

Admission Guarantees, High School Economic Composition and College Application Behavior

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Abstract

We evaluate whether an admission guarantee increased application rates among poor compared to affluent and average high schools. Poisson regression results show that disparities in application rates are not due to size, minority composition, distance to the public flagships, or college orientation of the school. The conclusion considers policy implications.

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Introduction

Even as college campuses become more ethno-racially diverse, socioeconomic diversity has been slow to materialize (Douthat, 2005; Gerald and Haycock, 2006). Carnevale and Rose (2004:106) claim that three-fourths of students enrolled at the most selective colleges and universities come from the top quartile of the household income distribution, but less than five percent are from the lowest income quartile. Because there are no preferences for poor students, many researchers argue that social class is a bigger admission obstacle than race (Bowen, et al., 2005; Gerald and Haycock, 2006; Haveman and Smeeding, 2006; Kahlenberg, 2004; 2010). Partly due to public and legal scrutiny of race-sensitive policies, research about equity and access to higher education largely has focused on *institutional admission* decisions and *individual enrollment* decisions; however, both outcomes depend on who applies in the first place (Brown and Hirschman, 2006; Sacks, 2007; Holley and Spencer, 1999).

Although research interest in social class barriers to college attainment has been on the rise (see Delbanco, 2007 review), scholarly preoccupation with admission regimes and enrollment trends has given short shrift to application behavior in general, and as a conduit to campus socioeconomic diversity in particular. Most studies of application behavior are concerned with ethno-racial rather than social class variation in application rates (Long, 2004; Card and Krueger, 2005; Brown and Hirschman, 2006; Pallais, 2008; Griffith and Rothstein, 2009; Long and Tienda, 2010; Harris and Tienda, 2010). Still, there is growing recognition that the relative scarcity of low-income students in higher education, and at selective institutions in particular, largely reflects the lower propensity of qualified low income students to apply (Bowen, et al., 2005; Avery and Kane, 2004; Cabrera and La Nasa, 2001). That high schools are held accountable for low graduation rates, but not low college-going rates, may also contribute to the paucity of policy research about college application behavior. Another reason is the lack of quality data to consider who, among those qualified for admission, do not apply.

The Texas top 10% law, which went into effect in 1998, provides a natural experiment to evaluate whether an admission guarantee for all students who graduate in the top decile of their high school class raised applications from low-income populations. Texas ranks 9th among states based on the income gap between its richest and poorest families, and 5th based on the gap between its richest and middle-income families (Bernstein, et al., 2008).¹ With one of the fastest growing and most ethno-racially diverse college-age populations in the nation, the Lone Star state exhibits high levels of residential income and racial segregation, which is mirrored in its schools (Tienda and Niu, 2006). These circumstances are conducive to large disparities in college going behavior that potentially can be altered by the change in admission regime.

A public policy that promises admission to a fixed percent of the top-ranked students of each high school can potentially increase applicant pools by raising students' postsecondary aspirations (Frost, 2007); broadening their college choice sets (Niu and Tienda, 2008); reducing anxiety about admissibility (Long and Tienda, 2010); and altering sending patterns among high schools (Long, et al., 2010). The top 10% law not only qualifies a broad socioeconomic spectrum of Texas high school graduates for admission to selective, public institutions, but also represents a potentially powerful incentive to boost applications from students attending schools with weak college-going traditions.

University statistical profiles generally report the composition of enrollees even though applicant characteristics decisively shape the composition of admission and enrollment cohorts, particularly at public institutions with high admission rates (Brown and Hirschman, 2006; Long and Tienda, 2010). In the context of a policy that guarantees admission to a designated group of graduates, addressing whether rank-eligible students actually apply for admission is possibly more important than tracking changes in the socioeconomic, demographic and geographic composition of enrollees (Cabrera and La Nasa, 2001; Holley and Spencer, 1999; Pallais, 2008).

Whether the top 10% law actually altered college *application behavior* at schools serving a large share of low-income families is an empirical question that bears directly on the growing income polarization of selective college campuses (Delbanco, 2007; Gerald and Haycock, 2006; Haveman and

Smeeding, 2006). Because the law is only one of many factors that influence application behavior, it is conceivable that its impact may be minimal or potentially even exacerbate differentials along economic lines. Known school-level correlates of application behavior include distance to the university (Turley, 2009; Griffith and Rothstein, 2009; Mattern and Wyatt, 2009), college orientation of the school (Avery and Kane, 2004; Kane, 2004), and the ethno-racial make-up of the school (Frost, 2007). Therefore, we investigate whether the uniform admission regime altered the application rates to the University of Texas at Austin (UT) and to Texas A&M University (TAMU) from high schools that differ in the percent of economically disadvantaged students that they serve, and consider whether application rates reflect variation in pre-existing college orientation among high schools that serve affluent, middle-income and low-income students.

Before describing the data and research approach, we briefly review evidence about class variation of college-bound students and discuss the potential of the Texas top 10% law to broaden postsecondary opportunities for low-income students. After elaborating procedures for stratifying high schools based on their economic status and outlining the methodological approach, we evaluate changes in high school application rates according to the socioeconomic composition of the students they serve before and after an admission guarantee was in force. The final section discusses policy implications, with a focus on recent trends in merit versus need-based financial aid.

Background: Policy Context and Prior Studies

Most scholarship about equity and access to higher education focuses on how admission criteria used by selective colleges and universities, particularly preferences accorded to minority, legacy, and development applicants, influences enrollment behavior, academic performance, persistence and graduation rates. In the wake of the 5th Circuit Court ruling in *Hopwood v. Texas*,² which outlawed affirmative action in college admissions, administrators and researchers at the public flagships collaborated with legislators to devise an allegedly race-neutral admission regime that would broaden college access among socioeconomic, geographic as well as ethno-racial segments of Texas's population.

Architects of the top 10% law reasoned that “by establishing an admissions scheme that ... equalized the status of all Texas high schools—conferring the same benefits on top [10% graduates] from rural, suburban and urban high schools—the [law] had the potential to increase the number of students matriculating at state universities from these underrepresented regions and schools” (Holley and Spencer, 1999: 9). Importantly, eligibility for guaranteed admission is determined on a *school-specific* basis; that is, the law qualifies for automatic admission the top decile of *every* high school, provided that administrators rank students based on their grades and that the graduating class includes at least 10 seniors.³

Application behavior

Data to track applicants is not readily available; therefore, several studies of applicant pools use the list of colleges and universities to which students send their standardized test score reports to proxy application behavior (Card and Krueger, 2005; Long 2004; Pallais, 2008). Because test score data is a better proxy of application behavior for relatively high-scoring than for lower-scoring applicants, it is less well suited to understand variation in the behavior of low-income students. In fact, Rothstein (2004) claims that the predictive power of the SAT stems from its association with social class and high school quality. Most students who take college entrance exams do so because they have already decided to attend, and decide where to apply based on their test scores relative to institutional averages. These studies, however, provide limited insight about application behavior of high achieving students from economically disadvantaged backgrounds.

