Assessing a New Approach to Class-Based Affirmative Action

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Today’s Presentation

- **Why?**
  - Review policy climate and ballot initiatives that motivate this research

- **How?**
  - Introduce class-based affirmative action at the University of Colorado – Boulder

- **To what end?**
  - Present findings from analyses designed to forecast the impact of implementing class-based affirmative action
Background

- **2008 Election: Amendment 46**
  - “Colorado Civil Rights Initiative” sought to eliminate race-based affirmative action at public universities in Colorado

- Posed serious threats to undergraduate admissions at CU, which seeks to admit:
  1. Students that possess backgrounds, perspectives, and life experiences that provide a unique and important contribution
  2. Students that have overcome significant adversity

- In anticipation of the vote, CU developed statistical approaches to support class-based affirmative action
Class-Based Affirmative Action

“Top X%” Plans
- Guaranteed admission to state university for applicants whose class rank is sufficiently high

UCLA Law School (Sander, 1997).
- Synthesized applicant-level factors on a single quantitative scale

My approach attempts to quantify:
1) The socioeconomic obstacles an applicant has faced
2) The extent to which that applicant has overcome those obstacles (Kahlenberg, 1997)
Measuring Disadvantage and Overachievement

The Disadvantage Index

Purpose: Quantify the obstacles an applicant has faced

- The reduction, owing to socioeconomic circumstance, in an applicant’s likelihood of attending a 4-year college

The Overachievement Index

Purpose: Quantify the extent to which an applicant has overcome obstacles

- The extent to which an applicant’s academic credentials exceed what is expected, conditional on socioeconomic factors.
The Disadvantage Index

Step 1

\[ P(E_i = 1) = \frac{\exp(\beta X_i + \xi Z_i)}{1 + \exp(\beta X_i + \xi Z_i)} \]

- \( E_i \) indicates college enrollment (dichotomous)
- \( X_i \) is a vector of achievement variables
- \( Z_i \) is a vector of socioeconomic variables

Step 2

\[ DI_i = \hat{P}(E_i = 1| \hat{\beta} X_i, \hat{\xi} Z_i) - \hat{P}(E_i = 1| \hat{\beta} X_i, \hat{\xi} Z^*) \]

- In \( Z^* \), socioeconomic variables are fixed at the values of a “typical” CU applicant.
The Disadvantage Index
The Overachievement Index

- **Step 1**

\[ Y_i = \theta K_i + \varepsilon_i \]

- $Y_i$ represents an academic credential (HSGPA, ACT, SAT)
- $K_i$ is a vector of socioeconomic variables

- **Step 2**

\[ OI_i = e_i = Y_i - \hat{\theta} K_i \]

- $e_i$ is the residual from the regression model above
## Academic and Socioeconomic Variables: ELS

<table>
<thead>
<tr>
<th>Academic</th>
<th>Applicant-Level</th>
<th>School-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative HSGPA</td>
<td>Family income</td>
<td>Percentage of students receiving FRL</td>
</tr>
<tr>
<td>SAT and ACT scores</td>
<td>Parents’ education level</td>
<td>Rural location</td>
</tr>
<tr>
<td></td>
<td>Single parent</td>
<td>Student-to-teacher ratio</td>
</tr>
<tr>
<td></td>
<td>Native English speaker</td>
<td>Size of the 12th grade class</td>
</tr>
</tbody>
</table>
Establishing Cut-Points

- Disadvantage and Overachievement scales are unfamiliar to admissions officers

- Initially, cut-points were set at one and two standard deviations from the CU applicant pool means
  - Moderate / severe disadvantage
  - High / extraordinary overachievement

- Revised cut-points rely on a standard-setting procedure, where senior admissions officers were subject matter experts
Implementation of Indices

- Undergraduate application review relies on primary and secondary factors

- Primary factors guide admissions decisions
  - Rigor of curriculum, cumulative GPA, quality of secondary school, etc.

- Secondary factors are less influential
  - Legacy status, race/ethnicity, performing arts, etc.
### Implementation of Indices

<table>
<thead>
<tr>
<th>Disadvantage</th>
<th>No Overachievement</th>
<th>High Overachievement</th>
<th>Extraordinary Overachievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Disadvantage</td>
<td>No admissions boost</td>
<td>Secondary factor boost</td>
<td>Primary factor boost</td>
</tr>
<tr>
<td>Moderate Disadvantage</td>
<td>Secondary factor boost</td>
<td>Primary factor boost</td>
<td>Primary factor boost</td>
</tr>
<tr>
<td>Severe Disadvantage</td>
<td>Primary factor boost</td>
<td>Primary factor boost</td>
<td>Primary factor boost</td>
</tr>
</tbody>
</table>
Research Question 1

