



The Divergence of the River: Examining the Effect of Academic “Mismatch” on College Students’ Early Attrition

Yuqin Gong

Illinois Education Research Council

June 16, 2006



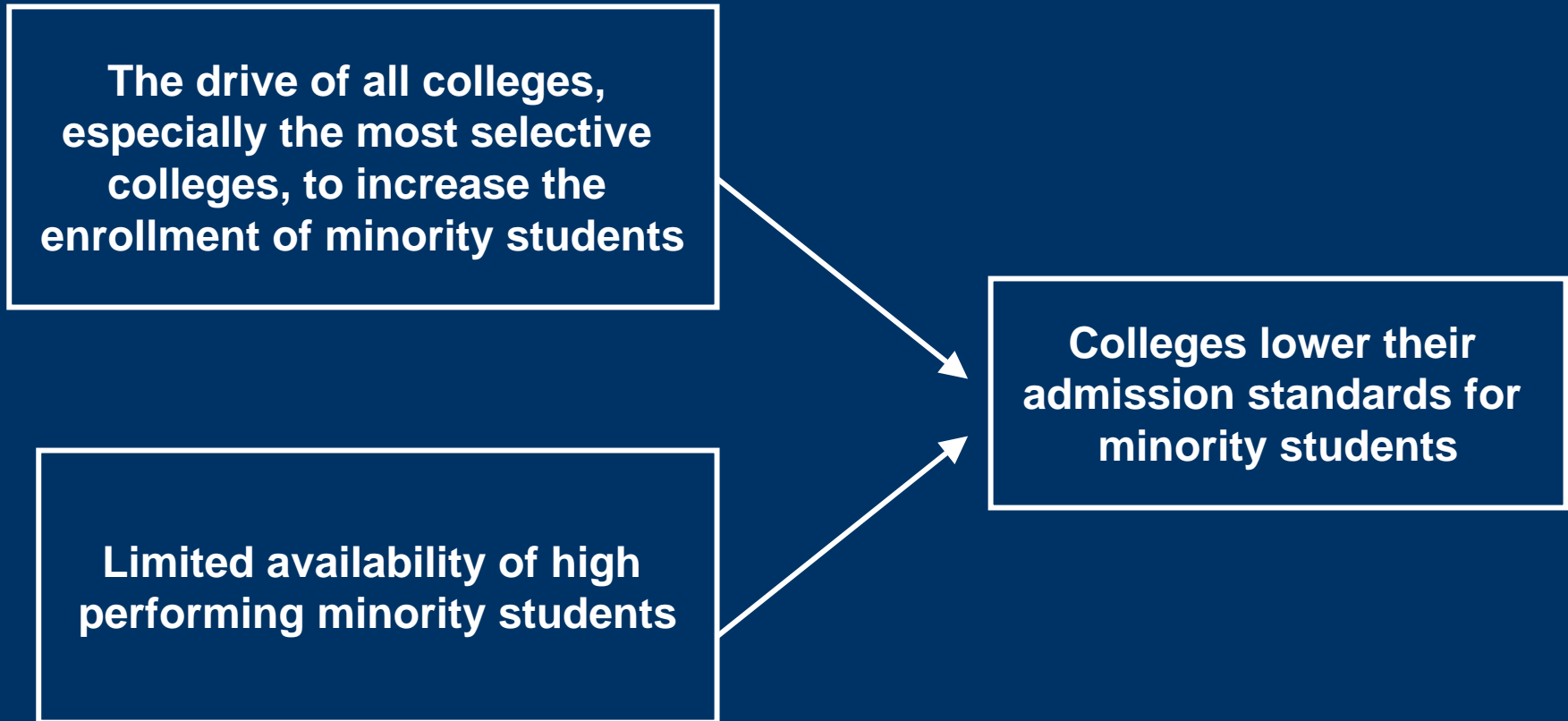
What Is the Research About?

