Overview

• What was MMAP and what did we find?
• Why high school grades?
• History of AB 705
• Adapting MMAP to AB 705
• Addressing selection bias
• Disaggregating the results
• What does the research say about corequisite supports?

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Multiple Measures Assessment Project

• Ongoing, multiple year collaborative effort of CCCCO, Common Assessment Initiative (CAI), RP Group, Cal-PASS Plus (Educational Results Partnership & San Joaquin Delta College), and now >90 CCC pilot colleges

• Identify, analyze, & validate multiple measures data (including HS transcript data, non cognitive variable data, & self-report HS transcript data)

• Focus on predictive validity (success in course) using classification and regression tree models (robust to missing data, non-linear effects, and interactions)
  – Very conservative approach: target ≥70% success rate in college level course

• Engage pilot colleges to conduct local replications, test models and pilot use in placement, and provide feedback

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## MMAP Recommendations

### English & Math Transfer-Level Placement

<table>
<thead>
<tr>
<th>Transfer Level Course</th>
<th>Recommended for Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English</strong></td>
<td>HS GPA ≥ 2.6</td>
</tr>
<tr>
<td><strong>Statistics</strong></td>
<td>HS GPA ≥ 3.0</td>
</tr>
<tr>
<td>Passed Algebra I (or better)</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>HS GPA ≥ 2.3 &amp; Pre-Calculus C (or better)</td>
</tr>
<tr>
<td><strong>Pre-calculus</strong></td>
<td>HS GPA ≥ 3.4</td>
</tr>
<tr>
<td>Passed Algebra II (or better)</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>HS GPA ≥ 2.6 &amp; enrolled in Calculus</td>
</tr>
</tbody>
</table>

MMAP: Placement into college-level courses

- English: 64% MMAP Placement (HSGPA ≥2.6) vs. 28% Historical Placement
- Math: 40% MMAP Placement (HSGPA ≥3.0 + HS Algebra) vs. 15% Historical Placement

Success Rates in Transfer-level English

- Sierra, 2014F: 71%, 79%
- Shasta, 2015S: 60%, 67%
- San Diego CCD, 2015F: 68%, 79%
- Norco, 2016F: 69%, 69%
- MiraCosta, 2016S: 65%, 67%
- MiraCosta, 2016F: 68%, 80%
- Merritt, 2015M-2016S: 50%, 56%
- Las Positas, 2016F: 75%, 76%
- Laney, 2015M-2016S: 76%, 71%
- Irvine Valley, 2016F: 77%, 85%
- College of Alameda, 2015M-2016S: 78%, 78%
- Canada, 2015F: 78%, 78%
- Berkeley, 2015M-2016S: 69%, 71%

Success Rates in Transfer-level Math

- San Diego CCD, 2015F: 60%, 38%
- Merritt, 2015M-2016S: 60%, 77%
- Norco, 2016F: 59%, 58%
- Laney, 2015M-2016S: 65%, 65%
- College of Alameda, 2015M-2016S: 65%, 79%
- Canada, 2015F: 65%, 68%
- Berkeley, 2015M-2016S: 46%, 51%

bit.ly/MMAPSummary2017
<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>Metric</th>
<th>English Difference</th>
<th>Math difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in transfer-level courses in same term</td>
<td>Success rates (Completion with C or better)</td>
<td>2 percentage points (PP) higher</td>
<td>Equal</td>
</tr>
<tr>
<td>Students placed 1 level below (previous cohort)</td>
<td>Completion of transfer-level course in 2 years (2 year throughput)</td>
<td>26 PP higher (72% vs. 46%)</td>
<td>41 PP higher (68% vs 27%)</td>
</tr>
<tr>
<td>Students placed 2 levels below (previous cohort)</td>
<td>Completion of transfer-level course in 2 years (2 year throughput)</td>
<td>40 PP higher (72% vs. 32%)</td>
<td>53 PP higher (68% vs. 15%)</td>
</tr>
</tbody>
</table>
MMAP: Las Positas F2016 results: English

*Used student self-reported HSGPA $\geq 2.5$ within 10 years of high school
Access to transfer-level courses has expanded more rapidly in English than in math.
FIGURE 2
Increased access to transfer-level math is strongly linked to increases in throughput

FIGURE 3
Increased access to transfer-level English lead to increases in throughput

Why high school grades?

