in Figure 8, black students are predicted to have slightly lower first-time bar passage rates under SES AA than under racial AA (45.9% to 42.6%), and low SES students are predicted to have virtually the same rates (59.7% to 58.7%). Black students also are predicted to have slightly lower rates of passing the bar in a later attempt (from 12.4% to 11.6%) and higher rates of failing the bar (from 14.9% to 16.1%) under SES AA than under racial AA. Low SES students, on the other hand, are predicted to have a slightly higher rate of passing the bar in a later attempt (from 7.4% to 8.0%), but this effect does not fully offset the decrease in low SES students predicted to pass

[3]Note that only seven black students in Tier 1 dropped out in the actual data, so the prediction for that outcome has very large standard errors and should be interpreted cautiously.

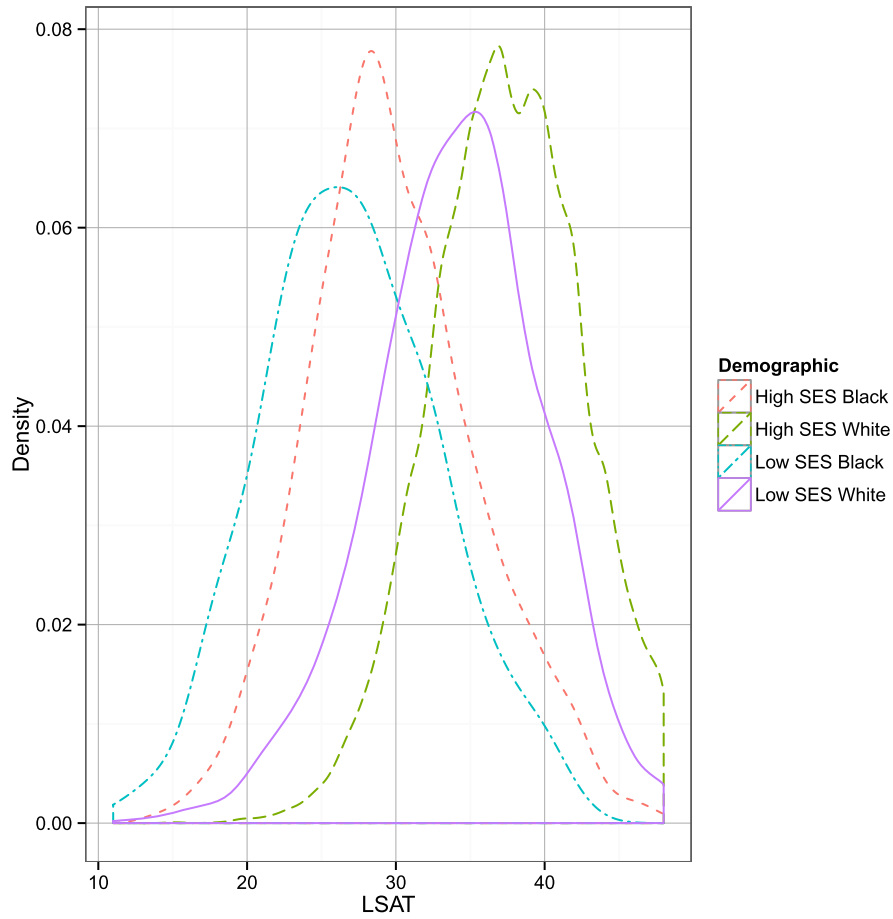

FIG. 7. *LSAT distributions by intersected demographic group. A much larger difference exists between races within the same SES group than between SES groups within the same race. The racial achievement gap is thus larger than the SES achievement gap. When going from racial AA to SES AA, low SES white students will thus benefit more than low SES black students.*

the bar on their first try, leaving the bar failure rate for low SES students roughly the same (from 8.2% to 8.6%).

Although these changes are all within the 95% intervals of the actual values, they are notable in that they consistently contradict the predictions of the mismatch hypothesis. The overall bar passage rate of the low SES students was virtually unchanged under the SES AA system, whereas the black students, no longer targeted by AA, had worse outcomes.

6. CONCLUSION

Our results provide some insight into the potential effects of adopting SES AA, finding that (1) racial and SES AA achieve dramatically different racial composition results, and (2) the data and our simulations contradict the predictions of the mismatch hypothesis. In particular, without affirmative action specifically targeting black students, attaining racial diversity in top law school tiers would be very difficult. Although it is often argued that SES can serve as a proxy for race, the data suggest that adopting an SES-based system would not maintain racial diversity. Differences in applicant qualifications across race persist even after controlling for SES, so most minority students who are currently admitted and enroll into top schools are from comparatively affluent backgrounds.

Moreover, assessing the impact of going from racial to SES AA on student academic outcomes (graduation rates and bar passage rates) revealed almost no significant differences between the results for the two systems, even when examining the results under cross-sections of race, SES, and law school tier. These results suggest that the principal impact of affirmative action is on the racial and SES composition across law school tiers rather than on academic outcomes across racial and SES groups, a conclusion that contrasts with the predictions of the mismatch hypothesis.

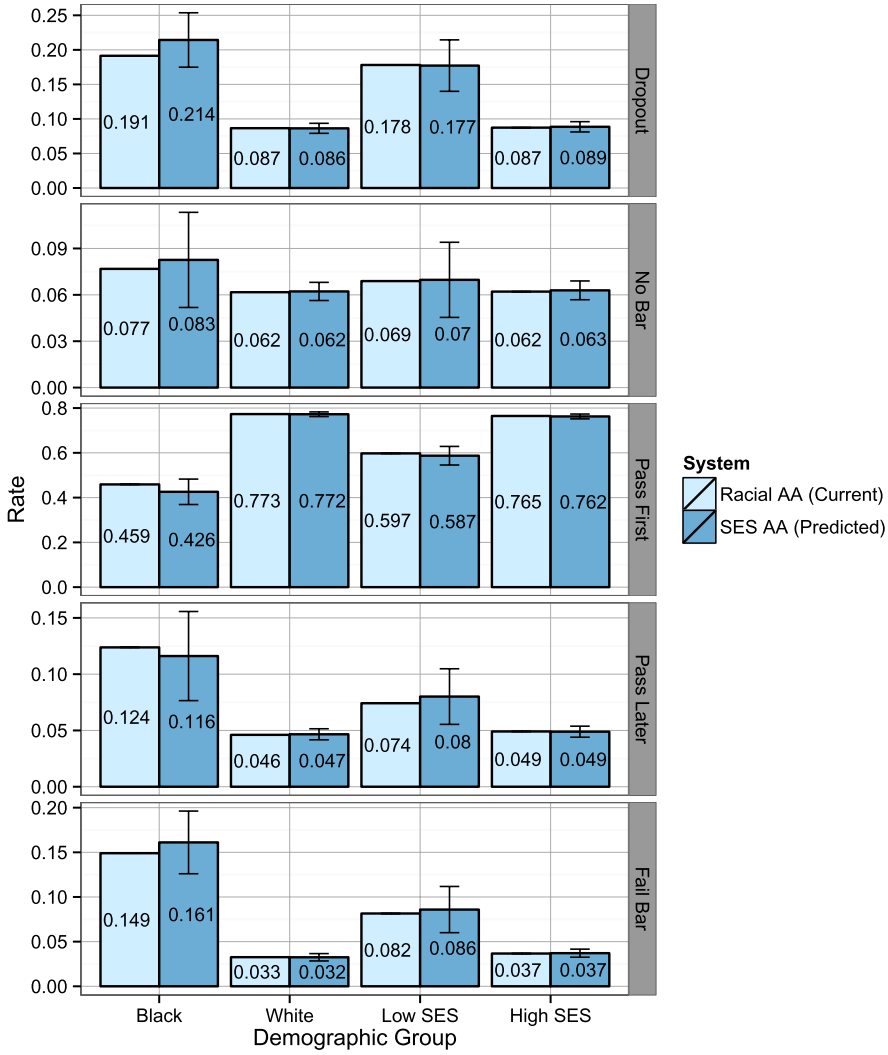

FIG. 8. *Impact of SES AA on graduation and bar passage outcomes for students by demographic group. Neither graduation nor bar passage rates across demographic groups are predicted to differ under racial AA (light blue) and SES AA (dark blue). Note that although the academic outcomes were sequentially imputed conditional on the previous step (e.g., we only predict whether a student will pass the bar on their first try if we have imputed that the student will attempt the bar), the results reported are the unconditional rates for ease of interpretation. Given that each student can only fall into one of the categories for outcomes, the rates within each demographic group sum to* 1.

The results show that affirmative action does not appear to have negative effects on minority academic outcomes, but they also show that, conditional on students' incoming academic credentials and demographic characteristics, affirmative action does not appear to have significantly positive effects either. Thus, from a policy perspective, this analysis supports the need for racial affirmative action to maintain racial diversity in upper law school tiers but also indicates that improvements in minority academic outcomes would need to stem from alleviation of the achievement gap in students' academic preparation before law school.

