Placement Tests: How Accurate Are They?

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Research

• Student-level data from a statewide Community College System
• Examine validity of placement tests and high school information in predicting course grades and college performance
Student information on entry

- ACCUPLACER and COMPASS placement tests (2 math and 2 reading from each)
- High school information:
  - HS GPA
  - Effort (HS credits, # courses)
  - Aptitude (Honors courses, F grades)
  - Subject-level proficiency (# Math/Engl. courses)
  - College prep (# college courses)
Student outcomes in college

- College GPA and college-level credits earned after 3-5 semesters
- Grades in gatekeeper Math/English courses

- Conditional on not being in Dev. Ed.:
  - Separate students above and below the cut-offs
  - Extrapolate from students who pass placement tests to generate predictions for students who fail the placement test
Results for college GPA and credits

- HS GPA very strongly correlated with college GPA and credits earned ($R^2=0.21$; $R^2=0.14$)
- Other HS information positively correlated, but does not improve $R^2$ from HS GPA model

For placement tests:
- Very weak positive association with college GPA
- Moderately strong positive association with college credits earned
- Same results above and below Dev. Ed. cut-off
Estimated pass probability by ACCUPLACER algebra

- Estimated probability of passing Gmatlgh2
- Estimated probability of passing Gmatlgh2

ACCUPLACER algebra

- Grade >= D
- Grade >= C
- Grade >= B
Estimated predicted success probability vs. test score

ACCUPLACER sentence skills

Predicted probability of success (C or Better in CL English)

density
- 0.01
- 0.02
- 0.03
- 0.04
- 0.05
- 0.06
- 0.07

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Validity Metric: Severe Error Rate

• What proportion of students are:
  – Placed in Dev. Ed., but are predicted to get ≥B grade in gatekeeper course
  – Not placed in Dev. Ed., but are predicted to fail the gatekeeper course

• Alternative: assume same numbers in Dev. Ed. but use HS GPA to assign them
## Severe Error Rate

<table>
<thead>
<tr>
<th>Gate-keeper course:</th>
<th>Using Placement Test Cutoffs</th>
<th>HS GPA as placement rule</th>
<th>Placement tests + HS GPA as placement rule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ACCUPLACER</td>
<td>32.7</td>
<td>16.5</td>
<td>25.7</td>
</tr>
<tr>
<td>COMPASS</td>
<td>26.8</td>
<td>12.3</td>
<td>18.8</td>
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<tr>
<td><strong>Math course A:</strong></td>
<td></td>
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<tr>
<td>ACCUPLACER</td>
<td>21.2</td>
<td>8.2</td>
<td>15.3</td>
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<tr>
<td>COMPASS</td>
<td>28.0</td>
<td>10.9</td>
<td>22.2</td>
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<tr>
<td><strong>Math course B:</strong></td>
<td></td>
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<td></td>
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<tr>
<td>ACCUPLACER</td>
<td>17.3</td>
<td>9.2</td>
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<tr>
<td>COMPASS</td>
<td>15.8</td>
<td>11.1</td>
<td>14.0</td>
</tr>
</tbody>
</table>
Key Issues

- Relevance for other states?
- Reform, replace, or remove placement tests?
- Economic implications?
For more information:

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