Evidence about income differences in application behavior is mixed. For example, Griffith and Rothstein (2009) show that distance from a selective institution influences student’s propensity to apply, but claim that application behavior does not differ by income. Examining an experiment that changed the cost of sending test score reports to colleges, Pallais (2008) finds that raising the number of test-score reports students were allowed to distribute to colleges free of charge increased both the number and selectivity of institutions to which low-income students apply. She does not consider whether this

behavior differs according to the socioeconomic composition of high school attended, which partly represents the college orientation of the school.

Several recent studies analyze administrative data from universities to evaluate application behavior. For example, Brown and Hirschman (2006) examine changes in the ethno-racial composition of the University of Washington's applicant pool before and after enactment of Initiative 200, a state ballot measure that eliminated affirmative action in 1998.⁴ They conclude that the decline in minority representation at the state's flagship institution resulted mainly from the drop in applications from students who perceive the university as unwelcoming, if not outright intimidating. Because the State of Washington did not implement a percent plan, Brown and Hirschman could not assess whether the applicant pool would have changed if incentives to apply were modified.

Long and Tienda (2010) analyze institutional application data for seven Texas universities that differ in the selectivity of their admission criteria to ascertain whether and how applicant characteristics changed under the top 10% admission regime. They show that average SAT/ACT test scores of applicants to less selective institutions rose, as students with high test scores who did not qualify for the admission guarantee were denied admission to the public flagships.⁵ Concomitantly, the average SAT/ACT scores of UT applicants stagnated, partly because growing numbers of rank-eligible students from low performing schools sought admission to the public flagships and partly because students eligible for automatic admission may be less motivated to excel on the exam. Focusing on changes in the ethno-racial composition of the Texas public flagships, Harris and Tienda (2010) compare school-specific application rates to UT-Austin and TAMU before and after affirmative action was judicially banned. By simulating gains and losses associated with each policy regime, they demonstrate that the uniform admission regime did not restore the ethno-racial makeup of either public flagship. Although Harris and Tienda generated group-specific application rates using high schools as units of analysis and they control for both changes in the size of graduation cohorts and institutional carrying capacity (i.e., undergraduate enrollment), they did not focus on whether application rates differed according to the socioeconomic composition of the students served by high schools. Control for growth in the size of graduation cohorts is

necessary to compare changes in rates because the Texas college-eligible population grew rapidly since 1990.

Reasons for low application rates generally focus on students' family income (Cabrera and La Nasa, 2001; Ellwood and Kane, 2000; Haveman and Smeeding, 2006), poor guidance (Frost, 2005), perceived costs and knowledge of available financial aid (Pallais, 2008; Bettinger, et al., 2009; Avery and Kane, 2004), distance from home (Turley, 2009; Griffith and Rothstein, 2009), and the college orientation of the high school (Avery and Kane, 2004). For example, Frost (2005) finds that the college orientation of counseling departments influences students' knowledge about college options, even after taking into account differences in students' family background, educational expectations and experiences, and other attributes that influence postsecondary behavior. Her findings are consistent with Hill's (2008) study of strategies that counseling offices use to match students with postsecondary institutions. Hill concludes that mere assistance with college applications yields poor matches compared with proactive strategies that engage both parents and college representatives; the former are typical at high schools that serve large shares of poor students while the latter are more common among schools with a strong college orientation that typically serve affluent student populations.

High School Quality

Many studies suggest that quality of high school attended is associated with college going behavior because school climate influences both knowledge about college options and expectations about the likelihood of attending a top choice school (Niu and Tienda, 2008; Lipman Hearne, Inc., 2006; Bowen, et al., 2005). Although there is a limited literature establishing links between the quality of high school attended and postsecondary outcomes in general, and application behavior in particular, two recent studies are noteworthy.

Espenshade and Radford (2009), who examine enrollees at seven selective colleges and universities in the 1990s, show that graduates of elite high schools are significantly more likely to graduate within six years of first enrollment compared with their statistical counterparts who attended less competitive high schools. Fletcher and Tienda (2010) implement a fixed effects methodology that

compares students who graduated from the *same high school* to argue that differences in the caliber of high schools that black, Hispanic, Asian and white students attend is largely responsible for racial and ethnic differences in postsecondary academic achievement. They do not consider what aspects of schools account for achievement differences, however, nor do they compare schools that differ in the socioeconomic or demographic composition of students served. Domina (2007) claims that the admission guarantee buttressed by scholarship programs that link postsecondary opportunities to high school academic performance boosted academic engagement, which is evident in lower absenteeism rates, higher SAT test-taking rates, and higher college application rates among students who attend high schools that serve large numbers of economically disadvantaged students.

Missing applicants

The application process can be overwhelming, and particularly for low-income students and first-generation college students for whom costs and availability of financial aid loom large in their decision to apply (Bettinger, et al., 2009). Using a nationally representative survey of high school graduates, Cabrera and La Nasa (2001:138) find that only 21 percent of high school seniors from the lowest SES quartile seek admission to a four-year institution, compared with nearly three-fourths of seniors from the highest SES quartile. Yet, very few analysts investigate why low-income students who are qualified for college do not apply. A notable exception is Avery and Kane's (2004) study of the Boston public schools, which shows that even among students who aspire to attend college, achieve a GPA of 3.0 or higher, and take the required SAT exam, many fail to complete and submit applications. Similarly, Niu and Tienda (2008) find that the socioeconomic composition of students served by high schools influences not only how broadly but also how high students set their college sights. To a considerable degree application behavior is governed by students' estimation—wrongly or correctly—of their chances of attendance.

The top 10% law eliminates two barriers confronted by low-income and minority students. First, by eliminating the test score filter for students who graduate in the top decile of their high school class, for rank-eligible graduates the admission guarantee broadens college access to students from poor schools. Second, the greater transparency of the top 10% admission

regime eliminates uncertainty about admission prospects for students who graduate in the top 10% of their class (Long, et al., 2010). That the law permits rank-eligible graduates to select their postsecondary institution eliminates another aspect of student uncertainty and anxiety about college attendance, namely the need to apply to “safety schools.”

Whether the new admission policy changed the application behavior of graduates from poor high schools is an empirical question that has not received systematic scrutiny. Phrased as a question, did the law increase the relative number of applicants to the public flagships from high schools that serve large numbers of economically disadvantaged students, as intended, and if so, by how much? Second, were changes in application rates driven by other factors associated with college orientation of high schools, such as distance, test-taking behavior, ethno-racial composition and size?