Empirically test the mismatch argument surrounding the consideration of race in higher education admissions through the lens of early attrition



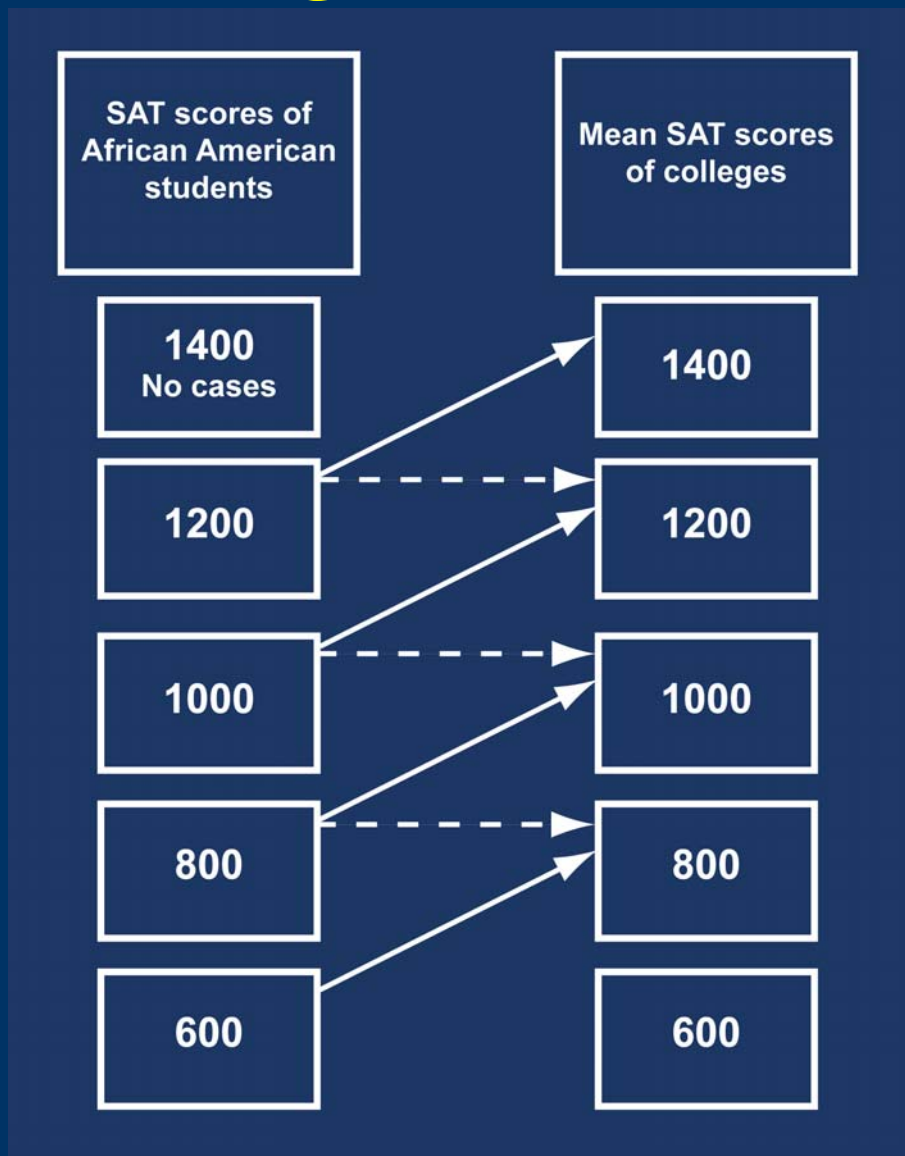


The Mismatch Argument – the Phenomenon





The Mismatch Argument—The Phenomenon





The Link Between Mismatch and High Dropout Rate of Black Students

- ***Consequences of mismatch***

“Because of this ‘pervasive shifting effect,’ minority students would find themselves in serious academic difficulties all up and down the scale (of higher institutions), because they would be systematically mismatched with institutions at all levels. Put bluntly, many minority students with all the prerequisites for success would be artificially turned into failures because of this pervasive mismatching.” (Sowell, 2004, pp. 146-147)

“Perhaps disproportionately large number of blacks fail to complete college because so many are enrolled at institutions whose normal admissions standards they could not meet.” (Therstrom, 1994/1995, p. 62)

- ***Their solution***

stop affirmative action in college admissions so black students would “have the same prospects of graduating as their classmates of other racial backgrounds.” (Therstrom, 1994/1995, p. 64)



What Is the Valid Comparison to Assess the Argument?

- **Comparison between students with similar characteristics but attending institutions with different admission standards**





What Evidence Did the Argument Proponents Provide?

