UC and the SAT/ACT

RESEARCH FINDINGS
1994 - 2019

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University of California, Berkeley
Prop 209 and its impact

- 1995: Regents’ resolution SP-1 barring use of race
- 1996: Prop 209 passed
- 1998: Prop 209 takes effect
- Underrepresented minority admissions fall by half at top UC campuses; cascade effect
College Destinations of Top Applicants
Denied Admission to Berkeley and UCLA, 1997 to 2002

University of California

<table>
<thead>
<tr>
<th>Year</th>
<th>All Students</th>
<th>Underrepresented Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>55.8%</td>
<td>54.7%</td>
</tr>
<tr>
<td>1998</td>
<td>54.6%</td>
<td>45.2%</td>
</tr>
<tr>
<td>1999</td>
<td>58.3%</td>
<td>50.0%</td>
</tr>
<tr>
<td>2000</td>
<td>60.9%</td>
<td>49.3%</td>
</tr>
<tr>
<td>2001</td>
<td>61.5%</td>
<td>43.3%</td>
</tr>
<tr>
<td>2002</td>
<td>56.9%</td>
<td>41.5%</td>
</tr>
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</table>

Private Selective Institutions

<table>
<thead>
<tr>
<th>Year</th>
<th>All Students</th>
<th>Underrepresented Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>9.3%</td>
<td>14.1%</td>
</tr>
<tr>
<td>1998</td>
<td>9.0%</td>
<td>15.6%</td>
</tr>
<tr>
<td>1999</td>
<td>11.6%</td>
<td>18.5%</td>
</tr>
<tr>
<td>2000</td>
<td>12.6%</td>
<td>22.7%</td>
</tr>
<tr>
<td>2001</td>
<td>12.1%</td>
<td>24.1%</td>
</tr>
<tr>
<td>2002</td>
<td>13.8%</td>
<td>24.4%</td>
</tr>
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</table>
## UC Admissions in the Aftermath of Prop 209

<table>
<thead>
<tr>
<th>Prop 209 and its impact</th>
<th>UC policy responses</th>
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<tbody>
<tr>
<td>1995: Regents’ resolution SP-1 barring use of race</td>
<td>School-centered outreach</td>
</tr>
<tr>
<td>1996: Prop 209 passed</td>
<td>Top 4% Plan/ELC</td>
</tr>
<tr>
<td>1998: Prop 209 takes effect</td>
<td>Holistic review</td>
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<tr>
<td>Underrepresented minority admissions fall by half at top UC campuses; cascade effect</td>
<td>Class-based admissions preferences</td>
</tr>
<tr>
<td></td>
<td>Admissions testing: search for alternatives to the SAT/ACT</td>
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</tbody>
</table>
Standardized Regression Coefficients for HSGPA, SAT I and SAT II Scores by UC Campus, 1996-1999

Regression equation: $UCGPA = HSGPA + SAT\ I + SAT\ II$

<table>
<thead>
<tr>
<th>Campus</th>
<th>HSGPA</th>
<th>SAT I</th>
<th>SAT II</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC Berkeley</td>
<td>.21</td>
<td>-.02*</td>
<td>.27</td>
</tr>
<tr>
<td>UC Davis</td>
<td>.30</td>
<td>.04</td>
<td>.27</td>
</tr>
<tr>
<td>UC Irvine</td>
<td>.25</td>
<td>.09</td>
<td>.21</td>
</tr>
<tr>
<td>UC Los Angeles</td>
<td>.23</td>
<td>.05</td>
<td>.26</td>
</tr>
<tr>
<td>UC Riverside</td>
<td>.31</td>
<td>.16</td>
<td>.10</td>
</tr>
<tr>
<td>UC San Diego</td>
<td>.27</td>
<td>.03*</td>
<td>.25</td>
</tr>
<tr>
<td>UC Santa Barbara</td>
<td>.36</td>
<td>.11</td>
<td>.15</td>
</tr>
<tr>
<td>UC Santa Cruz**</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>UC System</td>
<td>.27</td>
<td>.07</td>
<td>.23</td>
</tr>
</tbody>
</table>

* Not statistically significant at <.01 level.
** Does not assign conventional grades.
Initial Findings

Curriculum-based achievement exams like the SAT II Subject Tests predict UC performance at least as well as nationally norm-referenced exams like the SAT or ACT.

“The benefits of achievement tests for college admissions – greater clarity in admissions standards, closer linkage to the high school curriculum – can be realized without any sacrifice in the capacity to predict success in college.”