Low-income students face three hurdles to college attendance: achieving the credentials that qualify them for admission; actually graduating from high school; and applying for admission (Cabrera and La Nasa, 2001). By focusing on students who overcome the first two hurdles, namely high school graduates who qualify for automatic admission under the top 10% law, our analyses use a best-case scenario to evaluate social class variation in high school level application behavior.⁶ To avoid the biases incurred by reliance on proxy measures of application behavior used in prior studies (e.g., indicators of where students submit test scores), we combine administrative data from the Texas Education Agency (TEA) and institutional data on college applicants to UT and TAMU to examine whether and how the social class composition of applicant pools changed in response to the admission guarantee. The following section describes the data, operational definitions and methods used for the multivariate analysis.

Data and Methods

We use publicly available data from the TEA to stratify regular Texas public high schools for the years 1994-2003 according to the socioeconomic status of the students they serve.⁷ For

each regular public high school, TEA data indicate the total number of graduates in each year, as well as mean school SAT scores and the school-specific share of students ever classified as economically disadvantaged.⁸ College application data is obtained from administrative records for the two Texas public flagship institutions, UT (1994-2003) and TAMU (1994-2002).⁹ For applicants to each institution, the administrative records include measures of class rank, senior class size, standardized test scores, and an identifier of the high school attended. Applicant class rank for UT and TAMU is calculated using class rank and senior class size.¹⁰

High School Socioeconomic Strata

We stratify *high schools* according to the composition of their student body using the percent of students ever economically disadvantaged. Because high school students eligible for free or reduced lunch may be disinclined to request the benefit in order to avoid public stigma, the TEA measure based on receipt of lunch subsidy over the full academic career is a better proxy for low income students than a current year measure for seniors. For each year in the observation period we classify regular Texas public high schools into three broad socioeconomic strata based on the share of students who ever received free or reduced lunch. Schools in the lowest quartile are designated *affluent*; those in the highest quartile are designated *poor*; and high schools in the middle quartiles are classified as *average (or typical)*. Because the statewide share of economically disadvantaged students rose over time, we calculated the quartile cut-points for each year. We make no presumption that school socioeconomic strata represent the socioeconomic status of individual students, but expect that students from affluent high schools who qualify for the admission guarantee will be more likely to apply to one of the public flagships compared with their rank counterparts from high schools with large numbers of economically disadvantaged students.¹¹

College Application Rates

Calculation of application rates for the three socioeconomic strata requires institutional data about the number of applicants from the high schools comprising each stratum in a particular

year and size of the strata-specific graduation cohorts in that year. Our institutional applicant files include high school identifiers for individual students and the TEA public files provide the counts of graduates from each high school. For each year we assign high schools to one of the three strata and sum graduates across high schools to generate the strata-specific denominators. Subsequently we compute year-specific numerators for each high school stratum by summing applicants to a particular institution to derive high school-specific application rates. We also compute rank-specific application rates to UT and TAMU in order to distinguish between students eligible for automatic admission and their same school classmates ranked in the second or third decile who were not guaranteed admission even though they may have been admissible. For the decile-specific calculations we use one-tenth of the high school graduation cohort as the denominator.

Descriptive Results

Table 1 characterizes the universe of Texas public high schools according to socioeconomic strata before the admission guarantee was in force and four years after its implementation. The Texas high school population grew at a fast clip during the observation period (WICHE, 2003), and so too did the number of public high schools. Excluding special and alternative high schools, between 1994 and 2002 Texas added 60 secondary schools even as many grew in size. Although the largest high schools fall in the affluent stratum, the greatest increase in size was registered among schools that serve large shares of low-income students.

Table 1 About Here

Two factors determine the potential applicant pool from any school: school size and graduation rate, which together yield the number of seniors eligible to apply to college. Between 1996 and 2002 the mean number of graduates from affluent high schools rose from 208 to over 250; by comparison, poor schools averaged 83 graduates in 1996 compared with 150 in 2002. Based on size differences alone, the number of rank-eligible graduates from affluent high schools

will be larger compared with typical or poor schools. Average high schools are smaller still, with the mean graduating class size rising from a 111 to 155 over the observation period. Of course, not all high school graduates aspire to post-secondary education, which depends in part on school climate and college-going traditions, as well as on individual characteristics and family background.

Economic and ethno-racial heterogeneity of affluent and average schools rose over time, but poor high schools became more homogeneous as the share of students who ever received free or reduced lunches rose (Swanson, 2006). In 1996, for example, 64 percent of students attending poor high schools had qualified for a free or reduced lunch, but by 2002, the mean share rose to over 70 percent. By contrast, the average share of low-income students enrolled in affluent high schools inched up only two percentage points; however, at average high schools the mean percentage poor rose nearly five points over the six year period. Despite high dropout rates among minority students (Swanson, 2006), the shares of black and Hispanic diploma recipients rose. Nevertheless, owing to high levels of school economic and racial segregation (Tienda and Niu, 2006), most minority graduates attended high schools that served large shares of economically disadvantaged students. Approximately three-fourths of graduates from affluent high schools were white, but at poor high schools Hispanics represented over 70 percent of all diploma recipients.

Graduates from affluent Texas schools achieve SAT scores that average over 140 points higher than those achieved by graduates from schools that serve large numbers of economically disadvantaged students. The mean SAT score achieved by students from affluent and average high schools was virtually unchanged over the observation period, but the 30-point drop witnessed by graduates from poor schools widened the test score gap by school socioeconomic strata.¹² Although test scores are disregarded for rank-eligible students, low scores could signal weak college orientation and potentially discourage applications from students by signaling poor academic preparation.

Application Rates

The lower panel of Table 1 summarizes differences in application rates as well as the share of high schools that did not send a single applicant to the public flagships. Sending patterns vary widely by socioeconomic strata as well as between the two flagships. As revealed by the strata shares that sent no applicants, UT's sending patterns are more concentrated than those of TAMU, but especially among the high schools that serve very low shares of economically disadvantaged students.

Figure 1, which reports trends in application rates at UT and TAMU for the top three deciles of the class rank distribution according to high school socioeconomic strata, yields several insights about changes in the applicant pools. First, at both flagship institutions the highest application rates correspond to top 10% graduates from affluent high schools; and at both institutions, the application rates from top-ranked graduates from affluent schools dip in the wake of the *Hopwood* decision. Although TAMU's application rates from top-ranked affluent school graduates recover to their pre-*Hopwood* levels, at UT the application rates from top-ranked affluent school graduates surpass their 1994 level by eight percentage points (36 and 44 percent for 1994 and 2003, respectively).