- To what extent does the implementation of CU’s class-based affirmative action policy change the likelihood of acceptance for low-SES and minority students?
2009 Experiment

- A small sample (n=478) was randomly selected from the Fall 2009 applicant pool

- Each sampled application was reviewed twice
  - Control Condition: Race-based affirmative action
    - Official decision
  - Treatment Condition: Class-based affirmative action
    - Unofficial second review

- No admissions officer reviewed the same application twice
### Findings: 2009 Experiment

<table>
<thead>
<tr>
<th>Applicant Type</th>
<th>N</th>
<th>Class-based</th>
<th>Race-based</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES</td>
<td>121</td>
<td>81%</td>
<td>72%</td>
<td>9%**</td>
</tr>
<tr>
<td>Severely Low SES</td>
<td>35</td>
<td>83%</td>
<td>63%</td>
<td>20%*</td>
</tr>
<tr>
<td>URM</td>
<td>48</td>
<td>64%</td>
<td>56%</td>
<td>8%</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01, via test of correlated proportions (McNemar, 1947)
2010 Experiment

- A large sample (n=2,000) was randomly selected from the Fall 2010 applicant pool

- Sampled applications were randomly assigned
  - Control Condition: Race-based affirmative action
  - Treatment Condition: Class-plus-race affirmative action

- Analytic focus on acceptance rates for poor and underrepresented minority applicants
# Findings: 2010 Experiment

<table>
<thead>
<tr>
<th>Applicant Type</th>
<th>Class-Plus-Race</th>
<th>Race-Based</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Acceptance Rate</td>
<td>N</td>
</tr>
<tr>
<td>Low SES</td>
<td>212</td>
<td>58%</td>
<td>195</td>
</tr>
<tr>
<td>Severely Low SES</td>
<td>54</td>
<td>57%</td>
<td>55</td>
</tr>
<tr>
<td>URM</td>
<td>118</td>
<td>62%</td>
<td>118</td>
</tr>
<tr>
<td>Low SES and URM</td>
<td>47</td>
<td>59%</td>
<td>43</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01, via Fisher's exact test (Fisher, 1934)
Research Question 2

- What is the likelihood of college success for students admitted under CU’s class-based policy?
Focusing on Class-Based Admits

- Nineteen applicants from the 2009 experiment were:
  - (1) admitted under class-based condition, and
  - (2) refused under race-based condition

- Marginal academic credentials and low SES suggest the possibility of “academic mismatch” (Sander, 2004)

- Class-based admits were matched to historical CU students (“impostors”)
  - I examine college outcomes for historical impostors
### College Outcomes for Class-Based Admits

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>% Graduating in 4 Years</th>
<th>% Graduating in 6 Years</th>
<th>Undergraduate GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impostors</td>
<td>2,704</td>
<td>28.3%</td>
<td>52.9%</td>
<td>2.50</td>
</tr>
<tr>
<td>Baseline</td>
<td>18,422</td>
<td>39.8%</td>
<td>66.0%</td>
<td>2.83</td>
</tr>
</tbody>
</table>

- Across measures, college outcomes are lower for historical impostors
- More than half of the impostors ultimately graduated
### College Outcomes for Class-Based Admits

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<th>% Graduating in 6 Years</th>
<th>Undergraduate GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impostors (&quot;Overachievers&quot;)</td>
<td>601</td>
<td>44.8%</td>
<td>70.0%</td>
<td>2.94</td>
</tr>
<tr>
<td>Baseline</td>
<td>18,422</td>
<td>39.8%</td>
<td>66.0%</td>
<td>2.83</td>
</tr>
</tbody>
</table>

- Overachievers tend to outperform the baseline
- Outcomes for disadvantaged students are low, relative to the baseline
Discussion

- Impact of using class-based affirmative action
  - As a substitute for race-based affirmative action, it can maintain minority acceptance rates *under certain conditions*
  - Used in concert with race-based affirmative action, it can significantly improve minority acceptance rates *under certain conditions*

- College prospects for class-based admits
  - Overall results suggest success is possible for class-based admits, but far from guaranteed
Limitations

Analysis of college outcomes relied on:

- Historical data
- Small sample of class-based admits

Unclear how these findings generalize to elite, highly selective institutions

- Highly selective universities tend to place significant weight on minority status
- Class-based admits at elite schools may perform better than these results suggest
Large, moderately selective public universities are underrepresented in affirmative action scholarship.

More than half of the undergraduates in the United States attend large public universities (Snyder & Dillow, 2010).