IS THERE A "WORKABLE" RACE-NEUTRAL ALTERNATIVE TO AFFIRMATIVE ACTION IN COLLEGE ADMISSIONS?*

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The 2013 decision by the U.S. Supreme Court in the *Fisher v. University of Texas at Austin* case clarified when and how it is legally permissible for universities to use an applicant's race-ethnicity in its admissions decisions. The court concluded that such use is permissible when "no workable race-neutral alternatives would produce the educational benefits of diversity." This paper shows that replacing traditional affirmative action with a system that uses an applicant's predicted likelihood of being an underrepresented racial minority as a proxy for the applicant's actual minority status can yield an admitted class that has a lower predicted grade point average and likelihood of graduating than the class that would have been admitted using traditional affirmative action. This result suggests that race-neutral alternatives may not be "workable" from the university's perspective.
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I. INTRODUCTION

I.A. Legal Context

Affirmative Action in college admissions has always been controversial and its legality has been under constant challenge for over 40 years. The 1978 decision by the U.S. Supreme Court in the *Regents of the University of California v. Bakke* case was a split decision. Four justices voted for reversal of the lower court's ruling that the admissions system used by the Medical School at UC-Davis (which reserved a set number of admissions slots for minority applicants) violated the 14th Amendment of the U.S. Constitution and the Federal Civil Rights Act, four voted for affirmance of the lower court ruling, and Justice Powell voted to affirm the part of the decision that stated that UC-Davis's two-track admission system was unconstitutional, but rejected the part that enjoined UC-Davis from taking race into account. Rather, Powell concluded that "the goal of achieving a diverse student body is sufficiently compelling to justify consideration of race in admissions decisions under some circumstances" (p. 267). This ruling prompted "diversity" to be the only compelling argument that most universities could use to justify their use of affirmative action, disallowed the use of separate admissions systems for minority applicants, and limited universities to use race as only one factor among many in comparing applicants.

The 4-4-1 split decision in *Bakke* left the legality of college affirmative action on shaky ground. In 1992, Cheryl Hopwood and three other plaintiffs sued after being denied admittance to the University of Texas Law School. In the *Hopwood v. Texas* case, the Fifth Circuit Court of Appeals effectively rejected the *Bakke* opinion of Justice Powell. They concluded that:

> "…any consideration of race or ethnicity by the law school for the purpose of achieving a diverse student body is not a compelling interest under the Fourteenth Amendment.

> Justice Powell's argument in Bakke garnered only his own vote and has never represented the view of a majority of the Court in *Bakke* or any other case" (p. 25).

The U.S. Supreme Court decided not to hear the case. Subsequently, the Attorney General of Texas interpreted the *Hopwood* decision as a ban on race-based admissions, financial aid, and recruiting policies at both public and private institutions in the state. The first freshman class to be affected by the ban enrolled in the fall of 1997.

The ambiguities left by the divergence of decisions in the *Bakke* and *Hopwood* cases were resolved by the Supreme Court's 2003 decisions regarding the University of Michigan's undergraduate and law school admissions in *Gratz v. Bollinger* and *Grutter v. Bollinger*. The Court's decisions, found that

> "…diversity is a compelling interest in higher education, and that race is one of a number of factors that can be taken into account to achieve the educational benefits of a diverse student body. The Court found that the individualized, whole-file review used in the University of Michigan Law School's admissions process is narrowly tailored to achieve the educational benefits of diversity… while race is one of a number of factors that can be considered in undergraduate admissions, the automatic distribution of [a fixed number of points] to students from underrepresented minority groups is not narrowly tailored" (p. 1, Alger, 2003).

These decisions essentially allowed for race and ethnicity to be taken account of in admissions, so long as that consideration was not mechanical and was part of a full review of the applicant's file.

Furthermore, the *Grutter* decision outlined steps that universities must take prior to using race/ethnicity in their admission decisions. Justice O'Connor's Opinion of the Court noted that:

> Narrow tailoring does not require exhaustion of every conceivable race-neutral alternative. Nor does it require a university to choose between maintaining a reputation for excellence or fulfilling a commitment to provide educational opportunities to members of all racial groups. … Narrow tailoring does, however, require serious, good faith consideration of workable race-neutral alternatives that will achieve the diversity the university seeks" (p. 27).

Finally, the *Grutter* decision concluded that "race conscious admissions policies must be limited in time" (p. 30) and included O'Connor's note that:

> "It has been 25 years since Justice Powell first approved the use of race to further an interest in student body diversity in the context of public higher education. … We expect that 25 years from now, the use of racial preferences will no longer be necessary to further the interest approved today" (p. 31).[1]

To some critics of affirmative action, this stated expectation appeared to establish an expiration date for affirmative action, and created an invitation to continue to legally challenge university policies.

Following the *Grutter* decision, the University of Texas at Austin (UT) announced their return to using affirmative action in 2005 (Faulkner, 2005). UT's decision prompted a court challenge, *Fisher v. the University of Texas at Austin*, which was decided by the U.S. Supreme

[1] Krueger, Rothstein, and Turner (2006) concluded that this expectation is too optimistic; "Economic progress alone is unlikely to narrow the achievement gap enough in 25 years to produce today's racial diversity levels with race-blind admissions" (p. 282). For a sample of other recent empirical analyses of affirmative action in college admissions, see Holzer and Neumark (2000, 2006), Long (2004), Arcidiacono (2005), Howell (2010), and Hinrichs (2012).

Court in June of 2013. The Supreme Court invalidated the decision by Fifth Circuit Court of Appeals regarding the *Fisher* case. The Court determined that "the Fifth Circuit did not hold the University to the demanding burden of strict scrutiny articulated" in the *Grutter* and *Bakke* cases (*Fisher*, 2013a, p. 1). In remanding the case, they ruled that "the Fifth Circuit must assess whether the University has offered sufficient evidence to prove that its admissions program is narrowly tailored to obtain the educational benefits of diversity" (*Fisher*, 2013a, p. 3). "University must prove [to the reviewing court] that the means it chose to attain that diversity are narrowly tailored to its goal. On this point, the University receives no deference….The reviewing court must ultimately be satisfied that **no workable race-neutral alternatives would produce the educational benefits of diversity**" (*Fisher*, 2013b, p. 10) [emphasis added].