Figure 1 About Here

Application rates of top 10% graduates from poor schools were well below those of lower ranked graduates from affluent schools and also below the rates from top-ranked graduates from average high schools. At both institutions, the application rates of affluent school second decile graduates closely tracked those of top-decile graduates from average high schools, especially after 1998, when the top 10% law was fully in force. Both curves are higher than that corresponding to top 10% graduates from poor high schools, particularly at TAMU. Although UT registered higher application rates from students eligible for automatic admission, the application rate of top 10% graduates from poor high schools dropped from 21 percent in 1994 to 11 percent in 1998 and rebounded slightly (to 13 percent) in 2002. The Longhorn Opportunity Scholarship program, which targeted schools with low college traditions that

also serve large numbers of low-income students, is partly responsible for the uptick in the application rate of students attending poor schools (Domina, 2007).

Third, flagship application rates of students ranked below the second decile of their senior class differ appreciably according to the socioeconomic composition of their high school. About 15 percent of affluent school graduates ranked in the third decile of their class apply to UT or TAMU, compared with approximately two percent of their rank counterparts from poor high schools. Notably, affluent school graduates ranked in the third decile of their high schools apply to TAMU at higher rates than top-ranked students from poor schools, unlike UT, where the pattern is reversed.

Differential application rates by high school socioeconomic composition are particularly large among top decile graduates, and especially at UT, where application rates of top decile graduates from affluent schools rose nearly eight percentage points between 1994 and 2003. UT top 10 percent applicants from poor high schools, which approached 20 percent in 1994, fell in the period leading to and following the *Hopwood* decision, but have since rebounded to a high of 22 percent. This recovery, however, paled by comparison to the surge in application rates from affluent school graduates eligible for automatic admission, which reached 44 percent in 2003. Thus, four years after the admission guarantee was in force, rank-eligible graduates from affluent high schools were twice as likely to apply to UT as their rank counterparts from poor schools; at TAMU, the application advantage of top decile affluent school graduates relative to top-decile graduates from poor schools was greater still, roughly 2.5 times as high.

Notwithstanding these parallels between UT and TAMU in the application rates by high school strata, there are several noteworthy differences. First are downward trending application rates of graduates from average and poor schools at TAMU, which contrasts with UT's experience. Specifically, the application rate of top decile graduates from poor high schools fell almost eight percentage points while that at UT held relatively steady. Yet, in 1994, TAMU had a slight edge over UT in applications from poor high schools. Second, the application rate to TAMU of top decile graduates from affluent schools remained flat over the period, except for the slight dip immediately following the *Hopwood* decision. Finally, the propensity for top-ranked graduates from typical high schools to apply to TAMU

also slid under the uniform admission regime, from 28 to 25 percent. As a result of these trends, application rates of top ranked students to UT and TAMU have diverged over time, particularly for graduates from affluent schools.

Multivariate Analysis

The descriptive analysis offers partial support for the claim that the top 10% law broadened access to the public flagships via socioeconomic diversification of their respective applicant pools. Growing heterogeneity of Texas public high schools (Table 1) coupled with distinct application sending patterns to TAMU and UT (Long, et al., 2010), warrants a multivariate analysis to determine whether other factors that are associated both with socioeconomic composition of schools (strata) and application rates, notably size, distance and college orientation are responsible for the underlying differentials.

Following Mattern and Wyatt (2009), we represent the distance as a set of dummy variables (<50; 50-249 and 250+ miles). Ethno-racial composition is measured as percent of graduates who are black, Hispanic, and Asian at each high school. College orientation of schools is indexed by percent of students who take college admission exams and the school's average score. Affluent high schools are larger, on average, compared with schools that serve larger shares of economically disadvantaged students; therefore all models include the number of graduates as a statistical control.

As Table 1 reveals, application rates to the Texas public flagships are highly unequal, with a few schools sending many applicants and large numbers sending very few or zero applicants. Because the distribution of high school application rates includes a large spike at zero, standard regression methods are inappropriate. Subsequently we estimate a zero-truncated Poisson regression for high schools that sent at least one applicant to UT or TAMU in the observation year. Analytically, this procedure treats the application rate as a censored continuous variable to acknowledge the fact that many schools do not send a single applicant to the flagships.

We also estimated logistic regressions that treat the application proportion as a binary response.¹³ Both statistical techniques yield the same substantive conclusions; therefore, in the interest of parsimony we discuss only the Poisson regression results, which are reported in Table 2.

The statistical analysis focuses on the application rates of top decile graduates, who are the intended beneficiaries of the law.¹⁴ We estimate three models: the first includes the economic strata along with statistical controls for distance, school size and ethno-racial composition of the student body. Model two adds a measure of schools' college orientation, which we proxy with the share of students who took college entrance exams and the mean school score. The third model also includes an indicator that flags whether schools had sent any applicants to the target flagship in 1996, before the top 10% law went into effect. Substantively, the flag indicates whether the application rates of schools became more or less concentrated over the observation period.

Table 2 About Here

The uniform admission law changed incentives for students to apply to UT, but not TAMU, whose applicant pool hailed from a very broad geographic spectrum owing to the historical outreach function of the land grant college. At UT application rates of top 10% graduates from average and poor high schools were, respectively, 23 and 39 percent lower than those of affluent high schools of comparable size, distance and demographic composition. These differentials were reduced approximately 40 percent after adjusting for variation in schools' college orientation. The flag for 1996 application status indicates that rates were approximately 12 percent lower in 2002, on average, among schools with prior history of sending applicants. Because feeding patterns to UT were considerably more concentrated compared with TAMU, the top 10% law increased the number of schools that sent applicants to the Austin campus as it broadened the geographic diversity of applicant pool (Long, et al., 2010).

Consistent with the descriptive analyses, the top 10% law had quite different impacts at TAMU, where application rates diverged according to the schools economic composition. On average, TAMU's 2002 application rates from poor high schools were 41 percent lower and those from average schools 13 percent lower than affluent high schools with similar characteristics. TAMU's application gap between

average and affluent high schools is largely due to differences in postsecondary orientation, but this is not the case for poor schools. Modeling test-taking behavior and performance results shrinks the application gap between affluent and poor schools by 24 percent; Thus, top decile application rates from poor schools were 31 percent lower than those of affluent high schools of similar distance, size and demographic attributes. The point estimates are unchanged after including a flag for schools' prior sending history. That the point estimate is indistinguishable from zero reveals that the sending pattern was unaltered by the law, which is consistent with Long, et al (2010).

The covariates for size, distance and composition are consistent with prior research in that application rates are positively associated with size and inversely associated with distance at both flagships, with some noteworthy differences. Specifically, TAMU's applicant pool includes a larger share from small schools compared with UT, which draws disproportionately from the very largest high schools. The point estimates for the distance dummies confirm that TAMU's applicant pool draws from a more geographically dispersed applicant pool compared with UT. Finally, it appears that TAMU was less appealing to minority students compared with UT, as evident in the positive point estimates for the high school ethno-racial composition variables. All point estimates are positive for UT, even after adjusting for prior sending traditions, which indicates that application rates of top 10% graduates are higher at schools with large shares of minority students, which is consistent with the premise that the top 10% law promotes diversity by capitalizing on segregation (Tienda and Niu, 2006).

