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ABSTRACT

Apply Yourself: Racial and Ethnic Differences in College Application[1]

Access to higher education begins with a student's decision whether and where to apply to college. This paper examines racial and ethnic differences in college application behavior of high school graduates, using two recent graduation cohorts from Texas. We estimate racial and ethnic differences in the probability of applying to college, controlling for a student's college readiness, high school quality, certainty of college admissions, and high school fixed effects. We then investigate racial and ethnic differences in the choice of where to apply. We enhance the typical model of college matching by considering the social setting and high school feeder patterns of state universities. We find that racial and ethnic gaps in application rates, particularly for Hispanic students, are not explained by differential levels of college readiness, high school quality, or information regarding college admission processes. When applying to college, minorities are influenced by more than just matching their academic ability to the institution, and prefer institutions with a large proportion of same race students and campuses where same race students from their high school have been successful in the past.

JEL Classification: I21, I23, I24, J15, J18

Keywords: college application, college readiness, high school quality, undermatching, race and ethnicity, low-income students, Texas Top 10% Plan, automatic admissions

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I. Introduction

Substantial disparities in college enrollment rates exist across racial and socioeconomic groups in the United States. Nationally, only 62 percent of black and 60 percent of Hispanic high school graduates enrolled in college the fall semester after high school graduation, compared to 71 percent of white graduates (U.S. Department of Education, 2010). A key goal of education policy is to help remediate this inequity by providing equal opportunity and access to all students. However, to develop better policy, one needs to understand the underlying causes of these disparities. There are many possible explanations, including lack of information and different preferences. Moreover, selective admissions processes can limit college access among minorities if high school quality and high school outcomes are unequally distributed by race and ethnicity.

Even before a student can enter an admissions process, she must apply – a process that may be particularly daunting for a potential first-generation college student. While there are a few studies that investigate the admissions and enrollment process for minority students, most begin with a sample of students who express college interest by taking a college entrance exam (SAT or ACT). In this study, we investigate racial and ethnic differences in the first step in college enrollment – the application decision – using two full cohorts of recent Texas high school graduates. Because there is a common college application in Texas (See *www.ApplyTexas.org*, hereafter referred to as ApplyTexas), we are able to observe whether each student applied to each of the 37 four-year public postsecondary institutions in the state. Importantly, because we observe the population of students and not just those students who applied or took the SAT or ACT exam, we can learn more broadly about differences in college application behavior. We are also able to assess the differential roles of student demographics, high school quality, and student preparedness in the college application decision. Finally, we examine the importance of student-campus fit, by estimating the influence of academic match, campus demographics, and high school feeder patterns on behavior regarding where students apply to college.

One possible explanation for the disparities observed is that students have incorrect assessments of the likelihood of gaining admission to college, and this varies by race and ethnicity. To address this possibility, we take advantage of a unique institutional feature of the Texas public university system. Texas is one of several states that employs both "percent plan" and holistic admissions policies. During the time period under study, students who graduated from the top 10% of their senior class at *all* Texas public high schools were eligible for automatic admissions to *all* Texas public universities, including the highly-selective flagship campuses of the University of Texas at Austin (UT Austin) and Texas A&M University at College Station (TAMU). Academic slots not filled by automatically admitted students were given to students who underwent a more traditional holistic admissions process that includes race as one of many background factors.[2] Top 10% students were informed during their junior year of high school of their guaranteed admissions status and provided with information about campus options, while students below the top 10% faced the uncertainty and costs associated with a typical college search and application process. Thus, comparing the application choices of top 10% graduates, who were guaranteed admission, against top 11-25% graduates who faced holistic admissions processes, is particularly useful for understanding the interaction of race/ethnicity and admissions uncertainty.

There are several key findings from our analysis. First, we find that lower Hispanic college enrollment begins with a lower propensity to apply to college – that is, Hispanic students are less likely to apply to college than all other races, despite having higher average college readiness than black students. These results are robust to controls for student-level college readiness measures,

[2] In holistic admissions, top 11-25% students compete with a larger pool of lower-performing Texas public high school graduates, out-of-state applicants, international students, and Texas private school students for remaining slots.

high school characteristics, and high school fixed effects. Second, black students are in fact *more* likely to apply to college than students of other races with similar college readiness and high school quality, but this effect is concentrated among black students who are less prepared for college. Finally, we find racial and ethnic differences in the selection of college applied to, with blacks and Asians showing a strong preference for campuses with students within their own racial group, and black and Hispanics influenced by the prior experiences of their high school peers on the campus. Thus, inequality in college access and quality begins with the decision to apply to college and is influenced by college factors including student demographics and past high school feeder patterns.

The paper unfolds as follows. Section II provides a brief overview of related literature, Section III describes the data, Sections IV, V, and VI discuss the results on college application and college choice behavior, and Section VII concludes.

II. Related Literature

Our work relates to a number of literatures on the application decisions of minority students. One strand of literature examines how the presence or absence of affirmative action changes college application and enrollment decisions. Long (2004a) uses data from the College Board containing a 10 percent random sample of SAT takers and considers how white and minority applications changed with the elimination of affirmative action in California and Texas. He finds that both minority and non-minority students changed their behaviors; white and Asian students increased the selectivity of schools to which they applied, while under-represented minority students applied to less selective schools. While he cannot observe the actual colleges to which the student applied, he can observe college characteristics. He finds that, relative to white and Asian Americans, underrepresented minorities significantly lowered the number of score reports sent to in-state public colleges, regardless of quality; these results are slightly stronger in California than in Texas.[3] Card and Krueger (2005) also use a sample of SAT takers to examine how application decisions responded to the elimination of affirmative action and find little evidence of a change in the propensity of high-ability minorities to apply to at least one selective public institution in California and Texas.

While the aforementioned papers analyze the implications of changes in affirmative action policies on college application behaviors, we focus on a variety of other factors, such as differences in student preparation and differences in high school quality, using data on the full population of high school graduates in Texas; we are thus not limited to students who reveal their college preferences by taking entrance exams. In addition, we consider black and Hispanic students separately while prior studies consider both groups in an aggregate category of under-represented minorities.

There is also a recent and influential literature examining underserved populations and their decisions to apply to selective institutions (Griffith and Rothstein, 2009; Hoxby and Turner, 2013; Hoxby and Avery, 2013; Smith, Pender, and Howell, 2013; Dillon and Smith, 2013; and Pallais, 2015). In general, this literature examines a sample of students who are applying to college and trying to understand the college choices they make. Work by Hoxby and Avery (2013) focuses on high-ability high school students to examine the phenomenon of "undermatching." They show that

[3] Considering the role of the Texas Top 10% Plan on minority decision-making, Niu, Tienda, and Cortes (2006) analyze a representative survey of Texas high school seniors in the spring of 2002, who were re-interviewed one year later to evaluate differences in college preferences and enrollment decisions according to three criteria targeted by the Top 10% Plan: high school type, class rank, and minority status. They find that Texas seniors and top 10% graduates, in particular, consider institutional selectivity in making college choices. Moreover, graduates from feeder and resource-affluent high schools are more likely to preference selective institutions, while graduates from resource-poor high schools and high schools that rarely feed to selective state universities are less likely to choose selective institutions as their first preference. Also, both for first college preference and enrollment decisions, black and Hispanic students are less likely than white students to opt for selective universities. Long (2004b) uses data from the National Education Longitudinal Study (NELS) and documents that there would be substantial changes in the racial composition of universities following the elimination of affirmative action, even holding application behavior constant.

low-income high-achieving students who are likely to undermatch are those who are more isolated from other achieving students; those who do not undermatch tend to be highly concentrated in a small number of high schools. Pallais (2015) documents that low-income students may be more sensitive to application costs; she shows that a decline in the cost of applying to an additional college generated through a decline in the cost of sending one's ACT scores to an additional university leads students to apply to more selective universities. Finally, Dillon and Smith (2013) use the National Longitudinal Survey of Youth 1997 (NLSY97) to document the degree of "mismatch" among students in the NLSY97. Importantly, these data include a variety of demographic characteristics, and the authors use a unique definition of mismatch – the difference between a student's percentile in the ability distribution and the percentile of her college in the student-weighted distribution of a college quality index. They find that a large fraction of students are either undermatched or overmatched, and this is due to student decisions. They also find that features of the state university system the student faces affect the probability of mismatch. Our research focuses on racial and ethnic differences, considers the population of high school graduates, and examines a much broader set of institutional characteristics on which students may base their college application decisions.

Finally, there is also a recent literature examining racial and ethnic differences in college enrollment. Reardon, Baker, and Klasik (2012) document differences in enrollment patterns in highly selective colleges by race/ethnicity and income, and find that both black and Hispanic students are underrepresented in the most selective colleges, even after controlling for family income. Most recently work by Clotfelter, Ladd, and Vigdor (2014) use data from North Carolina to examine the role of the public university system in explaining the racial disparities in college enrollment and completion. They document significant racial and socioeconomic disparities in the likelihood of obtaining a four-year college degree at a University of North Carolina campus. However, these disparities can be fully explained by differential student readiness; once they control for 8th grade test scores, black students are more likely to enroll and succeed than non-Hispanic white students, largely due to the presence of historically black universities.

Our study builds on this literature using the population of students from Texas, with a focus on the racial and ethnic differences in college application behavior; in addition, because we have such a large sample, we are able to estimate differences in application behavior across students within the same high school. Finally, Texas' automatic admissions policy enables us to examine the issue of application behavior for a subsample of the population guaranteed admission, thereby ruling out mistaken beliefs in the probability of acceptance as an explanation for differential application behavior.

III. Data

The data sources for this study were collected by the Texas Workforce Data Quality Initiative (WDQI) at the University of Texas at Austin, funded by the United States Department of Labor. The dataset includes high school enrollment and performance measures for all Texas public school students who graduated in 2008 and 2009. High school measures of college readiness (such as type and number of courses completed and performance on high school exit exams) and basic demographics (race and ethnicity, eligibility for free lunch, English proficiency) were obtained from high school academic records. The WDQI database improves on data sets from prior studies of race and admissions by including all high school graduates rather than just those who expressed interest in college and including a sufficient minority population to disaggregate effects for blacks and Hispanics. In addition, links between high school and university administrative data sets allow for estimation of within high school differences by race and ethnicity, as well as measurement of a high school's historical feeder relationship with a university campus. Finally, the Texas context allows us to directly test the role of admissions uncertainty by comparing automatically admitted students to students who must undergo holistic admissions.