The *Fisher* decision, which surprised many who expected a more conservative set of justices to overturn the *Grutter* decision and strike down affirmative action in admissions, has yielded a greater degree of legal stability. However, the term "workable" remains vague. Workable seems to mean that the race-neutral alternative would not have too great of an adverse effect on other university objectives (such as in maintaining the "quality" of its admitted students). If challenged, a university would need to convince a court that race-neutral alternatives are not workable because the costs of such policies would be too great. The Supreme Court's decisions are likewise vague regarding what "race-neutral" means. The *Grutter* decision obliquely makes the following reference:

> "Universities in California, Florida, and Washington State, where racial preferences in admissions are prohibited by state law, are currently engaged in experimenting with a wide variety of alternative approaches. Universities in other States can and should draw on the most promising aspects of these race-neutral alternatives as they develop" (p. 31).

A more cogent discussion of legal "race-neutral" alternatives can be found in Coleman, Palmer, and Winnick (2008), who conclude that "facially race-neutral policies are subject to strict scrutiny (and qualify as legally 'race-conscious') only if they are motivated by a racially discriminatory purpose and result in a racially discriminatory effect" (p. 5). They caution universities that their policies may be deemed "race-conscious" if the policy "would not have been promulgated but for the motivation for achieving segregation or racial impact", "race is the predominant motivating factor behind the policy", or "there is a deliberate use of race-neutral criteria as a proxy for race" (p. 5). It would therefore seem that *any* policy that attempted to give weight in admissions decisions to any other factors aside from race (e.g., socioeconomic status) with the goal of boosting minority admissions would be deemed to be not "race-neutral" and would instead be deemed "race-conscious" and face the strict scrutiny test. Thus, there is an inherent tension in the terms "race-neutral" and "alternative" – if one seeks an "alternative" policy to race-based affirmative action that serves the same goal, then such a policy cannot be deemed "race-neutral." As an example, after the *Hopwood* decision, the Texas Legislature passed H.B. 588, which gave state institutions a list of 18 socioeconomic indicators that they could use in making first-time freshman admissions decisions. To the extent that the use of such indicators was *intended* to serve the purpose of replacing race-based affirmative action, such use would not be "race-neutral." This tension was recognized in Justice Ginsburg's dissent in the *Fisher* case:

> "I have said before and reiterate here that only an ostrich could regard the supposedly neutral alternatives as race unconscious… As Justice Souter observed, the vaunted alternatives suffer from 'the disadvantage of deliberate obfuscation'" (*Fisher*, 2013c, p. 2).

I.B. Research Questions

This paper evaluates the effects of replacing "traditional affirmative action" (which places direct weight on the applicant's race/ethnicity in the university's admissions decision) with "proxy-based affirmative action" (which places weight on the applicant's predicted likelihood of being an underrepresented minority). Nakedly and deliberately engaging in such "proxy-based affirmative action" would not qualify as a "race-neutral alternative." Yet, such a direct alternate policy yields the upper-bound impact for other less transparent alternative policies, such as giving added weight to socioeconomic status or utilizing *de facto* high school segregation to help boost minority admissions by admitting all students who graduate in the top-X% of their high school classes.[2]

Using administrative admissions data from the University of Texas at Austin, I answer the following research questions. First, if UT used all of the information that they had obtained on an applicant (aside from the student's race) to predict the student's race and then used proxy-based affirmative action rather than traditional affirmative action, what effects would that policy change yield in terms of the academic qualities of the admitted student body? Second what share of minority and non-minority students would be "displaced" (i.e., admitted under one regime but not the other) when using the proxy-based system rather than race-based affirmative action?

[2] Another race-neutral alternative would be for universities to attempt to boost minority application rates by, for example, doing more recruiting visits to high schools with large minority enrollments. The theoretical potential for such an application-based strategy to be efficacious is established in Brown and Hirschman (2006). Yet, there is scant empirical evidence to document the effectiveness of such recruiting strategies, and there are inferences that such alternative strategies have been ineffective (Long, 2007).

This paper builds off the theoretical work of Chan and Eyster (2003) who predicted that universities would respond to affirmative action bans by shifting the weights placed on applicant characteristics in ways to favor minority applicants, and the empirical work of Long and Tienda (2008), who used the same administrative data and found "some evidence that universities changed the weights they placed on applicant characteristics in ways that aided underrepresented minority applicants…these changes were insufficient to restore Black and Hispanic applicants' share of admitted students" (p. 255). That is, while UT and Texas A&M University did respond to the *Hopwood* decision by implicitly using correlated indicators for race, their efforts were not sufficient to restore the racial composition of the admitted students. Long and Tienda focused on *actual* changes enacted by UT, Texas A&M, and Texas Tech University in the years following the *Hopwood* decision. In contrast, this paper estimates *hypothetical* changes that UT could have taken so as to evaluate the implications of fully restoring minority representation using correlated indicators of the student's race/ethnicity.

As shown below, I find that UT had limited ability to predict a student's race-ethnicity just based on the information it collected on applicants during these years. Consequently, if they sought to restore the representation of these minority groups, they would need to place more weight on the applicant's predicted likelihood of being an underrepresented minority than they previously placed directly on the applicant's minority status. Doing so, however, comes at the cost of yielding an admitted class that has a lower predicted grade point average and likelihood of graduating than the class that would have been admitted using traditional affirmative action. This result suggests that race-neutral alternatives may not be "workable" from the university's perspective.

II. METHODS

I begin by estimating the parameters of UT's "Traditional Race-Based Affirmative Action" admissions system. I estimate the following probit regression using data on UT's applicants in 1996, which was the last year in which UT could use race-based affirmative action prior to enforcement of the *Hopwood* ruling:

(1) $\text{Prob}(Admitted_i = 1) = \Phi(\beta_0 + \beta_1 URM_i + \boldsymbol{X}_i'\boldsymbol{\beta}_2 + \varepsilon_i)$

URM_i equals one if the student is an "underrepresented minority", which is inclusive of Black, Hispanic, and American Indian/Alaskan Native students[3], and $\boldsymbol{X}$ is a vector of other characteristics that the university considers in their admissions decision.