Discussion

The divergent experiences of UT and TAMU in attracting applicants eligible for automatic admission are puzzling because TAMU's overall application rates were higher prior to the *Hopwood* decision (Table 1), and because the land grant flagship has always attracted students from a larger number of high schools (Long, et al., 2010). Figure 2, which further disaggregates application rates among top decile graduates from affluent, average and poor public high schools, provides insight into the diverging application rates between UT and TAMU after 1998.

Figure 2 about Here

Claims that the admission guarantee triggered an increase in applications from students eligible for automatic admission find mixed support, particularly at TAMU. The first column in the upper left panel of Figure 2 shows that students who graduated in the top two percentiles of their class drove the surge in UT's application rate from affluent schools. At TAMU application rates for all affluent school graduates who qualified for automatic admission were slightly lower for 2000-02 compared with 1994-96. That top-ranked graduates from affluent schools have many college options, both in and out of state may partly account for stagnant application rates, particularly if the public flagships serve as a "safety" option for students aspiring to attend a selective out-of-state or private in-state university. TAMU's falling application rates from top-ranked graduates from affluent schools reveal institutional preferences for students who formerly applied to both institutions in hopes of being admitted to one (Long and Tienda, 2010); the admission guarantee obviates the need to apply to both institutions if one is clearly preferred.

Neither explanation clarifies the falling TAMU application rates among top ranked graduates from poor high schools, however. Although only 100 miles apart geographically, the two flagships are much further apart in their institutional cultures. An article in *Texas Monthly* (Burka, 2004) captured the essence of the difference: not only had TAMU lost its place among the top 50 public universities since 1997, but both enrolled and prospective students characterized the institution as politically conservative, predominately white, and focused on agricultural and mechanical (engineering) sciences. Quoting an opinion article published in TAMU's newspaper, *The Battalion*, Burka (2004:127) notes: "A&M, while renowned for agriculture, engineering, architecture and business, has a less-than-stellar though slowly improving reputation for liberal arts, which leads many outstanding students to choose the University of Texas instead."

At UT, the top 10% law seems to have stimulated higher application rates among the top half of rank-eligible graduates from poor schools, but students ranked at or below the 6th percentile were missing in application both before and after the admission guarantee was in force. Most likely this reflects the limited availability of Longhorn Opportunity Scholarships, which only the highest ranked students

receive (Domina, 2007; Niu and Tienda, 2010). Fellowship receipt, however, is conditional on application. Although TAMU offers Century Scholarships to top-ranked graduates from targeted schools with large numbers of low-income students, application rates of every segment of top decile graduates from poor schools dropped after the admission guarantee was in force.

Architects of the top 10% law sought to diversify the socioeconomic mix of public flagships, but the descriptive and multivariate evidence imply limited progress and some evidence of growing advantage for graduates from affluent schools. Table 3 compares both Texas flagships with the two most selective private institutions, and five additional public universities for which we have administrative data about applicant pools. Because the top 10% law does not apply to the private institutions, neither Rice nor SMU systematically collect this information. We do not report rank-specific application rates for the Arlington, San Antonio and Pan American campuses because 30 to 40 percent of applicant records lacked information about class rank. Because class rank is not an admission barrier at the less selective institutions, which have virtually open admissions, this data shortcoming is less consequential for these institutions.

Table 3 About Here

Because public institutions are expected to serve all segments of the Texas population, not just those of higher means, the similar socioeconomic composition of applicants among the four more selective universities, which include the State's two elite private institutions, is striking.¹⁵ This similarity is all the more remarkable because 2002-03 tuition and board at Rice topped \$25,000, compared with annualized costs at UT and TAMU of approximately \$13 thousand. SMU's tuition and board for the 2002-03 academic year topped \$31 thousand, and its applicant pool draws heavily from affluent high schools located in nearby, wealthy Dallas suburbs. That Rice limited the debt students were asked to accrue over four years to \$10,000, and provided grants to fund the remainder of student need partly explains the higher share of applicants from poor schools compared with SMU (Nissimov, 2001a; 2001b).

Among applicants to Texas Tech and UT-Arlington, only between 9 and 11 percent graduate from schools that serve large numbers of poor students, while nearly three in five applicants to Texas

Tech and over half of Arlington's applicants attend affluent schools.¹⁶ Just the opposite pattern obtains among the least selective public institutions, particularly Pan Am, whose applicants from affluent high schools are negligible. Only UT-San Antonio draws an applicant pool that is balanced along socioeconomic lines. This is due to its geographic proximity to UT, which has become saturated with students guaranteed automatic admission (Niu and Tienda, 2010). Many applicants to UTSA aspire to transfer to the Austin campus, or hope that their credentials will earn them a spot among those not filled by automatic admits.

Notwithstanding the absence of reliable class rank data for several UT system campuses, the right panel reveals rather limited socioeconomic differentiation in application rates of top 10% graduates compared with all graduates. At moderately selective Texas Tech, representation of top-decile applicants from poor high schools is double that of the total pool; furthermore, the share of applications from top ranked applicants from average high schools is over 12 percentage points higher than that of the full pool. TAMU-Kingsville's share of top 10% applicants from affluent high schools is lower than its total share of applicants from schools with few poor students, likely a sign that it loses many of these students to one of the public flagships.

Conclusions

Even as more colleges and universities tout need-blind admissions, actual enrollment trends show that students whose families rank in the lower quartile of the income distribution are all but invisible at the most selective postsecondary institutions (Kahlenberg, 2004; 2010), and increasingly, also at the public flagships (Nichol, 2008). Using application rates to the two Texas public flagships among high schools that differ in the socioeconomic composition of their students, we examine whether the admission guarantee for students who graduate in the top decile of their high school class increased application rates among schools that serve large numbers of economically disadvantaged students.

Contrary to the goals sought by the legislators who crafted the top 10% law, we find that graduates from affluent schools are significantly more likely to seek admission to one of the public

flagships compared with their cohorts who graduated from high schools that served students of low to moderate socioeconomic status. Furthermore, application rates to TAMU from schools serving low-income students actually fell. At UT, application rates from poor high schools rose, mainly due to students who graduated in the top five percentiles of their class. Although administrative data do not indicate whether these applicants were offered Longhorn scholarships, a recent study based on survey data suggests this is the case (Niu and Tienda, 2010).

