Multiple Measures Assessment Project: From Pilot to Paradigm

The Strengthening Student Success Conference
October 12, 2017

http://rpgroup.org/All-Projects/ctl/ArticleView/mid/1686/articleId/118/Multiple-Measures-Assessment-Project-MMAP
\[ y = f(x) \]
MMAP Project Overview

Collaboration
- CAI
- CCCCCO
- Cal-PASS+
- RP Group
- 64+ CCCs

Model Development
- English
- Math
- ESL
- Reading
- Non-cognitive Variables
- Self-reported transcript data

Engagement
- Local replication
- Webinars
- Professional development
- Support
- Pilot results inform statewide implementation
Pilot College Implementation Overview

- 65 pilot colleges have signed a data sharing agreement
- 13+ additional colleges have received informal assistance
- ≈20 colleges implemented a pilot in fall 2015 or spring 2016 (or prior) mostly as small pilots to serve as a trial run
- Approximately 25 colleges reported they piloted in fall 2016 or planned to in spring 2017
- Approximately 17 are still in the planning phase
- Results from more than 12 colleges for English and 7 in math with more results being analyzed currently
The Models
Data Set for the Models

• CCC students enrolled in an English, Math, Reading or ESL class with matching high school data in Cal-PASS Plus
  • ≈1 M cases for Math & English; ≈200k for Reading & ESL
• Bulk of first CCC enrollments from 2008 through 2014
• Rules used students with 4 years of high school data (≈25% of sample)
• Used rpart, a machine learning algorithm, to create decision trees
• Local researchers trained to replicate models locally
• MMAP code
• R4IR Tutorial https://drive.google.com/drive/folders/0Bz-jqwGzLQjJajA5YUIxUjdETzA?usp=sharing
Variables Explored in the Models

- High School Unweighted Cumulative GPA
- Grades in high school courses
- CST scores
- Advanced Placement course taking
- Taking higher level courses (math)
- Delay between HS and CCC (math)
- HS English types (expository, remedial, ESL)
- HS Math level (Elem Algebra, Integrated Algebra, Pre-Calculus)
## Transfer-Level Placement Recommendations

<table>
<thead>
<tr>
<th>Transfer Level Course</th>
<th>Direct Matriculant</th>
<th>Non-Direct Matriculant</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Algebra (STEM)</td>
<td>HS 11 GPA &gt;=3.2 OR</td>
<td>HS 12 GPA &gt;=3.2 OR</td>
</tr>
<tr>
<td>Passed Algebra II (or better)</td>
<td>HS 11 GPA &gt;=2.9 AND Pre-Calculus C (or better)</td>
<td>HS 12 GPA &gt;=3.0 AND Pre-Calculus or Statistics (C or better)</td>
</tr>
<tr>
<td>Statistics (General Education/Liberal Arts)</td>
<td>HS 11 GPA &gt;=3.0 OR</td>
<td>HS 12 GPA &gt;=3.0 OR</td>
</tr>
<tr>
<td>Passed Algebra I (or better)</td>
<td>HS 11 GPA &gt;=2.3 AND Pre-Calculus C (or better)</td>
<td>HS 12 GPA &gt;=2.6 AND Pre-Calculus (C or better)</td>
</tr>
<tr>
<td>English</td>
<td>HS 11 GPA &gt;=2.6</td>
<td>HS 12 GPA &gt;=2.6</td>
</tr>
</tbody>
</table>

Results from the Field
Pilot Summary

- MMAP rules performing as expected
- Messaging should be done once with a single voice and specifically state the recommended course
- Implementation of MMAP rules is nuanced
  • For example, don’t use statistics rules to place into calculus
- MMAP started new conversations within and across departments and services that did not occur prior
- Collaboration between high schools and colleges has increased and is an important element of success
Success Rates in Transfer-level English

Success Rates in Transfer-level Math

“Under our previous policies, African American and Latino students were far less likely to place into transfer-level math. Under the new policies, African American students’ access to transfer-level math increased eight-fold, Latino students’ access increased four-fold, and the disproportionate impact in placement was eliminated for all racial groups.”