- **Within institution racial gaps in test scores and racial differences in graduation/attrition rates**
- **No evidence on the most valid comparison**





How Did Earlier Studies Test the Argument

- The effect of institution selectivity
- Mismatch proponents' criticisms





A Straightforward Way to Test the Argument

- In direct alignment with the argument
- Five groups to indicate student's position in academic preparation relative to their peers at the same institution
 - 1) Equal to or above institution median ACT score
 - 2) 1 or 2 points below median ACT score
 - 3) 3 or 4 points below median ACT score
 - 4) 5 or 6 points below median ACT score
 - 5) 7 or more points below median ACT score





Data

Subjects:

The Illinois public high school class of 2002 attending *four-year* institutions in the fall 2002

Data sources:

- ACT: Student ACT score, demographics, educational expectation, motivation
- NSC: College enrollment nationwide, enrollment status
- IPEDS: Institution characteristics such as size, student-faculty ratio, and control
- Barron's: institution competitiveness, institutional median ACT of entering freshman class

Dependent variable:

freshman-year to sophomore-year attrition



The Sample

Enrollment of the 39,606 Students Across Different Four-year Institutions (%)

Control of institution	Institutional competitiveness					Total
	Less (ACT < 21)	Competitive (ACT 21-23)	Very (ACT 24-26)	Highly/Most (ACT 27+)	Unknown	
Public	6.0	32.7	11.0	13.8	0.2	63.8
Private, nonprofit	2.2	12.0	11.4	7.2	1.5	34.3
Private, for-profit	1.6	0.0	0.0	0.0	0.3	1.9
Total	9.9	44.7	22.5	20.9	2.0	100.0

- **Public institutions enrolled the majority (63.8%) of the students in the sample.**
- **A wide range of institutions. Substantial number of institutions and students are represented in each competitiveness tier.**



The Sample (*cont'd*)

Freshman-to-Sophomore Year Attrition Rate by Race/Ethnicity and Gender

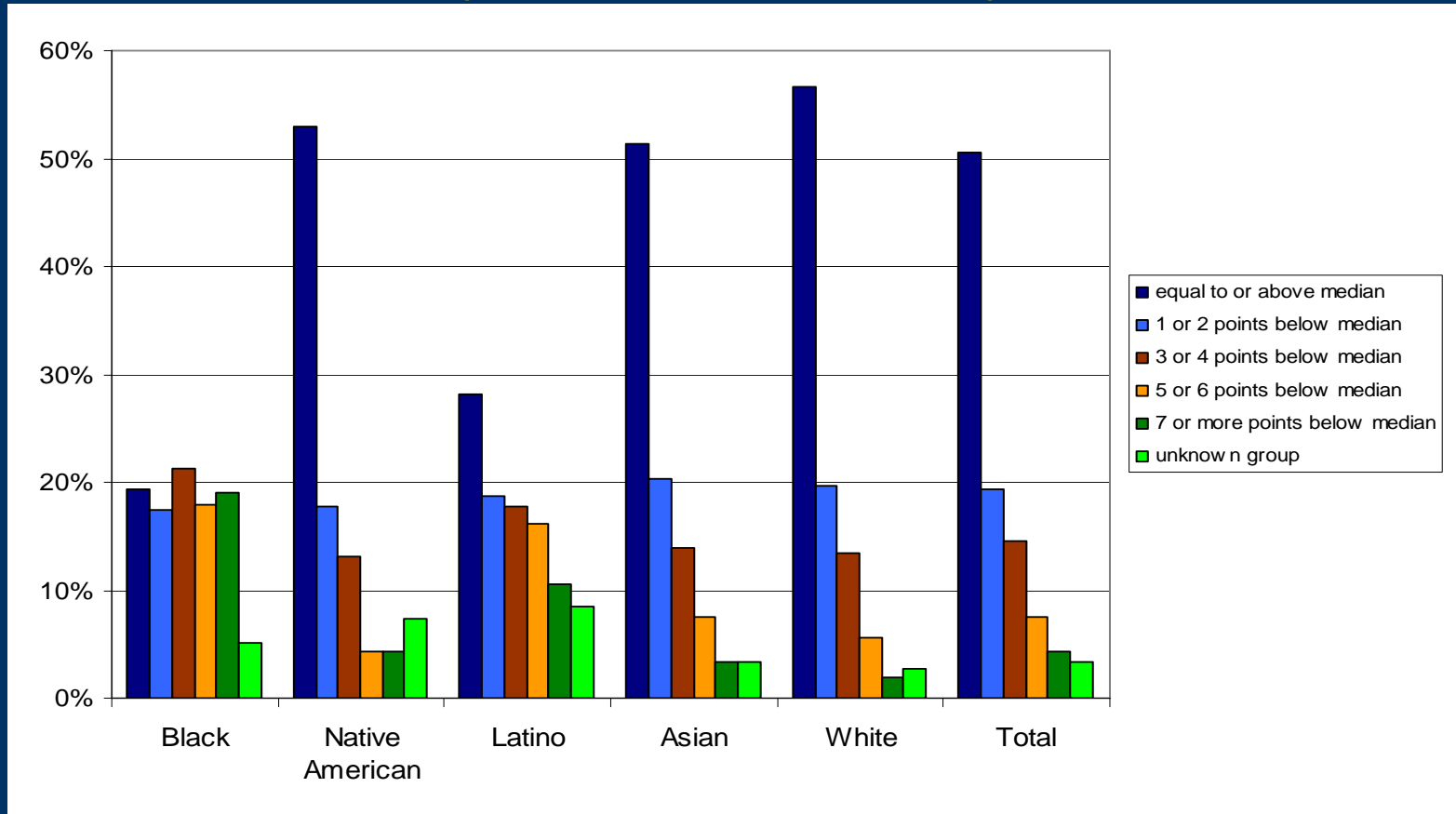
Race/ethnicity	Male	Female	Total	<i>n</i>
Black	26.9*	23.9	25.1	3695
Latino	24.2**	19.6	21.5	2051
Asian	12.8***	8.5	10.6	2607
Native American	25.6	10.7	19.1	68
White	16.4***	14.3	15.2	26762
Other	20.7	18.9	19.6	4423
Total	17.8***	15.7	16.7	39606