The two high school graduation cohorts include over 490,000 individuals. Reflecting the diversity of Texas, 44 percent of high school graduates in our analysis are white, 39 percent Hispanic, 14 percent black, and 4 percent Asian. We are able to include approximately 430,000 graduates in our regressions after excluding those with incomplete data and high schools that graduated fewer than five students within a year.[4]

Table 1 displays post-high school college enrollment choices by race and ethnicity. Both black and Hispanic students are under-represented in enrollment at elite state flagships universities, other selective state universities, Texas private universities, and out-of-state universities. Black students make up some ground in total enrollment at open-enrollment state universities, while Hispanic students are most likely to not enroll in any type of higher education. In this study, we examine whether these inequalities begin with college application behavior.

Table 2 displays summary statistics for all high school graduates and then disaggregated statistics by race and ethnicity. The graduates were 50 percent female, 44 percent eligible for free/reduce price lunch (FRL), and were on average 17.1 years old the September of their senior year in high school. In terms of college readiness, graduates average 2.5 semesters of Advanced Placement (AP) or International Baccalaureate (IB) courses. Twenty-four percent took AP English, 15 percent took AP mathematics, and 12 percent took AP science. The average graduate attended a high school that is 44 percent FRL, 14 percent black, and 41 percent Hispanic. In terms of the

[4] Typically, missing data are college readiness measures for students who transferred into Texas public schools in their junior or senior year. These students have incomplete high school coursework records and were not required to take the Texas high school exit exam.

high school's emphasis on college readiness, graduates on average attended schools where 11 percent of students earn college credit by passing an AP exam, 67 percent took SATs or ACTs, and SAT scores averaged 976. On average, black and Hispanic students have both lower individual college readiness and lower average high school college readiness than white and Asian students. For example, black and Hispanic students attended high schools where, on average, fewer than 9 percent of students earned AP credit and average SAT scores were below 950. Black students had lower average college readiness than Hispanic students across AP coursework and exit exam scores. Black and Hispanic students attended high schools with similar college readiness, but Hispanic students attended schools with a larger percent minority and FRL, on average.

K-12 public school data were merged with college application data for all those who applied to Texas public colleges and universities. Because all Texas public universities use a common online application called ApplyTexas, we are able to observe application behavior to any Texas public university; we used these records to identify students who applied to any public four-year university within one year of high school graduation.[5] The application data also provides additional information on family income, parent education, and college readiness, including SAT scores and eligibility for top 10% automatic admissions, which is not provided in the high school data set. We also can observe enrollment, financial aid, college grades, and college graduation data for all those who enrolled in any Texas public university.

Unfortunately, we do not have access to college application information for students who applied only to out-of-state schools. However, we were able to use the National Student Clearinghouse (NSC) data from the 2008-09 and 2009-10 academic years to identify Texas high school graduates who did not apply to any four-year Texas public university but who did enroll at

[5] See www.applytexas.org for more information.

any other four-year university in the United States in the fall following graduation. Individuals who applied to any Texas public university *or* enrolled in any other University are considered to be college applicants in our analysis.[6] When we consider applications to the most selective institutions, we include individuals who applied to the state flagship campuses of UT Austin and TAMU or who were observed enrolled at a college that was ranked higher than either Texas flagship university by *Barron's Profiles of American Colleges* (2007).[7]

Table 3 presents the application decisions by race and ethnicity for our graduation cohorts. Row 1 presents statistics for the sample observed in the Texas public university application sample, and row 2 then presents similar statistics when we augment the sample with the NSC enrollment data. For four-year public universities in Texas, black and white application rates were similar at 35 percent for blacks and 36 percent for whites, and the Asian application rate was substantially higher at 52 percent. Hispanic students, who make up the second largest group of graduates, have a much lower application rate at only 27 percent.

The adjustment resulting from incorporating the NSC data is relatively small; the gaps are largest for whites and Asians, with 9 percent of Asians and 7 percent of whites appearing as enrolled in the NSC without applying to any four-year public university in Texas. The gaps are smaller for blacks and Hispanics at only 4 and 3 percent, respectively.

When we look at applications to elite state flagship universities in row 3, black and Hispanic application rates fall to only 5 percent, compared to 14 percent for white and nearly 30

[6] In 2008 and 2009, Texas had a total of 37 public four-year universities, all of which participated in *ApplyTexas*. This includes campuses of the UT System, Texas A&M System, Texas State system, University of Houston System, Texas Tech University, and several other campuses. A full list of included public universities is available from the authors.

[7] The cost of postsecondary education in Texas is about the same across public universities, and it is significantly more expensive for a Texas resident to enroll out-of-state. For example, in 2006, the total cost of attendance (tuition, fees, plus room and board) ranged from \$11,919–\$12,845 at Texas flagship university, and from \$7,445–\$13,027 at other Texas selective public universities. Thus, cost of attendance at state universities, relative to other college options, is not the driving mechanism behind the low enrollment rates, in particular, for Hispanic students observed in Table 1.

percent for Asian students. Row 4 then uses the NSC data to incorporate those who enrolled in four-year universities ranked higher than the flagship universities (according to *Barron's*) and who did not apply to either flagship in Texas. We see that approximately 3 percent of Asians appear as enrolled at elite universities without applying to either flagship university in Texas. The gaps for other groups are quite small. Only 0.6 percent of whites, 0.3 percent of blacks, and 0.2 percent of Hispanics appear as enrolled in higher-ranked universities without applying to at least one Texas flagship university as well. Since the gaps for blacks and Hispanics are always lower than whites, omitted information for students who apply only to non-Texas universities and do not enroll is likely to result in understating racial differences, as it is likely that more whites than blacks or Hispanics also apply and don't enroll.[8]

IV. Decision to Apply

These summary statistics suggest that racial and ethnic gaps in college access can be partially explained by differential application behavior; however, these statistics do not account for students' preparation and ability, which vary by race/ethnicity and influence the likelihood of college admission. In this setting, it is possible that high school sorting and college readiness explains much of the difference in college application behavior for Hispanic students, and it is unclear why blacks have similar application rates to white students.

To better understand the relationship between student characteristics and their application decisions in the context of high school sorting, we estimate the following simple model:

$$(1)\ y_{ist} = \alpha \cdot Race_i + \beta \cdot X_i + \gamma \cdot Z_{st} + \eta_t + \pi_s + \varepsilon_{ist}$$

[8] We may, however, overstate differences between whites and Asians, because Asians are probably also more likely to apply and not enroll than whites. Other demographics, college readiness, and high school quality are similar across the sample of students who applied to a four-year public university in Texas and the larger sample that only appears in the NSC (see Appendix 1).

where y_{ist} is an indicator of whether student i, who attended high school s and graduated at time t, applied to any four-year college. $Race_i$ represents indicator variables for race and ethnicity, X_i is a vector of individual student characteristics such as college readiness and indicators for free and reduced lunch and limited English proficiency. Z_{st} is a time-varying vector of high school characteristics related to both the demographics and the college preparedness of graduates, and η_t represents graduation year indicators.[9] We estimate this equation as a linear probability model both with and without high school fixed effects, π_s.

Table 4 presents results for regression specifications for the full sample of high school graduates for our two main outcomes of interest. As noted earlier, our first outcome is an indicator of whether an individual applies to a four-year university—this is equal to one if the student either applied to any four-year Texas public university or appeared in the NSC as enrolled at any four-year university (panel A). Our second outcome in an indicator of whether an individual applied to a selective university—this is equal to one if the individual applied to either Texas flagship university or appeared in the NSC as enrolled in a four-year university ranked higher than the Texas flagships (panel B).

We first consider the probability of applying to a four-year college (as defined above). Column 1 presents the results from a simple model that controls for race and ethnicity along with a parsimonious set of demographic controls that includes graduation year, age, gender, and indicators for limited English proficiency (LEP) and FRL in high school. This specification confirms substantial differences across races, controlling for this limited set of demographics, in the probability of applying to a public university, with blacks and Asians significantly more likely to apply and Hispanics significantly less likely to apply than whites.

[9] Throughout this study, high school characteristics are lagged one year prior to the student's senior year in high school.

However, these application differences could be due to differences in college preparation or ability. Column 2 adds controls for observable college readiness including the total number of AP semesters taken, indicators for whether the student took AP English, AP mathematics, and AP science courses, the total number of failing grades received on semester report cards, and performance on the state exit exam (standardized composite of English and math scores). All of these additional variables are significant predictors of college application behavior in the expected direction, and the estimated racial and ethnic differences change in distinct ways. The positive black coefficient becomes even more positive, the positive Asian coefficient becomes smaller in magnitude, and the negative significant Hispanic coefficient becomes insignificant and smaller in magnitude. Thus, difference in individual college readiness variables appear to explain much of the difference between white and Hispanic and white and Asian application rates, but not the differences between blacks and whites.

Even controlling for student characteristics, differences in application behavior may still be due to differences in high school quality. School quality can affect students through a variety of channels, including college preparedness, opportunities to take AP coursework, and expectations for higher education. School quality will vary by race and ethnicity due to historic segregation of neighborhoods and school districts, as well as selective admissions at magnet high schools. It is likely that race and ethnicity also influence a student's experiences within a racially integrated high school in ways that affect college choices. To examine this, we add observable measures of high school quality, including demographic measures (logged total enrollment, percent FRL, percent black, and percent Hispanic), indicators of typical college expectations (percent of graduates who enroll in four-year colleges, percent of students earning AP credit, and percent of students taking SATs – all lagged one year to reflect prior graduating classes), and geographical proximity to the nearest public university.[10] Minorities may live further from universities than whites; thus, the costs of attending college may be higher.[11] Column 3 presents the results when we include these controls. Controlling for college readiness, observable high school characteristics, and distance to college, we find once again that a black student is significantly more likely than a white student to apply to college, ceteris paribus. In contrast, Hispanics are again significantly less likely to apply than similar white students, while Asians and whites are not significantly different.

In our final specification, we include high school fixed effects, thereby controlling for any school characteristics that are constant across this two-year time period (column 4). Here, we are comparing students with equal college preparedness who graduated from the same high school to see if there are racial and ethnic disparities in application behavior within high schools. With high school fixed effects, the positive effects of black and negative effects of Hispanic from column 3 are confirmed and with similar magnitudes. We estimate that within high schools, a black student is 13.8 percentage points more likely to apply to college than a similar white student, while a Hispanic student is 6.1 percentage points less likely to apply than a similar white student. For Asians, unlike prior specifications, the within school difference in application behavior is

[10] The distance variables are generated using longitude and latitude to compute the distance between each high school and each public university campus. The program used in the computation of the distance variables is called "Distance and Bearing between Matched Features" (distbyid.avx) by Jenness (2004), which is an application for ArcView. The extension distbyid.avx calculates the distance and bearing between features with identical attribute values, allowing one to generate connecting lines and calculate data for specific sets of features. The output options in this extension include a results table containing various user-selected fields such as: distance and bearing between features, *X*/*Y* coordinates, centroids versus closest edges, etc. Since we had all school address, we first generated *X*/*Y* coordinates based on *longitude* and *latitude* of all of the Texas high schools. Then, using the option *X*/*Y* coordinates, we compute a 2,412 distance matrix. Lastly, the function option in Stata Statistics/Data Analysis called $min(x_1, x_2, x_3, \dots, x_k)$ is used to generate miles to nearest public university and public flagship university. In the case of missing distance data, we used the average distance for non-missing observations within in the same school district or county.

