Inequality in American Higher Education: A Closer Look at Public Broad Access Institutions in California

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Current Research and Policy Context

- Rise in time to degree
- Rising tuition
- Growing gaps in college entry, persistence, and completion by family income
- Accountability in higher education and college quality
- Increased attention on community colleges
Research Objective

• Examine gaps in postsecondary outcomes by race
  – Persistence and completion
  – Performance

• Focus on two of the nation’s largest systems
  – California Community Colleges (CCC)
  – California State University (CSU)

• Adjust for observed individual and institutional differences that may contribute to gaps:
  – Financial constraints
  – Academic preparation
  – High school quality
  – Major sorting
  – Institutional differences
Why Broad Access?

- Distribution of Institutions by Type and Acceptance Rates (College Board)

Sources: NCES, IPEDS
California Public Higher Education

- California’s structured system of public higher education—The Master Plan (1960)
  - UC: reserved for the top 1/8th (9 campuses)
  - CSU: reserved for the top 1/3rd (23 campuses)
  - CCC: “any student capable of benefiting from instruction” (113 campuses)
California Community Colleges

• California Community Colleges (CCC) largest system of higher education in the nation
  – 2.1 million students at 113 campuses
  – Two-thirds of all California college students attend a community college
  – Enrolls 20% of the nation’s community college students
  – 45% of students qualify for need-based fee waiver and pay no fees

• Goals of system
  – Preparing students to transfer to four-year universities
  – Workforce development and training
  – Basic skills and remedial education
CCC: Data and Sample

• California Community College Chancellor’s Office
  – Census of students enrolled
  – Transcript level information

• Match to California Department of Education K-12 data
  – High school test scores
  – Demographic information

• Analytic sample over 300,000 students across 108 community colleges
  – First time freshman cohorts (2005-2009)
  – Age 17-19
  – Started college within one year of high school graduation
  – Enrolled in at least two courses (six units) in their first year
### Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black/AA</th>
<th>Hispanic/Latino</th>
<th>Other</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>0.489</td>
<td>0.515</td>
<td>0.529</td>
<td>0.460</td>
<td>0.503</td>
</tr>
<tr>
<td></td>
<td>(0.500)</td>
<td>(0.500)</td>
<td>(0.499)</td>
<td>(0.498)</td>
<td>(0.500)</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>0.102</td>
<td>0.398</td>
<td>0.526</td>
<td>0.317</td>
<td>0.321</td>
</tr>
<tr>
<td></td>
<td>(0.302)</td>
<td>(0.489)</td>
<td>(0.499)</td>
<td>(0.465)</td>
<td>(0.467)</td>
</tr>
<tr>
<td>11th grade English Score</td>
<td>341.3</td>
<td>302.5</td>
<td>314.1</td>
<td>330.5</td>
<td>326.2</td>
</tr>
<tr>
<td></td>
<td>(62.50)</td>
<td>(58.84)</td>
<td>(55.55)</td>
<td>(59.48)</td>
<td>(60.72)</td>
</tr>
<tr>
<td>11th Math Level Low</td>
<td>0.319</td>
<td>0.452</td>
<td>0.437</td>
<td>0.299</td>
<td>0.372</td>
</tr>
<tr>
<td></td>
<td>(0.466)</td>
<td>(0.498)</td>
<td>(0.496)</td>
<td>(0.458)</td>
<td>(0.483)</td>
</tr>
<tr>
<td>High School Quality</td>
<td>736.2</td>
<td>666.0</td>
<td>667.7</td>
<td>719.3</td>
<td>701.7</td>
</tr>
<tr>
<td></td>
<td>(73.86)</td>
<td>(87.10)</td>
<td>(79.64)</td>
<td>(82.29)</td>
<td>(84.86)</td>
</tr>
<tr>
<td>Observations</td>
<td>152,229</td>
<td>27,951</td>
<td>153,875</td>
<td>55,132</td>
<td>389,187</td>
</tr>
</tbody>
</table>
Race Gaps in Persistence, Performance, & Completion

- Individual Determinants
  - Financial Constraints (Free/Reduced Lunch in 11th grade)
  - Academic Preparation (11th grade Math/ELA performance)
  - High School Quality (California’s API score)

- Institutional Differences
CCC: Race Gaps in Two Year Persistence Rates

- Model 1: Unconditional
- Model 2: 1 + Cohort Fixed Effects
- Model 3: 2 + Free/Reduced Lunch Eligibility
- Model 4: 3 + 11th Grade Test Scores
- Model 5: 4 + High School Quality (API)
- Model 6: 5 + College Fixed Effects