Beyond Prediction: Testing for Achievement

Desirable properties of achievement tests:
- Criterion- vs. norm-referenced assessment
- Better alignment with K-12 standards
- Minimize test prep
- Less adverse impact
- “Signaling effect” for disadvantaged students and schools

President Atkinson’s 2001 address to ACE
BOARS’ 2002 Policy on Admissions Testing
### The SAT and ACT Respond to UC

<table>
<thead>
<tr>
<th>What changed</th>
<th>What didn’t change</th>
</tr>
</thead>
<tbody>
<tr>
<td>- SAT drops verbal analogies and quantitative comparisons</td>
<td>- Both SAT and ACT retain norm-referenced design</td>
</tr>
<tr>
<td>- Both ACT and SAT add Writing Test</td>
<td>- Bell-curve assumption is last remaining vestige of IQ tradition in college admissions</td>
</tr>
<tr>
<td>- Intended to position national exams as achievement tests</td>
<td>- “A test at war with itself”: Norm-referenced assessment for college admissions vs. standards-based assessment for K-12 accountability</td>
</tr>
<tr>
<td>- Foreshadows later efforts to have college admissions tests adopted for state K-12 accountability purposes</td>
<td></td>
</tr>
</tbody>
</table>
Creating the Bell Curve

Scaled score

Raw score: Number of questions correctly answered
Frequency Distribution of Scaled Scores Among California SAT Takers
Norm-referenced tests are designed to produce the same distribution from one year to the next and are ill-suited to measure change over time in educational achievement.
Study Variables

Sample: All California resident applicants for UC freshmen admission from 1994 through 2016

- SAT scores
  - Composite of verbal + math
  - Includes ACT-equivalent scores
- High school GPA
  - “Weighted” for AP/honors
- Family income
  - Log of family income in constant 2012 $
- Parents’ education
  - Highest-educated parent
- Underrepresented minority status
  - Self-identification as Latino/a or Black
  - Excludes Native Americans
### Correlations

<table>
<thead>
<tr>
<th></th>
<th>Family Income</th>
<th>Parents’ Education</th>
<th>Race/ Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school GPA</td>
<td>.11</td>
<td>.14</td>
<td>-.17</td>
</tr>
<tr>
<td>SAT/ACT scores</td>
<td>.36</td>
<td>.45</td>
<td>-.38</td>
</tr>
</tbody>
</table>

**Conditioning effect of socioeconomic background on SAT/ACT scores vs. HSGPA**
Variance in SAT/ACT Scores and High School GPA Explained by Family Income, Education and Race/Ethnicity, 1995 to 2016

*Regression equation: SAT score or HSGPA = b_1(Log of Income) + b_2(Parent Ed) + b_3(URM Status)*

Source: UC Corporate Student System data on all California residents who applied for freshman admission from 1995 through 2016 and for whom complete data were available on all covariates.
New Findings, Part 1

Compared to other admissions criteria like high school GPA, SAT/ACT scores are more sensitive to social background factors like parental education, income, and race/ethnicity.

The conditioning effect of socioeconomic background has grown substantially over the past quarter century and now accounts for 39% of all test-score variation among UC applicants.

Policy implication: The growing correlation between social background and SAT/ACT scores makes it difficult to rationalize treating scores purely as a measure of individual merit or ability, without regard for group differences in opportunity to learn.
Relative Weight of Family Income, Education, and Race/Ethnicity in Explaining SAT/ACT Scores, 1995 to 2016

Regression equation: SAT/ACT score = $b_1$(Log of Income) + $b_2$(Parent Education) + $b_3$(URM Status)

Source: UC Corporate Student System data on all California residents who applied for freshman admission from 1995 through 2016 and for whom complete data were available on all covariates.
## Racial Segregation in California Public Schools

### Los Angeles Schools by Level of Segregation (2016)

<table>
<thead>
<tr>
<th>Level of Segregation</th>
<th>Number of Schools</th>
<th>Percent of schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majority nonwhite (50-100% nonwhite)</td>
<td>958</td>
<td>95%</td>
</tr>
<tr>
<td>Intensely segregated (90-100% nonwhite)</td>
<td>785</td>
<td>78%</td>
</tr>
<tr>
<td>Apartheid schools (99-100% nonwhite)</td>
<td>264</td>
<td>26%</td>
</tr>
</tbody>
</table>
Racial Segregation in California Public Schools

Over the past 25 years, California public schools have become among the most racially segregated in the US


Rapid increase in “intensely segregated” schools (90% or more URM)

Over half of all Latino/a students, and 39% of African Americans, attend intensely segregated schools

Double segregation by race and poverty

Black students on average attend schools that are two-thirds poor, while the average for Latinos is 70%.

Racial segregation is associated with multiple forms of disadvantage that combine to magnify test-score disparities among racial minorities

New Findings, Part 2

Race/ethnicity has an independent conditioning effect on SAT/ACT scores after controlling for family income and education.

The conditioning effect of race on SAT/ACT scores has grown substantially in the past 25 years, mirroring the massive re-segregation of California public schools during the same period.

Statistically, race/ethnicity has become more important than either family income or education in accounting for test-score differences among California high school graduates who apply to UC.

Policy implication: “Class based” or “race neutral” affirmative action is unlikely to prove an effective proxy for redressing racial/ethnic disparities in college admissions.
Percent Latino and Black Applicants by SAT/ACT vs. High School GPA Deciles

Source: UC Corporate Student System data on all CA resident freshman applicants from 2016 for whom complete data were available on all covariates.
Percent First-Generation College Applicants by SAT/ACT vs. HSGPA Quintiles

Source: UC Corporate Student System data on California residents who applied for freshman admissions between 1994 and 2011 for whom complete data were available on all covariates.
Conclusion

National standards for fairness in testing encourage colleges and universities to take into account the conditioning effects of socioeconomic background on test performance. UC considers family income and education in evaluating applicants’ test scores, but Prop 209 bars it from considering race/ethnicity.