APPENDIX A: MODEL SELECTION

A.1 Racial Groups

We limited our analysis to white and black students due to complications in characterizing AA policies toward Hispanic, Asian, and "Other" students. Specifically, as can be seen in Figures 10–11, Asian and "Other" students look very similar to white students in terms of their LSAT scores and UGPAs, so it is questionable whether they receive admissions preferences through affirmative action. Also, although Hispanics generally are thought to be treated similarly to black students in admissions preferences, we found the

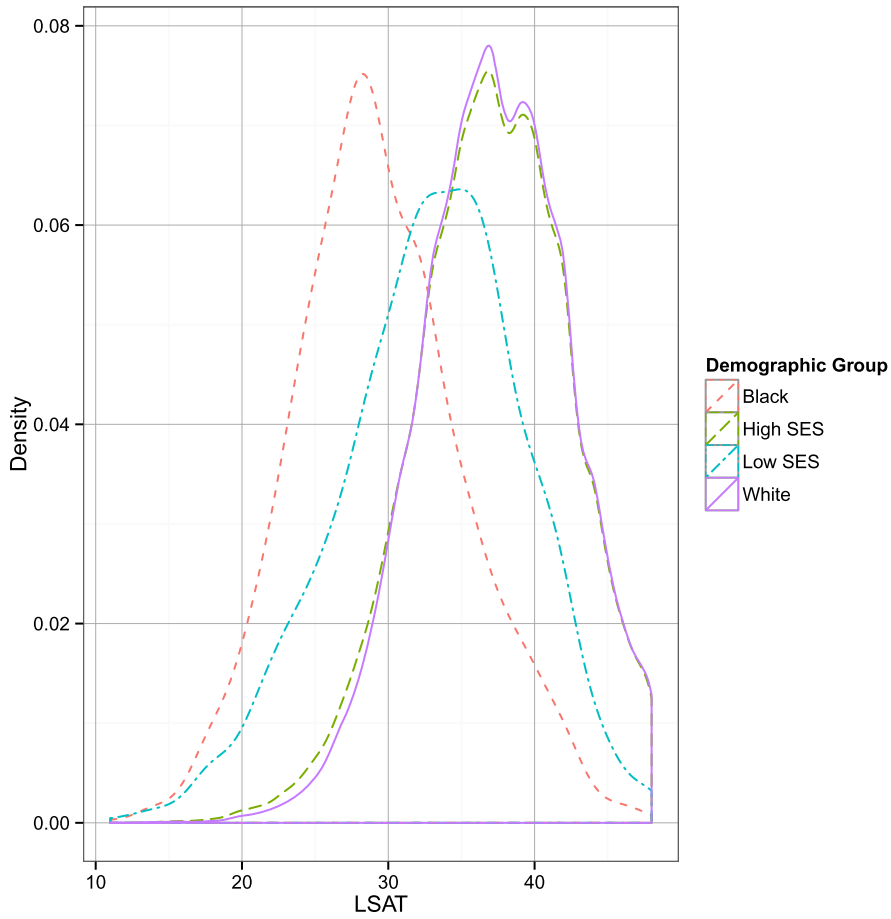

FIG. 9. *LSAT distributions by demographic group. LSAT distribution by demographic group. Black and low SES students have lower LSAT distributions than white or high SES students, who have essentially the same distributions. Notably, there is a substantial gap between the black and low SES student distributions, providing evidence that the LSAT gap between black and white students exceeds that between low and high SES students.*

trends in this dataset to be much less clear. For example, as shown in Table 3, the regression coefficients for the probability of enrolling in each tier for Hispanic students do not follow a specific trend. These factors make constructing SES-equivalent categories for these racial groups dubious. Thus, for this analysis, we focused our attention on examining the impact of the racial vs. SES AA systems on black and white students.

A.2 Calculating the SES Score

The SES score was computed as the first principal component of the SES factors. The resulting score was the following:

$$\begin{aligned} SES\_Score = {} & 0.442 occ_{mom} + 0.458 occ_{dad} \\ & + 0.485 ed_{mom} + 0.492 ed_{dad} \\ & + 0.342 fam\_inc, \end{aligned}$$

where *occ* is the parent's occupation category, *ed* is the parent's educational attainment, and *fam_inc* is the response to the general SES question. All of the SES factors were on a scale from 1 to 5, with higher numbers corresponding to higher SES, and were standardized before calculating the principal component.

For 14,291 students, one or more components of their SES scores was missing. Because this number of students is sufficiently large that simply removing the students from the data would compromise the sample size of minority students, we used the following method to impute the missing SES data. For instances where *occ* for a parent was missing but *ed* was available, we imputed the *occ* of the parent as the *ed* of the parent, and vice versa when *ed* was missing for a parent. Similarly, although a response of "homemaker" is technically not missing data, it does not have a clear SES ranking relative to other occupations; we replaced the *occ* for homemakers with the value of

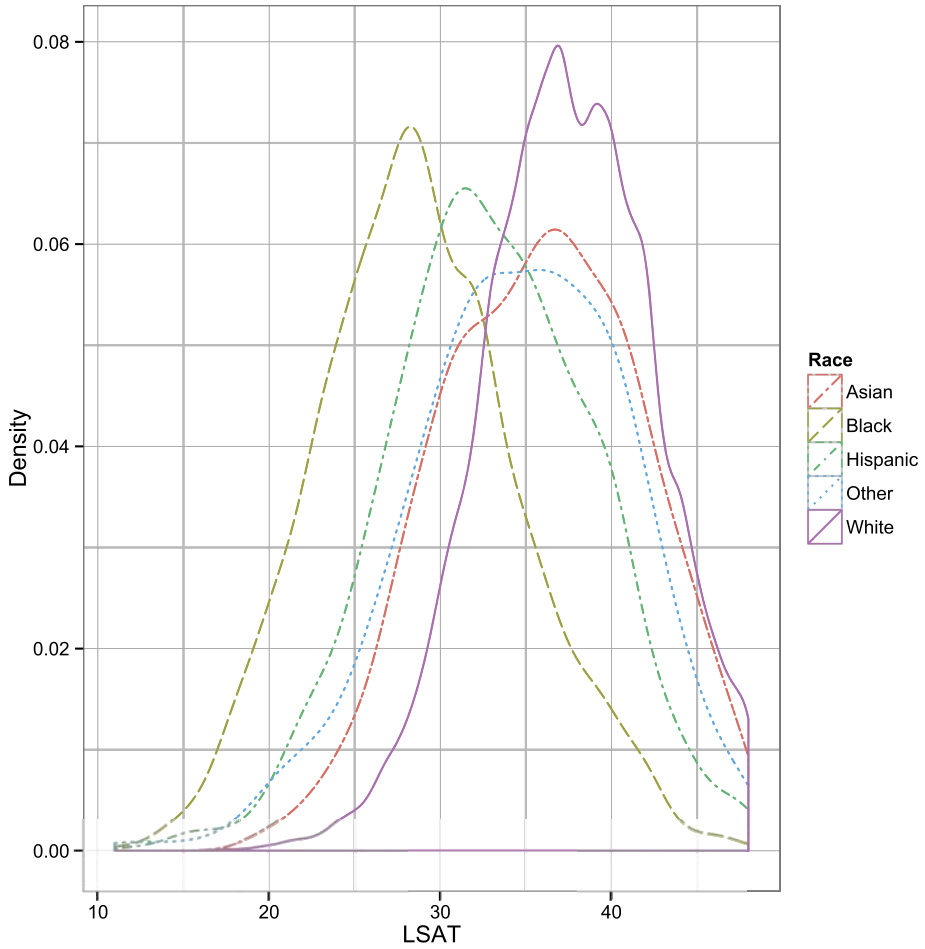

FIG. 10. *LSAT distributions by racial group. Although there are clear and substantial discrepancies between the LSAT distributions for white and black students, the differences are smaller for other racial minorities. In particular, Asians and "Other" students have similar distributions to white students, while Hispanics are distributed between white and black students. This might explain why the affirmative action trends were less apparent in the regression coefficients for Hispanic, Asian, and Other students in Table 3.*

their *ed* to better capture their earning potentials. If *occ* and *ed* were both missing for a parent, we imputed them with the *occ* and *ed* of the other parent under the assumption that people tend to marry within the same SES.

If the information for both parents was missing for a student, we assigned to the student the SES score corresponding to her *fam_inc* percentile rank. For example, if her *fam_inc* were 5, and if 80% of students had a *fam_inc* less than 5, we would impute her "parental score" (the part of the score excluding *fam_inc*) as the 80th percentile among all parental scores. Thus, the student's relative score would be similar to what it would be if the ranking system were exclusively based on *fam_inc*. Analogously, in cases where *fam_inc* was missing for a student, we calculated the percentile of the student's parental score and imputed the student's *fam_inc* as the *fam_inc* corresponding to that percentile. We removed students with no SES information available.