- AB 705 requires colleges to use one or more of the following when placing students into courses in math and English:
  - High School GPA
  - High School Coursework (which courses, how far you’ve gotten)
  - High School Grades
- If official grades are unavailable, colleges may use self reported grades or guided placement.
- Why is the use of high school grades required?
  - They have been shown repeatedly to be the strongest, most reliable predictor of college performance, including students’ first courses in English and math
Variance in college level English grades by Accuplacer, Compass, Asset - NC

Adapted from Bostian (2016), North Carolina Waves GPA
Wand, Students Magically College Ready adapted from
research of Belfield & Crosta, 2012 – see also Table 1:
Variance in college level math grades by Accuplacer, Compass, Asset - NC

Adapted from Bostian (2016), North Carolina Waves GPA Wand, Students Magically College Ready adapted from research of Belfield & Crosta, 2012 – see also Table 1: http://bit.ly/Belfield2012 (cf also Scott-Clayton, 2012)
Figure 6. Among University of Alaska students who enrolled directly in college English courses, high school grade point average explained more of the variation in college English grades than did exam scores, 2008/09–2011/12

Percent of variance explained

- Associate’s degree or certificate students
- Bachelor’s degree students

SAT | High school GPA | ACT | High school GPA | ACCUPLACER | High school GPA

Students who took the SAT | Students who took the ACT | Students who took the ACCUPLACER

Variance in college level math grades by Accuplacer, SAT, ACT - Alaska

Figure 7. Among University of Alaska students who enrolled directly in college math courses, high school grade point average explained more of the variation in college math grades than did exam scores, 2008/09–2011/12

Percent of variance explained

- Associate’s degree or certificate students
- Bachelor’s degree students

A Brief History of AB 705’s Origins and Development

- STEPS started with 14 colleges
- MMAP – started in 2014-15 with the 14 STEPS colleges
- CAI and Multiple Measures Work Group formed
- MMAP decision rules guidance released – over 90 colleges eventually join pilot
- AB 705 passed (October, 2017)
- AB 705 Implementation Committee formed and an ESL subcommittee formed
- Selection bias question: Are students with a certain GPA who were placed into a course representative of all students with that GPA, including those not so placed?
- RP Group adjusted predicted pass rates for the AB 705 Implementation Committee
- RP Group recommendations incorporated into CCCCO guidance memos on English and math
- AB 705 Implementation Committee and ESL subcommittees continue to meet to provide additional guidance
Adapting MMAP to AB 705

• MMAP decision trees were based on identifying students who were highly likely to be successful
  – At least 70% probability of success in transfer-level

• Now, students can only be assigned to developmental education if:
  – They are highly unlikely to succeed at the transfer-level class
  – AND
  – Developmental education maximizes probability of successful completion of transfer-level coursework in one year.
Essentially…what about everyone else? What maximizes their completion of transfer-level English and Math?

• Can we identify any students more likely to complete transfer-level English or Math if they start in developmental education?
  —Let’s look at the students least likely to succeed based on their HS performance
How to Read a Decision Tree for English

Figure 1. Interpreting Transfer Level English - L0 Y DM Decision Tree

Source: MMAP English Decision Rules, page 8: bit.ly/MMAPEnglishTrees
null
Pre-calculus Decision Tree

Checking for what would maximize likelihood of successful completion of transfer-level course

Compare:

A. The success rate of similar students, in this case the lowest performing HS students, if placed directly into transfer—level course

Vs.

B. Rate of successful completion of transfer-level course within one year (AB705) for students who start one level below

Note: not success rate in transfer-level only if transfer-level is taken
Addressing selection bias

• Differences in test scores, high school grades, and other factors that led to different placement may also be related to course performance
  – REMINDER, however – tests are more weakly related to course performance

• Still, the transfer-level course performance of students with low HSGPA who test into transfer-level courses may not fully generalize to those same students who didn’t place into transfer-level.
  – Have to adjust for differences in test scores and overall GPA
Adjusting Projected Success Rates

• Difference in GPA and placement test score can be accounted for statistically and the projected success rates of similar students but from lower placement levels can be adjusted (lowered)

• Magnitude of the adjustment depends on:
  – extent of differences in test scores and GPA between those in the MMAP models and those who would potentially be entering, and;
  – strength of the association between the test scores/GPA and success in the target class
Technical Details of Adjustment Process

• Use multivariate regression to predict success rate in target transfer-level using GPA and test scores

• Calculate mean high school GPA and test scores for lowest node students in each level/type of first attempted course

• Use regression model to predict success in the target course using means in step 2.