In the remainder of the analysis, I utilize data on UT's applicants in 1998, 1999, and 2000. Using these data, I evaluate the efficacy of alternative policies in the years immediately following the *Hopwood* decision.

As salient measures of the educational quality and desirability of each applicant, I estimate the cumulative grade point average (GPA) and likelihood of graduating within 6 years[4]

[3] Affirmative action practices at colleges and universities in the United States have historically not given preference to Asian American students (Bowen & Bok, 1998). Long (2004) and Long and Tienda (2008) found no significant advantage or disadvantage given to Asian applicants relative to White applicants using, respectively, national college admissions data from 1992 and institutional admissions data from the UT in pre-*Hopwood* years. As the data I use only record race as "Asian," I cannot determine any greater level of racial or ethnic specificity beyond this category.

using data on students who enrolled at UT in 1998, as shown in Equation 2a and 2b (which uses *j* subscripts to denote enrollees)[5]:

(2a) $GPA_j = \gamma_0 + \gamma_1 URM_j + \boldsymbol{Z}_j'\boldsymbol{\gamma_2} + \varepsilon_j$

(2b) $\text{Prob}(Graduate_j=1) = \Phi(\delta_0 + \delta_1 URM_j + \boldsymbol{Z}_j'\boldsymbol{\delta_2} + \varepsilon_j)$

$\boldsymbol{Z}$ includes characteristics that are observable to the university for its applicants.[6] Equation 2a is estimated using a tobit specification with lower and upper bounds of 0.0 and 4.0, respectively. I assume that these parameters, which are estimated based on enrollees, would roughly hold for all applicants, and apply the resulting coefficients to estimate the applicant's "*Quality*" from the perspective of the university:

(3a) $Quality1_i = Predicted\ GPA_i = 4\times\Phi(-(4-A_i)/\sigma) + [\Phi((4-A_i)/\sigma) - \Phi((0-A_i)/\sigma)] \times$

$\{A_i + \sigma\times[\phi((0-A_i)/\sigma) - \phi((4-A_i)/\sigma)] / [\Phi((4-A_i)/\sigma) - \Phi((0-A_i)/\sigma)]\},$

where $A_i = \hat{\gamma}_0 + \hat{\gamma}_1 URM_i + \boldsymbol{Z}_i'\hat{\boldsymbol{\gamma}}_2/\sigma$

(3b) $Quality2_i = Predicted\ Likelihood\ of\ Graduation_i = \Phi(\hat{\delta}_0 + \hat{\delta}_1 URM_i + \boldsymbol{Z}_i'\hat{\boldsymbol{\delta}}_2)$

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[4] There are strong reasons why universities care about these measures as indicators of student quality (e.g., see Geiser and Santelices (2007), and Bowen, Chingos, and McPherson (2011)). There is political pressure being exerted on colleges to raise graduation rates; President Obama launched the College Scorecard in 2013, which rates colleges on a variety of dimensions including their 6-year graduation rates.

[5] This analysis is restricted to 1998 enrollees because 6 years of transcript data are not available for 1999 and 2000 enrollees.

[6] As shown later in Table I, $\boldsymbol{Z}$ is a vector of applicant characteristics that is inclusive of $\boldsymbol{X}$.

Next, using data from 1998-2000 applicants, I estimate the probability that the applicant is an underrepresented minority based on observable applicant characteristics using the probit regression shown in Equation 4:

(4) $\text{Prob}(URM_i=1) = \Phi(\eta_0 + \boldsymbol{Z}_i'\boldsymbol{\eta}_1 + \varepsilon_i)$

I then compute the probability that applicant *i* is an underrepresented minority, which is subsequently used as the proxy indicator for the student's race:

(5) $Proxy_i = \Phi(\hat{\eta}_0 + \boldsymbol{Z}_i'\hat{\boldsymbol{\eta}}_1)$

Finally, I simulate the racial composition and *Quality* of admitted students under three admissions systems as follows[7]:

(6a) "Traditional Race-Based Affirmative Action":

$AdmissionsIndex_i = \Phi(\hat{\beta}_0 + \hat{\beta}_1 URM_i + \boldsymbol{X}_i'\widehat{\boldsymbol{\beta}}_2 + v_i)$

(6b) "Passive Affirmative Action Ban":

$AdmissionsIndex_i = \Phi(\hat{\beta}_0 + 0\times URM_i + \boldsymbol{X}_i'\widehat{\boldsymbol{\beta}}_2 + v_i)$

(6c) "Proxy-Based Affirmative Action":

$AdmissionsIndex_i = \Phi(\hat{\beta}_0 + \theta\times Proxy_i + \boldsymbol{X}_i'\widehat{\boldsymbol{\beta}}_2 + v_i)$

The beta parameters in Equations 6a-6c are derived from the estimation of Equation 1. Equation 6a is used to simulate the class that UT would have admitted had they maintained their pre-*Hopwood* admission system. The second admission system, which I label "Passive Affirmative Action Ban", holds the weights on $\boldsymbol{X}$ characteristics constant at $\widehat{\boldsymbol{\beta}}_2$, yet sets the weight on *URM* ($\hat{\beta}_1$) to zero. The idea here is that the university accommodates the affirmative action ban, but

[7] v_i is a random variable which (consistent with a probit model) is distributed $N(0,1)$. Since a random variable is included in the computation of the student's *AdmissionIndex*, I repeat the simulation ten times and report the mean of the ten simulations.

makes no other changes to its admissions formula in order to boost minority enrollment. The third admission system, which I label "Proxy-Based Affirmative Action", gives positive weight to the likelihood that the student is an underrepresented minority in the university's admissions decisions. By slowly increasing the value of θ in Equation 6c, I demonstrate how (a) using a proxy can increase minority representation among the admitted class, and (b) how doing so has distortionary effects on the set of admitted students and potentially has impacts on the academic quality of the admitted set. For these simulations, I assume that UT would sort applicants based on their *AdmissionsIndex* scores and admit the top-*N* applicants, where *N* is actual number of students who were admitted during these three years.[8]

III. DATA

Administrative data for the analysis was compiled by the Texas Higher Education Opportunity Project at Princeton University (http://opr.princeton.edu/archive/theop). Table I contains the descriptive statistics. The online appendix contains additional information on the variables and their construction. Since some variables are missing in the applicant files (most notably for parent's education in 1996), I use multiple imputation by chained equations, creating five imputed datasets, and combine the results using Rubin's (1987) method.