A.3 Undergraduate GPA (UGPA)

Although the data included the students' UGPAs, it did not include any information about the undergraduate institutions the students attended, thus rendering UGPA less interpretable. In carrying out our analysis, we included UGPA as a predictor for enrollment probabilities and academic outcomes, but the coefficients for UGPA should be interpreted carefully given this ambiguity. In general, LSAT is the more reliable metric for student academic ability given that it is standardized for all students. Thus, throughout the paper, we often examine changes in LSAT distribution in order to gauge changes in relative academic ability across law school tiers and demographic groups.

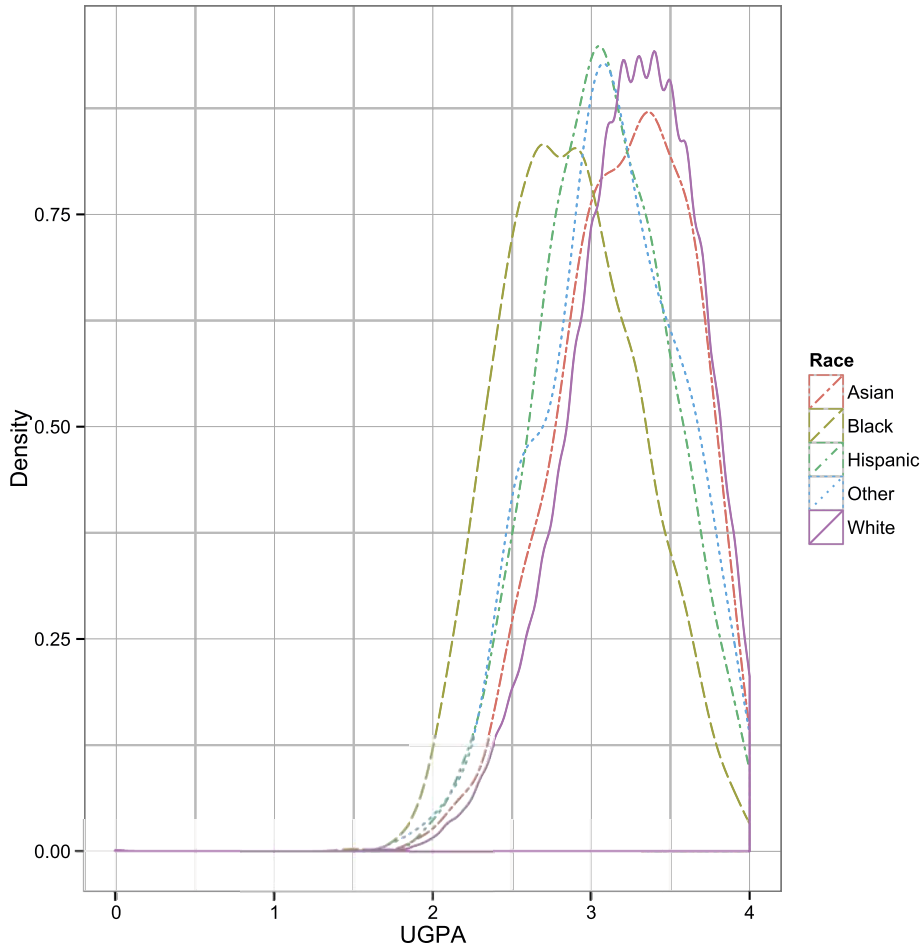

FIG. 11. *UGPA distributions by racial group. Although there is a substantial discrepancy between the white and black student distributions, the gap is less pronounced for the other minorities. Asian and white students seem especially aligned, while Hispanic and Other students are aligned.*

TABLE 3
Regression coefficients from logistic regression for all races

Tier	Intercept	LSAT	Asian	Black	Hispanic	Other
1	−12.37	0.25	0.84	1.84	0.36	0.59
2	−5.64	0.11	0.89	0.92	−0.28	0.63
3	−2.78	0.05	−0.32	0.73	1.24	−0.39
4	3.80	−0.12	−0.50	−1.31	−1.48	−0.11
5	5.24	−0.21	−1.44	−2.25	0.84	−1.16

Note: The results in this table were derived from logistic regressions with an indicator for being in a given tier as the outcome variable and race and LSAT as predictors. They show that effects of affirmative action in admissions are more apparent when comparing Black and White students than other minorities. What was estimated was the enrollment probability, not the enrollment probability conditional on not having been enrolled in a higher tier. Consequently, racial groups benefitting from affirmative action should have positive race coefficients for upper tiers and negative race coefficients for lower tiers. The results for Hispanic students are thus not very interpretable. Moreover, although the coefficients for Asian and Other follow the expected trends, their elevated race coefficients for higher tiers are surprising given that Asian and Other students generally do not benefit from affirmative action. These trends might be the product of Asian and Other students coming from better undergraduate institutions or having better extracurricular records.

A.4 Diversity Quotas

The rationale for modeling the admissions process with diversity quotas is that admissions committees are presumably less concerned with maintaining the size of the boost they give to AA-targeted students and more concerned with the outcomes—the numbers of AA-targeted students who enroll. Without this restriction, low SES students under SES AA would functionally receive the same increases in enrollment probability that black students received under the race-based AA system. This is problematic because low SES students in general have higher LSAT scores than black students (Figure 10), so simply using the black student enrollment functions for low SES students would result in excessive numbers of low SES students entering top tiers, as shown in Figures 12–13. For example, the unconstrained model predicts the number of low SES students in Tier 1 increases from 77 to 340.

Although disproportionate increases in low SES student enrollment are conceivable, it is questionable whether admissions committees would be willing to allocate many more slots to low SES students under SES AA. Given that admissions committees exercise affirmative action with the goal of achieving a diverse incoming class, and given that a smaller boost would suffice to yield a socioeconomically diverse student body, it is more likely that admissions committees would offer low SES students a less substantial boost than the one currently offered to black students. Using a quota model thus reflects this mitigation of the size of the admissions boost.

A.5 No-Quota Model

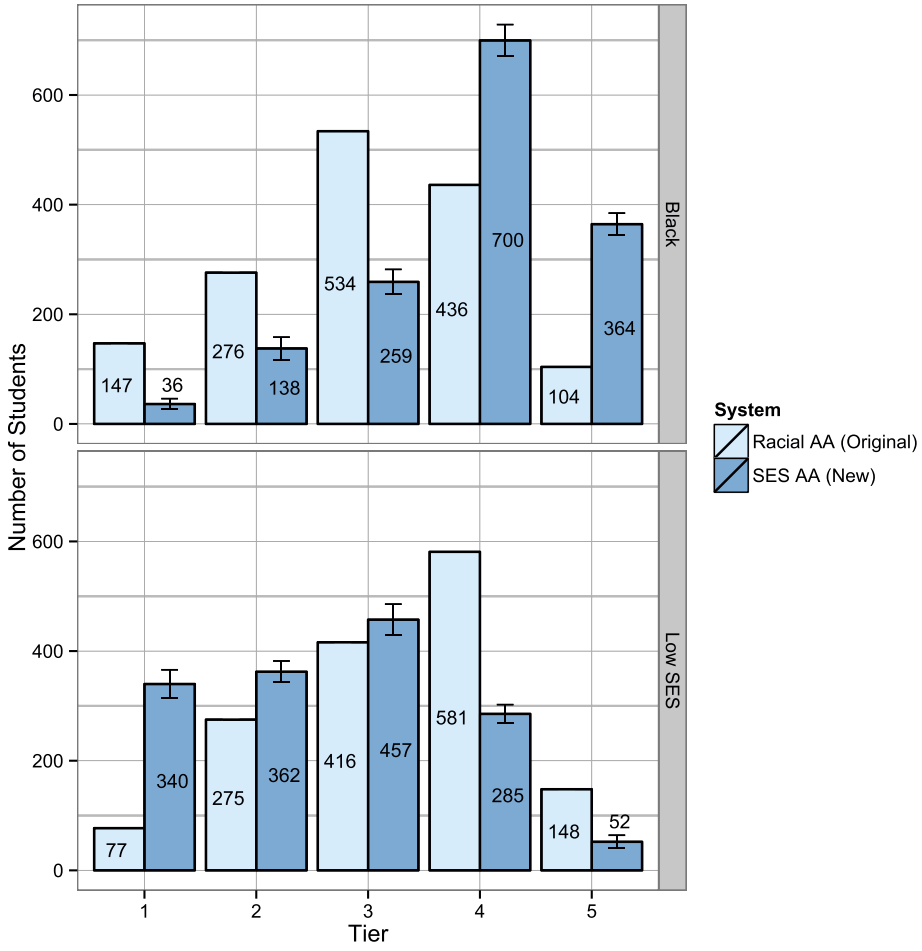

FIG. 12. *Unconstrained model, impact of SES AA on demographic composition across tiers. In the unconstrained model, students are enrolled into each tier (starting with Tier 1 and going down to Tier 5) until each tier is filled, but without constraints on the number of low SES students in each tier. This figure shows that if SES students are given the same AA boost that black students received without constraints on the numbers of low SES students enrolled into higher tiers, they experience disproportionate increases in their enrollment in higher tiers.*

