Racial and Ethnic Preferences in Undergraduate Admissions at the University of Michigan

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Executive Summary

The University of Michigan awarded a very large degree of preference in undergraduate admissions to blacks over whites and Asians with the same credentials and background for every year analyzed (1999, 2003, 2004, and 2005).

In every year:

- Black admittees had substantially lower SAT scores, ACT scores, and high school GPAs compared to Asians and whites.
- The range of Hispanic admittees' test scores (SATs and ACTs) and high school GPAs fell between those for blacks and those for Asians and whites.
- Asian admittees had higher median test scores (SATs and ACTs) compared to whites, but white admittees had higher high school GPAs.

In the most recent year (2005) for which data were provided, the median black admittee's SAT score was 1160, versus 1260 for Hispanics, 1350 for whites, and 1400 for Asians. High school GPAs were 3.4 for the median black, 3.6 for Hispanics, 3.8 for Asians, and 3.9 for whites.

In the years analyzed, UM rejected over 8,000 Hispanics, Asians, and whites who had higher SAT or ACT scores and GPAs than the median black admittee--including nearly 2,700 students in 2005, the most recent year, alone.

Based on logistic regression analyses, race and ethnicity are apparently more heavily weighted in admissions now than in 1999 (one of the years reviewed by the Supreme Court, which struck down the undergraduate admissions system as unconstitutional).

Odds ratios. As shown by odds ratios controlling for credentials and background, UM awarded a great deal of preference to black relative to white applicants for every year.

- In 1999, 2003, and 2004, the odds were roughly 25 to 1 favoring blacks among students taking the SATs.
- Using the ACTs, odds favoring black applicants were 48 to 1 in 1999, dropping to 29 to 1 in 2003, and 24 to 1 in 2004.
- The odds favoring blacks increased significantly in 2005 regardless of what test one took. The black-to-white odds ratios were 70 to 1 using the SAT and 63 to 1 using the ACT. Thus, the most recent year analyzed showed the most severe discrimination.

Odds ratios showed that Hispanic applicants were also granted substantial preferences over whites, controlling for other factors, but the degree of preference was not as large.

The odds favoring Hispanics over whites were the highest in 2005, the most recent year analyzed – 46 to 1 with the SAT and 48 to 1 with the ACT.

Odds ratios also indicated that whites were favored over Asians, controlling for other factors and using the SATs, although the odds ratios were small. When using the ACTs, the white over Asian odds ratios were even smaller (2005) or not statistically significant (all other years).

Probabilities of admission. Converted into probabilities of admission, an in-state male candidate with no alumni connection, and with an SAT score and a GPA equal to the medians for black admittees for each year, would have significantly greater chances of admission if black or, to a lesser extent, if Hispanic compared to whites and Asians. The gap between blacks versus whites and Asians increases over time.

In 1999, the candidate would have the following probabilities:
- a 28 percent chance of admission if black,
- a 12 percent chance if Hispanic, and
- a 1 percent chance if white or Asian.

The chances for admission if black or Hispanic rise steadily from 1999 to 2005. They remain basically the same if Asian or white. In 2005, a male Michigan resident with no parent ties to UM and with the same test scores and grades as the average black admittee would have the following chances of admission:
- a 43 percent chance if black,
- a 28 percent chance if Hispanic,
- a 0 percent chance if Asian, and
- a 1 percent chance if white.

For students with somewhat higher SAT scores and somewhat lower high school GPAs, the figures are perhaps even more dramatic. Blacks and Hispanics in 2005 with the same background described above but a 1240 SAT and 3.2 GPA had roughly a nine in ten chance of admissions (92 and 88 percent, respectively); Asians and whites with the same background and credentials, on the other hand, had only about a one in ten chance (10 and 14 percent, respectively).

Subsequent academic performance also displays gaps by race/ethnicity.

- For every year, median cumulative GPAs for black and Hispanic students were significantly lower than those for Asians and whites.

- Proportionately fewer blacks and Hispanics were in UM's honors program.

- Proportionately more blacks and Hispanics were on academic probation at some point during their enrollment at UM. A greater percentage of Asians was on academic probation compared to whites.

Acknowledgments

Introduction

For many years, the question of whether or not colleges and universities should use racial preferences in admissions has been a highly controversial issue. The matter came to a head in 2003, when the U.S. Supreme Court ruled in two major cases on the legality of racial preferences in higher education admission. In the first case, *Gratz v. Bollinger*, the Court found that a point-system of preferences--used by the University of Michigan in its undergraduate admissions--was unconstitutional. In the second case, *Grutter v. Bollinger*, the Court upheld a system of preferences used by the University of Michigan Law School that it found to be less mechanical.

The *Gratz* and *Grutter* decisions make it appropriate to monitor universities' use of racial and ethnic preferences--and, especially, the use of undergraduate admission preferences at the University of Michigan--for at least three reasons. First, as the split holdings demonstrate, if race is weighed too heavily or too mechanically, the law is violated. Second, since racial preferences are only allowed but not required under current law, the question remains whether universities *should* use them, even when they are allowed to. This policy question cannot be answered if the decisionmakers – particularly those outside the university admissions office, including, in the case of public universities, the general public – do not have all the facts. Third, at the conclusion of her majority opinion in *Grutter*, Justice Sandra Day O'Connor wrote, "We expect that 25 years from now, the use of racial preferences will no longer be necessary." Accordingly, one would expect to see the use of preferences and the weight afforded them to decline over time (one-eighth of the grace period Justice O'Connor allowed has now lapsed).

To put the issue most pointedly: What does the evidence show about whether the University of Michigan, in its undergraduate admissions, is weighing race and ethnicity less mechanically and heavy-handedly than it did under the system that was struck down as unconstitutional by the Supreme Court in 2003?

This study of the University of Michigan undergraduate admissions data is a follow-up to a previous study done in 1998 using data from the entering class of Fall 1995.[1] Back then, UM granted a significant amount of preference to some racial and ethnic groups over others. For the present study-- which looks at the Fall entering classes for 1999, 2003, 2004, and 2005[2]--CEO requested and obtained the data on each individual applicant's

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[1] The study can be found at www.ceousa.org/michigan.html.

[2] For comparison purposes, we decided to include 1999 as well as the three most recent years for which data were available. The data obtained for the earlier CEO study did not include applicants' residency status or their alumni/ae connections.

admission status, matriculation status, racial/ethnic group membership, and sex; whether the applicant was an in-state resident, and whether a parent had graduated from UM; and an applicant's SAT and/or ACT scores, his/her high school GPA, and, if available, the applicant's overall high school rank.

Omitted from the data analyses are those cases for which race or ethnicity is listed as "Other," missing, or unknown. American Indians and Native Hawaiians were also omitted because of their small numbers in this context. Lastly, cases with missing academic data were dropped from the statistical analyses. In cases where the information could potentially lead to the identification of an individual student, the University itself exempted the data from disclosure.

Additionally, this study analyzes data on the undergraduate academic performance of those who enrolled at UM. In particular, we look to see if there is evidence of the impact of racial/ethnic preferences on subsequent academic performance. For those applicants who later matriculated at UM, this report covers the racial/ethnic gaps in cumulative undergraduate GPAs, whether they were in the honors program, and whether they were ever on academic probation.

Applicants and Admittees: 1999, 2003, 2004, and 2005

Racial/Ethnic Composition of the Pool

Table 1 below displays the racial composition of the undergraduate school's pool of applicants and admittees in 1999, 2003, 2004, and 2005, using the data provided by the University of Michigan.

Table 1. Racial Composition of Applicants and Admittees[3]

		Applicants	*Admittees*
1999	Black	6%	6%
	Hispanic	3%	3%
	Asian	14%	13%
	White	77%	78%
2003	Black	7%	7%
	Hispanic	3%	5%
	Asian	18%	14%
	White	72%	75%
2004	Black	6%	7%
	Hispanic	4%	5%
	Asian	18%	16%
	White	72%	73%
2005	Black	6%	7%
	Hispanic	4%	5%
	Asian	19%	17%
	White	71%	71%

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[3] "No Response," "American Indian," "Native Hawaiian," "Alaskan Native," and "Other" were dropped from the analysis. The total numbers used for Table 1 are below.

Year	Applicants	Admittees
1999	16,138	10,500
2003	19,482	10,716
2004	15,597	10,431
2005	18,198	11,169

Applicants

The composition of the applicant pool changes somewhat from 1999 to 2005. For all four years, blacks made up 6 to 7 percent of the applicant pool. Hispanic applicants made up 3 percent of the pool in 1999 and 2003, rising to 4 percent in 2004 and 2005. Asians made up 14 percent in 1999, rising to 18 percent in 2003 and 2004, and 19 percent in 2005. In contrast to the other three groups, the proportion of white applicants dropped somewhat, from 77 percent in 1999, to 72 percent in 2003 and 2004, and then to 71 percent in 2005.

Admittees

The composition of admittees also changes from 1999 to 2005.