[Insert Table I here]

[8] Note that I am assuming that the university would not adjust *N* or the parameters in Equation 6 to address variation across students in their likelihood of enrolling conditional on being admitted.

IV. RESULTS

IV.A. Regression Results

Column 1 of Table II contains the parameter estimates reflecting UT's pre-*Hopwood* admission system (i.e., Equation 1). Consistent with prior research, underrepresented minorities are substantially more likely to be admitted than observably similar non-URMs. The average marginal effect of being a URM on the likelihood of admittance is 15.9 percentage points. The university also gave positive (but declining) weight to students with higher SAT/ACT test scores, and was more likely to admit students who took and scored 3 or higher on Advanced Placement (AP) exams and who are from Texas and are U.S. citizens. Notably, there is no evidence that UT attempted to use socioeconomic characteristics in their pre-*Hopwood* admissions decisions as there was no significant weight placed on parent's highest education level or the characteristics of the high schools the student attended.

[Insert Table II here]

Columns 2 and 3 of Table II contains the parameter estimates for Equations 2a and 2b, which show the relationship of student characteristics to future academic success. Underrepresented minority and Asian American enrollees had lower cumulative GPAs than their white counterparts, but there were no significant racial differences in 6-year graduation rates. Test scores and high school class rank were both positively associated with likelihood of graduation (in their relevant ranges), and class rank (but not test scores) was positively associated with cumulative GPA. Taking and "passing" AP exams were positively associated with both collegiate success measures. Female students, non-U.S. citizens, those who graduated from a UT "feeder" high school, had a parent with a graduate degree, and whose parents' income was over $80,000 earned higher college GPAs and were more likely to graduate. Finally,

students from Texas earned lower GPAs, but were more likely to gradate from UT. When these coefficients are applied to all applicants in the years 1998-2000 using Equations 3a and 3b, the predicted cumulative GPA has a mean (s.d.) of 2.80 (0.44), while the predicted likelihood of graduation has a mean (s.d.) of 68.5% (17.7%).

Column 4 of Table II contains the parameter estimates for Equation 4, which predicts the applicant's likelihood of being an underrepresented minority. URM applicants have lower SAT/ACT scores, are less likely to have taken and passed an AP exam (except in AP foreign languages), are less likely to be female, more likely to be a U.S. citizen, and have parents with lower education and lower income. All of these factors are positively associated with future academic success (as shown in columns 2 and 3). Thus, as the university places more weight on any of these factors in an effort to boost minority admissions, they will obtain an admitted class with lower "quality".

IV.B. Simulation Results

Table III shows the extent to which alternative admissions policies displace students from the available slots. Starting with the middle panel, among the URM students who are admitted using the traditional race-based affirmative action admissions policy, only 83% are admitted under the passive affirmative action ban system (i.e., 17% are "displaced" by the ban). Moving to a proxy-based system would only somewhat offset this displacement. Even when the weight placed on the $Proxy_i$ in Equation 6c (i.e. θ) is 3.5 (which is more than 4 times as large as the estimated coefficient on URM_i in Equation 6a), there are still 9% of those who would be admitted under traditional affirmative action admissions policy who are not admitted. Moreover, among URMs who are *not* admitted under the traditional affirmative action admissions policy, 23% would be admitted under the proxy-based system when $\theta = 3.5$. Thus, the proxy system

leads to admission of lower-"quality" URMs. Finally, as seen in the last two rows of Table III, the proxy-based affirmative action policy brings in non-URMs who would not be admitted under either the traditional affirmative action or passive ban systems. These rows reveal an inefficiency in the proxy-based system as these newly admitted non-URMs are only admitted in order to improve URMs' share of admitted students.

[Insert Table III here]

Table IV shows the effect of the alternate admission systems on the composition and quality of the admitted students. Moving from traditional affirmative action to a passive affirmative action ban system lowers URMs' share of admitted students from 19.5% to 16.1%. If the university wanted to restore this URM share using the proxy system, they would need to set $\theta = 3.5$. As the next two rows show, doing so comes as the cost of lowering student quality. First note that implementing the banning affirmative action only mildly raises quality, increasing average predicted GPAs from 2.944 to 2.952 and predicted likelihood of graduating from UT within 6 years from 74.5% to 74.7%. Subsequently implementing a proxy-based affirmative action system completely undoes this improvement. If such a proxy-based system were implemented such as to fully restore URMs' share, it would lower average predicted GPAs down to 2.922 and predicted likelihood of graduating from UT within 6 years down to 73.7%. Figure I graphically shows the effects of the proxy system on graduation rates. To put these changes in perspective, moving from the passive affirmative action ban system to the fully-implemented proxy-based system would lower the average admitted student from the 61^{st} to 59^{th} percentile of the distribution of applicants based on predicted cumulative GPA, and from 57^{th} to 55^{th} percentile based on predicted likelihood of graduating from UT within 6 years. Or, for every

10,000 enrollees, UT should expect nearly 100 fewer graduates. And, among all 4-year institutions nationally, UT's 6-year graduation rate would fall from the 88th to 87th percentile.[9]

[Insert Table IV here]

[Insert Figure I here]

V. CONCLUSION

The *Grutter* and *Fisher* decisions have created a clear mandate that universities must first show that "workable race-neutral" alternatives are insufficient to produce the benefits of having a diverse class of enrollees before these universities are permitted to use race-based affirmative action. All alternative admission systems that attempt to boost minority enrollment by giving weight to other non-race applicant characteristics that are correlated with race (e.g., systems that give advantage to lower socioeconomic status applicants for this purpose) are in essence attempts to create "proxies" for minority status. In this paper, I investigate what would happen if a university *directly* gave weight to the applicant's predicted likelihood of being an underrepresented minority applicant (rather than placing arbitrary weights on correlated indicators). I show that while such a system can be used to restore minority's share of admitted students, doing so can result in a class that has modestly lower predicted likelihood of collegiate academic success. Furthermore, utilizing such a proxy-based admission system is inefficient; in the simulation, I find that it required the university to place over four times as much weight on predicted minority status as the weight it previously placed directly on actual minority status, resulting in non-minority applicants being admitted who would not have been otherwise admitted.