[11] Although many Texas cities have large Hispanic populations, Hispanics are more likely than other races to live in rural areas near the Texas-Mexico border.

significant and negative, suggesting that Asians are less likely to apply than white peers from the same high school by approximately 2 percentage points.[12]

Our results so far indicate that the large Hispanic minority in Texas is least likely to apply to college while black students are more likely to apply than equally qualified whites with similar high school characteristics. While racial and ethnic differences in application to public universities in general is important, work by Hoxby and Avery (2013) suggests that another important difference for long-run economic outcomes may be racial and ethnic differences in application to elite schools. Texas' automatic admissions policy is designed to increase minority admissions to these elite schools, but the effects on minority application are unclear (Long 2004a; Card and Krueger 2005; Niu, Tienda, and Cortes 2006).

Panel B of Table 4 replicates the four specifications above for the outcome of applying to a selective institution as defined earlier.[13] Across all four specifications, black and Hispanic students are significantly less likely than whites to apply to a flagship university. Asian students are significantly more likely to apply than white students, but a large portion of this effect is explained by differences in college readiness and high school quality. The effects for all races and ethnicities are larger in the parsimonious specification in column 5, suggesting that some, but not all, racial and ethnic differences are explained by differential levels of college preparation and high school quality.

[12] To further support these results, we re-estimated all regression specifications on a subset of colleges that excludes Historically Black Colleges and Universities (HBCUs). Since Texas has two public HBCUs, our previous results on black application rates could be driven by these colleges. These regression results are shown in Appendix 2 of this paper. The black student coefficients are a bit smaller in magnitude, but still statistically significant, suggesting that higher application rates for less-qualified black student are not driven by the availability of HBCUs.

[13] For estimation of the probability of applying to a flagship university the "distance to college" variable is replaced with the distance to the nearest of the two flagship campuses.

V. Heterogeneity

So far, our estimates have assumed constant effects of race and ethnicity across both student and high school characteristics. It is possible, however, that these application patterns vary depending on the characteristics of the high school a student attended. Minorities attending a high school where more graduates take AP exams or enroll in college might be more likely to consider college options than those attending a high school where graduates rarely attend college.[14] Application patterns could also vary depending on the characteristics of the student, and in particular on the student's level of college readiness. For example, less college-ready minorities may behave differently than minorities who are more prepared for college. We next examine whether we observe differential college application patterns based on high school and student characteristics.

High School Characteristics

As noted above, it is possible that our results are driven by a tendency for black or Hispanic students, on average, to attend high schools with a low college-going culture or low expectations for postsecondary enrollment. Minority students may have different college application behaviors when they attend a high school with greater postsecondary expectations or with differential treatment of minorities relative to college expectations. Table 5 presents results when we examine whether gaps in application behavior are different at schools with high fraction of Hispanics vs. low fraction of Hispanics and schools with high college enrollment rates for graduates vs. low rates. In each case, a high school is characterized as "high" for a given characteristic if it is in the

[14] For example, Hoxby and Avery (2013) find that low-income, high achieving students who are in schools with other high-achieving students are more likely to apply to elite institutions, while those who are more isolated are not.

top 20% of all high schools statewide and "low" if it is in the bottom 20%.[15] Each specification includes controls for gender, age, race and ethnicity, demographics, college readiness, graduation year, and high school fixed effects.

The findings that black students are more likely to apply to college than whites, and that Hispanic students are less likely to apply to college than white students, are remarkably consistent across high school types. The estimated racial and ethnic differences are smallest in high schools with low college entrance rates (column 4 of panel A). Interestingly, the Hispanic effects were negative even in high schools with the highest college entrance rates (column 3) and percentage Hispanic (column 1). Other high school characteristics were also tested (results not displayed) with consistent results for black and Hispanic students.[16]

In panel B of Table 5, we examine whether racial differences in application to selective universities vary by high school type. Minorities should be more likely to apply from high schools where minorities are more likely to be represented in the top 10% – for example, a high school with more than 90% minority students. The results in panel B also control for gender, age, demographics, college readiness, graduation year, and high school fixed effects. Again, we observe that Hispanic students are less likely to apply to elite flagship universities compared to their white student counterparts, and their lower application rate is remarkably consistent across all high school types. The results for black and Asian students vary by high school type. Most notably,

[15] These cut-off values are 0.115, 0.302, and 0.669 for percentage Hispanic (bottom 20%, median, and top 20%, respectively), and 0.086, 0.223, and 0.366 for percentage of graduates from the high school who enrolled in a four-year college (bottom 20%, median, and top 20%, respectively).

[16] Specifically, we tested specification by the high school's percent FRL, percent SAT-tested and percent earning AP credit, along with specifications by the high school's rate of Hispanic SAT testing, Hispanic AP credit, and Hispanic college entry with similar results. Even in schools with high rates of Hispanic college readiness indicators and high rates of Hispanic college entry, Hispanics were significantly less likely to apply to college than whites with similar college readiness.

black students are significantly more likely to apply than whites at schools with high college enrollment.

College Readiness

We next examine whether racial and ethnic differences are constant across the distribution of student preparation for college. Students should be more likely to apply to college when their high school outcomes signal the potential for college success, and racial gaps might diminish for minority students who are highly qualified for postsecondary education. To examine this, we divide high school graduates by their observed high school preparation in comparison to what is typical for Texas public universities. This comparison proxies for information students might know about their own college readiness through observation of peers. First, we measured average levels of college readiness based on AP courses completed and high school exit exams for freshman entering all non-open enrollment public universities in Texas in the year prior to the student's graduation. We then selected three institutions from across the distribution of average freshman college readiness – the top-ranked campus (UT Austin), a mid-ranked campus (UT San Antonio), and the bottom-ranked campus (UT El Paso) among campuses that are not open enrollment. Next, from among the sample of high school graduates, we identified students whose exit exams and AP courses exceeded that of the average entering freshman at those three institutions during the student's senior year in high school. Thus, a "highly qualified student" is above average compared to an entering freshmen at the top ranked public university, a "somewhat qualified student" is above average for a median public university but not the top ranked, and a "less qualified student" is above average for a low-ranked public university but not the median university. Students who are below average for the bottom ranked campus are excluded from this analysis. High school students who are similar to students who successfully gain admissions and enroll should view themselves as college ready and should receive encouragement to apply from teachers and counselors. In addition, student college readiness should partially overcome the information problem regarding the probability of admissions.

Table 6 displays regression results by college-readiness level for the specifications that includes both student college readiness measures and high school fixed effects. Thus, we are estimating within-school racial differences across the three qualification groups. We again present our results for our two main outcomes of interest: application to any four-year university (panel A) and application to a flagship university (panel B), both as defined earlier. For either outcome, the results for Hispanic students are remarkably similar to prior point estimates. At all college-readiness levels, a Hispanic student is less likely to apply to college than a similarly prepared white student within the same high school. These effects are statistically significant for all groups except highly-qualified applicants to a flagship university. A highly-qualified Hispanic student is 3.2 percentage points less likely to apply to any college than a white student, and a less-qualified Hispanic student is 6.1 percentage points less likely to apply to any college than a white student.

The results for black students in Table 6 provide new insight into the positive effects previously reported. Black students from the medium- and less-qualified groups are significantly more likely to apply to college than similarly qualified whites, but black students from the highly qualified group are less likely to apply to college than highly qualified white students, although this difference is not statistically significant. Thus, the black application rate is high because of higher propensity to apply among students who are more marginal for college admissions. In addition, a highly qualified black student is 5 percentage points more likely to apply to a flagship university than a similar white student from the same high school.

Lastly, as shown in panel B, both highly and somewhat qualified Asian students are more likely to apply to selective universities than white students. Interestingly, these results suggest that Hispanic students are less likely to apply to any college at most levels of college readiness relative to whites, but that less prepared black students are more likely to apply to college than whites, and better prepared black students are more likely to apply to flagships. Asians are more likely to apply to flagship universities than white students. Put differently, among highly qualified graduates, Hispanic students are significantly more likely to "undermatch" (i.e., apply to campuses for which they are overqualified) relative to white students, but Asian students are more likely to "overmatch" (i.e., apply to campuses for which they are underqualified) relative to white students.[17]

VI. College Choice

So far, we have shown that Hispanic students are less likely to apply to four-year postsecondary education relative to whites, black students are more likely to apply than whites, and that Asian students are more likely to apply to selective universities in comparison to white students. Next, we examine how college characteristics influence application behavior by race and ethnicity. Why do students choose to apply to one university over another? Are there particular institutional characteristics that are more appealing to students of different races and ethnicities?

A number of papers have estimated college choice behavior. Long (2004) first examined college enrollment choices using McFadden's (1973) choice model. This strategy exploits the

[17] In other work (Black, Cortes, and Lincove 2015), we estimated interactions between college qualifications, as defined above, and the propensity to apply to elite flagship public universities by race and ethnicity. Here, we find that Hispanic students in the top 11-25% who were highly qualified for flagships were less likely to apply to flagships than similar white students. In addition, we find that black undermatch occurs among top 10% graduates who choose not to take advantage of automatic admissions to flagships (but do apply to less competitive campuses), while the Hispanic undermatch occurs among highly qualified students who miss the cut for automatic admissions and must compete in a holistic process.

variation across college characteristics in a student's choice set to estimate the influence of observable characteristics (such as tuition, distance from home, and college inputs) on enrollment. Hoxby and Avery (2013) applied the same approach to college application decisions to examine the application behavior of high-achieving, low-income high school students to explain the phenomenon of "undermatch," where highly qualified students opt for less competitive universities, despite a high probability of admissions and financial support at elite universities.[18] Here, we expand on Hoxby and Avery (2013) to better understand racial and ethnic differences in application choices. This strategy provides insight into how the characteristics of public universities may contribute to racial gaps in applications.

We also expand on prior models of college choice by examining academic, social, and informational influences on student choices. Prior studies primarily test how students are influenced by campus academics by estimating the effects of similarities or differences between the student's SAT scores and campus average, with controls for geographic and financial accessibility. To better understand racial and ethnic differences in application, we also consider characteristics describing the social setting of the college campus. Minority students may be reluctant to enroll in campuses with few students from the same racial or ethnic group. We also include measures of the feeder patterns between the student's high school and the college campus. Students may have better information about campuses attended by prior graduates from their own high school and may be more willing to attend a campus if their older peers are currently attending that campus.