The percentage of black and Hispanic admittees rose slightly over time. Black admittees made up 6 percent of admittees in 1999, rising slightly to 7 percent in 2003 and thereafter. Hispanic admittees made up 3 percent in 1999, and 5 percent thereafter.

In 1999, Asians made up 13 percent of admittees, rising to 14 percent in 2003, 16 percent in 2004, and 17 percent by 2005.

Whites as a percentage of the applicant pool, however, declined not sharply but nonetheless steadily over time. In 1999, whites made up 78 percent of those admitted to UM, dropping to 75 percent in 2003, 73 percent in 2004, and 71 percent in 2005.

Admission Rates

Figure 1. University of Michigan Undergraduate Admission Rates

	1999	2003	2004	2005
■ Blck	64%	58%	70%	71%
▨ Hisp	76%	73%	79%	79%
▨ Asn	58%	43%	58%	54%
☐ Wht	66%	57%	68%	62%
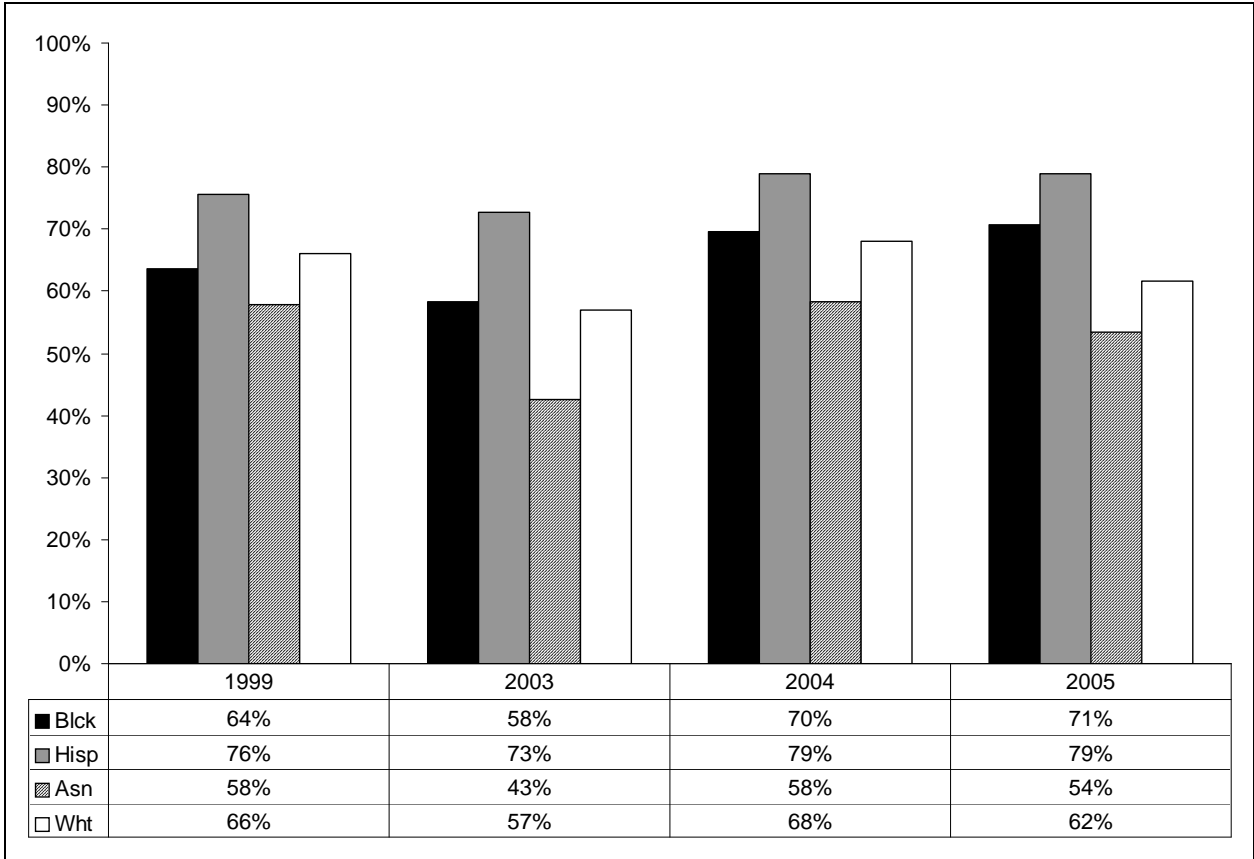
Admission rates for blacks and Hispanics were higher than those for Asians in all years, and higher than those for whites except in 1999. Admission rates also changed significantly for all groups over time.

For black applicants, the admission rate dropped from 1999 (when 64 percent of black applicants were admitted) to 2003 (58 percent admitted). It rose in subsequent years, when 70 percent of black applicants were admitted in 2004 and 71 percent in 2005.

For Hispanic applicants, the admission rate dropped from 76 percent in 1999 to 73 percent in 2003. In 2004, the admission rate rose to 79 percent and remained the same in 2005.

The admission rate for Asians dropped sharply from 1999 to 2003, from 58 percent to 43 percent. It rose again in 2004, to 58 percent, but dropped to 54 percent in 2005.

For whites, the admission rate was 66 percent in 1999, dropping to 57 percent in 2003. The admission rates for whites then rose to 68 percent in 2004, then dropped in 2005 to 62 percent.

Overall Group Comparisons of Admittees' Test Scores and Grades

Methodology

High school students applying to the University of Michigan are required to take either the SAT or ACT, and to submit their high school grades. In this section, the combined test scores and high school grade-point averages (GPAs) of those admitted to UM are used to analyze the gaps in test scores and grades for blacks, Hispanics, Asians, and whites.[4]

Admittees' mean scores and GPAs are not reported; instead, scores are reported at the 25th, 50th, and 75th percentiles. Percentile scores such as these are used because a few extremely low or high scores do not affect them, while the mean and related statistics are more susceptible to such influences. The 50th percentile (i.e., the median) represents the middle of the distribution of scores, while the 25th and 75th percentile scores taken together represent the spread of scores. For example, a 3.25 GPA at the 25th percentile means that 25 percent of GPAs were below 3.25, while 75 percent were above it. A GPA of 3.90 at the 75th percentile means that 75 percent of scores were below 3.90, while 25 percent were above it.

The figures below show the distribution of individual subscores by racial and ethnic group, starting with combined SAT scores from 1999, 2003, 2004, and 2005, followed by composite ACT scores and, lastly, high school GPAs.[5]

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[4] Unlike previous CEO reports on undergraduate institutions, the combined (i.e., total) SAT score was used by the author. The composite ACT score is also included for analysis. Combining scores is a measure used by many colleges and universities on their own websites and in reports such as the one done by *U.S. News & World Report*.

[5] The number of admittees with SAT or ACT test scores and GPAs by race/ethnicity is as follows.

	1999	2003	2004	2005
Blacks	643	748	687	817
Hispanics	334	491	498	578
Asians	1330	1460	1645	1845
Whites	8193	8017	7601	7929

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Results

SAT Scores

Figure 2. Total SAT Scores for Admittees

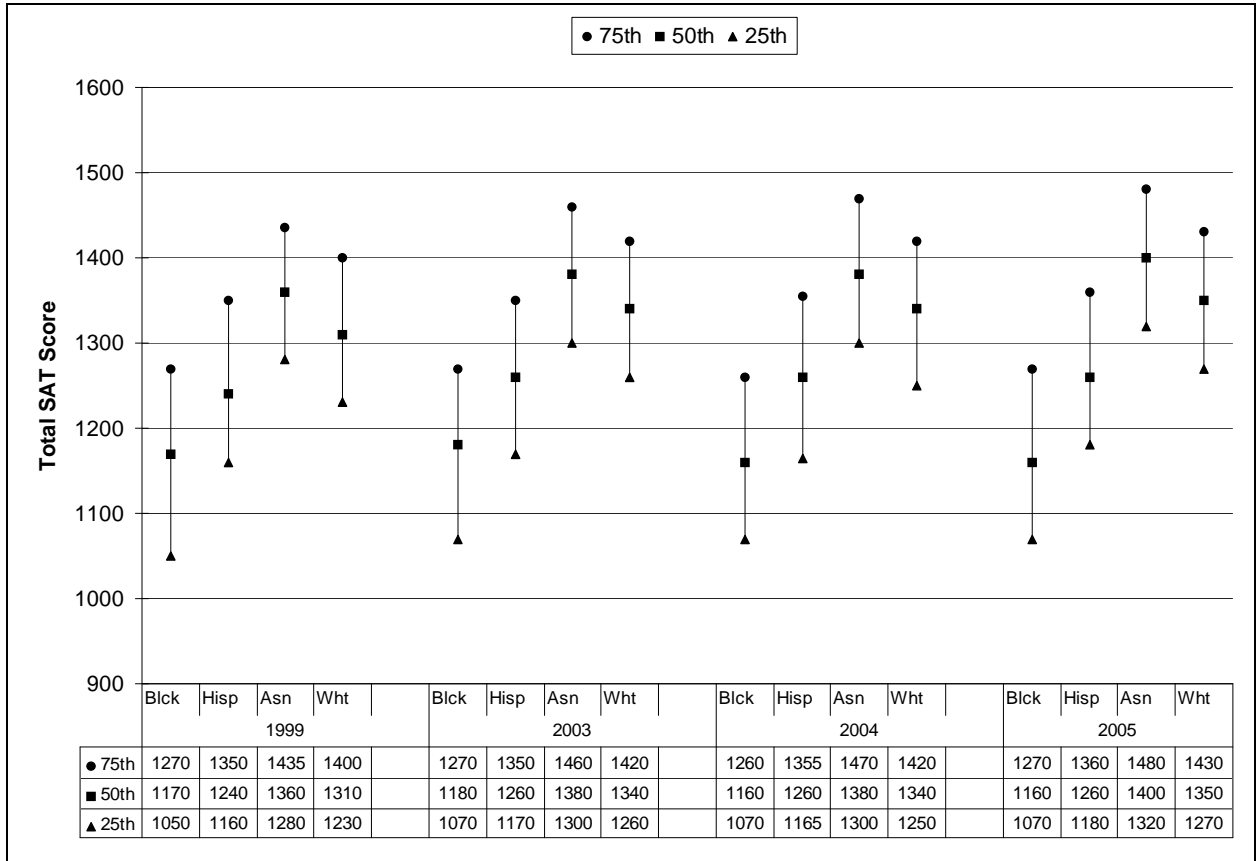|	Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht
			1999					2003					2004					2005	
● 75th	1270	1350	1435	1400		1270	1350	1460	1420		1260	1355	1470	1420		1270	1360	1480	1430
■ 50th	1170	1240	1360	1310		1180	1260	1380	1340		1160	1260	1380	1340		1160	1260	1400	1350
▲ 25th	1050	1160	1280	1230		1070	1170	1300	1260		1070	1165	1300	1250		1070	1180	1320	1270