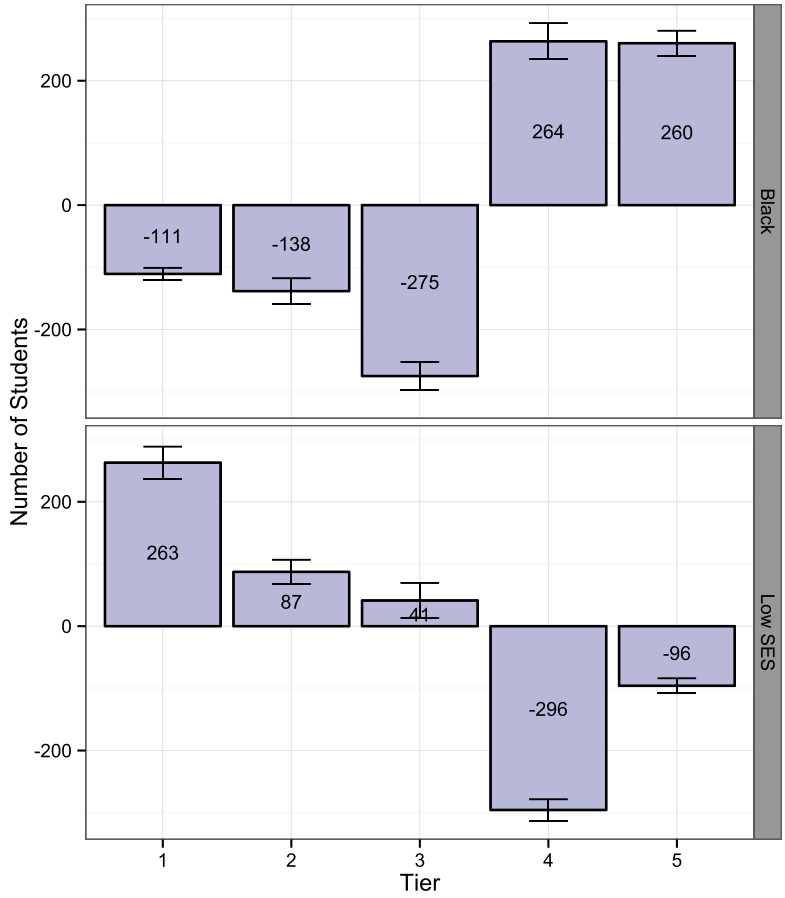

FIG. 13. *Unconstrained model, impact of SES AA on numbers of AA-targeted students across tiers. This figure illustrates that the increase in low SES students in Tiers* 1–3 *is far greater than the decrease in black students in these tiers, suggesting that if low SES students simply received the same boost as black students without constraints, their numbers in higher tiers would increase disproportionately. This is a result of the larger achievement gap between black and white students than between low SES and high SES students.*

APPENDIX B: ALGORITHMS

B.1 Estimating Tier Enrollment Probability Functions

1. Create separate lists for black and white students.
2. Run the logistic regression for the black and white students separately, with an indicator random variable of being in Tier 1 (vs. Tiers 2–5) as the outcome variable.
3. Remove the Tier 1 students from the black and white student lists.
4. Run the logistic regression for the remaining black and white students, with an indicator random variable of being in Tier 2 (vs. Tiers 3–5) as the outcome variable.
5. Remove the Tier 2 students from both lists.
6. Repeat for Tiers 3 and 4.
7. The conditional enrollment probability for Tier 5 is 1 for both black and white students.

B.2 Reassigning Tiers for SES AA System

1. Starting with Tier 1, draw the parameters for the probability enrollment functions ($p^b_{i,1}$ and $p^w_{i,1}$) from the estimated posterior distribution.
2. Separate the list of students into low and high SES.
3. Take a weighted sample of the low SES students drawing N^b_t of them with probability weights $p^b_{i,1}$, where $N_{b,t}$ is the number of black students in Tier t under racial AA and $p^b_{i,1}$ $p^b_{i,1}$ is the probability for student i enrolling in Tier 1 as a black student.
4. Perform the same procedure for the high SES students, drawing N^w_t of them with probability weights $p^w_{i,1}$.
5. Take out the low and high SES students assigned to Tier 1 from their respective lists, so they will not be eligible for reassignment to lower tiers.

6. Repeat for Tiers 2–4, going from the most to least selective.
7. Assign remaining students to Tier 5.

B.3 Imputing Academic Outcomes

1. *Dropout*: For each tier, use logistic regression to find a function for student dropout probability based on the original data.
2. Recalculate LSAT percentiles for each student based on their SES AA tier assignment.
3. Draw parameters from the posterior distribution of the fit. Use these parameters to impute the new dropout probabilities $d_{i,t}$ for students by applying the function corresponding to their assigned law school tier under SES AA, where $d_{i,t}$ is the probability that student i would dropout after attending Tier t.
4. For each tier, go through the list of students once and draw from a Bernoulli random variable with probability $d_{i,t}$ for each student to impute whether they did or did not drop out under the SES AA system.
5. *Take Bar*: Considering the list of students who graduated under the original racial system, use logistic regression to find functions, for each tier, of the probability of a student deciding not to take the bar exam.
6. Now consider the set of students who were imputed to have graduated from law school under the SES AA system. Use the function corresponding to their newly assigned law school tier to impute their probabilities of taking the bar.
7. Impute the outcome of taking the bar or not by going through the list of students and drawing from a Bernoulli random variable with the estimated probabilities of taking the bar exam.
8. *Bar Passage*: For the students whose outcomes are that they would take the bar, impute whether they pass the first time using the same logistic regression method.
9. For the remaining students who did not pass the bar the first time, impute whether they eventually pass the bar or fail using the same basic method.

APPENDIX C: RESULTS

TABLE 4
Overall changes in academic outcomes

Outcome	Original	New (SE)
Dropout rate	0.0926	0.0937 (0.0036)
Rate of not taking bar	0.0633	0.0624 (0.0030)
First-try bar passage rate	0.752	0.753 (0.0053)
Later-try bar passage rate	0.0507	0.0508 (0.0025)
Bar failure rate	0.0393	0.0399 (0.0024)

Note: None of the academic outcomes change substantially in aggregate between the two systems.

TABLE 5
Percentage changes in outcomes by race

Outcome variable	Race	Percentage change
Dropout rate	Black	0.1196
	White	−0.0023
Did not attempt bar	Black	0.0755
	White	0.0081
Passed bar first try	Black	−0.0719
	White	−0.0009
Passed bar later try	Black	−0.0622
	White	0.0108
Failed to pass bar	Black	0.0812
	White	−0.0031

Note: The quantities are expressed as percentage change in proportions in going from the racial to SES AA system.

TABLE 6
Percentage changes in outcomes by SES

Outcome variable	SES	Percentage change
Dropout rate	Low SES	−0.0051
	High SES	0.0137
Did not attempt bar	Low SES	0.0116
	High SES	0.0129
Passed bar first try	Low SES	−0.0172
	High SES	−0.0027
Passed bar later try	Low SES	0.0795
	High SES	−0.0041
Failed to pass bar	Low SES	0.0540
	High SES	0.0109

Note: The quantities are expressed as percentage change in proportions in going from the racial to SES AA system.