[9] Calculated using 2012 data from the Integrated Postsecondary Education Data System.

If a university attempted to utilize a proxy-based admission system, they would encounter a variety of dilemmas. First, to reduce the inefficiencies discussed above, they may be tempted to seek out additional information that is correlated with minority status. In a report I was commissioned to produce for the Educational Testing Service (Long, Forthcoming), I show how the collection of additional information could improve the prediction of minority status. For example, using 195 characteristics of 10th graders in the Education Longitudinal Study of 2002, I was able to correctly predict underrepresented minority status for 82% of the students. The top-3 most predictive characteristics were the minority status of the student's 1st, 2nd, and 3rd best friends – such information would be difficult for a university to reliably obtain. I note that "(w)hile the universities may want to go down this path, they may be thwarted by the monetary cost of purchasing such information, the political challenge that would be likely to follow from such privacy invasion, and the distaste it would engender in applicants" (p. 8). Furthermore, a naked and direct use of racial proxies is sure to invite legal challenge as such a policy would not be deemed "race neutral" as discussed in the introduction. On the other hand, the use of less direct proxy systems (such as arbitrary weighting of correlated indicators) is likely to produce even more inefficiency, distorting the set of admitted students, and further lowering academic quality. The second challenge universities would face is the *extent* to which they attempted to restore minority students' share of admitted students via the proxy-based system. If they sought to exactly offset the decline in minority students' share of admitted students brought about by the elimination of traditional race-based affirmative action (as was done in the simulation in this paper), they could be deemed guilty of having a quota for minority students, which would violate the *Bakke* decision. A lower-court ruling which went against the University of Michigan Law School in the *Grutter* case cited the university's target of 10-12% minority students as

unconstitutional; "by using race to ensure the enrollment of a certain minimum percentage of underrepresented minority students, the law school has made the current admissions policy practically indistinguishable from a quota system" (*Grutter v. Bollinger*, 137 F. Supp. 2d 851 (E.D. Mich. 2001)).

Setting aside these challenges, whether such alternative admissions systems are "workable" is in the eye of the beholder. I find that a proxy-based system (using the information currently available to universities) would modestly lower the predicted collegiate success of admitted students. In the simulation in this paper, the admitted students' predicted GPAs are found to fall from 2.95 to 2.92, and predicted likelihood of graduating from 74.7% to 73.7%. Whether this is a large enough cost to the university to be deemed not "workable" is unclear, and would likely vary from university-to-university and court-to-court.

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TABLE I

DESCRIPTIVE STATISTICS

	(1) Number of Non-Missing Observations	(2) Mean	(3) Number of Non-Missing Observations	(4) Mean	(5) Number of Non-Missing Observations	(6) Mean
Student is Admitted	16,628	66.4%				
Student's Cumulative GPA in UT Classes Through Spring 2005			6,835	2.89		
Student Graduated from UT Within 6 Years			6,835	72.6%		
Student is an Underrepresented Minority	16,628	19.2%	6,831	16.8%	50,705	19.0%
Student is Asian American	16,628	13.8%	6,831	16.9%	50,705	14.6%
Student is from Foreign Country	16,628	5.0%	6,831	0.7%	50,705	6.5%
Student's SAT/ACT Test Score (in 100s of SAT points)	16,187	11.97	6,835	12.07	49,075	11.92
Student's High School Class Rank Percentile	14,580	81.3	6,083	82.8	40,329	80.9
Student Took Advanced Placement (AP) Exam	16,628	20.3%	6,835	52.3%	50,914	24.3%
Student Scored 3+ on AP Math Exam	16,628	5.8%	6,835	18.3%	50,914	8.7%
Student Scored 3+ on AP Science Exam	16,628	2.7%	6,835	9.9%	50,914	4.3%
Student Scored 3+ on AP Foreign Language Exam	16,628	2.3%	6,835	9.1%	50,914	4.1%
Student Scored 3+ on AP Social Science Exam	16,628	3.8%	6,835	15.4%	50,914	7.2%
Student Scored 3+ on Other AP Exam	16,628	9.9%	6,835	30.9%	50,914	14.4%
Student is Female	16,628	49.9%	6,835	51.3%	50,867	49.9%
Student is a U.S. Citizen	16,628	90.0%	6,835	94.6%	50,914	89.1%
Parents' Highest Education is Below High School	7,553	0.2%	6,582	1.0%	45,366	1.2%
Parents' Highest Education is Some High School	7,553	1.7%	6,582	1.2%	45,366	1.4%
Parents' Highest Education is High School Graduate or G.E.D.	7,553	5.0%	6,582	5.4%	45,366	5.7%
Parents' Highest Education is Some College	7,553	14.7%	6,582	14.9%	45,366	15.2%
Parents' Highest Education is Bachelor's Degree	7,553	32.0%	6,582	33.5%	45,366	33.0%
Parent's Income is <$20,000			6,297	7.1%	42,468	6.8%
Parent's Income is >=$20,000 and <$40,000			6,297	14.5%	42,468	14.5%
Parent's Income is >=$40,000 and <$60,000			6,297	17.7%	42,468	15.9%
Parent's Income is >=$60,000 and <$80,000			6,297	17.7%	42,468	15.4%
Student is from a Single Parent Family			6,835	15.3%	50,914	14.5%
Student is from Texas	16,628	78.7%	6,829	92.0%	50,784	81.2%
Student Attended a UT "Feeder" High School	16,628	19.5%	6,835	26.3%	50,909	21.7%
Student Attended a "Longhorn Opportunity Scholarship" HS	16,628	2.3%	6,835	1.7%	50,914	2.6%
Student Attended a "Century Scholars" High School	16,628	2.1%	6,835	1.9%	50,914	2.2%
Student Attended a Private High School	11,955	8.8%	6,546	8.8%	45,634	11.3%
High School's Average SAT/ACT Score (in ACT points)	13,164	21.5	6,756	21.8	48,068	21.8
HS's % Who Took the SAT + % Who Took the ACT Exam	11,354	79.4%	5,854	79.0%	39,771	83.9%
Year of Application	1996		1998		1998-00	
Group	Applicants		Enrollees		Applicants	
Used for Equation(s):	1		2a, 2b		3a, 3b, 4, 5, 6a, 6b, 6c	

Notes: The squares of the following variables are additionally included in both the $\boldsymbol{X}$ the $\boldsymbol{Z}$ vectors: Student's High School Class Rank Percentile, Student's SAT/ACT Test Score, High School's Average SAT/ACT Score, and High School's Percentage Who Took the SAT or ACT Exam.