Following Long (2004) and Hoxby and Avery (2013), we model the college application decision as a conditional logit:

[18] Bettinger and Long (2004) use the same empirical strategy to investigate the effects of a specific college input and academic remediation on college outcomes.

$$(2)\ \Pr(y_i = j) = \frac{e^{Z_{ij} \cdot \beta}}{\sum_j e^{Z_{ij} \cdot \beta}}$$

$$(3)\ Z_{ij} \cdot \beta = \beta_1 \cdot C_j + \beta_2 \cdot Distance_{ij} + \beta_3 \cdot Academic_{ij} + \beta_4 \cdot Demog_j + \beta_5 \cdot Feeder_{ij} + \varepsilon_{ij}$$

where $\Pr(y_i = j)$ is an indicator if student i applied to university j, C_j represents in-state tuition cost at institution j, $Distance_{ij}$ is the distance from student i's high school address to institution j, $Academic_{ij}$ is a vector of indicator variables representing the student i's academic readiness compared to mean readiness on campus j (i.e., the distance between the student's SAT scores and the institution mean), $Demog_j$ is a vector of campus racial and ethnic demographics based on prior year's freshmen class at institution j (i.e., % Black, % Hispanic, and % Asian enrolled on campus), $Feeder_{ij}$ is a vector of variables indicating feeder patterns of student i's high school to each institution j (i.e., # enrolled from the same high school in prior year, # of college graduates from the same high school in prior year, # enrolled of the same race/ethnicity from the same high school, and # of college graduates of the same race/ethnicity from the same high school – all lagged one year prior to the student's high school graduation), and lastly, ε_{ij} is independent and identically distributed with the extreme value distribution.

In the estimation, a student appears in one observation for *each* four-year public university in Texas, reflecting the full choice set of public universities. The outcome variable is coded as one if the student applied to that campus and zero otherwise, and multiple positive outcomes occur for students who applied to more than one university. The conditional logit requires that individuals must have at least one positive outcome across the choice set, so this analysis is limited to students who applied to at least one university. Six universities that received fewer than five total applications are also omitted, creating a choice set of 31 public universities. The conditional logit is estimated with student fixed effects, controlling for all fixed student characteristics. All independent variables must vary across college campuses within a student's choice set. Our estimations include robust standard errors for clustering within high schools.

Table 7 presents our first set of results on what specific institutional attributes are appealing to students. Conditional logit results are displayed as odds ratios of the change in the odds of applying to a campus based on marginal changes in a campus characteristic, ceteris paribus. We estimate three specifications across racial and ethnic groups. Similar to prior work (Long, 2004; Hoxby and Avery 2013), the first specification includes controls for tuition, distance, and academic match (columns 1-4). Our second specification adds controls for social match, measured as the proportion of each minority race and ethnic group on the campus (columns 5-8). Lastly, the third specification adds controls for high school feeder patterns both for the whole high school and for students of the same race and ethnicity as the student (columns 9-12).

Across specifications, students of all races and ethnicities are more likely to apply to universities that are closer to home (either within commuting or visiting distance). Controlling for academic match, Hispanic students are the most sensitive to distance, followed by blacks and Asians, and white students are the least influenced by distance. In terms of academic campus match, all races and ethnicities are more likely to apply to campuses where their SATs are below the campus mean, and less likely to apply to campuses where their SATs are above the campus mean. However, Hispanic and black students are more likely to apply to campuses that are a far reach academically, with average SATs 200 or more points above their own score, while whites are significantly less likely to apply to a campus that are a far reach. With higher average SAT scores, white and Asian students have fewer "reach" campuses than black and Hispanic students, but the evidence does not suggest that a lack of close academic match campuses explains racial and ethnic differences in application behavior.

Looking at specifications with controls for social match, that is the racial demographic composition of the college campus (columns 5-8), we observe that black, Hispanic, and Asian students are all more likely to apply to campuses with a higher concentration within their own racial and ethnic group. The effect is particularly large for Asian and black students. Interestingly, whites' application behavior is negatively associated with minority concentrations of all other racial and ethnic groups on campus. For Asian students, the coefficients for academic match variables are influenced by the addition of campus racial demographic variables (column 7). Specifically, controlling for the percent Asian on campus, Asians are most likely to enroll on a campus where their SAT scores are within 100 points of the campus mean. This suggests that Asians are most likely to apply to campuses with a concentrated population of other Asian students with similar academic readiness. Hispanic and black students, in contrast, remain more likely to apply to reach schools, holding racial demographic composition of the university constant.

Our final specifications add controls for the information and familiarity students would gain about a campus by attending a high school that frequently sends graduates from their own school to that particular college campus. Our measures include the number of students from one's own high school who enrolled at the college in the previous year, as well as the number of students from one's own high school who graduated from that college in the previous year. We calculate both of these measures for the high school overall as well as for the student's own racial group. Hispanic and black students are more likely to apply to a campus that has recently enrolled any students from the same high school and recently graduated students from the same high school of the same race. Asians are positively influenced by both recent enrollment and recent graduation from their high school, but the race of the enrollers and completers is not relevant. White students are influenced by enrollment and completion of any race, as well as by enrollment specifically by whites. It appears that all students learn something about a college campus through the feeder relationship of their high school peers, but for black and Hispanic students, information about successful completion by same race and ethnicity of older peers is also important. The addition of high school feeder variables does reduce the size of coefficients on campus level racial composition variables, but large effects remain, particularly for black and Asian students.

Differences in application behavior by race and ethnicity could mask associated differences in income levels across racial and ethnic groups. In Table 8, we further disaggregate students into three brackets of family income (below \$40,000, \$40-80,000, and above \$80,000). Results are displayed for the full specification in columns 1-4 for low income, columns 5-8 for middle income, and columns 9-12 for high income. We find that students of all races and ethnicities are less sensitive to distance to college as income level increases. The effects of academic matching are similar across income brackets, and there is little evidence that low-income minorities are less likely to apply to reach schools than high-income minorities. The effects of social match are different across income brackets, however, with the presence of students from the same minority having a smaller influence on black and Hispanic students as family income increases. We find that high-income Hispanics are actually are less likely to apply to a campus with a high proportion of Hispanic students, holding other characteristics equal. At all income levels, white students are less likely to apply to campuses with a high proportion of students in all minority groups. The results for high school feeder variables are similar across income brackets, with black and Hispanic students at all income levels influenced by the successful completion of same race students from their high schools.

Finally, we consider the role of information in college application behavior. Hoxby and Avery (2013) hypothesize that college undermatch is related to a lack of information about admissions and financial aid among low-income, high-achieving high school students. In our final estimation, we exploit Texas's unique college admissions policy to test this hypothesis in relation to racial and ethnic application gaps in the state. Specifically, we examine whether racial and ethnic differences in college application behavior are similar between students in the top 10%, who have full information about their admission to the state's top universities, and those in the top 11-25% or bottom 75%, who face typical college admissions uncertainty.

The results, reported in Table 9, show very little effect of automatic admissions on the application choices of black, Asian, and white students. In comparison, Hispanic students in the top 10% are the only minority group not significantly influenced by same-race enrollment on campus (column 2 of panel A). Similarly, Hispanics in the top 10% are not significantly influenced by the feeder history of same-race students from their high school to the campus, while Hispanics subject to admissions uncertainty are more likely to apply to campuses where Hispanic students from their high school have recently completed a college degree.

VII. Conclusion

Minority access to higher education is a growing concern across the nation. Obstacles to higher education for minorities will limit growth in human capital and competitiveness for the United States in the very near future. In this study, we identify the college application decision as a pivotal first step in college access that precedes the processes of admissions and enrollment. Our study benefits from the use of a statewide student dataset that includes the full range of student ability and college readiness that exists within two high school graduation cohorts, and a single college application procedure that is common to most four-year universities in the state. We are also able to provide further insight into the decision process by analyzing campus preferences of applicants in a state where highly-qualified students are automatically admitted to the top public universities.

From a standpoint of population size, the growing Hispanic minority (soon to be a majority in Texas) is of great concern in Texas and across the nation. We consistently find that Hispanic students are least likely of all ethnic groups to apply to college overall and to elite flagship universities in particular. This finding is robust to controls for college readiness, high school quality, and high school fixed effects. The gap between Hispanic and white students in college application is consistent across levels of observable college readiness and high school quality. Even when Hispanic students attend high schools where a majority of students move on to college or where Hispanics are statistically high likely to achieve automatic admissions, Hispanic students are significantly less likely to apply to college than white students.

We find a more nuanced type of inequality in the college application behavior of black high school graduates, an issue not previously identified in studies that aggregate black and Hispanic students as a single group. On average, black students are actually more likely to apply to college than white and Hispanic students with similar levels of college readiness and high school quality. However, this is driven mostly by high application rates among less-prepared black students. Among the most qualified students, blacks have similar overall application rates to whites but are more likely to apply to flagship universities.

We also find that college application decisions for minorities are responsive to more than just the average academic performance of students on a campus. Black, Hispanic, and Asian students are more sensitive than whites to distance to college, and black, Hispanic, and Asian students are all influenced by the presence of same-race students on campus. Black and Hispanic students are also influenced by the historical feeder pattern of their high school to a campus, including past successful degree completion of same-race students from their high school. These social and information effects are mitigated only among high-income Hispanics and Hispanics who are guaranteed admission. Thus, minority application rates respond not only to student college readiness, but also the enrollment and outcomes of minority students on a campus. Automatic admissions might expand the application choices of Hispanics to include campuses with fewer Hispanics students, but black students are highly responsive to the racial composition of a campus even when they are guaranteed admissions to any campus.

While our results provide significant insight into the racial and ethnic disparities in college application behavior, we can offer little insight into the source of these inequalities. Our findings of race and ethnicity effects are robust to the inclusion of high school fixed effects, and the significant effect of high school characteristics on minority students suggest that high schools are an important source of information regarding college application. Overall, these potential frictions are not offset by the prospect of guaranteed admissions policies in higher education.

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Table 1: Summary Statistics - Racial and Ethnic Composition of High School Graduates by College Enrollment

	Texas Flagship (1)	Other Texas Public Universities (2)	Texas Open-Enrollment Universities (3)	Texas Private 4-Year College or University (4)	Out-of-State 4-Year College or University (5)	2-Year College (6)	Not Enrolled (7)
White (non-Hispanic)	0.638	0.474	0.438	0.584	0.622	0.468	0.351
Black	0.049	0.115	0.403	0.126	0.180	0.125	0.140
Hispanic	0.188	0.337	0.136	0.234	0.139	0.369	0.482
Asian	0.123	0.070	0.020	0.053	0.053	0.033	0.023
No. of observations	23,836	66,744	14,233	21,155	18,660	128,341	217,738

Notes: Based on enrollment in fall semester following high school graduation.