C.1 Changes in LSAT Distribution

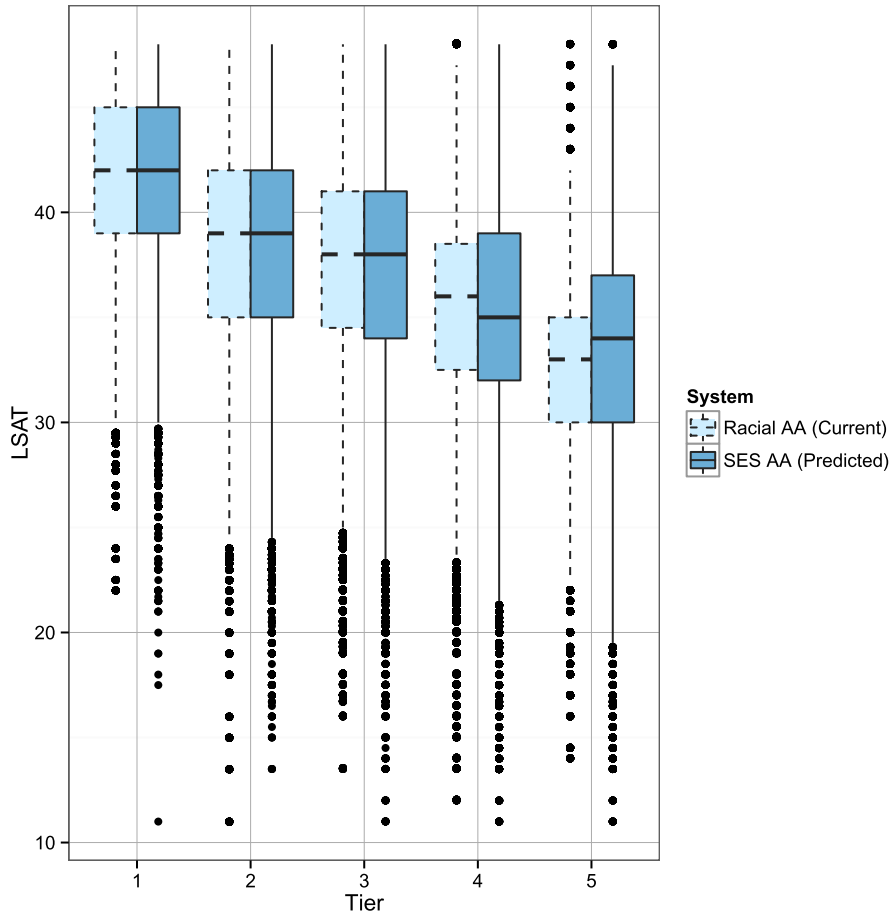

FIG. 14. *Impact of SES AA on LSAT distribution by tier. LSAT distributions remain roughly the same between racial and SES AA for Tiers* 1–3. *The distributions for Tiers* 4 *and* 5 *widen, with Tier* 4 *having a lower mean and Tier* 5 *a higher mean. Thus, the academic qualifications in each tier are not changing substantially between the two systems even as their demographic compositions change.*

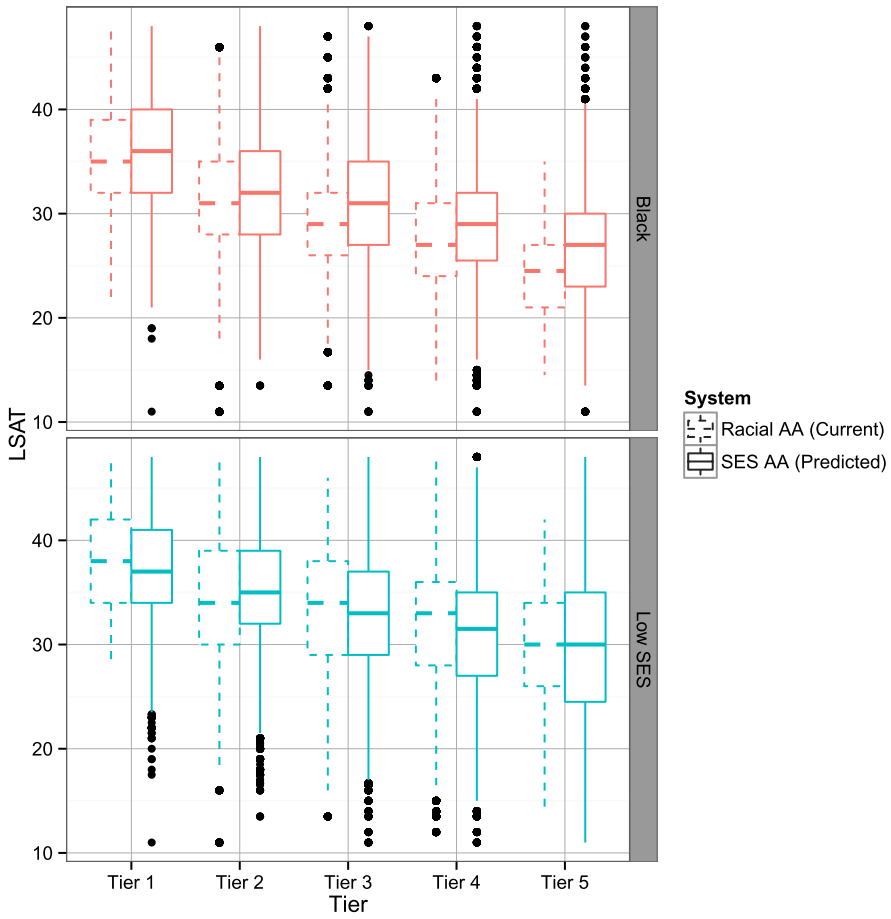

FIG. 15. *Impact of SES AA on LSAT distribution by tier for black and low SES students. In going from racial AA to SES AA, LSAT distributions are shifted toward higher LSAT scores for black students in all tiers and toward lower LSAT scores for low SES students for Tiers* 1, 3, *and* 4. *Given that the overall LSAT distributions have not changed substantially, as shown in Figure* 14, *this suggests that black students are better academically matched to their tiers under SES AA than under racial AA, whereas low SES students are better academically matched to their tiers under racial AA than under SES AA. Thus, by analyzing the simulation results for SES AA, we can gauge whether there is evidence for a mismatch effect.*

C.2 Changes by Demographic Group

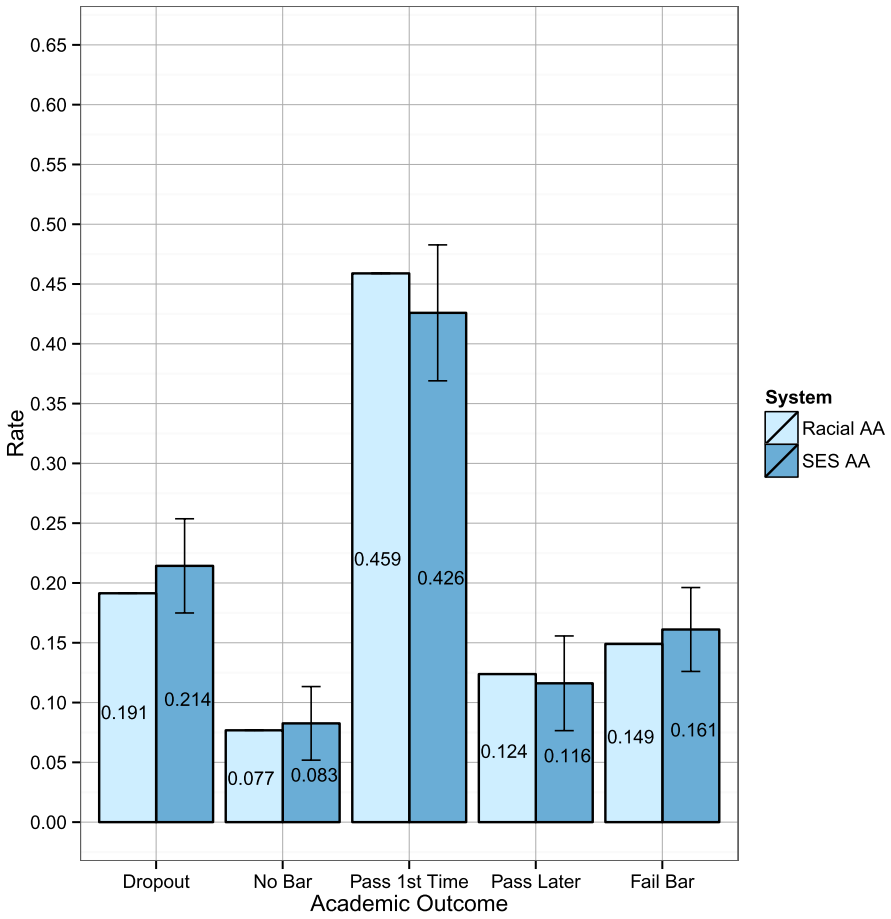

FIG. 16. *Impact of SES AA on graduation and bar passage outcomes for black students. Academic outcomes seem to worsen or stay the same overall for black students under the SES AA system, a result that directly contradicts the predictions of the mismatch hypothesis.*