Note. Chi-square test of gender difference within race/ethnicity significant at * $p < .05$. ** $p < .01$. *** $p < .001$.

- **Students of different race/ethnicity depart at significantly different rates.**
- **Within each racial/ethnic group (except for Native American students), male students are significantly more likely to drop out than females.**



The Magnitude of Mismatch, by Race/Ethnicity



- **Black and Latino students are more likely to be mismatched.**



The Magnitude of Mismatch, by Race/Ethnicity and Institution Competitiveness

Race/ Ethnicity	Equal to or above median	1 or 2 below median	3 or 4 below median	5 or 6 below median	7 or more below median	Unknown group	<i>n</i>
Less competitive institutions							
Black	22.1	15.6	21.3	13.6	5.9	21.6	597
Latino	29.1	17.2	10.3	5.6	2.1	35.7	378
Asian	36.4	15.2	12.0	6.5	1.1	28.8	184
White	57.3	14.3	10.2	4.5	0.6	13.2	2178
Very competitive institutions							
Black	18.3	19.9	20.7	20.8	20.2	0.0	682
Latino	30.2	20.5	16.8	21.2	11.4	0.0	650
Asian	51.5	20.7	15.8	8.1	3.9	0.0	1148
White	59.2	19.6	12.3	6.3	2.6	0.2	5310
Highly/Most competitive institutions							
Black	10.0	11.3	16.4	19.2	43.2	0.0	542
Latino	20.0	16.8	19.3	19.0	25.0	0.0	400
Asian	58.2	20.5	12.2	6.1	2.9	0.0	850
White	54.9	21.1	14.3	6.2	3.0	0.5	5539



The Magnitude of Mismatch

- All tiers of institutions
- All races/ethnicities (minorities and white)

Confirming the assertions of the argument regarding the scope of the mismatch phenomenon





