Validating Placement Systems: It’s all about Throughput

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#MaximizeThroughput

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Strengthening Student Success
Long Beach Westin
Overview

• Defining throughput
• Voices from the field
• Data: High school performance
• Objective: Maximizing throughput & establishing baseline
• Disproportionate impact
• How to test alternatives
• Non-cognitive variables
  • Psychometric properties: reliability, validity, bias
• The future
Defining Throughput Rate

- The probability of getting to and through a gateway course within a specified period of time.

- **Throughput rate (AB 705):** The proportion of a cohort of students who complete the transferable or gateway math or English course within two primary semesters or three primary quarters of entering their first course in the sequence.
A concerned voice from the field

After about four weeks in class with developmental English students, I have enough evidence of their commitments and expectations that I can see which students could have been jumped up to a transfer course (with or without co-requisite support) and which students with limited language competence should not make the jump...we do not have enough assessment information to be assigning large numbers of remedial students directly into transfer English courses, even with co-requisite support. If we do, the students who can rise to the occasion will pass the course. But what becomes of those students who cannot? ...We don’t want to be pushing students into a course which they are highly likely to fail. Failure often creates discouragement or disinterest. By contrast, success in a pre-transfer course allows for adjustment to the expectations of college level work, and in turn opens the door for further success. And, yes, it also runs the risk that the student won’t continue onward toward completion.
Defining “highly unlikely” to succeed

Figure 18: Measuring Perceptions of Uncertainty
Maximizing throughput

- The most critical aspect of AB 705 is the requirement that we maximize the probability of students completing the transfer-level course within one year.

- How do we know if we are maximizing throughput?

- Retrospective data will form the initial baseline.
  - Should we look across institutions to form standards regarding institutional throughput?

- All subsequent changes to placement, curriculum, and pedagogy should result in further improving throughput.
## Transfer-Level English Throughput Rates

<table>
<thead>
<tr>
<th>GPA Category</th>
<th>Description</th>
<th>Pass Rate</th>
<th>% of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>11th grade GPA &lt; 1.9</td>
<td>D or worse in 11th grade English</td>
<td>43%</td>
<td>~10%</td>
</tr>
<tr>
<td>11th grade GPA &gt;= 1.9 and D or worse in 11th grade English</td>
<td>49%</td>
<td>~5%</td>
<td></td>
</tr>
<tr>
<td>11th grade GPA &gt;= 1.9 and C- or better in 11th grade English</td>
<td>62%</td>
<td>~23%</td>
<td></td>
</tr>
<tr>
<td>11th grade GPA &gt;= 2.6</td>
<td>80%</td>
<td>~62%</td>
<td></td>
</tr>
</tbody>
</table>
Maximizing Throughput: English

One-year English throughput rate by placement level for students with less than a 1.9 high school GPA

- **Transfer-level**: 43% pass rate
- **One-level below**: 13% pass rate
- **Two-levels below**: 2% pass rate
- **Three-levels below**: 0% pass rate
- **Four-levels below**: 0% pass rate

11th grade GPA < 1.9
- 43% pass rate
- ~10% of students
Statistics

Decision Tree

Root Node

Branch

Internal Node/non leaf

Internal Node/split

Terminal node/leaf

Node 1

HS_11_GPA_CUM \geq 3

Node 2

HS_11_GPA_CUM \geq 3.3

Node 3

PRE_CALC_UP11 \geq 0.5

Node 4

PRE_CALC_UP11 > 0.5

Node 5

ALG_II_UP11 \geq 0.5

Node 6

0.7

Node 7

0.4

0.12%

Node 8

Node 9

Node 10

Node 11

Node 12

0.49

0.10%

0.58

0.19%

0.7

4%

0.7

16%

0.81

8%

0.88

30%
AB 705 Analysis of Pass Rates of Groups of Students in Transfer-level Statistics