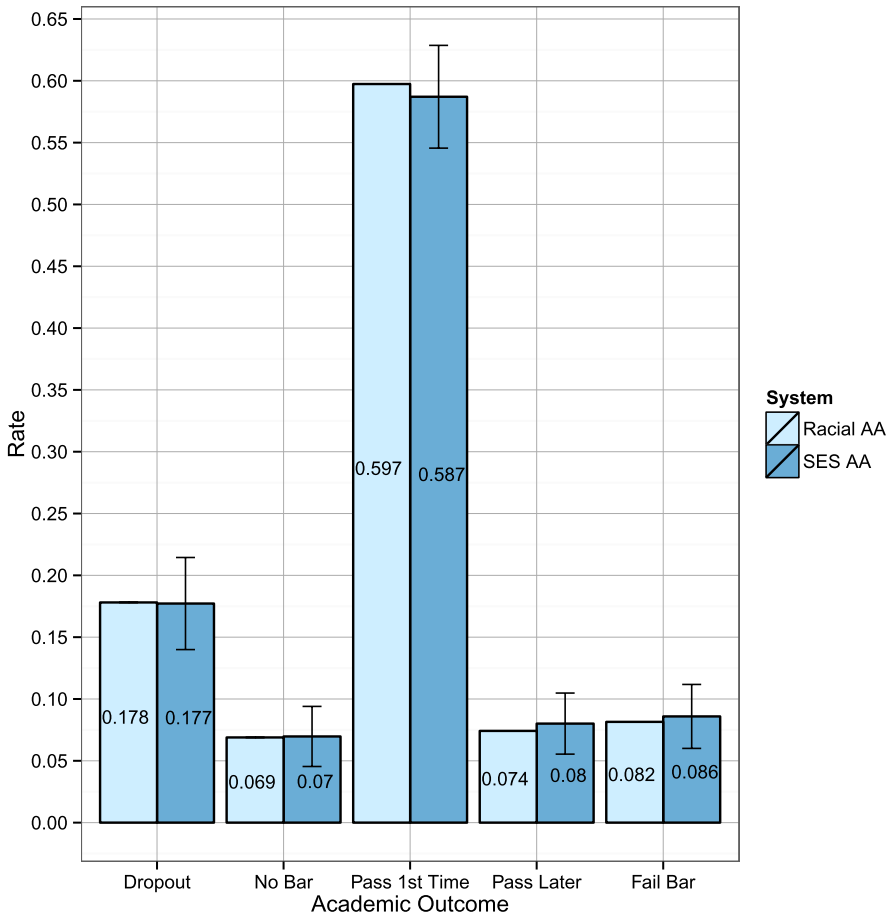

FIG. 17. *Impact of SES AA on graduation and bar passage outcomes for low SES students. Academic outcomes seem to improve or stay the same overall for low SES students under the SES AA system, a result that directly contradicts the predictions of the mismatch hypothesis.*

C.3 Changes by Tier

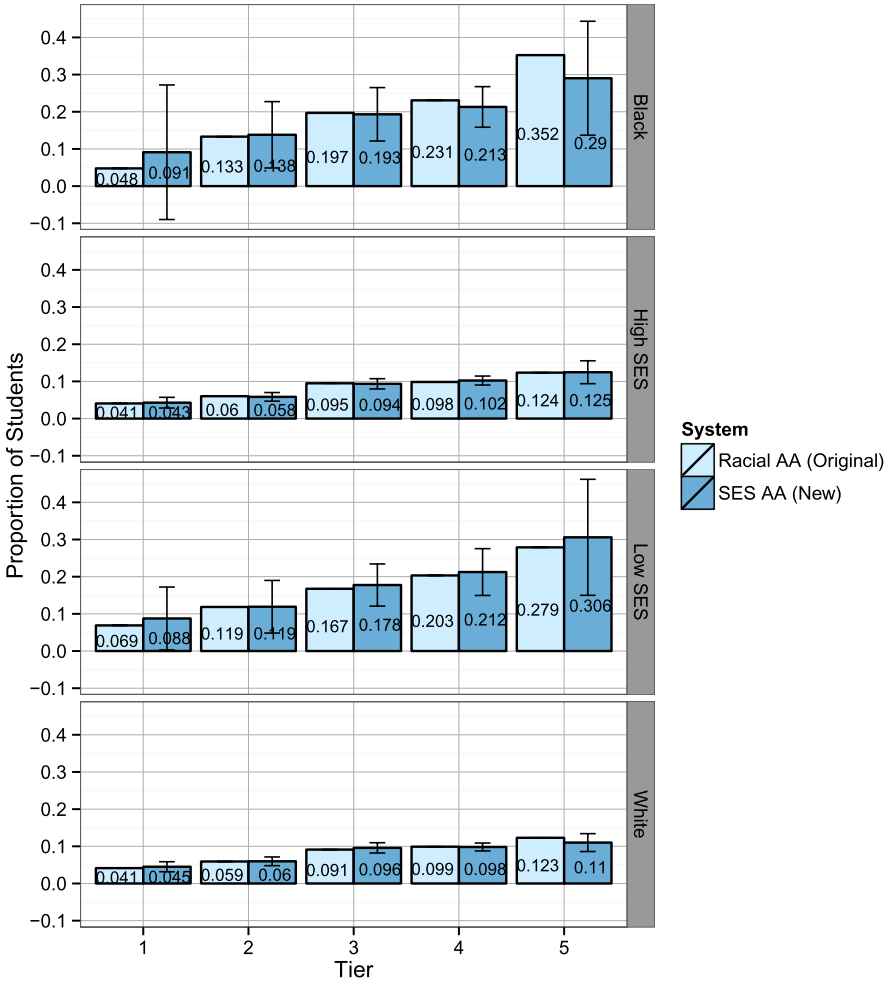

FIG. 18. *Impact of SES AA on dropout rates. There are no statistically significant changes in dropout rates in going from racial AA to SES AA. Note that there were only seven black students who dropped out in the actual data, contributing to the large standard errors for that prediction.*

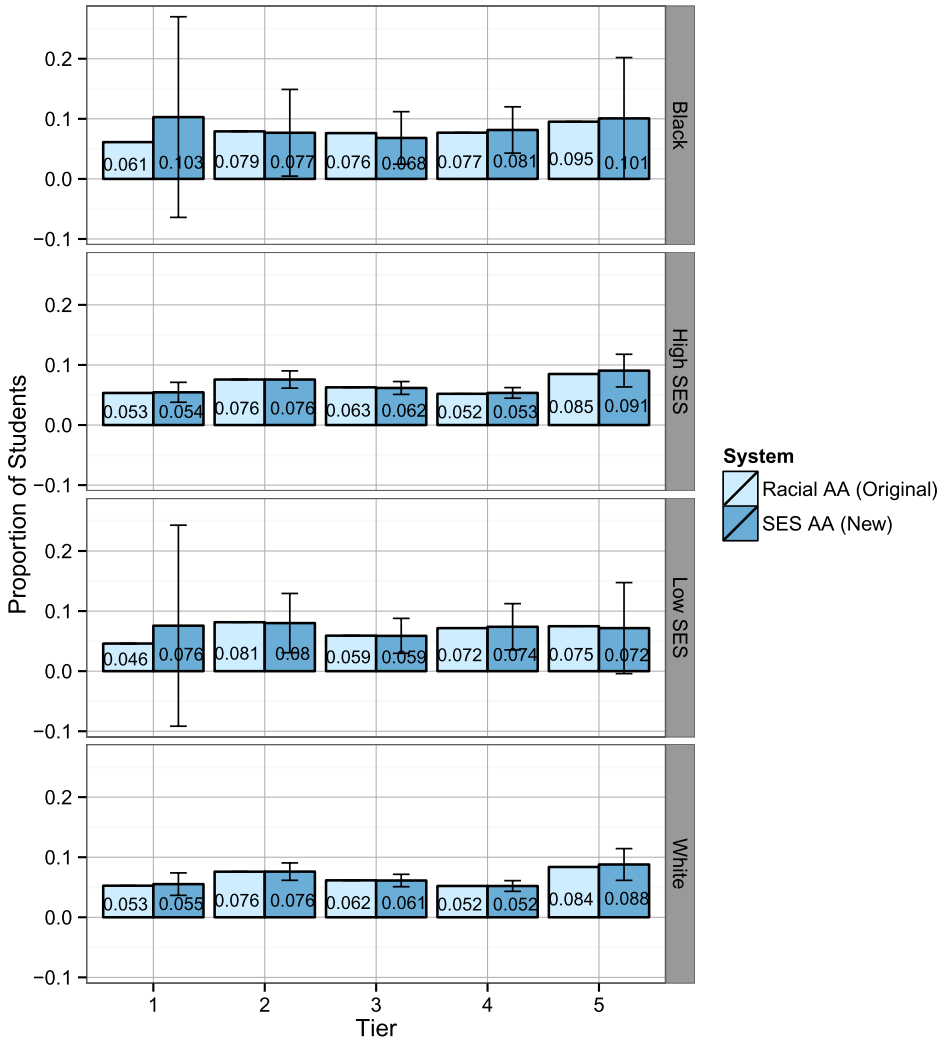

FIG. 19. *Impact of SES AA on rates of not taking the bar. Rates of not taking the bar increase for black students in Tier* 1 *and Tiers* 4–5 *but decrease for Tiers* 2–3. *The rates generally decrease for low SES students.*