Sources: Authors' calculations from Texas Workforce Data Quality Initiative (WDQI) Database, graduating student cohorts from spring 2008 and 2009. National Student Clearinghouse (NSC) data from the 2008-09 and 2009-10 academic years.

Table 2: Summary Statistics - Student and High School Characteristics by Race and Ethnicity

	Black	Hispanic	Asian	White	All Graduates
	(1)	(2)	(3)	(4)	(5)
Demographics:					
Female	0.518	0.507	0.488	0.494	0.502
Age	17.12	17.16	17.03	17.11	17.12
	(0.500)	(0.526)	(0.539)	(0.434)	(0.486)
Free/reduced lunch eligible	0.503	0.626	0.251	0.134	0.435
Limited English proficient	<0.01	<0.01	0.064	<0.01	0.137
High school coursework:					
No. of AP/IB courses completed (semesters)[a]	1.56	1.94	6.72	2.90	2.50
	(3.31)	(3.66)	(7.08)	(4.59)	(4.34)
Took AP English language arts	0.182	0.200	0.449	0.277	0.241
Took AP mathematics	0.074	0.096	0.437	0.184	0.145
Took AP science	0.064	0.081	0.387	0.141	0.117
No. of courses failed (semesters)	3.54	4.01	1.47	2.01	2.97
	(4.67)	(5.20)	(3.22)	(3.66)	(4.54)
High school exam exit (z-scores):					
English language arts	-0.224	-0.187	0.313	0.213	0.008
	(0.947)	(0.958)	(1.003)	(0.975)	(0.989)
Mathematics	-0.366	-0.212	0.660	0.243	0.008
	(0.860)	(0.928)	(1.094)	(0.982)	(0.992)
Science	-0.34	-0.268	0.477	0.301	0.008
	(0.872)	(0.907)	(1.049)	(0.983)	(0.991)
Social studies	-0.24	-0.243	0.379	0.261	0.009
	(0.936)	(0.949)	(0.983)	(0.962)	(0.989)
High school characteristics:					
% Free/reduced lunch eligible	0.490	0.587	0.300	0.305	0.439
	(0.213)	(0.247)	(0.200)	(0.175)	(0.249)
% Black	0.338	0.105	0.168	0.108	0.141
	(0.237)	(0.136)	(0.131)	(0.105)	(0.163)
% Hispanic	0.327	0.636	0.285	0.256	0.414
	(0.193)	(0.291)	(0.186)	(0.183)	(0.292)
% Earning AP credit	0.087	0.086	0.188	0.130	0.110
	(0.110)	(0.114)	(0.141)	(0.132)	(0.125)
% SAT tested	0.659	0.636	0.767	0.688	0.667
	(0.195)	(0.216)	(0.182)	(0.209)	(0.211)
Average SAT score	941.51	934.13	1031.51	1018.32	976.00
	(100.02)	(92.98)	(88.93)	(75.44)	(96.19)
Number of Graduates	67,215	188,835	19,405	213,486	490,707
Percent of Graduates	0.137	0.385	0.040	0.435	1.000

Notes: Summary statistics for graduates of Texas public high schools from 2008 and 2009. Standard errors are in parentheses for continuous variables. [a]Total number of Advanced Placement (AP) and International Baccalaureate (IB) courses completed (semesters).

Sources: Authors' calculations from Texas Workforce Data Quality Initiative (WDQI) Database, graduating student cohorts from spring 2008 and 2009.

Table 3: Summary Statistics by Four-Year College Application Rates for Texas High School Graduates

	Black (1)	Hispanic (2)	Asian (3)	White (4)
Applied to any college	0.351	0.267	0.524	0.364
Applied to any college or enrolled	0.393	0.295	0.613	0.434
Applied to flagship	0.050	0.054	0.295	0.141
Applied to flagship or enrolled at higher-ranked campus	0.053	0.056	0.326	0.147
Number of Graduates	67,215	188,835	19,405	213,486
Percent of Graduates	0.137	0.385	0.040	0.435

Notes: Includes all Texas high school graduates from 2008 and 2009. Application data are available for students who applied to Texas public universities. Additional enrollment data are available for all U.S. universities through the National Student Clearinghouse (NSC).

Sources: Authors' calculations from Texas Workforce Data Quality Initiative (WDQI) Database, graduating student cohorts from spring 2008 and 2009. National Student Clearinghouse (NSC) data from the 2008-09 and 2009-10 academic years. Schools ranked higher than Texas flagships universities were identified from 2008 & 2009 Barrons' rankings.

Table 4: Ordinary Least Squares Regression Results for Applying to College

	Panel A: Any 4-Year University				Panel B: Flagship University or Better			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Race and ethnicity:								
Black	0.023*	0.127*	0.135*	0.138*	-0.074*	-0.016*	-0.010*	-0.008*
	(0.008)	(0.006)	(0.005)	(0.004)	(0.004)	(0.003)	(0.002)	(0.002)
Hispanic	-0.077*	-0.002	-0.062*	-0.061*	-0.060*	-0.025*	-0.022*	-0.021*
	(0.009)	(0.007)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)
Asian	0.177*	0.018*	-0.005	-0.019*	0.185*	0.048*	0.040*	0.026*
	(0.009)	(0.009)	(0.007)	(0.006)	(0.011)	(0.008)	(0.007)	(0.005)
Other demographics:								
Free/reduced lunch eligible	-0.114*	-0.047*	-0.053*	-0.054*	-0.070*	-0.030*	-0.020*	-0.020*
	(0.006)	(0.005)	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)
Limited English proficient	-0.204*	-0.096*	-0.098*	-0.097*	-0.060*	0.009*	0.009*	0.011*
	(0.006)	(0.006)	(0.006)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)
High school coursework (college readiness):								
No. of AP and IB semesters		0.014*	0.011*	0.013*		0.017*	0.016*	0.018*
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Took AP English language arts		0.132*	0.129*	0.138*		0.013*	0.017*	0.019*
		(0.007)	(0.005)	(0.004)		(0.005)	(0.005)	(0.004)
Took AP mathematics		0.121*	0.121*	0.116*		0.151*	0.147*	0.140*
		(0.005)	(0.004)	(0.004)		(0.006)	(0.005)	(0.004)
Took AP science		0.051*	0.048*	0.048*		0.058*	0.057*	0.056*
		(0.006)	(0.005)	(0.004)		(0.005)	(0.005)	(0.004)
Total semesters failed		-0.020*	-0.018*	-0.020*		-0.003*	-0.003*	-0.003*
		(0.001)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
High school exit exam (z-score)[a]		0.079*	0.071*	0.067*		0.038*	0.035*	0.031*
		(0.002)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Geographic proximity: [b]								
Distance to nearest university (100 miles)			-0.051				-0.059*	
			(0.031)				(0.005)	
Distance squared			0.016				0.008*	
			(0.029)				(0.001)	
No. of observations	427,300	427,300	427,300	427,300	427,300	427,300	427,300	427,300
Other controls:								
High school characteristics[c]			Yes				Yes	
High school fixed effects				Yes				Yes

Notes: Robust standard errors (shown in parentheses) are clustered at the high school level. Overall college application rate to a 4-year public university is 0.382 (panel A) and flagship university application rate is 0.106 (panel B). Regressions also control for graduation year, gender, and age. Linear probability models for high school graduates from 2008 and 2009. Panel A dependent variable is equal to one if the student applied to any Texas 4-year university or enrolled at any 4-year university within one year of graduation. Panel B dependent variable is equal to one if the student applied to a Texas flagship public university (UT Austin or Texas A&M), enrolled in a Texas flagship public university, or enrolled at an elite 4-year university that is ranked higher than UT Austin by Barron's within one year of graduation. Enrollment data are available for all U.S. universities through the National Student Clearinghouse (NSC). [a]High school exit exam scores are a composite z-score of both English language arts and mathematics. [b]The distance variables are generated using longitude and latitude to compute the distance between all high schools and public universities in Texas. Panel A includes the distance to the nearest 4-year public university. Panel B includes the distance to the nearest flagship university. [c]Characteristics include logged enrollment, % FRL, % Black, % Hispanic, lagged measures of % of graduates entering 4-year colleges, % earning AP credit, and % SAT tested.

* indicates statistical significance at $p<0.05$ level.

Table 5: Ordinary Least Squares Regression Results for Applying to College by High School Characteristics

	Panel A: Any 4-Year University				Panel B: Flagship University or Better			
	% Hispanic		College Entrance Rate		% Hispanic		College Entrance Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Top 20%	Bottom 20%	Top 20%	Bottom 20%	Top 20%	Bottom 20%	Top 20%	Bottom 20%
Race and ethnicity:								
Black	0.157*	0.114*	0.113*	0.049*	0.125*	0.084*	0.075*	0.038*
	(0.016)	(0.012)	(0.008)	(0.009)	(0.015)	(0.012)	(0.007)	(0.008)
Hispanic	-0.026*	-0.049*	-0.072*	-0.017*	-0.022*	-0.049*	-0.068*	-0.015*
	(0.009)	(0.009)	(0.006)	(0.005)	(0.009)	(0.009)	(0.006)	(0.005)
Asian	0.017	-0.040*	-0.022*	0.007	0.017	-0.038*	-0.022*	0.007
	(0.023)	(0.010)	(0.006)	(0.018)	(0.022)	(0.011)	(0.007)	(0.018)
Other demographics:								
Free/reduced lunch eligible	-0.040*	-0.062*	-0.072*	-0.008*	-0.039*	-0.053*	-0.066*	-0.007*
	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)
Limited English proficient	-0.117*	-0.159*	-0.170*	-0.021*	-0.116*	-0.164*	-0.162*	-0.022*
	(0.009)	(0.021)	(0.011)	(0.009)	(0.009)	(0.022)	(0.011)	(0.009)
High school coursework (college readiness):								
No. of AP and IB semesters	0.021*	0.005*	0.007*	0.028*	0.022*	0.006*	0.007*	0.027*
	(0.002)	(0.002)	(0.001)	(0.005)	(0.002)	(0.002)	(0.001)	(0.005)
Took AP English language arts	0.115*	0.144*	0.123*	0.015	0.113*	0.135*	0.123*	0.010
	(0.009)	(0.013)	(0.007)	(0.018)	(0.009)	(0.013)	(0.007)	(0.018)
Took AP mathematics	0.062*	0.115*	0.095*	0.121*	0.062*	0.126*	0.102*	0.124*
	(0.010)	(0.010)	(0.006)	(0.032)	(0.010)	(0.011)	(0.006)	(0.033)
Took AP science	0.040*	0.056*	0.037*	0.024	0.041*	0.053*	0.038*	0.019
	(0.010)	(0.013)	(0.006)	(0.031)	(0.011)	(0.012)	(0.006)	(0.031)
Total semesters failed	-0.015*	-0.028*	-0.032*	-0.002*	-0.015*	-0.024*	-0.029*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.002)	(0.001)	(0.000)
High school exit exam (z-score)[a]	0.056*	0.078*	0.067*	0.015*	0.055*	0.073*	0.066*	0.014*
	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
No. of observations	94,289	55,795	132,050	19,938	94,289	55,795	132,050	19,938
Other controls:								
High school fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors (shown in parentheses) are clustered at the high school level. Regressions also control for graduation year, gender, and age. Linear probability model regressions for high school graduates from 2008 and 2009. Panel A dependent variable is equal to one if the student applied to any Texas 4-year university or enrolled at any 4-year university within one year of graduation. Panel B dependent variable is equal to one if the student applied to a Texas flagship public university (UT Austin or Texas A&M), enrolled in a Texas flagship public university, or enrolled at an elite 4-year university that is ranked higher than UT Austin by Barron's within one year of graduation. Enrollment data are available for all U.S. universities through the National Student Clearinghouse (NSC). Regression subsamples are based on characteristics of high school attended compared to statewide quintiles. Quintile cut-off values are 0.115 and 0.669 for percentage Hispanic (bottom 20% and top 20%, respectively); 0.086 and 0.366 for percentage of graduates from the high school who enrolled in a four-year college (bottom 20% and top 20%, respectively). [a]High school exit exam scores are a composite z-score of both English language arts and mathematics.