• Rescale regression predicted success rates against the lowest node predicted success rates to create comparability between decision-tree and regression-based predictions

• Calculate overall success rate estimate by weighting estimates from each level/type weighted by number of students beginning at each level

• Use standard error of prediction from the regression model at each level to create lower and upper error bounds for estimates also weighted as in step 5.
Regression Models

• English
  – HS GPA + ACCUPLACER sentence skills score + ACCUPLACER reading comprehension score

• Statistics and Precalculus
  – HS GPA + ACCUPLACER college algebra score
  – Other test scores (arithmetic and elementary algebra) for statistics did not yield useful results so only college algebra was used
Additional considerations for completion of transfer-level math starting from one-level below

• Not all students goals require transfer-level math
• Need to take into account that different majors/pathways lead to different possible math
• Need to account for different curricular entry points after intermediate algebra into transfer-level math curriculum
  — College algebra, trigonometry, pre-calculus
Statistics

• For students starting one-level below
  – count any transfer-level math completions in the numerator (not just statistics)
  – adjust denominator downward (improving throughput) twice:
    • Removing percentage of students with ed goals not requiring a transfer-level math course (11.6%)
    • Removing percentage of students who are pursuing a B-STEM pathway (25%)

• Method provides an optimistic estimate of throughput from 1 level below:
  1. it counts transfer-level completions of students without transfer-level ed goals
  2. most students have transfer goals
  3. doesn’t account for terminal degrees that may still have transfer-math requirement

• Takes into account that different majors/pathways lead to different possible math

• Need to account for different curricular entry points after intermediate algebra into transfer-level math curriculum
  – College algebra, trigonometry, precalculus
Pre-calculus (Entry-level BSTEM)

• Chosen because it’s most advanced post-intermediate algebra entry-level STEM courses across the colleges
  – Rules developed for direct placement into Precalculus should work for colleges with earlier math courses (e.g., College Algebra or Trigonometry)
• For students starting one-level below
  – count any/all BSTEM transfer-level math completions in the numerator from College Algebra and up, not just pre-calculus (to be as fair as possible given colleges with courses between intermediate algebra and precalculus)
  – adjust denominator downward, removing percentage of students with ed goals not requiring transfer-level math course (as with Stats, 11.6%)
  – adjust denominator further downward to reflect percentage of students with STEM major (Reduce denominator by additional 75%)
• Conservative method, avoids underestimating throughput from 1 level below.
  – Counts any transfer-level math completion regardless of ed goal/major (no changes to numerator) while adjusting denominator downward to account for ed goal/major
Transfer-Level Course Completion in One Year from First Class in Discipline (error bars represent ±1 se)

- **Transfer-Level English (HS GPA < 1.9)**
  - Lowest Node: N=7,248
  - Regression: N=1,749
  - 1 level below: N=13,241
  - Lowest Node Success: 43%
  - Regression Adjusted Success: 12%
  - Throughput: N=1 level below

- **Statistics (HS GPA < 2.3)**
  - Lowest Node: N=1,485
  - Regression: N=809
  - 1 level below: N=11,309
  - Lowest Node Success: 40%
  - Regression Adjusted Success: 29%
  - Throughput: N=1 level below

- **Pre-Calculus (HS GPA < 2.6)**
  - Lowest Node: N=1,753
  - Regression: N=661
  - 1 level below: N=18,917
  - Lowest Node Success: 38%
  - Regression Adjusted Success: 28%
  - Throughput: N=1 level below
What did disaggregation of the basic analysis show?