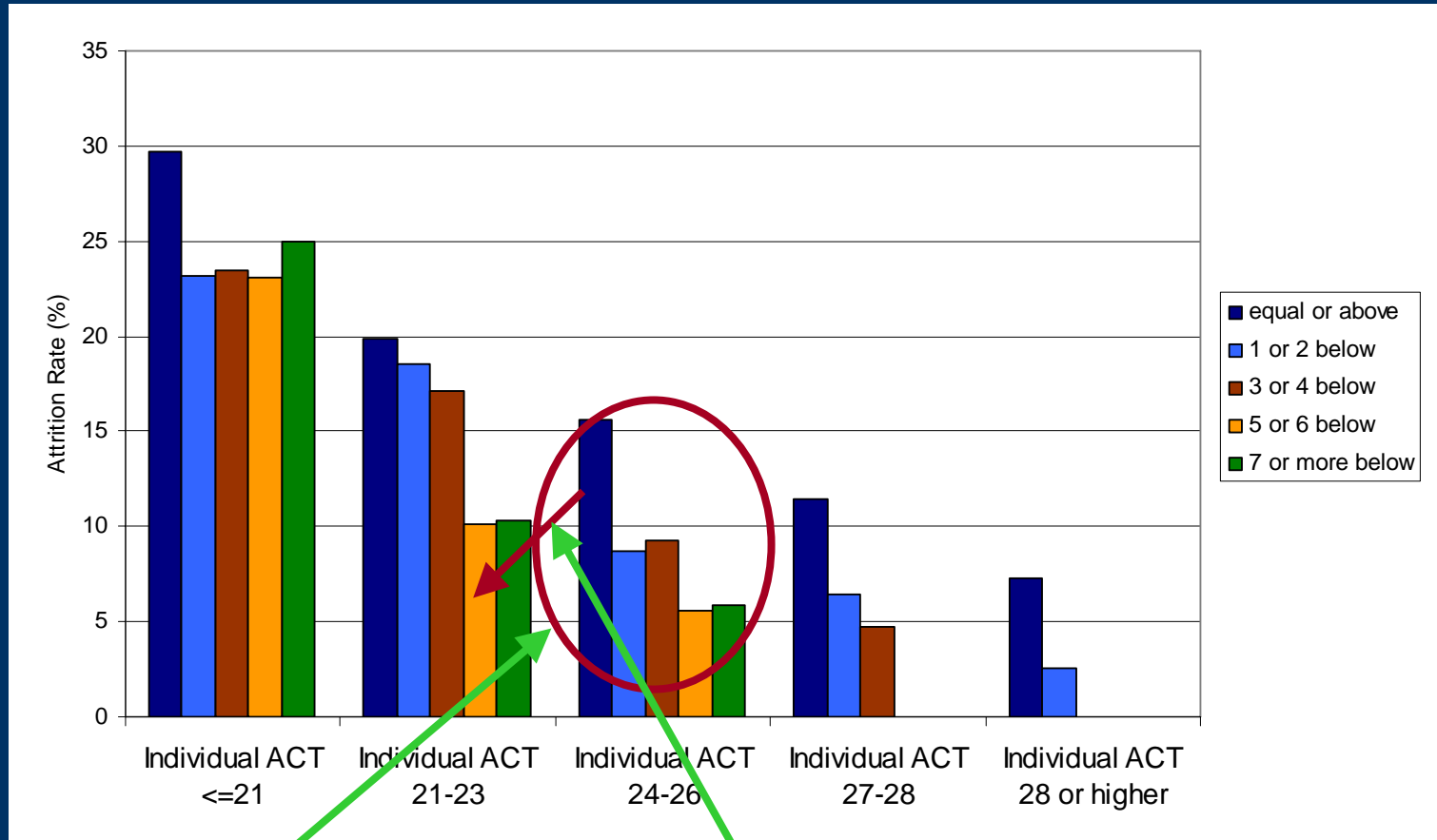
Is the Mismatch to Blame for the Higher Dropout Rates of Black and Latino Students?

If so, we would expect to observe:

1. With same ACT score, those in mismatched position would have higher attrition rate than those in well-matched position;
2. Well-matched black and Latino students would have similar attrition rate as well-matched white students;
3. Mismatched black students at HBCUs would have comparable attrition rate as mismatched black students at non-HBCUs.



Attrition Rate by Student ACT Score and Mismatch Scale



- ACT matters for attrition, BUT
- Given the same ACT scores, the more the mismatch, the lower is attrition.
- Higher-ACT students who attend matching institutions are more likely to stop enrollment than lower-ACT students who are mismatched.