* indicates statistical significance at p<0.05 level.

Table 6: Ordinary Least Squares Regression by College-Readiness Levels for Applying to College

	College Readiness Based on High School Exit Exam and Advanced Placement Coursework[a]					
	Panel A: Any 4-Year University			Panel B: Flagship University or Better		
	(1)	(2)	(3)	(4)	(5)	(6)
	Highly Qualified	Somewhat Qualified	Less Qualified	Highly Qualified	Somewhat Qualified	Less Qualified
Race and ethnicity:						
Black	-0.021	0.073*	0.136*	0.050*	-0.000	-0.012
	(0.017)	(0.008)	(0.011)	(0.023)	(0.010)	(0.010)
Hispanic	-0.032*	-0.032*	-0.061*	-0.022	-0.027*	-0.040*
	(0.010)	(0.006)	(0.009)	(0.015)	(0.006)	(0.007)
Asian	-0.004	-0.004	0.004	0.073*	0.042*	0.002
	(0.008)	(0.007)	(0.013)	(0.012)	(0.009)	(0.013)
Other demographics:						
Free/reduce lunch (FRL) eligible	-0.043*	-0.059*	-0.064*	-0.074*	-0.068*	-0.041*
	(0.010)	(0.006)	(0.007)	(0.016)	(0.006)	(0.006)
Limited English proficient (LEP)	-0.119	-0.280*	-0.257*	-0.130	-0.166*	-0.076*
	(0.105)	(0.038)	(0.040)	(0.111)	(0.032)	(0.027)
High school coursework (college readiness):						
No. of AP and IB semesters	-0.001	0.008*	0.013*	0.006*	0.016*	0.014*
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Took AP English language arts (ELA)	-0.000	0.024*	0.033*	-0.018	0.038*	0.032*
	(0.017)	(0.006)	(0.008)	(0.026)	(0.007)	(0.007)
Took AP mathematics	0.030*	0.059*	0.067*	0.175*	0.110*	0.093*
	(0.012)	(0.004)	(0.006)	(0.017)	(0.006)	(0.007)
Took AP science	0.010	0.018*	0.040*	0.041*	0.054*	0.053*
	(0.007)	(0.004)	(0.007)	(0.012)	(0.005)	(0.007)
Total semesters failed	-0.034*	-0.039*	-0.040*	-0.059*	-0.041*	-0.025*
	(0.005)	(0.002)	(0.002)	(0.006)	(0.002)	(0.001)
High school exit exam (z-score)[b]	-0.004	0.032*	0.061*	0.044*	0.088*	0.093*
	(0.006)	(0.004)	(0.006)	(0.009)	(0.004)	(0.007)
Constant	1.035*	0.475*	0.190	0.298	-0.091	-0.144
	(0.155)	(0.095)	(0.145)	(0.217)	(0.110)	(0.127)
No. of observations	13,037	53,412	30,521	13,037	53,412	30,521
Dependent variable mean	0.889	0.815	0.698	0.653	0.404	0.218
Other controls:						
High school fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors (shown in parentheses) are clustered at the high school level. All regressions control for graduation year, gender, and age. Linear probability model regressions for high school graduates from 2008 and 2009. Panel A dependent variable is equal to one if the student applied to any Texas 4-year university or enrolled at any 4-year university within one year of graduation. Panel B dependent variable is equal to one if the student applied to a Texas flagship public university (UT Austin or Texas A&M), enrolled in a Texas flagship public university, or enrolled at an elite 4-year university that is ranked higher than UT Austin by Barron's within one year of graduation. Enrollment data are available for all U.S. universities through the National Student Clearinghouse (NSC).

[a]College qualification levels are based on the average performance of entering freshmen on high school exit exams and Advanced Placement (AP) coursework completion at Texas state universities of varying levels of selectivity. "Highly qualified" is greater than the average entering freshman at the University of Texas at Austin (most selective state university). "Somewhat qualified" is less than average for UT Austin, but greater than average for the University of Texas at San Antonio (mid-range state university). "Less qualified" is less than average for UT San Antonio, but greater than average for the University of Texas at El Paso (less selective state university).

[b]High school exit exam scores are a composite z-score of both English language arts and mathematics.

* indicates statistical significance at $p<0.05$ level.

Table 7: Factors Associated with Applying to College by Race and Ethnicity - Results of a Conditional Logit Estimation (expressed in odds ratios)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Geographic Proximity: [a]	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White
Can commute (distance$\leq$ 60 miles)	14.863*	63.030*	20.098*	8.744*	8.550*	46.519*	18.721*	12.398*	4.407*	15.335*	5.485*	5.323*
	(0.651)	(5.083)	(1.179)	(0.594)	(0.497)	(3.025)	(1.225)	(0.752)	(0.278)	(0.953)	(0.436)	(0.338)
Can visit home (distance between 61-250 miles)	4.942*	6.819*	4.183*	3.123*	3.464*	5.271*	4.381*	3.271*	2.929*	4.171*	2.905*	2.612*
	(0.185)	(0.319)	(0.199)	(0.107)	(0.137)	(0.199)	(0.219)	(0.096)	(0.112)	(0.176)	(0.146)	(0.072)
College Preparedness: Measures of SAT Match [b]												
Own SAT 100-149 pts above campus mean	0.571*	0.523*	0.536*	0.612*	0.421*	0.506*	0.693*	0.605*	0.439*	0.506*	0.739*	0.653*
	(0.019)	(0.015)	(0.027)	(0.010)	(0.014)	(0.015)	(0.038)	(0.012)	(0.015)	(0.014)	(0.040)	(0.014)
Own SAT 150-199 pts above campus mean	0.389*	0.310*	0.353*	0.422*	0.230*	0.303*	0.548*	0.406*	0.246*	0.302*	0.579*	0.462*
	(0.017)	(0.014)	(0.024)	(0.009)	(0.009)	(0.013)	(0.044)	(0.012)	(0.010)	(0.012)	(0.048)	(0.015)
Own SAT greater than 200 pts above campus mean	0.127*	0.083*	0.065*	0.103*	0.042*	0.083*	0.183*	0.106*	0.053*	0.077*	0.203*	0.141*
	(0.011)	(0.007)	(0.008)	(0.004)	(0.003)	(0.006)	(0.024)	(0.005)	(0.004)	(0.006)	(0.026)	(0.007)
Own SAT 1-99 pts below campus mean	1.537*	1.924*	1.476*	1.375*	2.348*	1.950*	1.006	1.409*	2.249*	1.913*	0.965	1.271*
	(0.038)	(0.059)	(0.083)	(0.028)	(0.060)	(0.056)	(0.061)	(0.036)	(0.059)	(0.047)	(0.061)	(0.035)
Own SAT 100-149 pts below campus mean	1.702*	2.505*	1.740*	1.396*	3.538*	2.632*	0.894	1.457*	3.259*	2.569*	0.794*	1.200*
	(0.058)	(0.124)	(0.155)	(0.050)	(0.129)	(0.122)	(0.087)	(0.067)	(0.121)	(0.097)	(0.082)	(0.059)
Own SAT 150-199 pts below campus mean	1.687*	2.591*	1.673*	1.143*	4.211*	2.776*	0.720*	1.200*	3.804*	2.768*	0.659*	0.965
	(0.060)	(0.157)	(0.206)	(0.052)	(0.175)	(0.157)	(0.098)	(0.072)	(0.158)	(0.135)	(0.090)	(0.060)
Own SAT 200 or more pts below campus mean	1.285*	2.246*	1.194	0.616*	4.883*	2.516*	0.318*	0.689*	4.319*	2.501*	0.287*	0.507*
	(0.058)	(0.212)	(0.206)	(0.039)	(0.292)	(0.212)	(0.063)	(0.058)	(0.252)	(0.177)	(0.057)	(0.045)
Campus Racial Demographics (prior year's freshman class):												
% Black enrolled on campus					8.572*	0.222*	0.162*	0.068*	6.566*	0.306*	0.208*	0.067*
					(0.627)	(0.020)	(0.016)	(0.004)	(0.558)	(0.023)	(0.022)	(0.003)
% Hispanic enrolled on campus					0.564*	2.269*	1.637*	0.210*	0.442*	1.269*	0.799	0.129*
					(0.046)	(0.170)	(0.193)	(0.013)	(0.037)	(0.092)	(0.105)	(0.007)
% Asian enrolled on campus					0.963	0.590*	532.241*	0.002*	0.676	0.458*	294.081*	0.013*
					(0.194)	(0.140)	(212.072)	(0.001)	(0.140)	(0.081)	(102.809)	(0.003)
Feeder Patterns of Student's High School to College Campus:												
# Enrolled from same high school in prior year									1.029*	1.032*	1.031*	1.017*
									(0.004)	(0.006)	(0.006)	(0.004)
# Graduated from same high school in prior year									0.996	1.002	1.026*	1.019*
									(0.004)	(0.005)	(0.006)	(0.007)
# Enrolled of same race from same high school									1.004	0.989	1.016	1.017*
									(0.009)	(0.007)	(0.015)	(0.005)
# Graduated of same race from same high school									1.109*	1.048*	0.981	0.996
									(0.017)	(0.012)	(0.012)	(0.009)
No. of observations	616,559	1,374,664	305,660	2,250,259	616,559	1,374,664	305,660	2,250,259	616,559	1,374,664	305,660	2,250,259

Notes: Conditional logit estimates are reported in odds ratios (with student fixed effects) of the probability of application to 31 state universities. Robust standard errors for clustering within high schools. Sample includes students who graduated from a Texas public high school in 2008 and 2009 and applied to at least one Texas public university for admission in the fall following high school graduation. A small number of students (<1%) are omitted who were missing distance to college or SAT scores. [a]Distance is measured from the student's high school to each college campus. [b]Dichotomous measures of SAT match (omitted group has SATs 0-99 points above campus mean). Specifications also control for in-state tuition. All college campus variables (i.e., enrollment, graduation, SAT, and tuition) are lagged one year to information the student would have as she enterred her senior year of high school.