TABLE II

REGRESSION RESULTS

	(1) Equation 1: Y = Admitted				(2) Equation 2a: Y = Cumulative GPA			(3) Equation 2b: Y = Graduated Within 6 Years				(4) Equation 4: Y = Student is a URM			
	Coef.	Std. Error		Ave. Marginal Effect	Coef.	Std. Error		Coef.	Std. Error		Ave. Marginal Effect	Coef.	Std. Error		Ave. Marginal Effect
Student is an Underrepresented Minority	0.820	(0.074)	***	15.9%	-0.046	(0.026)	*	0.043	(0.055)		1.3%				
Student is Asian American	-0.063	(0.049)		-1.2%	-0.051	(0.024)	***	-0.001	(0.054)		0.0%				
Student is from Foreign Country	-0.102	(0.146)		-2.0%	0.034	(0.122)		-0.204	(0.276)		-5.9%				
Student's SAT/ACT Test Score (in 100s of SAT points)	2.175	(0.229)	***	42.1%	-0.010	(0.079)		0.356	(0.168)	**	10.3%	-0.419	(0.062)	***	-8.9%
Student's SAT/ACT Test Score Squared	-0.065	(0.010)	***	-1.3%	0.001	(0.003)		-0.0172	(0.007)	**	-0.5%	0.0114	(0.003)	***	0.2%
Student's High School Class Rank Percentile	0.040	(0.025)		0.8%	-0.010	(0.005)	***	0.006	(0.007)		0.2%	-0.004	(0.003)		-0.1%
Student's High School Class Rank Percentile Squared	0.0000	(0.0002)		0.000%	0.0002	(0.000)	***	0.0002	(0.0000)	***	0.005%	0.0000	(0.0000)		0.000%
Student Took Advanced Placement (AP) Exam	0.756	(0.062)	***	14.7%	0.048	(0.026)	*	0.058	(0.053)		1.7%	-0.067	(0.031)	**	-1.4%
Student Scored 3+ on AP Math Exam	0.531	(0.152)	***	10.3%	0.083	(0.023)	***	0.199	(0.061)	***	5.8%	-0.105	(0.040)	***	-2.2%
Student Scored 3+ on AP Science Exam	0.193	(0.191)		3.7%	-0.065	(0.031)	***	-0.044	(0.073)		-1.3%	-0.181	(0.058)	***	-3.8%
Student Scored 3+ on AP Foreign Language Exam	0.288	(0.153)	*	5.6%	0.123	(0.028)	***	0.107	(0.077)		3.1%	0.769	(0.045)	***	16.3%
Student Scored 3+ on AP Social Science Exam	0.178	(0.139)		3.5%	0.078	(0.026)	***	0.156	(0.069)	**	4.5%	-0.176	(0.047)	***	-3.7%
Student Scored 3+ on Other AP Exam	0.208	(0.094)	**	4.0%	0.041	(0.023)	*	0.069	(0.057)		2.0%	-0.089	(0.032)	***	-1.9%
Student is Female	-0.003	(0.045)		-0.1%	0.193	(0.018)	***	0.155	(0.036)	***	4.5%	-0.063	(0.019)	***	-1.3%
Student is a U.S. Citizen	0.246	(0.062)	***	4.8%	-0.098	(0.035)	***	-0.227	(0.090)	**	-6.6%	0.625	(0.061)	***	13.2%

Table II is continued on the next page.

TABLE II (Continued)

REGRESSION RESULTS

	(1) Equation 1: Y = Admitted			(2) Equation 2a: Y = Cumulative GPA			(3) Equation 2b: Y = Graduated Within 6 Years			(4) Equation 4: Y = Student is a URM		
	Coef.	Std. Error	Ave. Marginal Effect	Coef.	Std. Error		Coef.	Std. Error	Ave. Marginal Effect	Coef.	Std. Error	Ave. Marginal Effect
Parents' Highest Education is Below High School	-0.160	(0.497)	-3.1%	-0.165	(0.113)		-0.209	(0.172)	-6.1%	0.605	(0.086) ***	12.8%
Parents' Highest Education is Some High School	-0.045	(0.117)	-0.9%	-0.174	(0.074) ***		-0.191	(0.170)	-5.5%	0.259	(0.070) ***	5.5%
Parents' Highest Education is High School Graduate or G.E.D.	0.078	(0.071)	1.5%	-0.161	(0.043) ***		-0.184	(0.086) **	-5.3%	0.209	(0.035) ***	4.4%
Parents' Highest Education is Some College	0.036	(0.049)	0.7%	-0.106	(0.028) ***		-0.155	(0.058) ***	-4.5%	0.120	(0.025) ***	2.5%
Parents' Highest Education is Bachelor's Degree	0.001	(0.037)	0.0%	-0.057	(0.018) ***		-0.015	(0.041)	-0.4%	-0.060	(0.019) ***	-1.3%
Parent's Income is <$20,000				-0.110	(0.045) ***		-0.244	(0.096) **	-7.1%	0.548	(0.045) ***	11.6%
Parent's Income is >=$20,000 and <$40,000				-0.079	(0.029) ***		-0.249	(0.069) ***	-7.2%	0.456	(0.032) ***	9.7%
Parent's Income is >=$40,000 and <$60,000				-0.080	(0.024) ***		-0.258	(0.058) ***	-7.5%	0.287	(0.026) ***	6.1%
Parent's Income is >=$60,000 and <$80,000				-0.019	(0.022)		-0.127	(0.054) **	-3.7%	0.237	(0.025) ***	5.0%
Student is from a Single Parent Family				0.030	(0.026)		0.041	(0.052)	1.2%	0.062	(0.024) ***	1.3%
Student is from Texas	0.632	(0.136) ***	12.3%	-0.100	(0.040) ***		0.138	(0.074) *	4.0%	0.302	(0.042) ***	6.4%
Student Attended a UT "Feeder" High School	-0.005	(0.061)	-0.1%	0.092	(0.028) ***		0.096	(0.053) *	2.8%	-0.067	(0.060)	-1.4%
Student Attended a "Longhorn Opportunity Scholarship" HS	-0.261	(0.163)	-5.0%	0.138	(0.094)		0.272	(0.148) *	7.9%	0.555	(0.123) ***	11.8%
Student Attended a "Century Scholars" High School	0.228	(0.147)	4.4%	-0.090	(0.075)		-0.225	(0.150)	-6.5%	-0.019	(0.117)	-0.4%
Student Attended a Private High School	-0.015	(0.088)	-0.3%	0.072	(0.062)		-0.020	(0.088)	-0.6%	0.321	(0.095) ***	6.8%
High School's Average SAT/ACT Score (in ACT points)	-0.267	(0.267)	-5.2%	0.370	(0.180) ***		-0.021	(0.192)	-0.6%	-1.221	(0.271) ***	-25.9%
High School's Average SAT/ACT Score Squared	0.007	(0.006)	0.1%	-0.006	(0.004)		0.005	(0.004)	0.1%	0.024	(0.006) ***	0.5%
HS's % Who Took the SAT + % Who Took the ACT Exam	-0.275	(0.390)	-5.3%	0.644	(0.224) ***		1.041	(0.418) **	30.3%	0.094	(0.292)	2.0%
HS's % Who Took the SAT + % Who Took the ACT Exam Squared	0.130	(0.185)	2.5%	-0.244	(0.128) *		-0.419	(0.227) *	-12.2%	0.050	(0.145)	1.1%
Constant	-17.417	(2.470) ***		-3.457	(1.888) *		-4.95	(2.124) **		16.580	(3.005) ***	
Sigma				0.619								
Number of Observations		16,628			6,835			6,835			50,914	