Mean Persistence = .78
CCC: Race Gaps in Transfer Rates

- Model 1: Unconditional
- Model 2: 1 + Cohort Fixed Effects
- Model 3: 2 + Free/Reduced Lunch Eligibility
- Model 4: 3 + 11th Grade Test Scores
- Model 5: 4 + High School Quality (API)
- Model 6: 5 + College Fixed Effects

Mean Transfer = .25
CCC: Race Gaps in Degree Completion Rates

- Model 1: Unconditional
- Model 2: 1 + Cohort Fixed Effects
- Model 3: 2 + Free/Reduced Lunch Eligibility
- Model 4: 3 + 11th Grade Test Scores
- Model 5: 4 + High School Quality (API)
- Model 6: 5 + College Fixed Effects

Mean Complete = .32
CCC: Race Gaps in 1st year GPA

- Model 1: Unconditional
- Model 2: 1 + Cohort Fixed Effects
- Model 3: 2 + Free/Reduced Lunch Eligibility
- Model 4: 3 + 11th Grade Test Scores
- Model 5: 4 + High School Quality (API)
- Model 6: 5 + College Fixed Effects

Mean GPA =
Institutional Differences

• Distributions of student inputs
  – Considerable differences in student inputs across California’s 113 community colleges
Campuses differ dramatically in racial/ethnic makeup

- Campus race distributions
Campuses differ in high school academic preparation

- Campus high school English standardized test scores
Campuses differ in high school academic preparation

- Campus 11\textsuperscript{th} grade math course distribution
Race Gaps in CCC Degree Completion by Institution (Hispanic-White)

No Controls
Race Gaps in CCC Degree Completion by Institution (Hispanic-White) + Free/Reduced Lunch Eligibility
Race Gaps in CCC Degree Completion by Institution (Hispanic-White) + Free/Reduced Lunch Eligibility + Test Scores
Race Gaps in CCC Degree Completion by Institution (Hispanic-White)

+ Free/Reduced Lunch Eligibility + Test Scores + HS Quality
California State University (CSU)

• Largest 4-year public university system
• 23 campuses
• Fall 2015: 464,571 students:
  – 418,243 undergraduates
  – 44,641 graduate students
  – 11,687 post-baccalaureate
• 87% of first-time freshmen come from California public high schools
• One-third of undergraduates are the first in their families to attend college.
• 75% of students work more than 20 hours per week
• 54% of undergraduates are recipients of a Pell grant
• Recipients of 92% of the undergraduate transfers from CA community colleges
CSU: Data and Sample

- California State University Chancellor’s Office data
  - Census of students enrolled in years 2004-2014
- Match to California Department of Education K-12 data
  - High school test scores and
  - Demographic information
- Match to CCC data if transferred to CSU
- Over 500,000 students across 23 CSU campuses
## Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black/AA</th>
<th>Hispanic/Latino</th>
<th>Other</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (%)</td>
<td>55.28</td>
<td>63.92</td>
<td>61.17</td>
<td>54.62</td>
<td>57.58</td>
</tr>
<tr>
<td>Pell Status at Entry (%)</td>
<td>16.90</td>
<td>58.83</td>
<td>60.86</td>
<td>36.80</td>
<td>60.08</td>
</tr>
<tr>
<td>HS GPA</td>
<td>3.39</td>
<td>3.03</td>
<td>3.22</td>
<td>3.31</td>
<td>3.29</td>
</tr>
<tr>
<td>SAT</td>
<td>1090</td>
<td>900</td>
<td>940</td>
<td>1030</td>
<td>1010</td>
</tr>
<tr>
<td>No Remed (%)</td>
<td>68.12</td>
<td>23.98</td>
<td>35.95</td>
<td>51.16</td>
<td>49.84</td>
</tr>
<tr>
<td>Full Load (%)</td>
<td>46.12</td>
<td>33.22</td>
<td>32.56</td>
<td>37.31</td>
<td>38.25</td>
</tr>
<tr>
<td>N</td>
<td>171,280</td>
<td>30,250</td>
<td>183,944</td>
<td>154,315</td>
<td>539,789</td>
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CSU Persistence and Graduation Outcomes, by Freshman Cohort

<table>
<thead>
<tr>
<th>Year</th>
<th>Persist to Year 2</th>
<th>Graduate in 4 Years</th>
<th>Graduate in 6 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>82%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>80%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>80%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>79%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>80%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>83%</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>84%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>84%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>85%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>85%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>85%</td>
<td>19%</td>
<td></td>
</tr>
</tbody>
</table>
Race Gaps in Persistence, Performance, & Completion