Figure 2 displays the spread of admittees' combined SAT math and verbal scores. In every year, black admittees had substantially lower test scores than the other three groups. The median SAT scores for black admittees, for all years, were lower than the Hispanic, Asian, and white medians.

Scores for black admittees at the 75th percentile were lower than Asian scores at the 25th percentile in every year. This means that 75 percent of black admittees were admitted with lower SAT scores than at least 75 percent of Asian admittees.
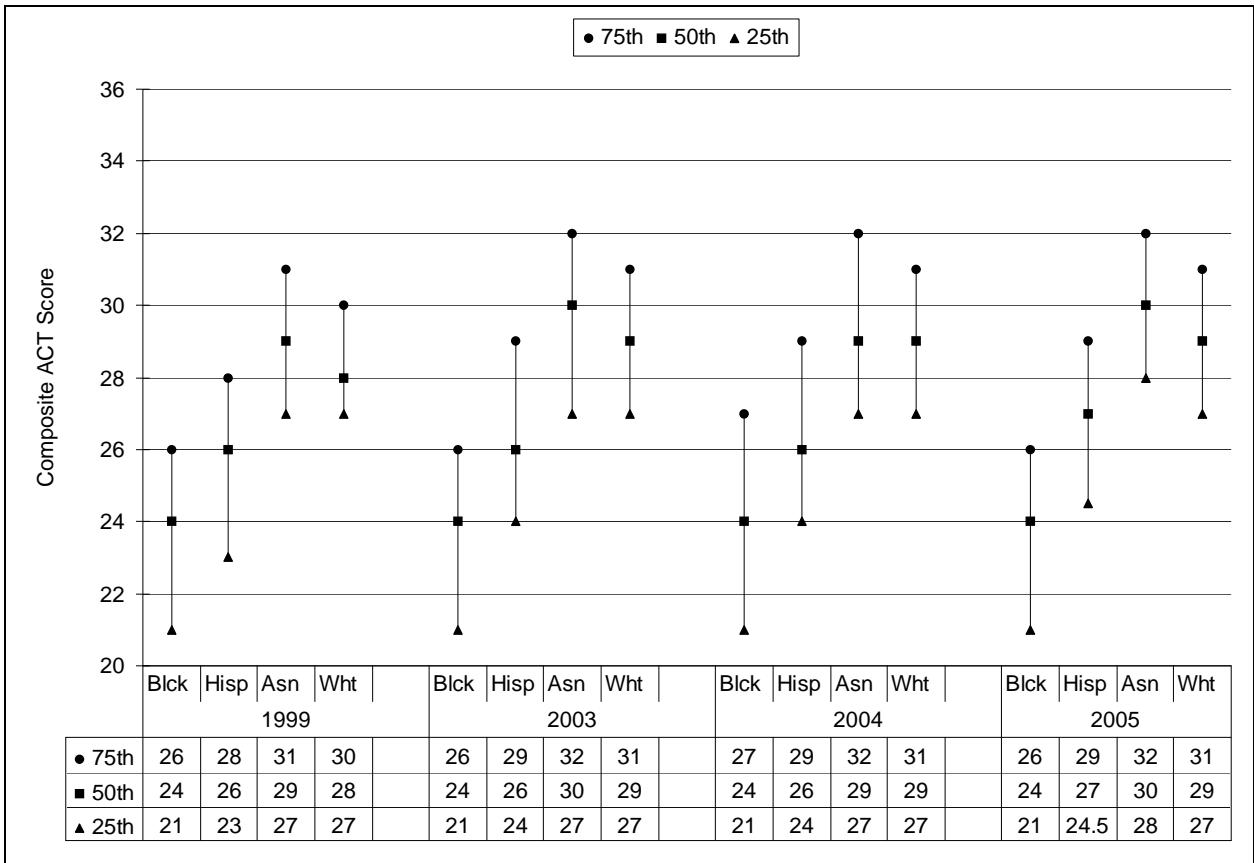
Scores for black admittees at the 75th percentile fell between the 25th and 50th percentile for white admittees for 1999, 2003, and 2004 and were equal to the 25th percentile for whites in 2005. That is, 75 percent of black admittees were admitted with lower SAT scores than half to three-quarters of all white admittees.

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For Hispanic admittees, median SAT scores were equal to or lower than Asian and white scores at the 25th percentile for 2003 and 2005; in 1999 and 2004, the Hispanic median fell between the 25th and 50th percentiles for white admittees.

SAT scores for Asian admittees were higher than those for whites for every year, for every percentile reported. For example, the median score for Asian admittees was 50 points higher than median scores for white admittees in 1999 and 2005, and 40 points higher in 2003 and 2004. Asian scores at the 25th percentile were 50 points higher than white scores at the same percentile in 1999, 2004, and 2005, and 40 points higher in 2003.

ACT Scores

Figure 3. Composite ACT Scores for Admittees

	Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht
		1999					2003					2004					2005		
● 75th	26	28	31	30		26	29	32	31		27	29	32	31		26	29	32	31
■ 50th	24	26	29	28		24	26	30	29		24	26	29	29		24	27	30	29
▲ 25th	21	23	27	27		21	24	27	27		21	24	27	27		21	24.5	28	27

The gap among groups is similar for ACT scores. For all four years, the average ACT scores for black admittees were lower compared to the medians for all other groups. Thus, when compared to Hispanic scores, for 1999 and 2003, the ACT scores for blacks at the 75th percentile were the same as the Hispanic median. They fell between the 50th and 75th percentiles in 2004 but below the Hispanic median in 2005.
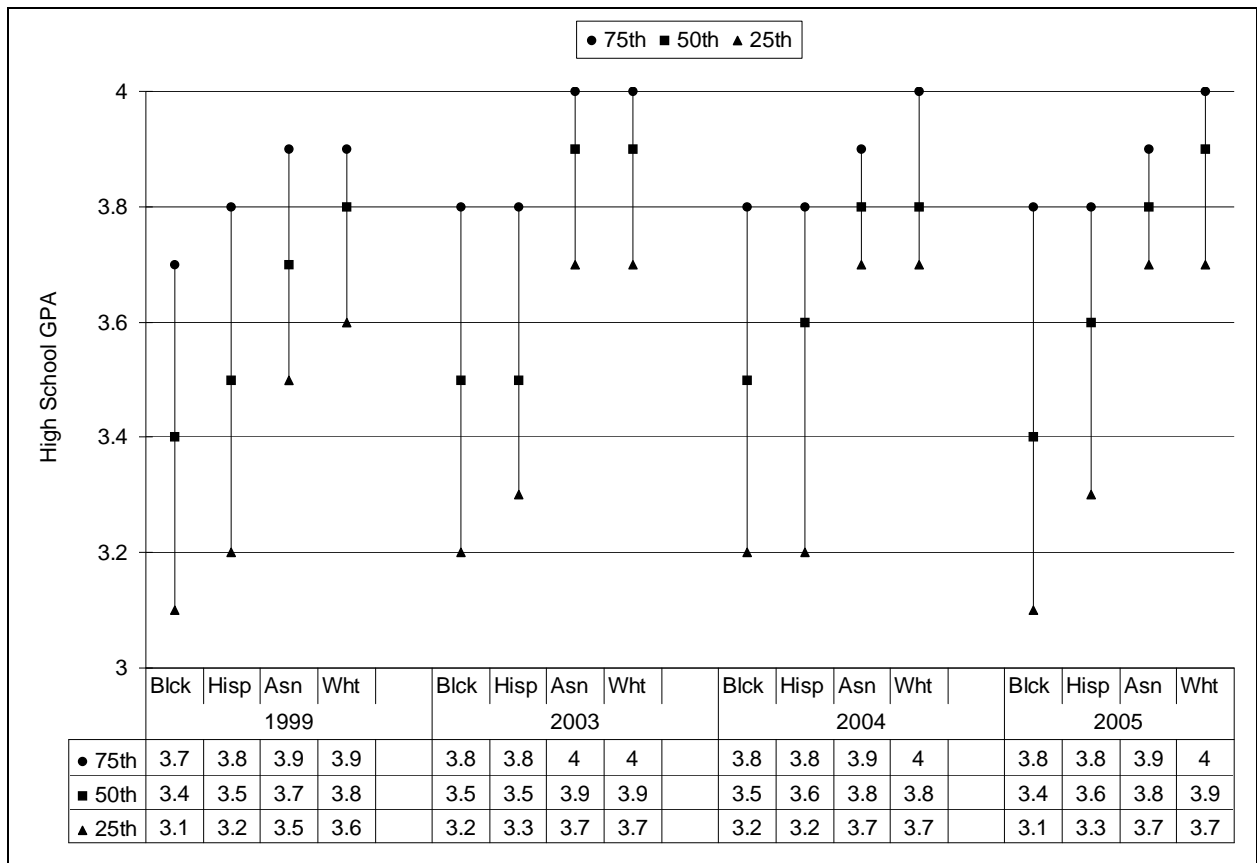
Comparing blacks to Asians and whites, the ACT score for black admittees at the 75th percentile was lower than ACT scores for Asians and whites at the 25th percentile in 1999, 2003, and 2005. They were the same in 2004.