Notes: ***, **, and * reflect two-sided p-values that are, respectively, equal to or less than 1%, 5%, and 10%. Robust statndard errors clustered at the high school level are used. For the four variables that are squared, the listed "average marginal effect" does not take into account the issues with evaluating interaction terms in non-linear models as discussed by Ai and Norton (2003), but rather simply shows the average of $\beta_k \Phi(X_i'\beta)$.

TABLE III

SIMULATION RESULTS: DISPLACEMENT OF ADMISSION SLOTS

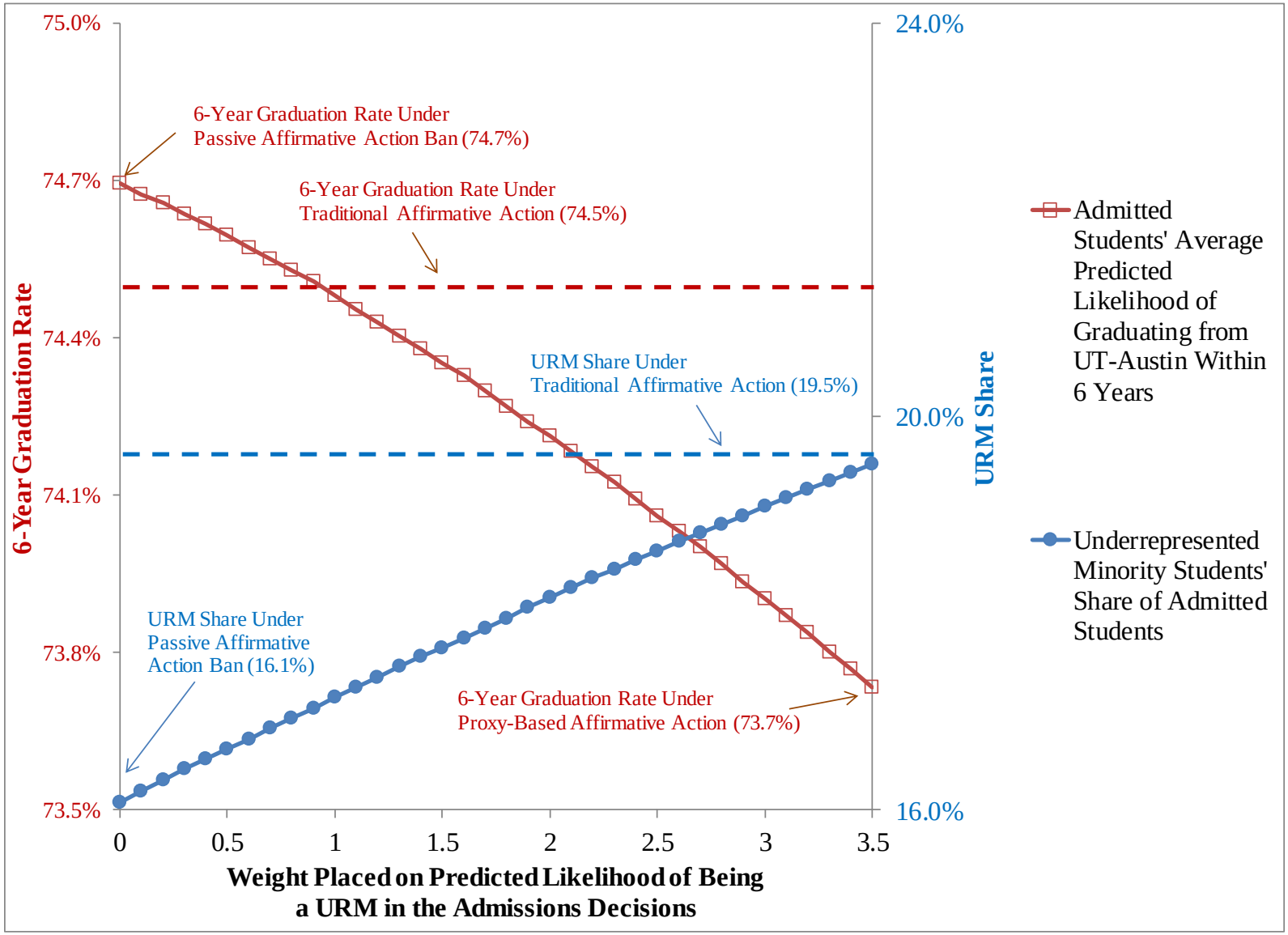
		Percent Admitted Under:									
		Traditional Affirmative Action	Passive Affirmative Action Ban	Proxy-Based Affirmative Action with Weight on Predicted Likelihood of Being a URM =							
				0.1	0.5	1	1.5	2	2.5	3	3.5
All Applicants	Admitted Under Traditional Affirmative Action	100	97	97	97	98	97	97	96	95	94
	Admitted Under Passive Affirmative Action Ban	97	100	100	99	98	97	96	95	94	94
	Not Admitted Under Traditional Affirmative Action	0	7	7	6	5	6	7	9	10	12
	Not Admitted Under Passive Affirmative Action Ban	7	0	0	2	4	6	8	10	12	14
URM Applicants	Admitted Under Traditional Affirmative Action	100	83	83	85	88	89	90	90	90	91
	Admitted Under Passive Affirmative Action Ban	100	100	100	100	99	99	98	98	97	97
	Not Admitted Under Traditional Affirmative Action	0	0	0	0	0	4	8	13	18	23
	Not Admitted Under Passive Affirmative Action Ban	29	0	1	5	10	15	20	25	29	33
Non-URM Applicants	Admitted Under Traditional Affirmative Action	100	100	100	100	100	99	98	97	96	95
	Admitted Under Passive Affirmative Action Ban	96	100	100	99	98	97	96	95	94	93
	Not Admitted Under Traditional Affirmative Action	0	9	9	7	6	6	7	8	9	10
	Not Admitted Under Passive Affirmative Action Ban	0	0	0	1	2	3	4	5	6	7