• There were no identifiable groups of students within the timeframe of this study who completed a transfer-level course at a higher rate when placed into developmental education than if placed directly into transfer-level.
  – This patterns holds by ethnicity, gender, EOPS and DSPS status, ELL status in high school, and Pell-eligible students as well.
### English Comparisons by HSGPA Level by Ethnicity

#### Success rates if placed directly

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>HS GPA&lt;1.9</th>
<th></th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th></th>
<th>HS GPA≥2.6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
<td>N</td>
</tr>
<tr>
<td>Asian</td>
<td>48%</td>
<td>347</td>
<td>66%</td>
<td>1,654</td>
<td>85%</td>
<td>5,855</td>
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<tr>
<td>African American</td>
<td>34%</td>
<td>488</td>
<td>52%</td>
<td>1,183</td>
<td>71%</td>
<td>1,319</td>
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<tr>
<td>Filipino</td>
<td>45%</td>
<td>131</td>
<td>62%</td>
<td>540</td>
<td>83%</td>
<td>1,751</td>
</tr>
<tr>
<td>Hispanic</td>
<td>41%</td>
<td>3,424</td>
<td>56%</td>
<td>9,094</td>
<td>76%</td>
<td>15,091</td>
</tr>
<tr>
<td>Native American</td>
<td>25%</td>
<td>55</td>
<td>53%</td>
<td>164</td>
<td>76%</td>
<td>214</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>37%</td>
<td>52</td>
<td>53%</td>
<td>129</td>
<td>72%</td>
<td>233</td>
</tr>
<tr>
<td>Two or more races</td>
<td>40%</td>
<td>164</td>
<td>56%</td>
<td>616</td>
<td>79%</td>
<td>1,374</td>
</tr>
<tr>
<td>White</td>
<td>46%</td>
<td>1,929</td>
<td>61%</td>
<td>8,507</td>
<td>82%</td>
<td>21,671</td>
</tr>
<tr>
<td>Unknown</td>
<td>42%</td>
<td>658</td>
<td>60%</td>
<td>2,048</td>
<td>80%</td>
<td>4,532</td>
</tr>
</tbody>
</table>

#### Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>HS GPA&lt;1.9</th>
<th></th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th></th>
<th>HS GPA≥2.6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
<td>N</td>
</tr>
<tr>
<td>Asian</td>
<td>27%</td>
<td>566</td>
<td>37%</td>
<td>1,940</td>
<td>39%</td>
<td>4,253</td>
</tr>
<tr>
<td>African American</td>
<td>12%</td>
<td>1,124</td>
<td>24%</td>
<td>1,752</td>
<td>36%</td>
<td>1,131</td>
</tr>
<tr>
<td>Filipino</td>
<td>21%</td>
<td>231</td>
<td>37%</td>
<td>670</td>
<td>48%</td>
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<tr>
<td>Hispanic</td>
<td>15%</td>
<td>7,439</td>
<td>28%</td>
<td>14,009</td>
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<td>12,326</td>
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<tr>
<td>Native American</td>
<td>18%</td>
<td>81</td>
<td>23%</td>
<td>143</td>
<td>45%</td>
<td>148</td>
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<tr>
<td>Pacific Islander</td>
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<td>71</td>
<td>26%</td>
<td>186</td>
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<td>188</td>
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<tr>
<td>Two or more races</td>
<td>16%</td>
<td>257</td>
<td>28%</td>
<td>636</td>
<td>43%</td>
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<td>White</td>
<td>20%</td>
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<td>31%</td>
<td>7,462</td>
<td>50%</td>
<td>9,434</td>
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<tr>
<td>Unknown</td>
<td>18%</td>
<td>1,057</td>
<td>30%</td>
<td>2,253</td>
<td>47%</td>
<td>2,423</td>
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</table>
Direct Placement Success Rate Advantage Relative to Successful Completion of Transfer-level if Starting One Level Below

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
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</thead>
<tbody>
<tr>
<td>Asian</td>
<td>22%</td>
<td>29%</td>
<td>46%</td>
</tr>
<tr>
<td>African American</td>
<td>22%</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>Filipino</td>
<td>24%</td>
<td>25%</td>
<td>34%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>26%</td>
<td>28%</td>
<td>34%</td>
</tr>
<tr>
<td>Native American</td>
<td>7%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>29%</td>
<td>27%</td>
<td>31%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>24%</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>White</td>
<td>26%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>Unknown</td>
<td>24%</td>
<td>29%</td>
<td>33%</td>
</tr>
</tbody>
</table>
## English Comparisons by HSGPA Level by Gender