Comparing Hispanic to Asian and white scores, Hispanic ACT scores at the median were equal to or lower than Asian and white scores at the 25th percentile in all four years.

ACT scores for Asian admittees are equal to or higher than those for whites at the same percentiles. This pattern occurs in every year.

High School GPAs

Figure 4. High School GPAs for Admittees

	Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht		Blck	Hisp	Asn	Wht
			1999					2003					2004					2005	
● 75th	3.7	3.8	3.9	3.9		3.8	3.8	4	4		3.8	3.8	3.9	4		3.8	3.8	3.9	4
■ 50th	3.4	3.5	3.7	3.8		3.5	3.5	3.9	3.9		3.5	3.6	3.8	3.8		3.4	3.6	3.8	3.9
▲ 25th	3.1	3.2	3.5	3.6		3.2	3.3	3.7	3.7		3.2	3.2	3.7	3.7		3.1	3.3	3.7	3.7

There are also differences (up to a half grade-point) in GPAs between blacks and Hispanics versus white and Asian admittees. And, in all years, the GPAs for black admittees were lower than white and Asian GPAs at the same percentiles. In every year, the median GPAs of black admittees were lower than those at the 25th percentile for Asians and whites. At the 75th percentile, the GPA of black admittees was never more than the median GPAs of white and Asian admittees, for all years.

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Comparing Hispanic admittees with Asian and white admittees for every year, GPAs for Hispanic admittees were also lower than those at the same percentiles for Asian and white admittees. The Hispanic GPA at the 75th percentile was roughly the same as the Asian and the white scores at the 50th percentile, for all years.

Comparing Asian and white admittees at the same percentiles, Asian GPAs were either the same or lower than white GPAs. In 2004, for instance, Asian GPAs at the 75th percentile were lower than those for whites at the same percentile, while scores at the other percentiles were the same. In 2005, the Asian median was lower than the median for white admittees, as was the Asian GPA at the 75th percentile.

Rejectees versus Admittees

Figure 5. Percentage of Rejectees with SATs or ACTs and GPAs Higher than Black Admittee Medians

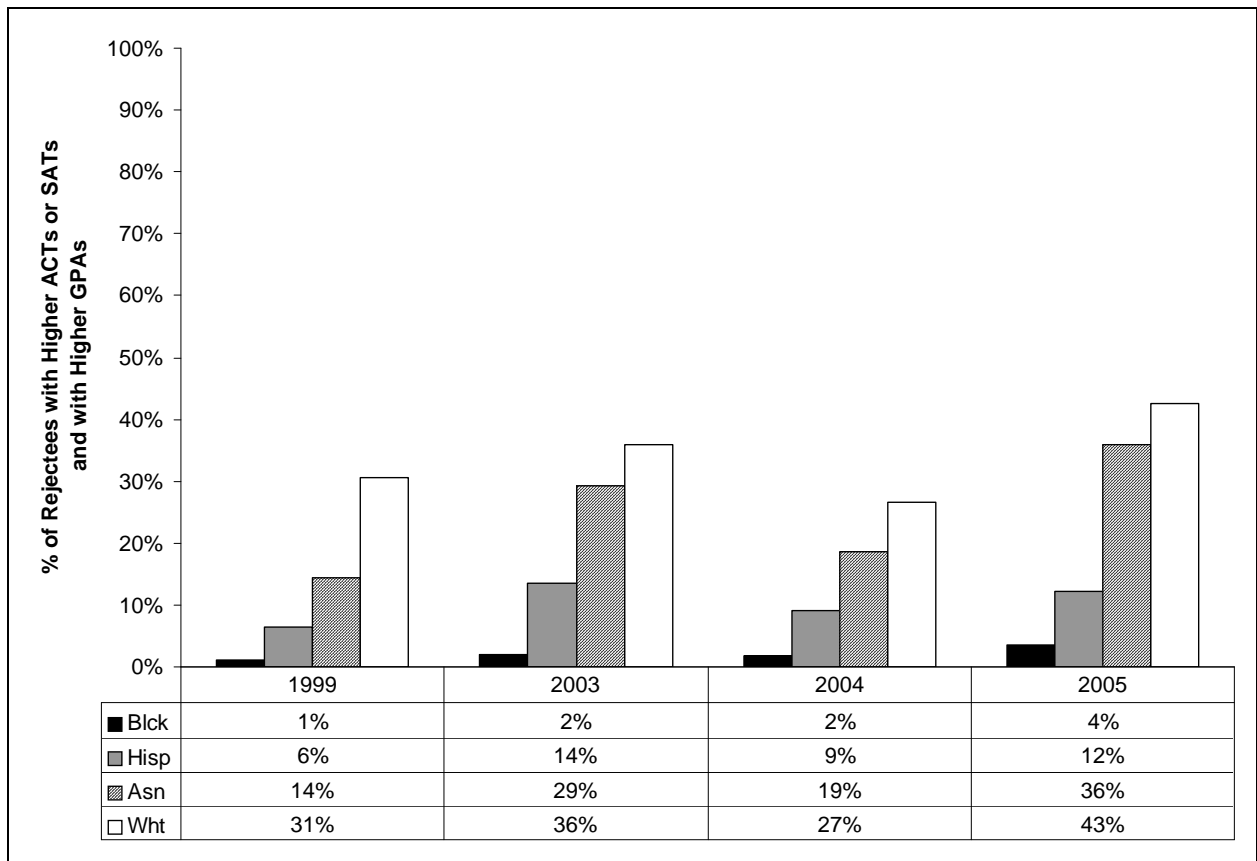|	1999	2003	2004	2005
■ Blck	1%	2%	2%	4%
▨ Hisp	6%	14%	9%	12%
▩ Asn	14%	29%	19%	36%
□ Wht	31%	36%	27%	43%

Figure 5 displays the percentage of rejectees by race/ethnicity with higher SAT or ACT scores *and* GPAs than those for black admittees at the 50th percentile for each year.[6] As a

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[6] The number of rejectees by year is as follows.

	1999	2003	2004	2005
Black	367	536	299	337

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percentage, significantly more Asians and whites were rejected with higher SAT or ACT scores and GPAs compared to Hispanic applicants. Moreover, the percentages of rejectees with higher test scores and grades vary widely from year to year for Asians and whites, but less so for Hispanics.

In 1999, for example, 6 percent of Hispanic rejectees had higher SAT or ACT scores and grades compared to the average black admittee. It rose to 14 percent in 2003, dropped to 9 percent in 2004, but rose again in 2005 to 12 percent.

For Asian rejectees, 14 percent in 1999 had higher test scores and grades, and this more than doubled to 29 percent in 2003, then dropped to 19 percent in 2004, but rose again to 36 percent in 2005.

For white rejectees, 31 percent in 1999 had higher test scores and GPAs compared to the average black admittee. In 2003, it rose to 36 percent, then dropped to 27 percent in 2004, and finally rose to 43 percent of all white rejectees in 2005.

The total number of Hispanics, Asians, and whites rejected with higher SAT or ACT scores and grades than the median black admittee was 1,430 in 1999; 2,792 in 2003; 1,176 in 2004; and 2,693 in 2005--or 8,091 rejectees over these four years.