TABLE IV

SIMULATION RESULTS: EFFECT OF POLICY CHANGES ON QUALITY OF ADMITTED STUDENTS

	Admitted Under:									
	Traditional Affirmative Action	Passive Affirmative Action Ban	Proxy-Based Affirmative Action with Weight on Predicted Likelihood of Being a URM =							
			0.1	0.5	1	1.5	2	2.5	3	3.5
URM's Share of Admitted Students	19.5%	16.1%	16.2%	16.6%	17.1%	17.7%	18.2%	18.6%	19.1%	19.5%
Predicted Cumulative GPA in UT Classes	2.944	2.952	2.951	2.948	2.944	2.940	2.936	2.932	2.927	2.922
Predicted Likelihood of Graduating from UT Within 6 Years	74.5%	74.7%	74.7%	74.6%	74.5%	74.4%	74.2%	74.1%	73.9%	73.7%

Figure I: Effect of Using a Proxy-Based Affirmative Action System on the Composition of UT-Austin's Admitted Students



Online Data Appendix

Notes on variables and their construction:

- **"Student is from Foreign Country"**: the data contain "International" as its own racial/ethnic group (i.e., no additional racial or ethnic information is obtained on these students).
- **"Student's SAT/ACT Test Score"**: ACT test scores were converted into their equivalent SAT test score values using a conversion table provided by the College Board (Dorans, 2002). I then take the higher value, which is consistent in spirit with the findings of Vigdor and Clotfelter (2003), who noted that for students who take the SAT test multiple times, there is a "widespread policy stated by college admissions offices to use only the highest score . . . for purposes of ranking applicants, ignoring the scores from all other attempts" (p. 2). Consistent with this practice, the University of Michigan's point system, which was the subject of the Supreme Court's *Gratz* decision, used the higher value of the points assigned based on the student's SAT and ACT scores (see http://www.vpcomm.umich.edu/admissions/legal/gratz/gra-cert.html).
    - Dorans, N. J. (2002). *The recentering of SAT scales and its effects on score distributions and score interpretations* (Research Report No. 2002-11). New York: College Board.
    - Vigdor, J. L., & Clotfelter, C. T. (2003). Retaking the SAT. *Journal of Human Resources*, 38, 1–33.
- **"UT 'Feeder' High School"**: Feeder high schools are defined as the top 20 high schools based on the absolute number of students admitted to UT in the year 2000 (Tienda & Niu, 2006).
    - Tienda, M., & Niu, S. (2006). Flagships, feeders, and the Texas top 10% plan. *Journal of Higher Education*, 77, 712–739.
- **"'Longhorn Opportunity Scholarship' High School"**: Longhorn high schools are defined as those ever targeted by the University of Texas for the Longhorn Opportunity Scholarships (LOS). According to UT's Office of Student Financial Services (2005): "These schools were included based on criteria that takes into account their students' historical underrepresentation, measured in terms of a significantly lower than average percentage of college entrance exams sent to The University by students from this particular school, and an average parental income of less than $35,000."
    - University of Texas at Austin, Office of Student Financial Services. (2005). Implementation and results of the Texas Automatic Admission Law (HB588) at the University of Texas at Austin. Retrieved February 27, 2007, from http://www.utexas.edu/student/admissions/research/HB588-Report7.pdf
- **"'Century Scholars' High School"**: Century high schools are the LOS counterparts at Texas A&M University, namely, campuses ever targeted for Century Scholarships.
- **"High School's Average SAT/ACT Score (in ACT points)"**: For every high school in

the United States, including private schools, data were obtained on average SAT scores for the years 1994–2001 and average ACT scores for the years 1991, 1992, 1994, 1996, 1998, 2000, and 2004. Because the ACT data span a greater range of years, SAT scores were converted into ACT equivalents. Average SAT scores were linearly regressed on average ACT scores for the years 1994, 1996, 1998, and 2000. (These regressions were weighted based on the minimum value of the number of test takers on either test.) For these years, a weighted average of the high school's average SAT and average ACT scores was computed, using the number of test takers on each test as weights. For the years 1995, 1997, 1999, and 2001, the previous year's regression parameters were used for the conversion of SAT scores into ACT equivalents. For years with missing values for the high school's average SAT/ACT score, missing values were imputed using the nearest available year and given preference to years in the same period (i.e., before and after the 1996 "recentering" of SAT scores).

- **"High School's Percentage Who Took the SAT + Percentage Who Took the ACT Exam":** These shares were determined by merging the SAT and ACT data sets discussed in the prior bullet with 11^{th} grade enrollment data from the U.S. Department of Education, Common Core of Data. For years with missing information on the shares taking either the SAT or ACT, missing values are imputed using the nearest available year.