Race has an independent effect on SAT/ACT scores among UC applicants, mirroring the growing concentration of Latino and Black students in California’s poorest, most intensely segregated schools.

Policy implication: If UC cannot legally consider the effect of race and racial segregation on test performance, neither should it consider SAT/ACT scores. Race-blind implies SAT/ACT-blind admissions.
UC and the SAT/ACT
Research Findings: 1994 to 2019

ADDITIONAL SLIDES
FOR Q & A

Source: College Board College-Bound Seniors Reports for California.
ACT Writing: Scaled Score vs. Number Correct
Probing the UC findings

Changes in racial/ethnic composition of UC applicants vs. all California SAT takers

**Underrepresented Minorities as a Proportion of California High School Graduates, SAT Takers, and UC Applicants, 1998 to 2011**

Source: UC Corporate Student System, College Board Annual College-Bound Seniors Reports, California Department of Finance.
Probing the UC findings

Problem of missing SES data for California SAT takers

Percent Not Responding to SAT Questionnaire Items on Family Income, Parents' Education, and Race/Ethnicity: California SAT Takers, 1998 to 2013

Source: College Board annual College-Bound Seniors Reports for California, 1998 to 2013.
SAT Scores (all other factors held constant)

Predicted College GPA

Prediction Errors

“false negatives”

(3.81)

(3.00)

(2.19)

Student A

(3.94)

(3.13)

(2.32)

“false positives”

Student B

SAT Scores (all other factors held constant)
Relative Weight of High School GPA and SAT/ACT Scores in Predicting 5-Year Graduation Rates, Before and After Controlling for SES: All UC Freshmen vs. Underrepresented Minorities

Source: UC Corporate Student System data, 1994 to 2005. All estimates are statistically significant at .001 confidence level.
Percent of Variance in UCGPA Predicted by HSGPA and Test Scores With and Without Bonus Points for AP/Honors

Regression equation: \( UCGPA = \alpha HSGPA + \beta SAT I + \varphi SAT II \)

### Explained Variance in First-Year UCGPA

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>No Bonus Point</td>
<td>21.32%</td>
<td>1</td>
<td>21.46%</td>
<td>1</td>
<td>23.54%</td>
<td>1</td>
</tr>
<tr>
<td>Half Bonus Point</td>
<td>20.67%</td>
<td>2</td>
<td>21.10%</td>
<td>2</td>
<td>22.87%</td>
<td>2</td>
</tr>
<tr>
<td>Full Bonus Point</td>
<td>19.22%</td>
<td>3</td>
<td>19.82%</td>
<td>3</td>
<td>21.19%</td>
<td>3</td>
</tr>
</tbody>
</table>

### Explained Variance in Second-Year UCGPA

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Bonus Point</td>
<td>14.91%</td>
<td>1</td>
<td>13.88%</td>
<td>1</td>
<td>16.37%</td>
<td>1</td>
</tr>
<tr>
<td>Half Bonus Point</td>
<td>14.33%</td>
<td>2</td>
<td>13.34%</td>
<td>2</td>
<td>15.79%</td>
<td>2</td>
</tr>
<tr>
<td>Full Bonus Point</td>
<td>13.16%</td>
<td>3</td>
<td>12.28%</td>
<td>3</td>
<td>14.65%</td>
<td>3</td>
</tr>
</tbody>
</table>

Frequency Distribution of SAT I Scores:
All CA SAT I Takers vs. SAT I Takers Who Also Took SAT II

SAT I Score

Number of Students

All California SAT I Takers

SAT I Takers Who Also Took SAT II
New California Resident Admits and Enrolled Freshmen as a Percentage of California High School Graduates

Source: UC Corporate Student System (for CA resident admits and new freshmen), California Department of Finance Demographic Research Unit (for CA public high school graduates), California Postsecondary Education Commission (for CA private high school graduates from 1994 to 2009), and Western Interstate Commission on Higher Education (for CA private high school graduates from 2010 to 2012).
Percent Latino and Black Applicants by SAT/ACT vs. High School GPA Deciles

Source: UC Corporate Student System data on all CA resident freshman applicants from 1994 through 2011 for whom complete data were available on all covariates.
Criterion-referenced scoring

“In addition, BOARS Testing Principles should explicitly prefer tests that are not only curriculum-based but also scored by reference to achievement standards.”

-- BOARS’ 2009 revision of UC Principles for Admissions Testing
“BOARS’ review of the history of the development of admissions tests and of their use at the University of California points clearly to the fact that the original decision to adopt the testing requirement and create the Eligibility Index was driven only in part by policy goals. Pragmatic needs to reduce the size of the eligibility pool and to rank-order applicants to selective campuses in a simple, efficient way also played substantial roles. In BOARS’ current view, these pragmatic reasons—while important—are insufficient justification in themselves for the adoption of a test requirement or the selection of a specific test battery.”

-- BOARS’ 2002 policy