Our findings have several important policy implications. Because enrollment prospects of high-performing, low-income students are relatively high, an admission guarantee can potentially increase the campus representation of low-income students if it increases application rates from schools that serve large shares of poor students (Cabrera and La Nasa, 2001; Bowen, et al., 2005; Brown and Hirschman, 2006; Gerald and Haycock, 2006; Haveman and Smeeding, 2006). Stated differently, even reforms that make admission criteria more transparent and eliminate the test score barrier faced by low-income students will not alter the socioeconomic composition of college campuses *unless the applicant pool is changed* (Sacks, 2007). The policy challenge, then, is how to raise application rates of low-income students. Financial aid is necessary, but like an admission guarantee, insufficient to boost application rates from schools with low college-going traditions (Avery and Kane, 2004).

Fischer (2008) and others claim that the share of students with Pell grants has been falling at the wealthiest public institutions. According to Gerald and Haycock (2006) only 22 percent of all students enrolled at the public flagships received Pell grants in 2005, compared with the national average of 35 percent. Their report shows that between 1992 and 2004 the share of low-income students fell at UT because the share enrolled relative to the pool of eligible (admitted) students shrank. That the public flagships are becoming whiter and richer even as successive cohorts of high school graduates are becoming more diverse is a worrisome trend because these institutions are the engines of social mobility and economic productivity. Nichol (2008) suggests that many of the premier public flagships are at risk of abandoning their public mission because rising costs and diminished state support make needy students less attractive.

To broaden access to low-income students, Haveman and Smeeding (2006) propose (1) pricing tuition close to real costs and using the additional revenue to subsidize needy students; (2) limiting public subsidies to wealthy private schools; and (3) expanding Pell grants. Additional prerequisites for boosting socioeconomic campus diversity include aggressive recruitment of talented low-income students beginning in middle school to ensure that they take the required college preparation courses; to keep their sights on college as a realistic possibility; and to guide them through the college choice process. These conditions are especially important for first generation college students, whose parents are least well equipped to guide their children through the college choice process, but may not be realistic short term strategies to increase diversification of selective public institutions.

Two additional short-term strategies to increase socioeconomic diversity at public universities involve strengthening ties between universities and middle schools that feed into high schools with low application rates and refocusing financial aid on needy students who are talented (rather than meritorious students who are not needy). In Texas, expansion of the Longhorn and Century Scholarship programs can further reverse trends toward ethnic and class homogeneity of the public institutions both by identifying talented students *before* they enter high school and by expanding the number of fellowships offered at each school. In states that do not guarantee admission to a fixed percentage of the college-eligible population, the need-based financial aid can be accompanied by a class-based affirmative action that gives preference to high achieving students who attend schools that serve large numbers of disadvantaged students. This two-pronged approach may garner more political support compared with preferences based on ascription or legacy status.

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¹ Most of the eight states with higher income inequality than Texas are in the South; in rank order these states are: New York (1); Alabama (2); Mississippi, (3); Massachusetts (4); Tennessee (5); New Mexico (6); Connecticut (7); and California (8). See <http://www.cbpp.org/files/4-9-08sft>

² *Hopwood v Texas*, 78 F.3d 932 (5th Cir. 1996), *cert. denied*, 518 U.S. 1033 (1996).

³ The admission guarantee applies to private and parochial schools, provided they meet the class size minimum and also rank their students, which many do not.

⁴ I-200 *prohibited* the state from using race or ethnicity in admission decisions, employment or contract awards.

⁵ Denial rates were especially high at UT, where saturation with automatically admitted students surged after the guarantee was implemented. See Tienda and Sullivan, 2009.

⁶ Texas has a dismal graduation rate, estimated around 67 percent for the 2002-2003 academic year (Swanson, 2006), which ranks it 37th in the nation (Greene and Forster, 2003: Appendix Table 2).

⁷ We use publicly available data from the National Center for Education Statistics (NCES) to identify special and alternative high schools, which are excluded from the analysis on grounds that their students may differ systematically in their college going behavior.

⁸ The measure of students ever economically disadvantaged was provided in response to a specific request to the Texas Education Agency.

⁹ See <http://theop.princeton.edu> for further information about the data collection.

¹⁰ For UT-Austin, 2.8% of applicants' records lack precise class rank measures, but instead include an indicator of class rank within ranges. We smoothed these applicants into appropriate class rank ranges and would like to thank Mark Long for generously sharing his Stata code to accomplish this (details are available from the authors).

¹¹ Affluent high schools may not have affluent students at all, they simply have a very small share of poor students, and the remaining students may be of either affluent or more moderate means. Another name for this category might be "Few Poor." Similarly, while average high schools have an average share of low-income students, we know nothing about the financial circumstances of the rest. Our classification of school strata generates conservative estimates of class variation in applicant pools because applicants from poor and typical schools are more likely to hail from the upper than the low end of the income distribution.

¹² We restrict the discussion of test score differences to 1996 through 2003 because the scores reported by TEA prior to 1996 were not re-centered and thus are not comparable to those reported from 1996 to the present. We also converted ACT scores to their SAT equivalents in order to present a uniform metric.

¹³ We use the `blogit` command in Stata which requires both the number of applicants and the total number of high school graduates. This procedure produces estimates for grouped data, as in our case, which is based on graduates within schools. Results are available on request.

¹⁴ Parallel estimates for application rates that are not restricted to the top 10% are available from the authors.

¹⁵ Institutional comparisons are restricted to applicants from regular public high schools. Because both private universities draw large numbers of students from out of state, the share of applicants from Texas regular public high schools comprises only 35 percent of Rice's pool and for SMU 39 percent, which is far below the shares for UT and TAMU, at 72 and 79 percent, respectively. Sources for data about Rice and SMU are, respectively, <http://www.ruf.rice.edu/~instresr/ricefacts2002>. Accessed on 8/10/09; <http://SMU.edu/ir/CDS/Archive/cds2002.pdf>. Accessed on 8/10/09.

¹⁶ We have prepared these tabulations for every year but do not report them because the temporal changes were minimal.