• Individual Determinants (Pre-College)
  – Financial Constraints (Pell Eligibility)
  – Academic Preparation (SAT, HS GPA)

• Individual Determinants (College Entry)
  – Remediation Status
  – Declared Major
  – Credit Load, Work Status

• Institutional Differences
CSU: Race Gaps in Year 2 Persistence

- Model 1: Unconditional
- Model 2: 1 + Pell Eligibility
- Model 3: 2 + SATs
- Model 4: 3 + Campus Fixed Effects
- Model 5: 4 + Major Fixed Effects

Mean Persistence = .83
CSU: Race Gaps in 6 Year Graduation Rates

- Model 1: Unconditional
- Model 2: 1 + Pell Eligibility
- Model 3: 2 + SATs
- Model 4: 3 + Campus Fixed Effects
- Model 5: 4 + Major Fixed Effects
CSU: Race Gaps in 1\textsuperscript{st} Term GPA

- Model 1: Unconditional
- Model 2: 1 + Pell Eligibility
- Model 3: 2 + SATs
- Model 4: 3 + Campus Fixed Effects
- Model 5: 4 + Major Fixed Effects

Mean GPA = 2.79
CSU: Race Gaps in GPA over time

- Fully Specified Model (only graduates)
CSU Institutional Differences
CSU Institutional Differences
CSU Institutional Differences

![Graph showing institutional differences]
CSU Institutional Differences

![Graph showing 6 Year Graduation rates across different campuses for White, Black, and Hispanic students.]
CSU Institutional Differences

![Scatter plot showing institutional differences in Fall GPA among different ethnic groups across various campuses. The plot includes data points for White, Black, and Hispanic students, with varying circle sizes representing different GPA values.](image)
• Big gaps in postsecondary outcomes, even conditioning on a host of things that are highly correlated with these outcomes (and holding selectivity/sector constant)
• Explore gender differences
• Institutional characteristics
• Richer set of college readiness indicators
Thank You!

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Extra Slides
## Racial/Ethnic Composition of CA Public Higher Education Institutions

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-year Public</td>
<td>2-year Public</td>
</tr>
<tr>
<td>White</td>
<td>63%</td>
<td>16%</td>
</tr>
<tr>
<td>Black</td>
<td>12%</td>
<td>19%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>14%</td>
<td>19%</td>
</tr>
<tr>
<td>Asian</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>4.0%</td>
<td>21%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

## Declared Major at Entry by Race

<table>
<thead>
<tr>
<th>Race/Major</th>
<th>Biomedical Sciences</th>
<th>Business</th>
<th>Engineering</th>
<th>Education/Child Dev</th>
<th>Health Professions</th>
<th>Social Science</th>
<th>Other STEM</th>
<th>Other Non-STEM</th>
<th>Undeclared</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>6.09</td>
<td>15.04</td>
<td>12.86</td>
<td>5.45</td>
<td>1.78</td>
<td>12.52</td>
<td>6.53</td>
<td>22</td>
<td>17.75</td>
</tr>
<tr>
<td>Black/African American</td>
<td>7.84</td>
<td>14.56</td>
<td>7.67</td>
<td>5.33</td>
<td>3.14</td>
<td>19.92</td>
<td>3.0</td>
<td>16.72</td>
<td>21.81</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>7.8</td>
<td>12.06</td>
<td>10.27</td>
<td>4.67</td>
<td>2.78</td>
<td>19.43</td>
<td>4.3</td>
<td>15.29</td>
<td>23.42</td>
</tr>
<tr>
<td>Other</td>
<td>8.67</td>
<td>15.15</td>
<td>14.89</td>
<td>4.57</td>
<td>3.14</td>
<td>10.34</td>
<td>4.64</td>
<td>14.68</td>
<td>23.92</td>
</tr>
<tr>
<td>Total</td>
<td>7.51</td>
<td>14.03</td>
<td>12.27</td>
<td>4.92</td>
<td>2.58</td>
<td>14.66</td>
<td>5.03</td>
<td>17.33</td>
<td>21.67</td>
</tr>
</tbody>
</table>
CC: Differences in Outcomes by Free/Reduced Priced Lunch and 11th grade ELA Test Score Deciles
CC: Differences in Outcomes by Free/Reduced Priced Lunch and 11th grade ELA Test Score Deciles
CSU: Differences in Outcomes by Pell Eligibility Status and SAT Deciles
CSU: Differences in Outcomes by Pell Eligibility Status and SAT Deciles
CSU: Differences in Outcomes by Pell Eligibility Status and SAT Deciles
CSU: Differences in Outcomes by Race and SAT Deciles
CSU: Differences in Outcomes by Race and SAT Deciles
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