### Success rates if placed directly

<table>
<thead>
<tr>
<th>Gender</th>
<th>HS GPA&lt;1.9</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp;&lt;2.6</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>42%</td>
<td>2,721</td>
<td>60%</td>
<td>11,022</td>
<td>81%</td>
<td>29,312</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>42%</td>
<td>4,527</td>
<td>58%</td>
<td>12,913</td>
<td>78%</td>
<td>22,728</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>Gender</th>
<th>HS GPA&lt;1.9</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp;&lt;2.6</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>17%</td>
<td>5,036</td>
<td>31%</td>
<td>12,990</td>
<td>46%</td>
<td>16,714</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16%</td>
<td>6,610</td>
<td>28%</td>
<td>12,691</td>
<td>42%</td>
<td>11,390</td>
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<td></td>
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</tr>
</tbody>
</table>
## English Comparisons by HSGPA Level by ELL Designation in High School

### Success rates if placed directly

<table>
<thead>
<tr>
<th>ELL</th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
</tr>
<tr>
<td>No ELL Designation</td>
<td>41%</td>
<td>4,939</td>
<td>59%</td>
</tr>
<tr>
<td>ELL Designation</td>
<td>43%</td>
<td>1,669</td>
<td>59%</td>
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### Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>ELL</th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>N</td>
<td>Rate</td>
</tr>
<tr>
<td>No ELL Designation</td>
<td>16%</td>
<td>8,866</td>
<td>29%</td>
</tr>
<tr>
<td>ELL Designation</td>
<td>18%</td>
<td>3,248</td>
<td>31%</td>
</tr>
</tbody>
</table>
Direct Placement Success Rate Advantage Relative to Successful Completion of Transfer-level if Starting One Level Below

<table>
<thead>
<tr>
<th></th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>Male</td>
<td>26%</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td><strong>ELL Designation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No ELL Designation</td>
<td>26%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>ELL Designation</td>
<td>24%</td>
<td>29%</td>
<td>37%</td>
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</tbody>
</table>
# English Comparisons by HSGPA Level by EOPS Status

## Success rates if placed directly

<table>
<thead>
<tr>
<th>EOPS</th>
<th>HS GPA&lt;1.9</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not EOPS</td>
<td>42%</td>
<td>6,644</td>
<td>59%</td>
<td>22,355</td>
<td>80%</td>
<td>49,643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOPS</td>
<td>42%</td>
<td>604</td>
<td>64%</td>
<td>1,580</td>
<td>78%</td>
<td>2,397</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>EOPS</th>
<th>HS GPA&lt;1.9</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>Rate</th>
<th>N</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not EOPS</td>
<td>16%</td>
<td>11,925</td>
<td>29%</td>
<td>26,517</td>
<td>44%</td>
<td>29,425</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOPS</td>
<td>24%</td>
<td>1,249</td>
<td>39%</td>
<td>2,534</td>
<td>57%</td>
<td>2,367</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### English Comparisons by HSGPA Level by DSPS Status

#### Success rates if placed directly

<table>
<thead>
<tr>
<th>DSPS</th>
<th>HS GPA&lt;1.9 Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp; &lt;2.6 Rate</th>
<th>N</th>
<th>HS GPA≥2.6 Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not DSPS</td>
<td>42%</td>
<td>7,040</td>
<td>59%</td>
<td>23,345</td>
<td>80%</td>
<td>50,851</td>
</tr>
<tr>
<td>DSPS</td>
<td>43%</td>
<td>208</td>
<td>58%</td>
<td>590</td>
<td>77%</td>
<td>1,189</td>
</tr>
</tbody>
</table>

#### Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>DSPS</th>
<th>HS GPA&lt;1.9 Rate</th>
<th>N</th>
<th>HS GPA≥1.9 &amp; &lt;2.6 Rate</th>
<th>N</th>
<th>HS GPA≥2.6 Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>17%</td>
<td>12,724</td>
<td>30%</td>
<td>28,071</td>
<td>44%</td>
<td>30,743</td>
</tr>
<tr>
<td>Yes</td>
<td>17%</td>
<td>450</td>
<td>28%</td>
<td>980</td>
<td>52%</td>
<td>1,049</td>
</tr>
</tbody>
</table>
### English Comparisons by HSGPA Level by Pell Status