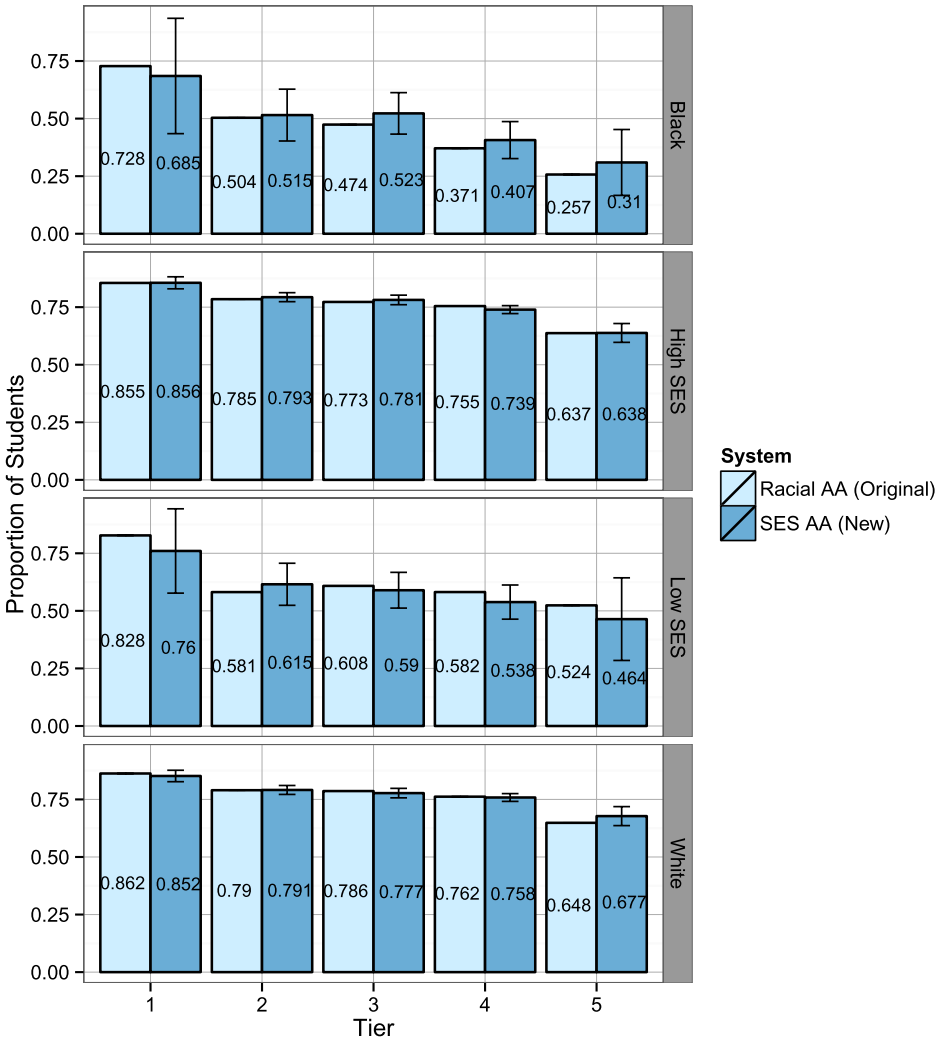

FIG. 20. *Impact of SES AA on rates of passing bar on first try. First-try bar passage rates decrease for black students in Tier* 1 *but increase for lower tiers. For low SES students, they increase for Tiers* 1–3 *but decrease for Tiers* 4–5.

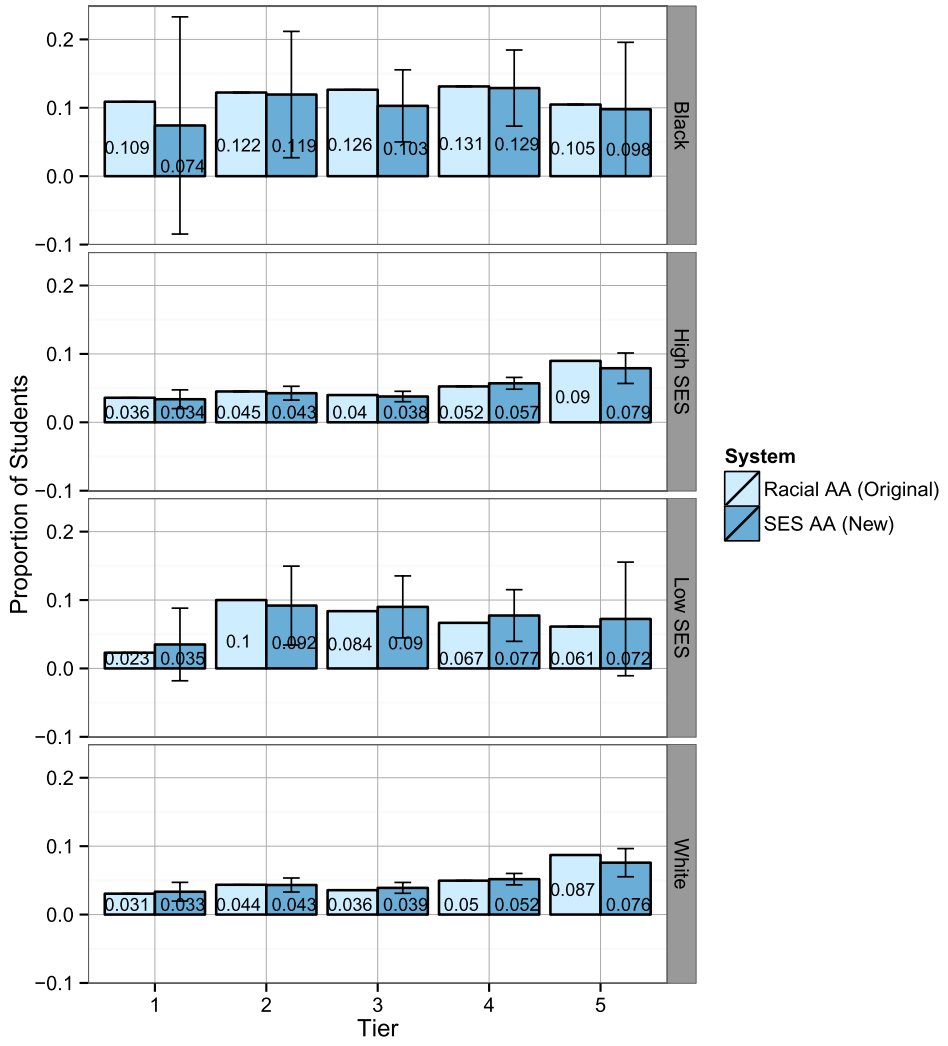

FIG. 21. *Impact of SES AA on rates of passing bar on later try. Later-try bar passage rates generally decrease for black students. The rates remain fairly constant for the other demographic groups.*

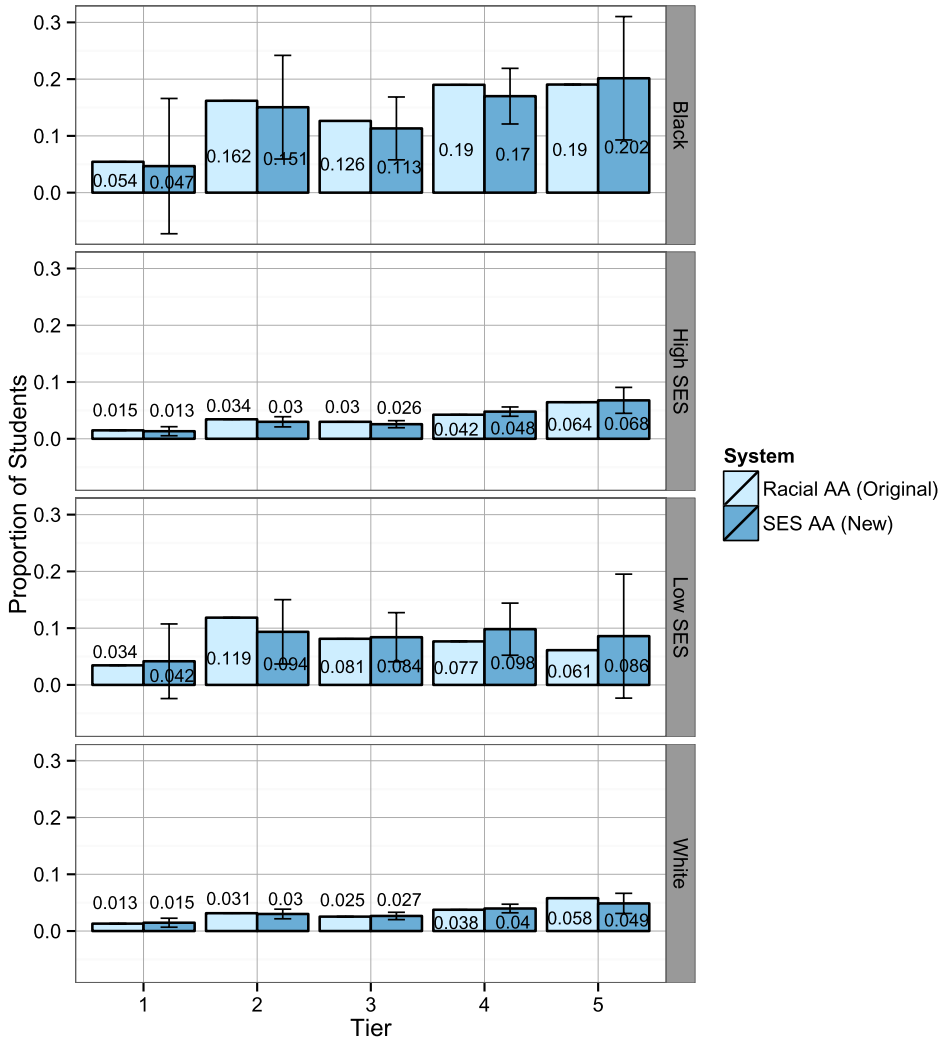

FIG. 22. *Impact of SES AA on bar failure rates. Bar failure rates increase for black students in Tier* 1 *and decrease across the remainder of the tiers, though with large error bars. The rates increase slightly for low SES students in Tier* 1 *and Tiers* 4–5 *but decrease for Tiers* 2–3.