Table 1. Descriptive Characteristics for Texas Public High Schools by Socioeconomic Strata: 1996 and 2002

	Affluent High Schools		Average High Schools		Poor High Schools	
	1996	2002	1996	2002	1996	2002
Median Number of Graduates	208	256	75	86	83	150
Interquartile Range	77-409	74-494	38-183	44-223	31-218	52-309
Mean % Economically Disadvantaged ^a	10.2	12.1	29.7	34.4	64.2	71.5
Range	0 - 19.5	0 - 22.1	19.6 - 43.6	22.2 - 51.0	43.9 - 100.0	51.1 - 98.2
Ethno-Racial Composition (Mean percent) ^a						
% White	77.2	73.2	55.9	53.0	16.2	11.3
% Hispanic	11.0	13.4	23.0	27.4	71.8	71.0
% Black	6.8	7.6	18.0	16.3	10.6	16.2
% Asian	4.6	5.5	2.9	3.0	1.2	1.4
Mean % Taking College Admission Test ^a	75.0	73.7	62.3	59.1	55.6	53.2
Mean SAT Score ^a	1035.8	1039.0	976.0	974.4	892.1	862.7
(SD)	(51.1)	(53.3)	(69.6)	(68.6)	(70.0)	(73.9)
Mean Total Application Rate ^a						
UT Austin	9.8	12.1	3.6	5.1	2.4	3.3
(SD)	(9.3)	(9.3)	(4.3)	(5.4)	(2.8)	(2.3)
TAMU	10.8	11.2	5.4	5.2	2.9	2.4
(SD)	(6.7)	(7.7)	(4.2)	(3.8)	(2.6)	(3.2)
Mean Top 10% Application Rate ^a						
UT Austin	32.0	44.5	18.3	26.3	14.7	22.7
(SD)	(24.5)	(25.2)	(17.3)	(20.2)	(14.3)	(15.1)
TAMU	34.4	33.5	27.9	25.6	17.4	13.6
(SD)	(18.5)	(17.6)	(20.6)	(17.5)	(15.3)	(14.8)
% Schools with 0 Applicants						
UT Austin	20.0	11.0	42.6	29.7	46.3	31.9
TAMU	5.9	5.4	21.4	14.4	30.7	31.9
Number of High Schools (N)	247	262	494	524	246	261

Source: THEOP Administrative Records

^a Weighted by number of graduates. Sources: National Center for Education Statistics (NCES), Texas Education Agency (TEA), THEOP Administrative Data.

Table 2. Zero-truncated Poisson Regression Estimates of High School Application Rates to UT and TAMU: 2002 (standard errors)

Institution Model	University of Texas at Austin			Texas A&M University		
	(1)	(2)	(3)	(1)	(2)	(3)
H.S. Strata [Affluent]						
Average	-0.226*** (0.041)	-0.132** (0.043)	-0.131** (0.043)	-0.132** (0.041)	-0.073 (0.043)	-0.073 (0.043)
Poor	-0.391*** (0.080)	-0.245** (0.080)	-0.251** (0.080)	-0.411*** (0.086)	-0.314*** (0.087)	-0.314*** (0.087)
Mean % Test Takers		0.010*** (0.001)	0.010*** (0.001)		0.006*** (0.001)	0.006*** (0.001)
Mean SAT Score		0.003*** (0.000)	0.003*** (0.000)		0.001*** (0.000)	0.001*** (0.000)
Applicants 1996			-0.116* (0.046)			0.011 (0.057)
Distance from University [<50]						
50-249 miles	-0.572*** (0.042)	-0.487*** (0.043)	-0.490*** (0.043)	0.068 (0.057)	0.121* (0.058)	0.121* (0.058)
250+ miles	-0.815*** (0.061)	-0.815*** (0.062)	-0.821*** (0.062)	-0.177* (0.073)	-0.157* (0.074)	-0.156* (0.074)
Ethno-Racial Composition						
% Black	-0.003* (0.001)	0.006*** (0.001)	0.006*** (0.001)	-0.006*** (0.001)	-0.003 (0.001)	-0.003 (0.001)
% Hispanic	0.003*** (0.001)	0.010*** (0.001)	0.011*** (0.001)	-0.005*** (0.001)	-0.002* (0.001)	-0.002* (0.001)
% Asian	0.032*** (0.002)	0.024*** (0.002)	0.024*** (0.002)	-0.012*** (0.003)	-0.017*** (0.003)	-0.017*** (0.003)
Top 10% Graduates	0.022*** (0.001)	0.019*** (0.001)	0.020*** (0.001)	0.018*** (0.001)	0.016*** (0.001)	0.016*** (0.001)
Constant	1.978*** (0.063)	-1.507*** (0.306)	-1.459*** (0.307)	1.862*** (0.079)	0.293 (0.330)	0.285 (0.333)
N (Schools)	646	646	646	723	723	723
Pseudo R-sq	0.600	0.626	0.626	0.440	0.447	0.447

Source: THEOP Administrative Records

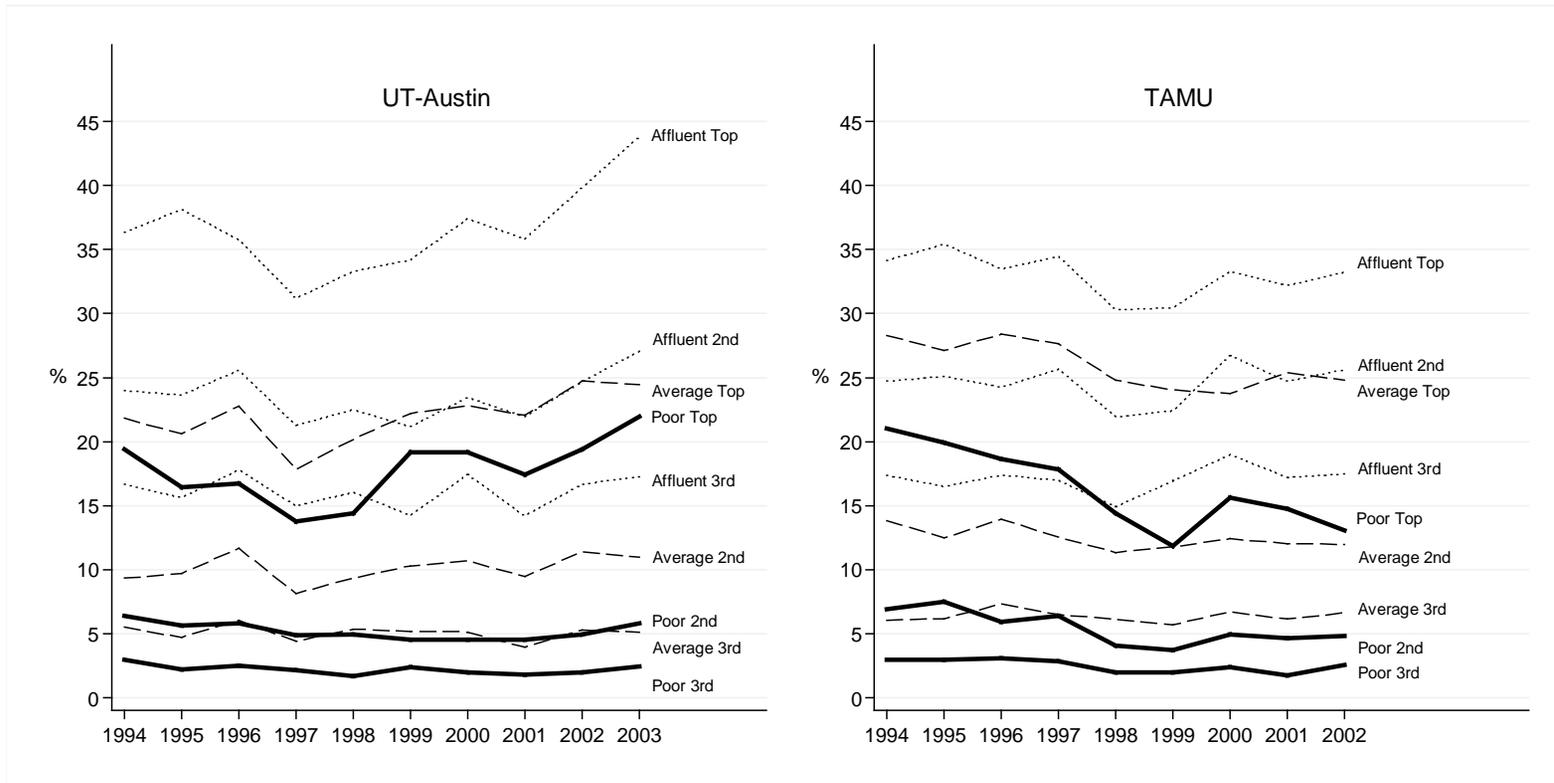
Note: Reference Groups in Brackets *p<0.05 **p<0.01 ***p<0.001