#### Success rates if placed directly

<table>
<thead>
<tr>
<th>Pell</th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA&lt;1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
<th>Rate</th>
<th>N</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Pell</td>
<td>41%</td>
<td>4,311</td>
<td>58%</td>
<td>15,410</td>
<td>81%</td>
<td>36,920</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pell</td>
<td>44%</td>
<td>2,937</td>
<td>61%</td>
<td>8,525</td>
<td>78%</td>
<td>15,120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Successful completion of transfer-level if start one-level below

<table>
<thead>
<tr>
<th>Pell</th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA&lt;1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
<th>Rate</th>
<th>N</th>
<th>Rate</th>
<th>N</th>
<th>Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Pell</td>
<td>15%</td>
<td>6,999</td>
<td>29%</td>
<td>16,476</td>
<td>42%</td>
<td>20,465</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pell</td>
<td>18%</td>
<td>6,175</td>
<td>31%</td>
<td>12,575</td>
<td>49%</td>
<td>11,327</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Direct Placement Success Rate Advantage Relative to Successful Completion of Transfer-level if Starting One Level Below

<table>
<thead>
<tr>
<th></th>
<th>HS GPA&lt;1.9</th>
<th>HS GPA≥1.9 &amp; &lt;2.6</th>
<th>HS GPA≥2.6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EOPS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not EOPS</td>
<td>26%</td>
<td>30%</td>
<td>37%</td>
</tr>
<tr>
<td>EOPS</td>
<td>18%</td>
<td>24%</td>
<td>21%</td>
</tr>
<tr>
<td><strong>DSPS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not DSPS</td>
<td>26%</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td>DSPS</td>
<td>26%</td>
<td>30%</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Pell</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Pell</td>
<td>26%</td>
<td>29%</td>
<td>39%</td>
</tr>
<tr>
<td>Pell</td>
<td>26%</td>
<td>30%</td>
<td>29%</td>
</tr>
</tbody>
</table>
No one is saying that these success rates are acceptable

• However, AB705 requires that we only place students into developmental education if:
  – students are highly unlikely to succeed at transfer-level
  – it maximizes their likelihood of completion of the transfer-level course

• Neither of these conditions appear to be met even for the lowest performing HS students

• That limits us to providing concurrent or corequisite support
Co-requisite students completed college composition at more than twice the rate of students who started in traditional remediation.

SOURCE: Authors’ analysis of COMIS data.
NOTES: In the calculation of throughput rates we restrict the analysis to transfer seeking students for which the co-requisite or the one-semester accelerated course was their first course. Porterville College is not included because we only have one term of data.

FIGURE 5
Co-requisite students were more likely to complete transfer-level statistics within one year

SOURCE: Author’s analysis of COMIS data.

NOTE: In the calculation of throughput rates we restrict the analysis to transfer seeking students for which the co-requisite or pre-stats was their first course.

## Placement/Support Recommendations: English

<table>
<thead>
<tr>
<th>High School Performance Metrics</th>
<th>Recommended AB 705 Placement for English</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSGPA ≥ 2.6</td>
<td>Transfer-Level English Composition</td>
</tr>
<tr>
<td></td>
<td>No additional academic or concurrent support required</td>
</tr>
<tr>
<td>HSGPA 1.9 to 2.6</td>
<td>Transfer-Level English Composition</td>
</tr>
<tr>
<td></td>
<td>Additional academic and concurrent support recommended</td>
</tr>
<tr>
<td>HSGPA &lt; 1.9</td>
<td>Transfer-Level English Composition</td>
</tr>
<tr>
<td></td>
<td>Additional academic and concurrent support strongly recommended</td>
</tr>
</tbody>
</table>

For more information, see the July, 2018 AB705 Implementation Memo at [https://assessment.cccco.edu/resources/](https://assessment.cccco.edu/resources/).
## Placement/Support Recommendations: Statistics/Liberal Arts Mathematics

<table>
<thead>
<tr>
<th>High School Performance Metric</th>
<th>Recommended AB 705 Placement for Statistics/Liberal Arts Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSGPA ( \geq 3.0 )</td>
<td>Transfer-Level Statistics/Liberal Arts Mathematics</td>
</tr>
<tr>
<td>Or</td>
<td>No additional academic or concurrent support required</td>
</tr>
<tr>
<td>HSGPA ( \geq 2.3 ) &amp; ( \geq C ) in Precalculus</td>
<td></td>
</tr>
<tr>
<td>HSGPA 2.3–3.0</td>
<td>Transfer-Level Statistics/Liberal Arts Mathematics</td>
</tr>
<tr>
<td></td>
<td>Additional academic and concurrent support recommended</td>
</tr>
<tr>
<td>HSGPA &lt; 2.3</td>
<td>Transfer-Level Statistics/Liberal Arts Mathematics</td>
</tr>
<tr>
<td></td>
<td>Additional academic and concurrent support strongly recommended</td>
</tr>
</tbody>
</table>
## Placement/Support Recommendations: BSTEM Math