– Cuyamaca College

“There are thousands of reasons to do this; each one has a name.”

– Bakersfield College

“MMAP is a COMPLETION initiative, not a SUCCESS initiative.”

– Santa Monica College
Getting Help from Cal-PASS Plus
Maximizing High School Data -- Cal-PASS Plus

- Increasing participation in Cal-PASS Plus
- Web services -- API (New!)
- Transcript review
Increasing Local Participation in Cal-PASS Plus

• Check local district participation and completeness
  • Complete member list here: https://www.calpassplus.org/calpass/join/members

• Work with Cal-PASS PLUS to verify and update MOUs and data

• Identify primary outreach contact(s) from college to work with Cal-PASS PLUS
  – Name, college, role, contact info to Ken Sorey, ken@edresults.org
### Member List

Select Region

- East Bay

Or Select District

- [Select District] (Dropdown)

---

**Show only districts with data**

---

<table>
<thead>
<tr>
<th>District Name</th>
<th>Most Recent Data (Click to show data)</th>
<th>MOU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Albany City Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Antioch Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Aspire Public Schools</td>
<td>2012-2013</td>
<td>Yes</td>
</tr>
<tr>
<td>Berkeley Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Castro Valley Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Dublin Unified</td>
<td>2015-2016</td>
<td>Yes</td>
</tr>
<tr>
<td>Academic Year</td>
<td>Student</td>
<td>Course</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>2006-2007</td>
<td>22,133</td>
<td>18,945</td>
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<tr>
<td>2007-2008</td>
<td>21,277</td>
<td>36,981</td>
</tr>
<tr>
<td>2008-2009</td>
<td>20,862</td>
<td>52,045</td>
</tr>
<tr>
<td>2009-2010</td>
<td>21,263</td>
<td>63,731</td>
</tr>
<tr>
<td>2010-2011</td>
<td>22,325</td>
<td>136,988</td>
</tr>
<tr>
<td>2011-2012</td>
<td>19,831</td>
<td>84,811</td>
</tr>
<tr>
<td>2012-2013</td>
<td>20,960</td>
<td>135,343</td>
</tr>
<tr>
<td>2013-2014</td>
<td>20,956</td>
<td>134,897</td>
</tr>
<tr>
<td>2014-2015</td>
<td>20,874</td>
<td>49,353</td>
</tr>
<tr>
<td>2015-2016</td>
<td>20,058</td>
<td>184,593</td>
</tr>
</tbody>
</table>
Increasing Local Participation in Cal-PASS Plus

• Step 2: Strategies and tools for engaging local K-12 districts and stakeholders
  • Identify opportunities to engage partners in work
    • Superintendent and principal breakfasts/coffees (etc.)
    • Leadership phone calls/check ins
    • Outreach letters (sample included in FTP)
  • Use opportunities to share what this could mean for students from that district and for supporting local college readiness and completion efforts
    • Local Impact analysis
    • Other value-add data tools on the system
  • Cal-PASS Plus ready, willing, and able to support any and all of those outreach opportunities
Share Local Impact Analysis: MMAP

  - Overall
  - By College
  - By Math and English

- Limitations:
  - Does not include self-reported data
  - Based on students with Cal-PASS Plus data
  - Retrospective projections
  - Placement vs. Enrollment
Increasing Local Participation in Cal-PASS Plus

• Additional support material available to help K-12 districts get started
  – Benefits to participation
  – What data to upload
  – Citrus College outreach example:
    • http://bit.ly/MMAPCitrusOutreach
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Mr. Paul Lopez  
Student Trustee

Dr. Edward C. Ortell  
Superintendent/President

K-14 Education Forum
April 28, 2017

Forum Proceedings
Multiple Measures Assessment Project

The Multiple Measures Assessment Project (MMPA) is a collaborative effort led by the RP Group and Educational Results Partnerships’ Cal-PASS (California Postsecondary Access and Success System) teams to develop, pilot, and disseminate the implementation of a statewide model. Since its inception in 2006, the project has evolved to collect, analyze, and report postsecondary outcomes data for students enrolled in the system. The project is funded by the California Community College System Office (CCC) and is administered by the California Community Colleges Chancellor’s Office (CCC CO) through a contract with the RP Group.