Hispanic	108	184	133	155
Asian	970	1968	1181	1603
White	4193	6078	3553	4934

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Logistic Regression Analysis and Odds Ratios

Methodology

Although the data presented thus far provide substantial evidence of racial and ethnic preferences in admissions to the University of Michigan's undergraduate program, it is possible to make the case even stronger and considerably more precise. The most powerful means of assessing the degree of racial and ethnic preference in admissions is to develop statistical models that predict the probability of admission at a school for members of the different ethnic and racial groups, holding constant their qualifications. Computing a logistic regression equation that predicts admission decisions by race and ethnicity does this by including test scores, high school grades, and various background characteristics as statistical control variables.

Logistic regression analysis with multiple control variables was used as the preferred statistical technique because of the nature of the data provided. One way of conventionally expressing a relationship between the independent and dependent variable is by using correlation coefficients. A negative correlation coefficient of -1.0 signifies a perfect negative relationship between the independent (predictor) variable and the dependent (or outcome) variable, whereby an increase in the value of the independent variable yields a decrease in the value of the dependent variable. A positive correlation coefficient of 1.0 signifies a perfect positive relationship between the two variables; as the independent variable increases, so does the dependent variable. Strictly speaking, however, one cannot use correlations to analyze admissions data because correlations and standard multiple regression analysis requires a dependent variable that is non-binary in form. In the case of an applicant's admission status, the dependent variable (individual admission status) is a binary dependent variable—reject versus admit. To get around this binary-variable problem, we rely on multiple logistic regression equations and their corresponding odds ratios.

The odds ratio is somewhat like a correlation coefficient, except instead of varying from 1.0 to −1.0, it varies between zero and infinity. An odds ratio of 1.0 to 1 means that the odds of admissions for the two groups are equal. It is equivalent to a correlation of zero. An odds ratio greater than 1.0 to 1 means that the odds of members of Group A being admitted are greater than those for members of Group B, in precisely the amount calculated. An odds ratio of less than 1.0 to 1 means the members of Group A are less

likely to be admitted than those in Group B. The former is similar to a positive correlation, the latter similar to a negative correlation.

The statistical technique of multiple logistic regression allows us to present admissions data in terms of the relative odds of those in Group A being admitted compared to Group B while simultaneously controlling for a host of other possibly confounding variables. The value of the odds ratio is that it provides a relatively direct summary measure of the degree of racial or ethnic preference given in the admissions process for a particular school.

Logistic regression equations predicting the likelihood of admissions were computed for the 1999, 2003, 2004, and 2005 applicant pools, controlling for SAT or ACT scores, high school grade-point averages, alumni/ae connections, sex, and in-state residency. We were able to derive the odds of admission from these equations for each minority group relative to that of whites, while simultaneously controlling for the effects of these other variables.[7]

Logistic regression analysis also allows us to test for statistical significance. Statistical calculations always include what is called a *p*-value. When results are deemed to be statistically significant, this means that the calculated *p*-value is less than some pre-determined cutoff level of significance. The level of significance conventionally is reported in the form of "$p \leq .05$." This value means that, with these data, there is a probability equal to or less than 5 percent that the difference found between one group and another (e.g., blacks versus whites, Hispanics versus whites, or Asians versus whites, since minority groups are being compared to whites) is due to chance. It is a convention in statistical studies to use the 0.05 value. In more stringent analyses, 0.01 (one in 100) or occasionally 0.001 (one in 1,000) can be used as the cutoff. Any *p* value greater than 0.05 (or the more stringent 0.01) is rejected, and the results are said to be nonsignificant. A difference that is statistically significant has very little chance of being the result of chance—that is, a statistical fluke.

In the next section, we discuss odds ratios derived from comparing all applicants, not just admittees, by race − blacks to whites, Hispanics to whites, and Asians to whites. Statistical significance is also noted. The size of the odds ratio reflects the strength of the association between race or ethnicity and admission status. An odds ratio equal to or greater than 3.0 to 1 is commonly thought to reflect a strong relationship; an odds ratio of about 2.0 to 1 reflects a moderate association, while a relative odds ratio of 1.5 or less to 1 indicates a weak relationship. Of course, an odds ratio of 1.0 to 1 indicates no relationship.[8] Finally, a *very* strong relationship might be taken to be the rough equivalent

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[7] For a discussion of logistic regression and a more complete discussion of odds ratios, see Alan Agresti, *Introduction to Categorical Data Analysis* (New York: John Wiley and Sons, 1996).

[8] See David E. Lilienfeld and Paul D. Stolley, *Foundations of Epidemiology*, 3rd edition (New York: Oxford University Press, 1994): 200-202.

of the relative odds of smokers versus nonsmokers dying from lung cancer, which in one well-known study is calculated as 14 to 1.[9]

Results: Relative Odds of Admission, Controlling for Other Factors

As shown in Table 2, one set of analysis was undertaken using the SATs, and the second using the ACTs.

Table 2. Relative Odds of Various Groups Admitted over White Applicants, Controlling for Other Factors

Using SATs	Black-White	Hispanic-White	Asian-White	Inverted, White-Asian[10]
1999	26.9040****	11.7529****	0.7958**	1.2567**
2003	24.7888****	16.3811****	0.6027****	1.6593****
2004	25.9921****	14.7680****	0.7118****	1.4049****
2005	70.7591****	46.31289****	0.6870****	1.4555****
Using ACTs	Black-White	Hispanic-White	Asian-White	Inverted, White-Asian
1999	48.6656****	32.4642****	0.9418^{ns}	1.0618^{ns}
2003	29.0918****	25.6230****	0.9625^{ns}	1.0390^{ns}
2004	23.6657****	17.2307****	0.8725^{ns}	1.1461^{ns}
2005	62.7869****	47.8248****	0.8094*	1.2355*

*$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$, ^{ns}Not statistically significant.*

Regardless of whether one uses the SATs or the ACTs, Table 2 shows that the University of Michigan granted a great deal of preference to its black applicants over white applicants with identical credentials for all four years studied.[11] For both black and Hispanic applicants compared to whites, the odds ratios are all large.

SATs. Calculated with the SATs, the odds ratios compared to whites increased substantially in 2005 compared to the other years. For black-to-white odds ratios, they increased from the mid-twenties to roughly 70 to 1. For Hispanics, they first increased somewhat, from roughly 12 to one in 1999 to 16 to 1 in 2003 and 15 to 1 in 2004. Hispanic-to-white odds ratios then rose substantially in 2005, to 46 to 1.

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[9] Taken from a 20-year longitudinal study of British male physicians by R. Doll and R. Peto, as quoted in Agresti, *Introduction to Categorical Data Analysis*, p. 47.

[10] The white-to-Asian odds ratio is calculated by taking the reciprocal of the Asian-to-white odds ratio.

[11] The odds ratios are not directly comparable to those calculated in CEO's earlier study in the 1990s. In that case, there were no data analyzed regarding an applicant's residency status or alumni/ae connections. When logistic regression analyses are performed on the data used for this study and using only the variables used in the earlier study, odds ratios are similar. See Appendix 3.

For Asian applicants relative to whites, odds ratios favoring whites are small. Moreover, they do not change much over time.

ACTs. Odds ratios calculated with the ACTs are similar. The black-white odds ratios are all very large, and, like the calculations with the SATs, the black-white odds ratio in 2005 is the largest, favoring blacks over whites by roughly 63 to 1. For Hispanics, the odds ratios decline from 1999 to 2004, from roughly 32 to 1 in 1999, to 26 to 1 in 2003, to 17 to 1 in 2004. The Hispanic-to-white odds ratios then more than doubled in 2005, to almost 48 to 1.

Odds ratios with ACTs for Asians versus whites were not statistically significant in 1999, 2003, and 2004. They were statistically significant in 2005, but whites were favored over Asians by only 1.2 to 1 (a relatively small effect).

Probabilities of Admission

The meaning of logistic regression equations and their associated odds ratios may be difficult to grasp because the equations are complex and hard to explain without resorting to mathematical formulations. A more intuitive way to grasp the underlying dynamic of preferential admissions is to convert these logistic regression equations into estimates of the probabilities of admission for individuals with different racial/ethnic group membership, given the same test scores and grades. In this section, we compare the probabilities of admission for individuals belonging to these different groups, using the logistic regression equation specific to each year. The probability calculations provide an estimate of the admission chances for members of each group, all with the same test scores and grades, alumni and residency status, and sex.

We chose to examine the probabilities for an in-state male applicant with no alumni/ae connections to UM.[12] The same set of SAT scores and GPAs is entered for blacks, whites, Hispanics, and Asians. Then we calculated the chances of admission for a black applicant, a white applicant, a Hispanic applicant, and an Asian applicant with those academic qualifications. These calculations do not change the statistical results reported in the earlier section on odds ratios. They simply provide an easier-to-understand interpretation of their meaning.

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[12] One can compare probabilities of admission for any combination of alumni/ae status, residency status, and sex. Composite ACT scores could also be used. Equations for calculating probabilities for each year and each racial/ethnic group are in the appendices.