* indicates statistical significance at p<0.05 level.

Table 8: Factors Associated with Applying to College by Family Income and Race/Ethnicity - Results of a Conditional Logit Estimation (expressed in odds ratios)

	Panel A: Low Income (<$40k)				Panel B: Middle Income ($40-80k)				Panel C: High Income (>$80k)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Geographic Proximity: [a]	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White
Can commute (distance $\leq$ 60 miles)	5.458*	19.365*	8.378*	11.779*	3.540*	13.148*	5.489*	7.838*	2.761*	6.581*	3.888*	3.491*
	(0.395)	(1.327)	(0.858)	(0.785)	(0.254)	(0.839)	(0.552)	(0.452)	(0.256)	(0.518)	(0.455)	(0.226)
Can visit home (distance between 61-250 miles)	3.246*	4.688*	3.319*	3.469*	2.568*	3.760*	2.712*	2.963*	2.352*	3.036*	2.928*	2.283*
	(0.155)	(0.253)	(0.262)	(0.139)	(0.119)	(0.162)	(0.188)	(0.095)	(0.128)	(0.141)	(0.218)	(0.065)
College Preparedness: Measures of SAT Match [b]												
Own SAT 100-149 pts above campus mean	0.441*	0.495*	0.535*	0.613*	0.459*	0.527*	0.742*	0.624*	0.450*	0.579*	0.897	0.675*
	(0.021)	(0.021)	(0.048)	(0.023)	(0.029)	(0.024)	(0.057)	(0.019)	(0.032)	(0.029)	(0.068)	(0.018)
Own SAT 150-199 pts above campus mean	0.255*	0.308*	0.350*	0.388*	0.257*	0.312*	0.481*	0.421*	0.269*	0.375*	0.926	0.515*
	(0.015)	(0.017)	(0.040)	(0.019)	(0.020)	(0.019)	(0.056)	(0.016)	(0.026)	(0.024)	(0.094)	(0.019)
Own SAT greater than 200 pts above campus mean	0.069*	0.102*	0.078*	0.113*	0.064*	0.087*	0.178*	0.133*	0.056*	0.102*	0.427*	0.171*
	(0.007)	(0.009)	(0.012)	(0.008)	(0.007)	(0.008)	(0.029)	(0.007)	(0.008)	(0.011)	(0.057)	(0.010)
Own SAT 1-99 pts below campus mean	2.279*	1.960*	1.524*	1.589*	2.160*	1.973*	1.093	1.472*	2.045*	1.499*	0.625*	1.115*
	(0.074)	(0.059)	(0.109)	(0.054)	(0.103)	(0.070)	(0.081)	(0.040)	(0.119)	(0.073)	(0.056)	(0.036)
Own SAT 100-149 pts below campus mean	3.196*	2.795*	1.599*	1.822*	3.349*	2.633*	0.996	1.479*	2.730*	1.641*	0.391*	0.972
	(0.132)	(0.123)	(0.185)	(0.099)	(0.220)	(0.139)	(0.109)	(0.066)	(0.224)	(0.130)	(0.054)	(0.057)
Own SAT 150-199 pts below campus mean	3.896*	2.984*	1.601*	1.618*	3.788*	3.036*	0.919	1.268*	2.694*	1.537*	0.261*	0.743*
	(0.176)	(0.163)	(0.230)	(0.106)	(0.280)	(0.188)	(0.139)	(0.072)	(0.280)	(0.142)	(0.051)	(0.056)
Own SAT 200 or more pts below campus mean	4.776*	3.139*	1.255	1.297*	4.219*	2.538*	0.402*	0.852*	2.316*	1.003	0.063*	0.314*
	(0.275)	(0.231)	(0.238)	(0.111)	(0.397)	(0.215)	(0.078)	(0.066)	(0.308)	(0.127)	(0.017)	(0.033)
Campus Racial Demographics (prior year's freshman class):												
% Black enrolled on campus	7.646*	0.350*	0.402*	0.079*	5.540*	0.283*	0.263*	0.055*	3.790*	0.169*	0.142*	0.068*
	(0.664)	(0.031)	(0.061)	(0.007)	(0.642)	(0.026)	(0.038)	(0.004)	(0.447)	(0.016)	(0.017)	(0.003)
% Hispanic enrolled on campus	0.396*	1.333*	1.669*	0.190*	0.394*	1.145	0.868	0.144*	0.441*	0.721*	0.550*	0.101*
	(0.040)	(0.127)	(0.302)	(0.012)	(0.040)	(0.086)	(0.134)	(0.009)	(0.051)	(0.062)	(0.102)	(0.006)
% Asian enrolled on campus	0.693	0.752	257.298*	0.003*	1.036	0.574*	234.142*	0.011*	1.325	0.316*	291.763*	0.031*
	(0.160)	(0.151)	(117.235)	(0.001)	(0.265)	(0.122)	(97.073)	(0.003)	(0.397)	(0.081)	(120.375)	(0.009)
Feeder Patterns of Student's High School to College Campus:												
# Enrolled from same high school in prior year	1.029*	1.043*	1.038*	1.026*	1.030*	1.036*	1.030*	1.018*	1.026*	1.030*	1.024*	1.012*
	(0.005)	(0.005)	(0.006)	(0.005)	(0.003)	(0.006)	(0.007)	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)
# Graduated from same high school in prior year	0.991	0.992	1.015*	1.015*	0.994	0.998	1.025*	1.022*	1.004	1.008	1.035*	1.018*
	(0.005)	(0.005)	(0.006)	(0.008)	(0.004)	(0.005)	(0.007)	(0.007)	(0.004)	(0.005)	(0.007)	(0.007)
# Enrolled of same race from same high school	1.000	0.985*	1.009	1.005	1.006	0.981*	1.026	1.015*	1.017	0.969*	1.026*	1.021*
	(0.009)	(0.007)	(0.016)	(0.007)	(0.010)	(0.007)	(0.020)	(0.006)	(0.011)	(0.007)	(0.013)	(0.006)
# Graduated of same race from same high school	1.105*	1.050*	0.990	0.993	1.126*	1.061*	0.973	0.989	1.128*	1.079*	0.972	0.999
	(0.019)	(0.014)	(0.012)	(0.010)	(0.020)	(0.012)	(0.014)	(0.009)	(0.024)	(0.014)	(0.016)	(0.010)
No. of observations	323,857	711,202	99,417	388,678	176,142	365,149	91,729	547,305	87,451	187,364	106,640	1,191,392

Notes: Conditional logit estimates are reported in odds ratios (with student fixed effects) of the probability of application to 31 state universities. Robust standard errors for clustering within high schools. Sample includes students who graduated from a Texas public high school in 2008 and 2009 and applied to at least one Texas public university for admission in the fall following high school graduation and provided income data on ApplyTexas. A small number of students (<1%) are omitted who were missing distance to college or SAT scores. [a]Distance is measured from the student's high school to each college campus. [b]Dichotomous measures of SAT match (omitted group has SATs 0-99 points above campus mean). Specifications also control for in-state tuition. All college campus variables (i.e., enrollment, graduation, SAT, and tuition) are lagged one year to information the student would have as she enterred her senior year of high school.

* indicates statistical significance at p<0.05 level.

Table 9: Factors Associated with Applying to College by High School Class Rank and Race/Ethnicity - Results of a Conditional Logit Estimation (expressed in odds ratios)