<table>
<thead>
<tr>
<th>High School Performance Metric</th>
<th>Recommended AB 705 Placement for BSTEM Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSGPA $\geq$ 3.4 OR HSGPA $\geq$ 2.6 &amp; enrolled in HS Calculus</td>
<td>Transfer-Level BSTEM Mathematics  &lt;br&gt; No additional academic or concurrent support required</td>
</tr>
<tr>
<td>HSGPA $\geq$2.6 or Enrolled in HS Precalculus</td>
<td>Transfer-Level BSTEM Mathematics  &lt;br&gt; Additional academic and concurrent support recommended</td>
</tr>
<tr>
<td>HSGPA $\leq$ 2.6 and no Precalculus</td>
<td>Transfer-Level BSTEM Mathematics  &lt;br&gt; Additional academic and concurrent support strongly recommended</td>
</tr>
</tbody>
</table>

Note: The BSTEM table presumes student completion of Intermediate Algebra/Algebra 2, an equivalent such as Integrated Math III, or higher course in high school.
Common Questions and Some Answers

Do we have any data about whether or not students who take course with a corequisite earn better, worse, or the same grades as students who make it through a sequence?

• First and foremost, many, many more of them earn grades in the transfer level course if they take it, even without a corequisite, than if they’re placed one level below

• And the overall number of good grades (A’s and B’s) in transfer-level is higher…
Can we place students one or more levels below?

- Yes but only under **very limited** conditions

- You have to use evidence based on high school data that demonstrates that they are highly unlikely to successfully complete the transfer-level course
  - Plain meaning interpretations (https://en.wikipedia.org/wiki/Plain_meaning_rule) would typically place highly unlikely around 10% on average.
  - When asked to interpret range of probabilities indicated by “highly unlikely”, both those using such words professionally (e.g., Kent, 1964) and lay audiences (e.g., bit.ly/HighlyUnlikely) interpreted highly unlikely to represent outcomes that happen 5-10% of the time on average. Except for significant outliers, highest individual estimates range between 20-30%
  - CCCC Guidance currently defaulting to synonymous with maximization of likelihood

- Has to maximize their likelihood of completion of transfer-level course (compared to students with similar levels of high school performance)
Can we continue to offer courses one or more levels below?

• Yes
  — Such courses may serve specific subsets of a college’s student population

• However:
  — Very likely cannot be required
  — Worth careful consideration whether it’s good practice to offer paths that might attract certain types of students when we have evidence that that path may not be best for them
  — Construction, entrances, and ease, candy placement and deliciousness
Do we have 2 years starting in Fall 2019 to study our current placement/sequence to determine whether it complies with AB705?

• No

• A fair amount of data exists on your existing curriculum that can be reasonably used to determine whether your current placement/sequence might comply

• In addition to your local data/IR team, CalPASS Plus has retrospective datasets immediately available to support local exploration.
Can we adopt new placement rules and prerequisites and study them for two years?

- Possibly but such rules/curriculum would require:
  - evidence-based use of high school achievement data
  - only students demonstratively highly unlikely to succeed be required to take pre-transfer-level courses
  - a meaningful logic model with supportive evidence to explain how the new pre-transfer level courses would be likely to achieve sufficiently higher success rates and persistence rates to maximize students’ likelihood of completing the transfer-level course

- Local placement rules into transfer-level courses with varying required or recommended supports would be easier - don’t need to meet the highly unlikely standard
  - Possibly couldn’t require them for students highly likely to succeed (such as those identified by earlier MMAP research)

- More specific guidance on this will be coming later this Fall.
Do we just have to meet the minimum successful completion rate when students are placed directly in transfer-level per the guidance for a new sequence to be acceptable?