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Figure 6. Probability of Admission*

	1999	2003	2004	2005
■ Blck	28%	27%	38%	43%
▨ Hisp	12%	18%	22%	28%
▨ Asn	1%	1%	1%	0%
☐ Wht	1%	1%	1%	1%
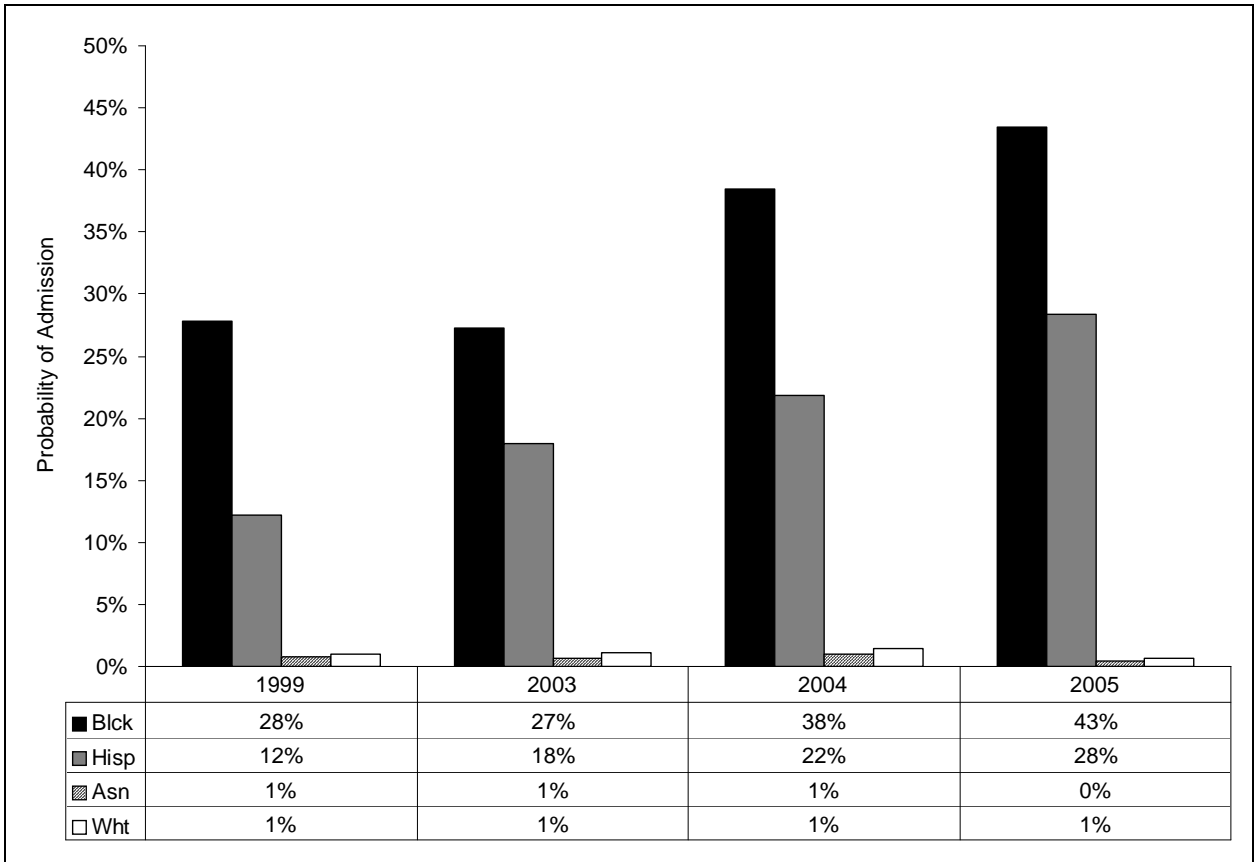
*Controlling for test scores, grades, sex, residency, and alumni connection of applicant. Assumes applicant is male, a Michigan resident, with no parent who attended the institution, and has the same total SAT score and high school GPA as the median for black admittees for that particular year.

Figure 6 shows the probability of admission of an in-state male applicant, with no alumni/ae connections, and a total SAT score and GPA equal to the median test score and GPA of blacks admitted for each year.[13] In every year, a significantly greater percentage of blacks would be admitted with these qualifications and background characteristics compared to Hispanics. Very few whites and Asians would be admitted.

If the applicant were black in 1999, for instance, the likelihood of admission would be 28 percent, compared to 12 percent if the applicant were Hispanic. It drops to 1 percent if the applicant were white or Asian. For 2003, 27 percent of black applicants with those qualifications and background would be admitted, versus 18 percent of Hispanics but only 1 percent of Asians and whites. In 2004, 38 percent of black applicants with such credentials would be admitted, versus 22 percent of Hispanics and 1 percent of Asians and whites.

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[13] The black median total SAT score and high school GPA in 1999 were 1170 and 3.4, respectively; in 2003, they were 1180 and 3.5; in 2004, 1160 and 3.5; and in 2005, 1160 and 3.4.

By 2005, the probability of admission for black Michigan males with no alumni/ae connections to UM, but test scores and grades equal to the average black admittee, rises to 43 percent. The probability of admission for an identical Hispanic applicant would rise to 28 percent. In contrast, no Asian applicants and only 1 percent of whites with these characteristics and credentials would be admitted.

For students with somewhat higher SAT scores and somewhat lower high school GPAs, the figures are perhaps even more dramatic. For example, in 2005, black and Hispanic male applicants from Michigan with no alumni/ae ties to UM but with a 1240 SAT and 3.2 GPA had a nine in ten chance of admissions (92 percent and 88 percent, respectively); Asians and whites with the exact same background and credentials, on the other hand, had only about a one in ten chance (10 percent and 14 percent, respectively).

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Subsequent Performance at UM

The section below is based on the data released by UM to CEO. UM excluded those individuals where the university believed the information could potentially lead to the identification of that individual. The University of Michigan provided the cumulative college GPAs for students for 1999, 2003, and 2004; whether they were in the honors program for 1999, 2003, 2004, and 2005; and whether they had ever been on academic probation for 1999, 2003, and 2004. The percentages across the years are not comparable because there are different amounts of cumulative data available for each class.

Cumulative College GPA

Figure 7. Cumulative College GPA While at UM

	Blck	Hisp	Asn	Whte		Blck	Hisp	Asn	Whte		Blck	Hisp	Asn	Whte
			1999					2003					2004	
● 75th	2.91	3.46	3.44	3.60		2.96	3.25	3.34	3.62		3.15	3.34	3.53	3.60
■ 50th	2.41	2.85	2.98	3.35		2.63	2.80	3.09	3.34		2.82	2.99	3.26	3.33
▲ 25th	1.88	2.10	2.33	3.05		2.27	2.35	2.71	3.02		2.47	2.65	2.94	2.99
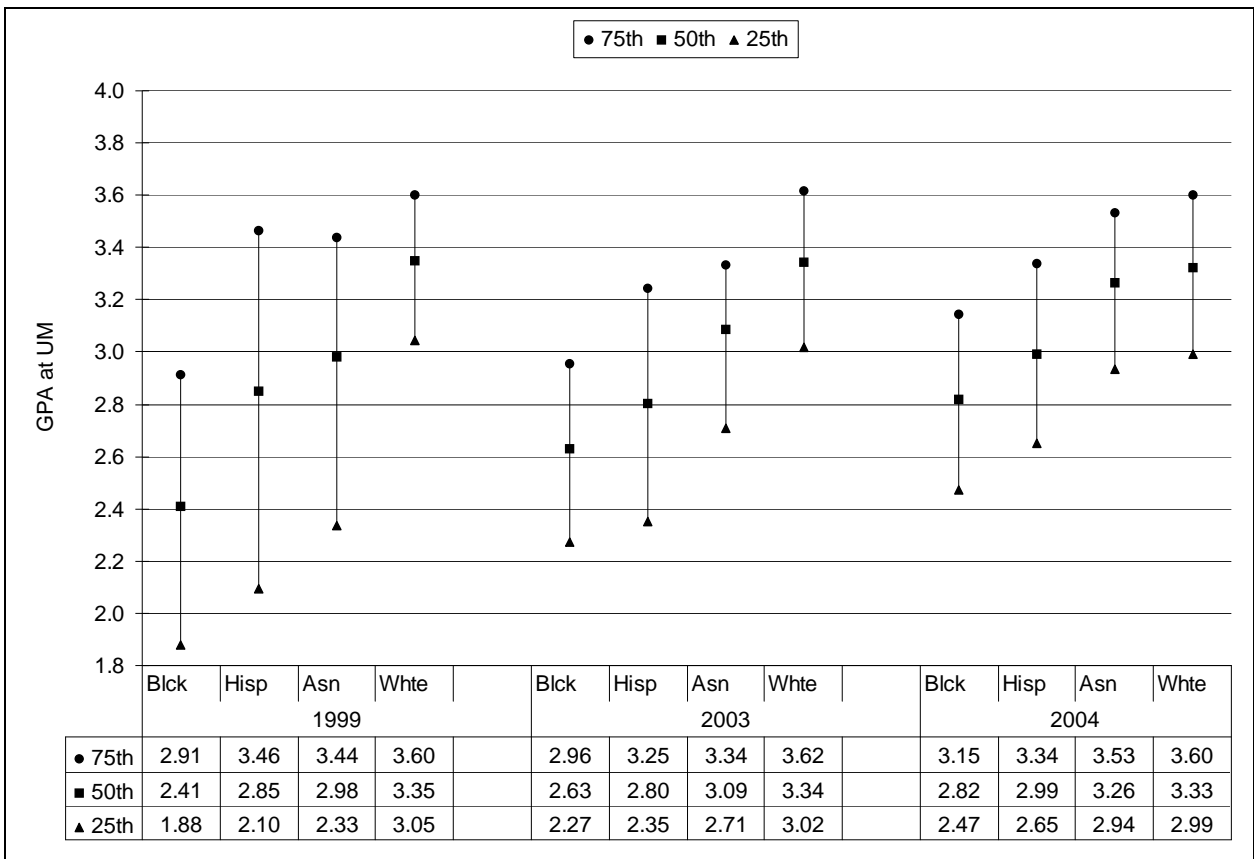
For every year, the cumulative college GPAs for black enrollees were lower than those for Hispanics, Asians, and whites at the same percentiles. For the entering class of 1999, the median college GPA for blacks was 2.41, which was roughly half a point lower than the median for Hispanics and Asians, and almost a full point lower than the median for