<table>
<thead>
<tr>
<th>GPA Range</th>
<th>Course Performance</th>
<th>Pass Rate</th>
<th>Students %</th>
</tr>
</thead>
<tbody>
<tr>
<td>11th grade GPA &lt; 2.3</td>
<td></td>
<td>40%</td>
<td>~12%</td>
</tr>
<tr>
<td>11th grade GPA &gt;= 2.3 and C- or worse in Algebra II</td>
<td>49% pass rate</td>
<td>~10% of students</td>
<td></td>
</tr>
<tr>
<td>11th grade GPA &gt;= 2.3 and C or better in Algebra II</td>
<td>58% pass rate</td>
<td>12% of students</td>
<td></td>
</tr>
<tr>
<td>11th grade GPA &gt;= 2.3 and C or better in Pre-Calculus</td>
<td>70% pass rate</td>
<td>~4% of students</td>
<td></td>
</tr>
<tr>
<td>11th grade GPA &gt;= 3.0</td>
<td></td>
<td>80%</td>
<td>~62%</td>
</tr>
</tbody>
</table>
One-year Math throughput rate by placement level for students with less than a 2.3 high school GPA

- 11th grade GPA < 2.3
- 40% pass rate
- ~12% of students
Maximizing throughput

- Retrospective data establishes baseline
- Use the MMAP decision trees (or local variants, if desired)
- Evaluate whether students’ throughput would be maximized if they were placed one level below relative to being placed directly into transfer-level
- Inferring the counterfactual
The law

• A community college district or college shall not require students to enroll in remedial English or mathematics coursework that lengthens their time to complete a degree unless placement research that includes consideration of high school grade point average and coursework shows that those students are highly unlikely to succeed in transfer-level coursework in English and mathematics. A community college district or college may require students to enroll in additional concurrent support, including additional language support for ESL students, during the same semester that they take a transfer-level English or mathematics course, but only if it is determined that the support will increase their likelihood of passing the transfer-level English or mathematics course. The community college district or college shall minimize the impact on student financial aid and unit requirements for the degree by exploring embedded support and low or noncredit support options.
The law

The bill would also authorize the board of governors to establish regulations that ensure that, for students who seek a **goal other than transfer**, and...with specific [programmatic] requirements that are **not met** with transfer-level coursework, a community college maximizes the probability that a student will enter and complete the required college-level coursework in English and mathematics within a one-year timeframe.
Obtain High School Performance Data

- CCGI – most recent data, most work to develop
- CalPASS – Objective, well established, one-year delay
- CCCApply – easiest to obtain, self-reported
- Other (e.g., local match)
Who to evaluate?

• Create and track placement cohorts
  • Groups of first-time students who assessed and placed as part of their initial matriculation
  • One cohort for each primary term
  • Identify alternate gateway math or English courses
  • Disaggregate cohort into students whose program of study requires a calculus-oriented STEM math pathway vs. the Statistics math pathway vs. an alternative non-transferable math
Outcomes

• Placement
  • What proportion of a placement cohort places into a transfer-level course?
  • What proportion place into an appropriate alternate gateway course?

• Enrollment in a related class
  • What percent of an incoming class enroll in a English or Math course?
  • If placed in ESL or Reading what percent enroll in ESL or Reading?

• Completion of the sequence/throughput rate
  • Within two primary terms/three quarters of initial attempt in the sequence
  • Is there DI in sequence completion/throughput?
Disproportionate impact

• Very important to looke for DI in any of the primary placement outcomes

• Is there DI in enrollment by ethnicity, gender, DSPS status, foster youth status, veteran status, socioeconomically disadvantaged status, age group (<20, 20-29, 30+)

• Use the PPG method at a minimum; the DD ASK suggests using at least three methods

• Think about reference group options – what makes sense?

• Seriously engage this question: is there evidence of institutional racism? How can the SEP and SSSP resources be brought to bear to address DI in placement and throughput?
How often to evaluate?

• Annually
Case studies

• Bakersfield College
• Mesa College
• IVC
• MiraCosta
How to test alternatives

• Must be able to provide clear evidence that students will be more likely to complete transfer-level courses within one year vs. placing them directly into transfer-level courses with appropriate support.

• Specifically, if proposing a multi-course sequence, attrition must be addressed. How will this sequence address attrition and reduce it?

• Show that it is theoretically possible that the proposed sequence maximizes throughput by completing the following formula:
  • Course 1 success rate * persistence rate * Course 2 success rate
  • Compare expected success rates and persistence rates to rates in similar classes and explain how higher rates than normal rates will be achieved.
Non-cognitive variables
The future

• Role of Adult Ed?