APPENDIX D: MODEL FIT FOR ACADEMIC OUTCOMES

We simulated the academic outcomes based on the actual tier assignments and found that the model successfully predicted all of the quantities of interest to within a 95% confidence interval.

TABLE 7
Fitted values: *Academic outcomes by race*

Outcome variable		Original	Fitted (SE)
Dropout rate	Black	0.1914	0.1922 (0.0177)
	White	0.0866	0.0868 (0.0029)
Did not attempt bar	Black	0.0768	0.0837 (0.0138)
	White	0.0617	0.0625 (0.0024)
Passed bar first try	Black	0.4589	0.4490 (0.0233)
	White	0.7731	0.7722 (0.0046)
Passed bar later try	Black	0.1238	0.1219 (0.0123)
	White	0.0461	0.0463 (0.0024)
Failed to pass bar	Black	0.1490	0.1532 (0.0161)
	White	0.0326	0.0322 (0.0019)

TABLE 8
Fitted values: *Academic outcomes by SES*

Outcome variable		Original	Fitted (SE)
Dropout rate	Low SES	0.1781	0.1787 (0.0162)
	High SES	0.0874	0.0877 (0.0030)
Did not attempt bar	Low SES	0.0689	0.0730 (0.0133)
	High SES	0.0621	0.0631 (0.0024)
Passed bar first try	Low SES	0.5974	0.5975 (0.0224)
	High SES	0.7646	0.7631 (0.0047)
Passed bar later try	Low SES	0.0742	0.0713 (0.0128)
	High SES	0.0491	0.0494 (0.0022)
Failed to pass bar	Low SES	0.0815	0.0794 (0.0127)
	High SES	0.0367	0.0367 (0.0018)

APPENDIX E: REGRESSION COEFFICIENTS

TABLE 9
Regression coefficients for dropout rates

Coefficient	Tier 1 (SE)	Tier 2 (SE)	Tier 3 (SE)	Tier 4 (SE)	Tier 5 (SE)
Intercept	5.06 (2.37)	0.77 (1.22)	0.91 (0.77)	−1.09 (0.73)	1.44 (1.34)
Female	−0.62 (0.22)	−0.14 (0.12)	−0.06 (0.08)	−0.07 (0.07)	−0.25 (0.14)
LSAT	−0.19 (0.07)	−0.08 (0.04)	−0.09 (0.02)	−0.03 (0.02)	−0.09 (0.05)
LSAT percentile	1.74 (1.11)	−0.08 (0.71)	0.37 (0.44)	−0.43 (0.40)	0.18 (0.72)
UGPA	−0.22 (0.30)	−0.16 (0.16)	−0.01 (0.11)	0.08 (0.09)	−0.15 (0.16)
Black	−1.56 (0.59)	0.21 (0.28)	0.31 (0.19)	0.71 (0.18)	0.71 (0.34)
Low SES	0.64 (0.72)	0.34 (0.30)	0.41 (0.21)	0.15 (0.18)	0.64 (0.33)
LSAT percentile: Black	4.79 (1.32)	0.32 (1.13)	−0.96 (1.00)	−0.79 (0.89)	−1.15 (1.79)
LSAT percentile: Low SES	−4.91 (4.32)	0.16 (0.80)	0.26 (0.52)	1.09 (0.39)	0.49 (0.68)

TABLE 10
Regression coefficients for rates of not taking the bar

Coefficient	Tier 1 (SE)	Tier 2 (SE)	Tier 3 (SE)	Tier 4 (SE)	Tier 5 (SE)
Intercept	−2.98 (3.00)	−0.56 (1.40)	2.26 (1.05)	−3.09 (1.12)	−3.45 (1.74)
Female	−0.17 (0.19)	−0.06 (0.11)	0.08 (0.10)	0.07 (0.09)	0.04 (0.16)
LSAT	−0.12 (0.08)	−0.04 (0.04)	−0.16 (0.03)	0.01 (0.04)	0.01 (0.06)
LSAT percentile	2.61 (1.22)	0.80 (0.79)	2.41 (0.58)	−0.18 (0.60)	0.23 (0.97)
UGPA	1.13 (0.33)	−0.18 (0.15)	−0.02 (0.13)	−0.01 (0.12)	0.25 (0.19)
Black	0.54 (0.57)	0.44 (0.35)	−0.22 (0.26)	0.50 (0.27)	1.25 (0.51)
Low SES	1.91 (0.78)	0.27 (0.34)	−0.42 (0.33)	0.40 (0.27)	−1.11 (0.70)
LSAT percentile: Black	−0.05 (1.85)	−3.36 (1.92)	0.78 (0.91)	0.16 (0.98)	−4.34 (3.59)
LSAT percentile: Low SES	−19.35 (10.27)	−0.67 (0.89)	0.79 (0.74)	0.05 (0.59)	2.36 (1.10)

TABLE 11
Regression coefficients for rates of passing bar on first try

Coefficient	Tier 1 (SE)	Tier 2 (SE)	Tier 3 (SE)	Tier 4 (SE)	Tier 5 (SE)
Intercept	−7.79 (2.12)	−7.16 (1.25)	−7.61 (0.94)	−6.51 (0.79)	−7.71 (1.72)
Female	0.07 (0.20)	−0.22 (0.12)	−0.08 (0.10)	−0.12 (0.08)	−0.48 (0.13)
LSAT	0.19 (0.06)	0.18 (0.04)	0.19 (0.03)	0.17 (0.03)	0.25 (0.06)
LSAT percentile	−0.43 (1.05)	−0.59 (0.76)	−0.57 (0.55)	−0.47 (0.44)	−2.09 (0.90)
UGPA	0.94 (0.27)	0.99 (0.14)	1.04 (0.12)	0.96 (0.10)	0.76 (0.17)
Black	0.06 (0.37)	−0.36 (0.24)	−0.12 (0.19)	−0.69 (0.19)	−0.33 (0.41)
Low SES	0.84 (0.65)	−0.76 (0.27)	−0.44 (0.23)	−0.09 (0.21)	0.59 (0.46)
LSAT percentile: Black	−1.72 (1.51)	−0.83 (0.91)	−0.68 (0.83)	−0.13 (0.81)	−0.94 (1.51)
LSAT percentile: Low SES	−2.34 (1.57)	0.29 (0.87)	0.34 (0.79)	−0.01 (0.58)	−0.74 (1.03)

TABLE 12
Regression coefficients for rates of passing bar on later try

Coefficient	Tier 1 (SE)	Tier 2 (SE)	Tier 3 (SE)	Tier 4 (SE)	Tier 5 (SE)
Intercept	−4.61 (3.38)	−4.92 (1.85)	−2.52 (1.38)	−3.37 (1.18)	−4.41 (2.31)
Female	0.27 (0.41)	0.27 (0.21)	0.10 (0.18)	−0.15 (0.14)	−0.11 (0.23)
LSAT	0.12 (0.09)	0.14 (0.06)	0.04 (0.04)	0.11 (0.04)	0.15 (0.08)
LSAT percentile	−1.04 (1.88)	−1.94 (1.20)	−0.31 (0.90)	−1.78 (0.72)	−1.14 (1.26)
UGPA	0.37 (0.56)	0.30 (0.27)	0.52 (0.22)	0.27 (0.17)	0.19 (0.30)
Black	0.26 (0.66)	−0.21 (0.37)	0.30 (0.31)	−0.47 (0.29)	0.31 (0.60)
Low SES	−0.38 (1.15)	−0.64 (0.44)	−0.25 (0.36)	−0.31 (0.32)	0.21 (0.78)
LSAT percentile: Black	−0.17 (3.20)	0.30 (1.57)	−3.49 (1.87)	1.32 (1.77)	−6.78 (4.99)
LSAT percentile: Low SES	−2.95 (3.45)	2.56 (1.92)	0.74 (1.70)	0.83 (1.09)	−1.07 (1.99)

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