	Panel A: Top 10%				Panel B: Top 11-25%				Panel C: Botton 75%			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Geographic Proximity: [a]	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian	White
Can commute (distance $\leq$ 60 miles)	3.698*	13.207*	4.100*	4.710*	4.580*	17.590*	4.329*	6.275*	4.385*	15.694*	6.090*	4.951*
	(0.412)	(1.138)	(0.580)	(0.314)	(0.493)	(1.401)	(0.507)	(0.456)	(0.284)	(0.967)	(0.567)	(0.359)
Can visit home (distance between 61-250 miles)	3.121*	4.301*	3.909*	3.309*	2.997*	4.734*	2.732*	2.760*	2.852*	3.963*	2.249*	2.238*
	(0.244)	(0.220)	(0.379)	(0.158)	(0.184)	(0.291)	(0.231)	(0.103)	(0.120)	(0.184)	(0.136)	(0.073)
College Preparedness: Measures of SAT Match [b]												
Own SAT 100-149 pts above campus mean	0.511*	0.526*	0.831*	0.772*	0.449*	0.565*	0.778	0.699*	0.445*	0.537*	0.637*	0.580*
	(0.041)	(0.028)	(0.068)	(0.024)	(0.040)	(0.031)	(0.101)	(0.027)	(0.019)	(0.020)	(0.042)	(0.015)
Own SAT 150-199 pts above campus mean	0.311*	0.341*	0.667*	0.653*	0.235*	0.373*	0.784	0.515*	0.261*	0.315*	0.422*	0.372*
	(0.031)	(0.023)	(0.066)	(0.027)	(0.027)	(0.027)	(0.112)	(0.028)	(0.013)	(0.017)	(0.039)	(0.014)
Own SAT greater than 200 pts above campus mean	0.082*	0.092*	0.340*	0.290*	0.077*	0.147*	0.279*	0.200*	0.058*	0.091*	0.118*	0.105*
	(0.012)	(0.010)	(0.048)	(0.018)	(0.013)	(0.016)	(0.062)	(0.016)	(0.006)	(0.008)	(0.014)	(0.006)
Own SAT 1-99 pts below campus mean	1.957*	1.792*	0.833	1.075*	1.993*	1.561*	1.027	1.231*	2.265*	1.930*	1.201*	1.501*
	(0.127)	(0.086)	(0.085)	(0.038)	(0.117)	(0.069)	(0.116)	(0.047)	(0.067)	(0.053)	(0.076)	(0.045)
Own SAT 100-149 pts below campus mean	2.788*	2.562*	0.793	1.146*	3.084*	1.871*	0.753	1.147*	3.190*	2.508*	1.091	1.588*
	(0.284)	(0.181)	(0.102)	(0.068)	(0.254)	(0.122)	(0.126)	(0.073)	(0.128)	(0.102)	(0.110)	(0.081)
Own SAT 150-199 pts below campus mean	3.073*	3.230*	0.685*	0.905	3.165*	2.014*	0.729	0.962	3.829*	2.536*	0.953	1.398*
	(0.353)	(0.282)	(0.111)	(0.070)	(0.318)	(0.154)	(0.146)	(0.078)	(0.169)	(0.127)	(0.126)	(0.090)
Own SAT 200 or more pts below campus mean	4.548*	3.570*	0.429*	0.731*	3.425*	1.613*	0.412*	0.484*	4.355*	2.361*	0.509*	0.903
	(0.651)	(0.429)	(0.084)	(0.073)	(0.423)	(0.164)	(0.113)	(0.054)	(0.246)	(0.157)	(0.095)	(0.081)
Campus Racial Demographics (prior year's freshman class):												
% Black enrolled on campus	4.280*	0.416*	0.302*	0.108*	3.393*	0.184*	0.134*	0.052*	7.273*	0.277*	0.253*	0.071*
	(0.760)	(0.041)	(0.053)	(0.007)	(0.496)	(0.019)	(0.031)	(0.004)	(0.595)	(0.024)	(0.036)	(0.005)
% Hispanic enrolled on campus	0.371*	1.187	0.943	0.129*	0.466*	0.892	0.821	0.134*	0.426*	1.360*	0.894	0.139*
	(0.057)	(0.131)	(0.183)	(0.010)	(0.059)	(0.089)	(0.150)	(0.009)	(0.039)	(0.092)	(0.146)	(0.009)
% Asian enrolled on campus	1.865	0.354*	103.599*	0.030*	0.308*	0.189*	83.512*	0.001*	0.680	0.639*	538.506*	0.009*
	(0.664)	(0.088)	(49.354)	(0.008)	(0.104)	(0.048)	(50.649)	(0.000)	(0.153)	(0.131)	(210.846)	(0.002)
Feeder Patterns of Student's High School to College Campus:												
# Enrolled from same high school in prior year	1.016*	1.008	1.011*	1.007	1.029*	1.034*	1.056*	1.013*	1.029*	1.036*	1.048*	1.021*
	(0.005)	(0.007)	(0.005)	(0.004)	(0.005)	(0.007)	(0.008)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
# Graduated from same high school in prior year	1.047*	1.071*	1.060*	1.062*	1.003	1.013	1.013	1.025*	0.993	0.994	1.009*	1.014*
	(0.008)	(0.009)	(0.009)	(0.009)	(0.007)	(0.007)	(0.008)	(0.007)	(0.004)	(0.004)	(0.004)	(0.006)
# Enrolled of same race from same high school	1.020	1.008	1.030	1.000	1.005	0.988	0.981	1.020*	1.004	0.990	0.999	1.020*
	(0.011)	(0.009)	(0.024)	(0.007)	(0.012)	(0.009)	(0.020)	(0.007)	(0.009)	(0.007)	(0.011)	(0.006)
# Graduated of same race from same high school	1.081*	0.987	1.025	1.010	1.100*	1.035*	1.013	1.003	1.110*	1.047*	0.980*	0.987
	(0.028)	(0.016)	(0.020)	(0.013)	(0.027)	(0.013)	(0.017)	(0.010)	(0.016)	(0.012)	(0.008)	(0.008)
No. of observations	70,215	286,998	115,010	576,321	88,474	290,997	44,206	477,214	457,870	796,669	146,444	1,196,724

Notes: Conditional logit estimates are reported in odds ratios (with student fixed effects) of the probability of application to 31 state universities. Robust standard errors for clustering within high schools. Sample includes students who graduated from a Texas public high school in 2008 and 2009 and applied to at least one Texas public university for admission in the fall following high school graduation. Class rank bracket is included on ApplyTexas. A small number of students (<1%) are omitted who were missing distance to college or SAT scores. [a]Distance is measured from the student's high school to each college campus. [b]Dichotomous measures of SAT match (omitted group has SATs 0-99 points above campus mean). Specifications also control for in-state tuition. All college campus variables (i.e., enrollment, graduation, SAT, and tuition) are lagged one year to information the student would have as she enterred her senior year of high school.

* indicates statistical significance at p<0.05 level

Appendix 1: Summary Statistics by College Application Behavior

	Submitted *ApplyTexas*	Submitted *ApplyTexas* or enrolled at a 4-year	Applied to a Flagship University	All graduates
College application:				
Submitted *ApplyTexas*	1.000	0.874	1.000	0.331
Submitted *ApplyTexas* or enrolled at a 4-year	1.000	1.000	1.000	0.379
Applied to a Flagship University	0.306	0.267	1.000	0.101
Student demographics:				
Female	0.547	0.545	0.529	0.502
Age	17.03	17.03	17.02	17.12
	(0.346)	(0.350)	(0.330)	(0.486)
White (non-Hispanic)	0.478	0.497	0.608	0.435
Black	0.145	0.147	0.068	0.137
Hispanic	0.311	0.293	0.206	0.385
Asian	0.063	0.059	0.116	0.040
Free/reduced lunch eligible	0.293	0.280	0.155	0.379
Limited English proficient	0.008	0.008	0.002	0.036
High school coursework:				
No. of AP/IB courses completed (semesters)[a]	4.82	4.86	8.45	2.50
	(5.36)	(5.41)	(5.96)	(4.34)
Took AP English language arts	0.447	0.448	0.677	0.241
Took AP mathematics	0.299	0.301	0.586	0.145
Took AP science	0.235	0.235	0.442	0.117
Total semesters failed	1.14	1.13	0.32	2.97
	(2.53)	(2.52)	(1.04)	(4.54)
High school exit exam (z-score)[b]	0.435	0.444	0.966	0.009
	(0.877)	(0.886)	(0.805)	(0.990)
High school characteristics:				
Campus size	1992.44	1991.08	2167.56	1836.93
	(943.93)	(945.22)	(890.66)	(1012.26)
% Free/reduced lunch eligible	0.415	0.403	0.325	0.439
	(0.263)	(0.259)	(0.236)	(0.249)
% Black	0.134	0.135	0.123	0.141
	(0.167)	(0.165)	(0.134)	(0.163)
% Hispanic	0.410	0.395	0.332	0.414
	(0.303)	(0.297)	(0.258)	(0.292)
% Earning AP credit	0.131	0.136	0.178	0.109
	(0.130)	(0.133)	(0.149)	(0.125)
% SAT tested	0.728	0.730	0.764	0.667
	(0.177)	(0.178)	(0.172)	(0.211)
Average SAT score	987.59	991.76	1022.09	976.00
	(98.08)	(97.83)	(92.52)	(96.18)
No. of observations	162,271	185,742	49,580	490,561

Notes: Summary statistics for all graduates of Texas public high schools from 2008 and 2009. Standard errors are in parentheses for continuous variables. [a]Total number of Advanced Placement (AP) and International Baccalaureate (IB) courses completed (semesters). [b]High school exit exam scores are a composite z-score of both English language arts and mathematics.

Sources: Authors' calculations from Texas Workforce Data Quality Initiative (WDQI) Database, graduating student cohorts from spring 2008 and 2009. National Student Clearinghouse (NSC) data from the 2008-09 and 2009-10 academic years.

Appendix 2: Ordinary Least Squares Regression Results for Applying to College
Excluding from the Analysis Historically Black Colleges and Universities (non-HBCUs)

	Dependent Variable: Any 4-Year University				
	(1)	(2)	(3)	(4)	(5)
Race and ethnicity:					
Black	-0.012	0.092*	0.106*	0.109*	0.106*
	(0.007)	(0.006)	(0.004)	(0.004)	(0.004)
Hispanic	-0.077*	-0.003	-0.061*	-0.060*	-0.061*
	(0.009)	(0.007)	(0.003)	(0.003)	(0.003)
Asian	0.177*	0.017*	-0.004	-0.019*	-0.004
	(0.009)	(0.009)	(0.007)	(0.006)	(0.007)
Other demographics:					
Free/reduce lunch eligible	-0.114*	-0.047*	-0.052*	-0.053*	-0.052*
	(0.006)	(0.005)	(0.002)	(0.002)	(0.002)
Limited English proficient	-0.203*	-0.095*	-0.096*	-0.096*	-0.096*
	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
High school coursework (college readiness):					
No. of AP and IB semesters		0.014*	0.011*	0.013*	0.011*
		(0.001)	(0.001)	(0.001)	(0.001)
Took AP English language arts		0.132*	0.130*	0.138*	0.130*
		(0.007)	(0.006)	(0.004)	(0.005)
Took AP mathematics		0.122*	0.123*	0.117*	0.123*
		(0.005)	(0.004)	(0.004)	(0.004)
Took AP science		0.051*	0.047*	0.048*	0.048*
		(0.006)	(0.005)	(0.004)	(0.005)
Total semesters failed		-0.019*	-0.018*	-0.020*	-0.018*
		(0.001)	(0.000)	(0.000)	(0.000)
High school exit exam (z-score)[a]		0.079*	0.071*	0.067*	0.071*
		(0.002)	(0.001)	(0.001)	(0.001)
Geographic proximity: [b]					
Distance to nearest university (100 miles)					-0.049
					(0.031)
Distance squared					0.018
					(0.028)
No. of observations	427,300	427,300	427,300	427,300	427,300
Other controls:					
High school characteristics[c]			Yes		Yes
High school fixed effects				Yes	

Notes: Robust standard errors (shown in parentheses) are clustered at the high school level. Regressions also control for graduation year, gender, and age. Linear probability models for high school graduates from 2008 and 2009. Dependent variable is equal to one if the student applied to any Texas 4-year university or enrolled at any 4-year university within one year of graduation. Enrollment data are available for all U.S. universities through the National Student Clearinghouse (NSC). [a]High school exit exam scores are a composite z-score of both English language arts and mathematics. [b]The distance variables are generated using longitude and latitude to compute the distance between all high schools and the flagship public institutions in Texas. [c]Characteristics include logged enrollment, % FRL, % Black, % Hispanic, lagged measures of % of graduates entering 4-year colleges, % earning AP credit, and % SAT tested.

* indicates statistical significance at $p<0.05$ level.