Table 3. Composition of the 2002 Applicant Pools to Nine Texas Universities by High School Socioeconomic Strata

Institution	US News Selectivity	Total Applicant Pool			Top 10% Applicant Pool		
		% Affluent	% Average	% Poor	% Affluent	% Average	% Poor
UT-Austin	More Selective	60.0	30.0	10.1	49.6	35.0	15.4
TAMU	More Selective	60.4	31.5	8.1	47.7	40.4	11.9
Rice	More Selective	57.7	32.7	9.6			
SMU	More Selective	66.7	27.8	5.6			
Texas Tech	More Selective	59.0	32.2	8.8	37.5	44.8	17.8
UT-Arlington	More Selective	55.6	33.4	11.0			
UT-San Antonio	Less Selective	32.4	32.9	34.7			
TAMU-Kingsville	Less Selective	13.7	33.3	53.0	7.7	23.4	68.4
UT-Pan Am	Less Selective	2.0	15.5	82.5			

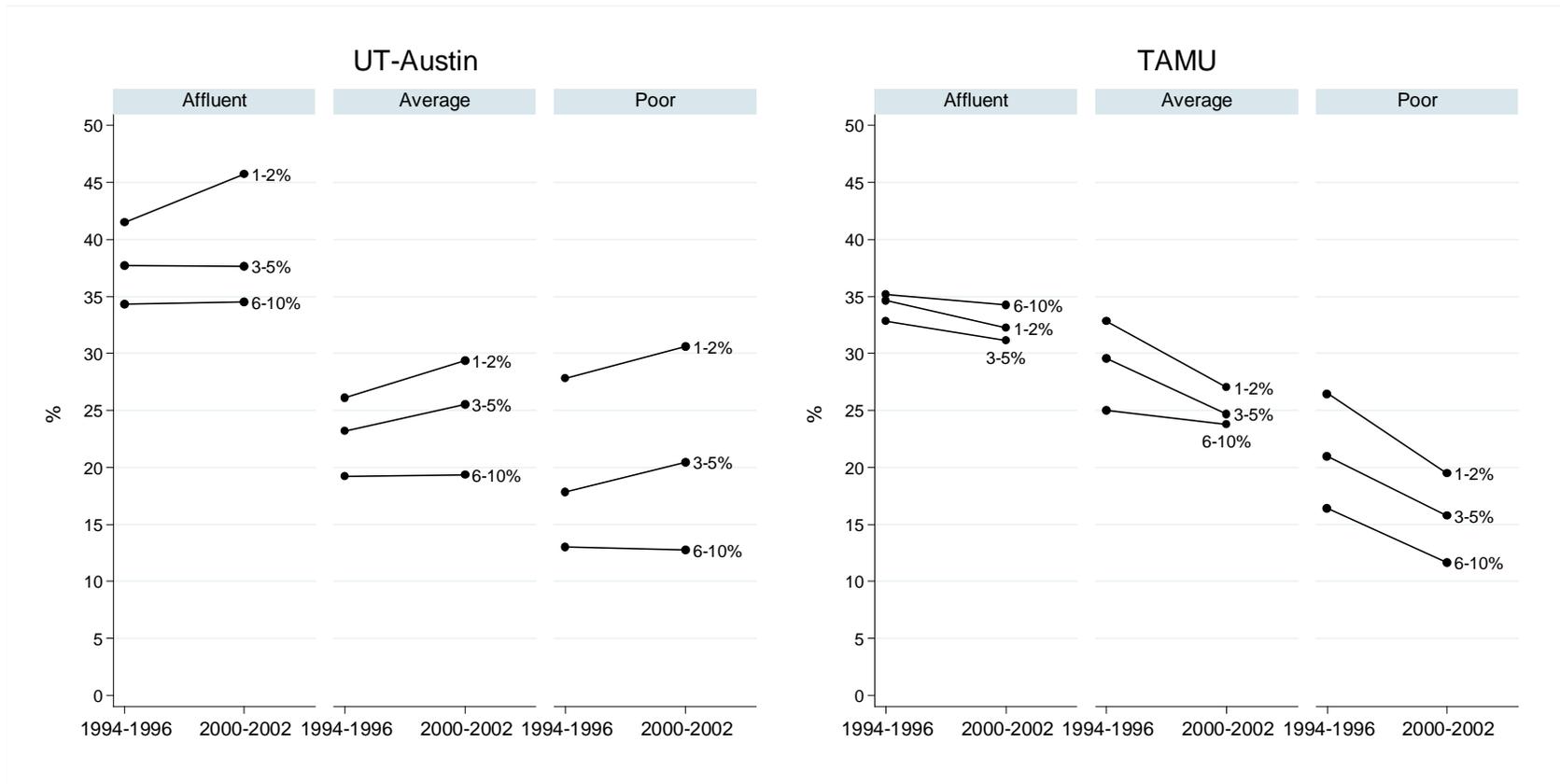
Source: THEOP Administrative Records

Figure 1. Application Rates by High School Type and Class Rank Decile



Sources: Texas Higher Education Opportunity Project (THEOP) administrative data; Texas Education Agency (TEA) data.

Figure 2. Application Rates by High School Type and Class Rank Percentile



Sources: Texas Higher Education Opportunity Project (THEOP) administrative data; Texas Education Agency (TEA) data.