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whites. The college GPA for blacks at the 75th percentile was slightly higher than the Hispanic median, lower than the Asian median, and lower than college GPAs for whites at the 25th percentile. In other words, 75 percent of blacks at UM had lower college grades compared to approximately 50 percent of Asians and 75 percent of whites.

For the class entering in 2003, the median college GPA for blacks (2.63) was lower than the Hispanic, Asian, and white medians. The GPA for black enrollees at the 75th percentile fell between the 50th and 75th percentiles for Hispanics. Moreover, it was lower than the Asian median, and lower than white GPAs at the 25th percentile. For the 2004 class, the median GPA for black enrollees also lagged behind those for Hispanics, Asians, and whites. The college GPAs at the 75th percentile for blacks fell between Hispanic GPAs at the 50th and 75th percentiles, and was lower than the Asian and white GPAs at the 50th percentile.

Hispanic college GPAs were generally lower than Asian and white GPAs at the same percentiles for every year. For the 1999 class, at the 75th percentile, the Hispanic GPA was roughly the same as those for Asians and whites, but GPAs at the median and 25th percentile were lower for Hispanics compared to Asians and whites. For the classes of 2003 and 2004, Hispanic GPAs at the 50th percentile fell between the 25th and 50th percentiles for Asians. Comparing Hispanics to whites, Hispanic GPAs in 2003 at the 50th percentile were lower than the college GPAs for whites at the 25th percentile, while Hispanic GPAs at the 75th percentile were lower than the white median. For the entering class of 2004, Hispanic GPAs at the 50th percentile were the same as the white 25th percentile GPA, while Hispanic GPAs at the 75th percentile fell between the white 50th and 75th percentiles.

The college GPAs for Asians were lower than those for whites at the same percentile for every year. For the class entering in 1999, the median GPA for Asians was 3.0, which was the same as the GPA for whites at the 25th percentile. That is, half the Asian enrollees had lower college grades compared to 75 percent of white enrollees. Asian GPAs at the 75th percentile fell between white GPAs at the 50th and 75th percentiles. For the entering class of 2003, the Asian GPA at the 75th percentile was the same as the white median, while the Asian median fell between the 25th and 50th percentile for whites. For 2004, Asian GPAs at the 25th, 50th, and 75th percentiles are all slightly lower than GPAs for whites at the same percentiles.
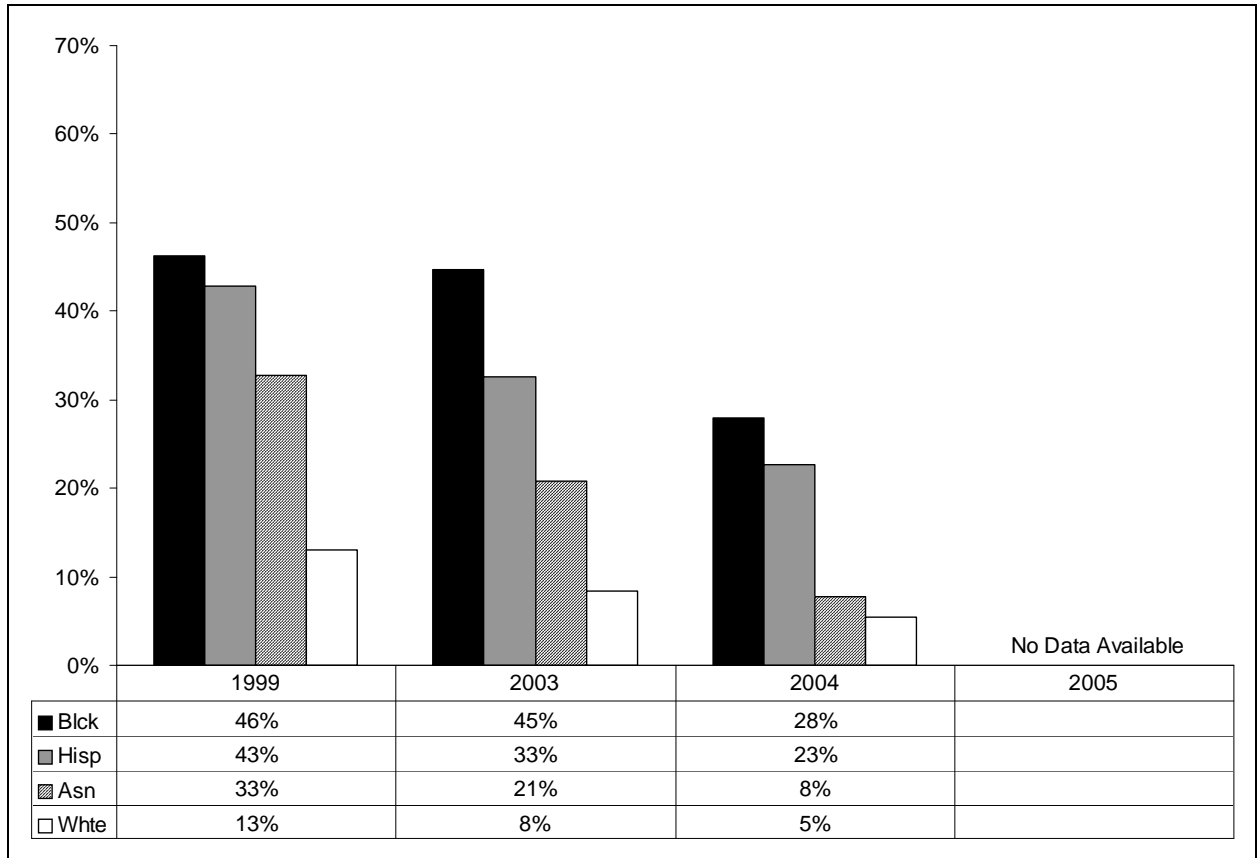
Honors Program