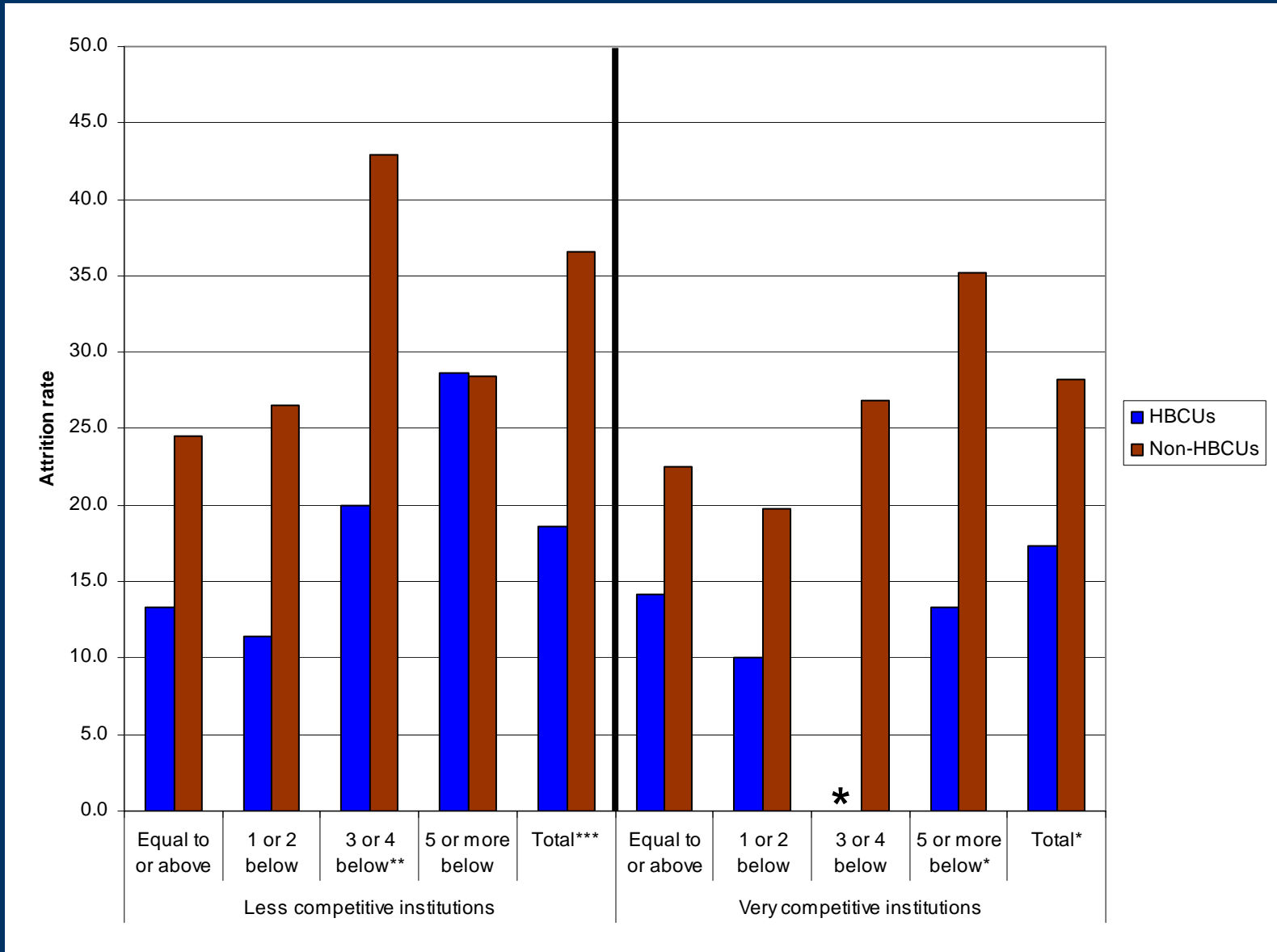
Attrition Rate of Well-Matched Students, by Race /Ethnicity and Institution Competitiveness

Institution competitiveness	Race/Ethnicity			
	Black	Latino	Asian	White
Less competitive	17.4	22.7	29.9	17.6*
Competitive	27.2	17.0	11.4	16.2***
Very competitive	21.6	18.9	8.3	12.0***
Highly/Most competitive	9.3	7.5	2.8	5.6*

Note. Chi-square test of the association of attrition with group membership significant at * $p < .05$. ** $p < .01$. *** $p < .001$.