• Not exactly

• It must meet that rate specifically among students that are highly unlikely to succeed (the only students allowed to be assigned to developmental courses)
  — you cannot use the overall success rates for the sequence if you allow students more likely to succeed to opt to take it
Can we use a standardized test as part of our placement method?

- Right now, barring action from the Board of Governors, no.
Can we require corequisite courses?

- Yes

- The AB705 legislation expressly allows colleges to require concurrent support
  - As a law, supersedes existing regulation (e.g., Title 5) if in conflict
  - Should be able to demonstrate likelihood that required concurrent support
    - will improve student outcomes AND
    - not adversely impact unit requirements/financial aid

- The guidance uses recommended language to speak to the colleges not as examples of language that must be used with students
What happens to students who fail 3 times? Do we have data on what happens after they fail the third time (do they go to different colleges, or do they quit college entirely)?

- Interesting research question that can’t be easily answered.
- However, many, many more “quit college” before completing the sequence when they begin below transfer-level, including students who would have been successful at transfer-level if given the chance.
- Further, colleges have lots of freedom to innovate before a student fails a third or even a second time.
Statistically, how does this play out at very different institutions with very different students and environments? In other words: what is a statistical difference in this kind of work, and what is not?

• It tends to play out very similarly virtually everywhere people do the work to check, even amongst students who are the least prepared using whatever metric they use (various standardized tests, HSGPA, etc.)

• The statistical differences are actually quite easy to check – comparisons of proportions calculators are widely available and free on the internet.
Can you wipe a non-passing grade off of a student's record for a basic skills course if they are now eligible for transfer-level course?

- Colleges can alleviate the previous grade in a basic skills course with the performance in a transfer level course under your local policy related to academic renewal without course repetition.
- It is a local decision if you permit this practice.
What if a student graduated over 10 years ago or they did not take Algebra I or II in high school? How do we place them?

- The 10 year recommendation is only a recommendation. Colleges can place students with HS transcripts older than 10 years.
- If students do not have the appropriate Algebra course, you can use other means to place them, such as guided self-placement.
- Also, students who do not have Algebra I or II will be a small population, so you should check this locally.
The guidance does not indicate the starting point rather mentions the transfer level course. For BSTEM, can the college decide the starting point? Or, are we to give access to all levels of math?

- Colleges continue to control their local curriculum in determining the starting point of their transfer-level curriculum. Some colleges begin their transfer-level coursework post-intermediate algebra at college algebra, some at trigonometry, some at pre-calculus.
  - Colleges will continue to control that starting point
  - Worth consideration college algebra and trigonometry are sometimes covered as part of intermediate algebra and pre-calculus
  - Colleges will have ability locally innovate on the most effective structure for their mathematics pathway, including placement above transfer-level
Can a standardized test be used to discriminate between transfer-levels (E.g. Precalculus and Calculus) post initial placement into transfer-level, for students that want to prerequisite challenge their ability to succeed at an even higher level than the default rules?

- Not until the CCCCPO approves its use.
Questions?

All webinars are archived here: [http://rpgroup.org/Our-Projects/All-Projects/Multiple-Measures/Presentations-and-Webinars](http://rpgroup.org/Our-Projects/All-Projects/Multiple-Measures/Presentations-and-Webinars)

Archived webinars:

- Replicating AB 705 Adjustments Locally
- Understanding and Interpreting the AB 705 Adjustments
- AB 705, ESL and English Composition
- Post-AB 705: Supporting Colleges Through the Transition for ESL

Upcoming webinars

- Validating Innovative Curriculum Under AB 705
  Tuesday, October 9 | 12 - 1 pm
  [https://cccconfer.zoom.us/j/937608807](https://cccconfer.zoom.us/j/937608807)
  1 646 876 9923 (US Toll)
  Meeting ID: 937 608 807

- AB 705 Adjustments, Ethnicity, Gender and Special Populations
  Thursday, October 25 | 10 - 11 am
  [https://cccconfer.zoom.us/j/553127255](https://cccconfer.zoom.us/j/553127255)
  1 646 876 9923 (US Toll)
  Meeting ID: 553 127 255

- Developing an AB 705 Evaluation/Research Plan
  Wednesday, November 7 | 10:30 – 11:30 am
  [https://cccconfer.zoom.us/j/440539610](https://cccconfer.zoom.us/j/440539610)
  +1 646 876 9923 (US Toll)
  Meeting ID: 440 539 610