Figure 8. Percentage in the Honors Program

	1999	2003	2004	2005
■ Blck	1%	1%	4%	3%
▨ Hisp	0%	5%	5%	6%
▨ Asn	11%	17%	15%	18%
☐ Whte	7%	10%	8%	9%
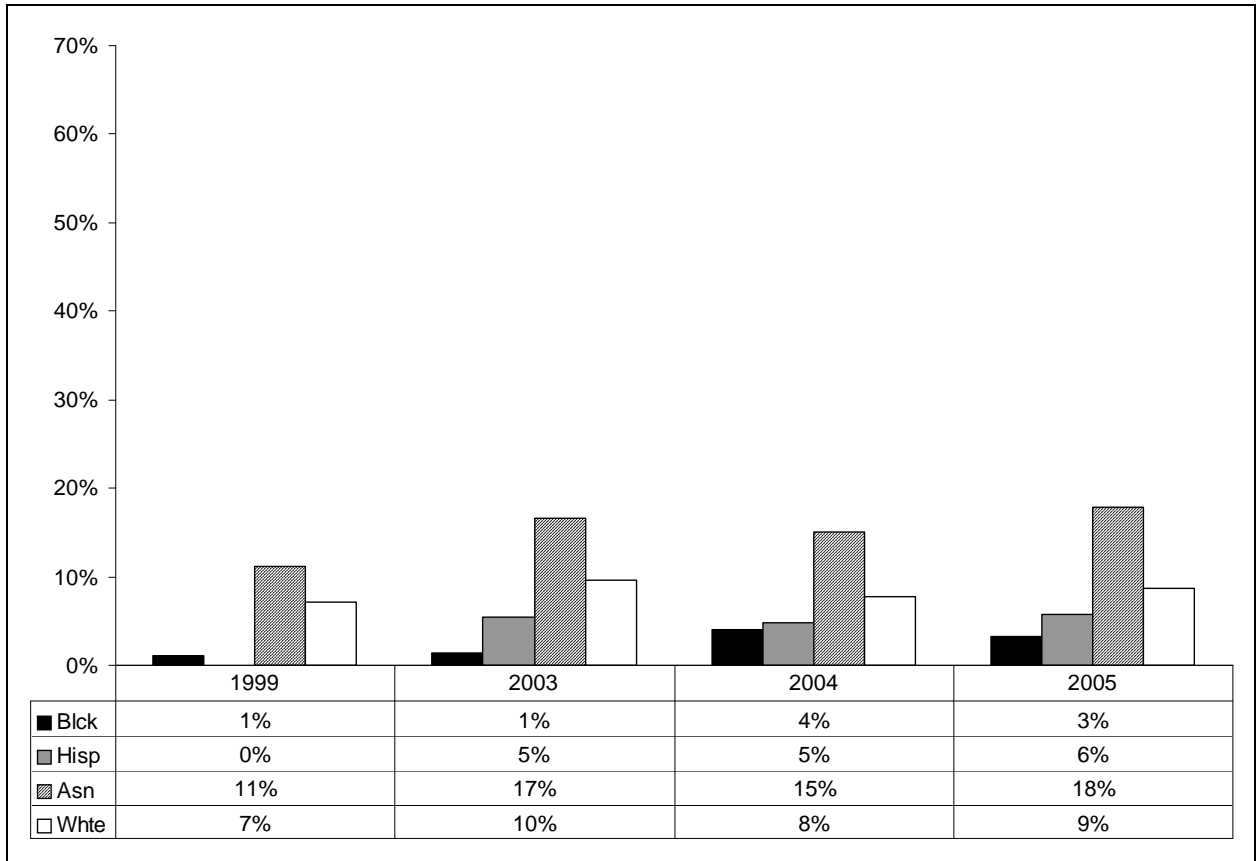
There are significant differences in the percentage of each group in UM's honors program. A smaller percentage of blacks and Hispanics at UM were in the honors program compared to whites and Asians in every year. For the entering class of 1999, 1 percent of blacks and no Hispanics were in the program, compared to 11 percent of Asians and 7 percent of whites. For the 2003 class, 1 percent of blacks and 5 percent of Hispanics were in honors, compared to 17 percent of Asian and 10 percent of white enrollees. In 2004, 4 percent of blacks were in the honors program, as were 5 percent of Hispanics, compared to 15 percent of Asians and 8 percent of whites. For 2005, the gaps are roughly the same as in the previous year − 3 percent of black enrollees were in the program, compared to 6 percent of Hispanics, 18 percent of Asians, and 9 percent of whites.

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Academic Probation

Figure 9. Percentage Ever on Academic Probation

	1999	2003	2004	2005
■ Blck	46%	45%	28%	
▨ Hisp	43%	33%	23%	
▨ Asn	33%	21%	8%	
□ Whte	13%	8%	5%	

(chart label: No Data Available — 2005)

Black students in every year had the largest percentage that had been on academic probation at some point during their matriculation at UM. For the entering class of 1999, 46 percent of blacks and 43 percent of Hispanics enrolled at UM had been on probation, compared to 33 percent of Asians and 13 percent of whites. For the 2003 group, 45 percent of blacks and 43 percent of Hispanics enrollees had been on academic probation, compared to 21 percent of Asians and 8 percent of whites. For the entering class of 2004, 28 percent of blacks, 23 percent of Hispanics, 8 percent of Asians, and 5 percent of whites had been on academic probation at some point. (This does not mean that fewer students each year are going on probation, by the way, since students in the 1999 entering class have available four years of cumulative data, while those entering in 2003 had only two years, and those in 2004 only one.)

Appendices

Appendix 1. Logistic Regression Equations

Variable	Unstandardized Regression Coefficient	Odds Ratios	Unstandardized Regression Coefficient	Odds Ratios
	1999		**2003**	
Total SAT	0.005976	1.0060****	0.005593	1.0056****
HSGPA	4.720287	112.2005****	4.736210	114.0013****
Black	3.292275	26.9040****	3.210393	24.7888****
Asian	-0.228460	0.7958*	-0.506390	0.6027****
Hispanic	2.464104	11.7529****	2.796127	16.3811****
Sex	-0.551610	0.5760****	0.703319	2.0204****
Residency	0.266833	1.3058****	0.325948	1.3853****
Alum	0.910921	2.4866****	0.869055	2.3847****
Constant	-23.14840	0.0000****	-24.478700	0.0000****
	2004		**2005**	
Total SAT	0.006015	1.0060****	0.006498	1.0066****
HSGPA	5.576617	264.1764****	5.847584	346.3966****
Black	3.257792	25.9921****	4.259281	70.75906****
Asian	-0.339990	0.7118****	-0.375380	0.687026****
Hispanic	2.692464	14.7680****	3.835420	46.31289****
Sex	0.259579	1.2964**	0.544197	1.723224****
Residency	0.082520	1.0860^{ns}	0.046833	1.047947^{ns}
Alum	0.585657	1.7962****	0.509982	1.665261****
Constant	-27.056500	0.0000****	-29.145400	0.0000****
	1999		**2003**	
CompACT	0.227226	1.2551****	0.270023	1.3100****
HSGPA	5.239279	188.5340****	4.992237	147.2655****
Black	3.884972	48.6656****	3.370456	29.0918****
Asian	-0.059960	0.9418^{ns}	-0.038210	0.9625^{ns}
Hispanic	3.480138	32.4642****	3.243491	25.6230****
Sex	-1.027030	0.3581****	0.352654	1.4228****
Residency	0.083415	1.0870^{ns}	0.350822	1.4202****
Alum	1.165093	3.2062****	1.121867	3.0706****
Constant	-23.822900	0.0000****	-26.103300	0.0000****
	2004		**2005**	
CompACT	0.235812	1.2659****	0.313898	1.3687****
HSGPA	5.300533	200.4436****	5.909599	368.5585****
Black	3.164025	23.6657****	4.139746	62.7869****
Asian	-0.136400	0.8725^{ns}	-0.211440	0.8094*
Hispanic	2.846693	17.2307****	3.867544	47.8248****
Sex	-0.024900	0.9754^{ns}	0.102322	1.1077^{ns}
Residency	0.001374	1.0014^{ns}	-0.127990	0.8799*
Alum	0.535327	1.7080****	0.514665	1.6731****
Constant	-25.001000	0.0000****	-29.726200	0.0000****

*$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$, ^{ns}Not statistically significant.

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Appendix 2. Calculating the Probability of Admission

Probability of Admission = A/(1+A).

Using Total SATs:

1999
A = EXP((0.005976*TOTSAT) + (4.720287*HSGPA) + (3.292275*Black) + (-0.22846*Asian)
+ (2.464104* Hispanic) + (-0.55161*Residency) + (0.266833*Sex) + (0.910921*Alum)
+ (-23.1484))

2003
A = EXP((0.005593*TOTSAT) + (4.73621*HSGPA) + (3.210393*Black) + (-0.50639*Asian)
+ (2.796127* Hispanic) + (0.703319*Residency) + (0.325948*Sex) + (0.869055*Alum)
+ (-24.4787))

2004
A = EXP((0.006015*TOTSAT) + (5.576617*HSGPA) + (3.257792*Black) + (-0.33999*Asian)
+ (2.692464* Hispanic) + (0.259579*Residency) + (0.08252*Sex) + (0.585657*Alum)
+ (-27.0565))

2005
A = EXP((0.006498*TOTSAT) + (5.847584*HSGPA) + (4.259281*Black) + (-0.37538*Asian)
+ (3.83542* Hispanic) + (0.544197*Residency) + (0.046833*Sex) + (0.509982*Alum)
+ (-29.1454))

Using Composite ACTs:

1999
A = EXP ((0.227226*CompACT) + (5.239279*HS GPA) + (3.884972*Black) + (-0.05996*Asian)
 + (3.480138*Hispanic) + (-1.02703*Residency) + (0.083415*Sex) + (1.165093*Parent Alum)
 +(-23.8229))

2003
A = EXP ((0.270023*CompACT) +(4.992237*HS GPA) + (3.370456*Black) + (-0.03821*Asian)
+ (3.243491*Hispanic) + (0.352654*Residency) + (0.350822*Sex) + (1.121867*Parent Alum)
+(-26.1033))

2004
A = EXP (0.235812*CompACT) + (5.300533*HS GPA) + (3.164025*Black) + (-0.1364*Asian)
+ (2.846693*Hispanic) + (-0.0249*Residency) + (0.001374*Sex) + (0.535327*Parent Alum)
+ (-25.001))

2005
A = EXP 0.313898*CompACT) + (5.909599*HS GPA) + (4.139746*Black) + (-0.21144*Asian)
+ (3.867544*Hispanic) + (0.102322*Residency) + (- 0.12799*Sex) + (0.514665*Parent Alum)
+ (-29.7262))

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