Attrition Rates of Black Students at HBCUs and Non-HBCUs, by Institutional Competitiveness and Mismatch Scale



* Small N



The Effect of Mismatch— Logistic Regression Analysis Result

Variable	Parameter Estimate	SE	Change in Probability
1 or 2 points below median	-0.1696***	0.0466	-0.0219
3 or 4 points below median	-0.1443**	0.0551	-0.0188
5 or 6 points below median	-0.3401***	0.0713	-0.0414
7 or more points below median	-0.3386***	0.0912	-0.0412
Mismatch measure not available	0.3082**	0.1045	0.0466

A mismatch of 7 or more points = 4 percentage points decrease in attrition likelihood compared to attending a matching institution. The effect remains after controlling for many student and institutional attributes.

Reference group is equal to or above institution median. Control variables includes student's race/ethnicity, gender, parents' income, unobservable attributes indicator, educational expectation, enrollment status, hours expected to work during freshman year, size, control and student-faculty ratio of institutions attended, and individual ACT composite score. ** $p < .01$. *** $p < .001$.



The Effect of Mismatch—A Summary

- Contradictory to the mismatch argument assertion, for students with similar characteristics, mismatch due to attending a more competitive institution does not hurt students' chance of success, rather, it decreases the likelihood of attrition.
- With similar ACT scores, the discontinuation rate is lower for those “mismatched” (due to attending a more competitive institution) than for those well matched.
- When well-matched with their institutions in preparation, black and Latino students drop out at higher rates than white students.
- At the same mismatch position, black students at HBCUs drop out at lower rate than black students at non-HBCUs with same competitiveness.
- Holding more factors constant, evidence from the logistic regression analysis indicates the decreasing effect of mismatch on attrition.





So, mismatch does not seem to explain the higher dropout rates of Black and Latino students.

Then what would explain the phenomenon?





Explaining Racial/Ethnic Differences in Attrition Likelihood

Race/ Ethnicity	Models					
	1. Race and gender only		2. Add all other control variables except ACT composite score		3. Add ACT composite score	
	Estimate	Delta-p	Estimate	Delta-p	Estimate	Delta-p
Black	0.6394***	0.1069	0.4015***	0.0626	0.0841	0.0118
Native	0.2424	0.0359	-0.0526	-0.0071	-0.1083	-0.0143
Latino	0.4313***	0.0678	0.2915***	0.0439	0.055	0.0077
Asian	-0.4279***	-0.0505	-0.2584***	-0.0324	-0.3565***	-0.0432
Other	0.2329**	0.0344	0.1871*	0.0272	0.0481	0.0067

Reference group is white students. Other variables includes student's race/ethnicity, gender, parents' income, unobservable attributes indicator, educational expectation, enrollment status, hours expected to work during freshman year, size, control and student-faculty ratio of institutions attended. ** $p < .01$. *** $p < .001$.

It is the disadvantages that Black and Latino students suffered in the factors considered here, especially in pre-college preparation, that lead to the higher attrition rates.



The Subtle But Important Distinction Between the Mismatch Argument and the Inadequate Preparation Argument

- **Different attribution:**

Academic preparation in its relative sense
vs. Academic preparation in its own/absolute sense

- **Different solution:**

Redistribution of Black and Latino students among tiers of higher education by stopping the race-sensitive admission practices
vs. Improving pre-college education quality and achievement for those students



Conclusions

- Mismatch exists in all tiers of higher institutions.
- However, the effect of mismatch contradicts what the mismatch argument has asserted.

Rather than hurting students' likelihood for success, mismatch decreases those students' likelihood of dropping out.

- It has the same effect for white and Asian students as it does for black and Latino students.



Policy Implications

- The findings of this study suggest that the use of race in admission is positively associated with students' persistence at their early stages of college life by shifting these students to higher-rank institutions.
- Whether mismatch has the same effects on graduation, major/field choice, grades, self-concept, and career attainment remain to be determined.





Policy Implications (*cont'd*)

- **This study also found that the inadequate preparation in black and Latino students' pre-college education is a critical barrier to their persistence in college.**
- **Policy efforts and commitments need to be strengthened in pre-college education to ensure equally adequate preparation for students of all race/ethnicities.**