For more than two decades, California’s community colleges have been required to assess and place students in the curriculum through means other than a single test score. Until recently, however, test scores have dominated the placement process across the state system. According to the RP Group, there is growing evidence that multiple measures, such as high school transcripts and non-cognitive variables, can greatly improve the accuracy of the placement process, and in turn, facilitate student movement into and through college-level coursework.

MMPA is currently working with over 60 colleges from across the state that have introduced pilot programs and is providing feedback on predictive models and user tools to help inform the adoption of the multiple measures approach.

Accurate placement impacts college completion and success

- Accurately placing students in college courses by using multiple measures of assessment tends to result in higher placement.
- This saves students years of time and a significant amount of money.
- Higher-level placement increases students’ likelihood of completing a degree or certificate, or transferring to a four-year institution.
- California Community Colleges Chancellor’s Office Scorecard data show that just 40 percent of community college students placed into remedial courses go on to complete a degree or certificate in five years as compared to 70 percent of students who enroll directly in college-level courses.
- In fall 2015, approximately 70 percent of Citrus College freshmen were placed into basic skills math using the Accuplacer test alone.
- Eighty-five Citrus College students were placed using MMPA guidelines, 49 percent would have received a higher math placement, and 40 percent would have received a higher English placement.

The Multiple Measures Assessment Project (MMPA)

- The Educational Results Partnership and the RP Group developed a multiple measures college-readiness assessment process for the MMPA.
- The process is a better assessment tool than the current single standardized placement test.
- In California, it has shown to:
  - Reduceremedial coursework placement
  - Increase college throughput
  - Decrease equity gaps among students
- MMPA utilizes high school transcript data and multiple other variables to better predict student success in college-level courses.

Currently, there are 55 community colleges participating in MMPA pilot studies, with 15 additional colleges preparing to do so.

The Impact of multiple measures assessment

- Statewide, 28 percent of students would be placed into transferable courses. Work on the using assessment research with a counseling and assessment team at UCI as part of the research, the college’s Office of Institutional Research, Planning and Effectiveness conducted a simulation study using fall 2015 Early Decision students. The study determined that if students were placed using MMPA guidelines, 49 percent would have received a higher math placement, and 49 percent would have received a higher English placement.
- Early Decision students from high schools in all five of the college’s feeder districts participated in the initial study of the guidelines. These students will be placed in summer and fall classes using MMPA guidelines, with math and English placement levels determined by multiple measures, including Accuplacer assessment results, high school GPA, and prior college coursework.
- Dr. Over said the goal of MMPA at Citrus College is to provide holistic, comprehensive and accurate assessment to measure student capacity for college-level coursework. The next steps for the MMPA pilot study will be to work with English, ESL and math faculty at Citrus College to secure their participation and support; provide support to students who receive recommendations, but who may need to develop college-level study habits; and to monitor students with higher placements to ensure they are successful in their courses.
New Web Services from Cal-PASS Plus

- Current practice: frequent uploads of SFTP files with matching then return with data and placements
- API: real-time matching of data to CPP through data “calls” using a statewide ID for each student
- More secure and removes need to pass files
- What is returned
  - Transcript
    - Used for local Institutions to apply local models
  - Placement
    - Statewide Multiple Measures rules applied to student

Looking for Pilot Colleges to Implement
Local transcript review

• One backup strategy for students from K-12 districts with missing data or for out of state students
  – Can be resource intensive but tools can support use
  – College-developed resources
    • College of Alameda tool and presentation
    • Sierra College Placement Tool: http://bit.ly/SierraPlacementTool
Multiple Measures and ESL
ESL Findings

- Most HS ESL go into CC English
- Most Credit ESL students do not come from NC
- High School origin does not generally relate to college outcomes
- Multiple measures for ESL will benefit from extra questions on application
What is an ESL Student?

- High school ELL designation or ELD course history AND taking community college ESL (included in MMAP ESL analysis)
- High school ELL designation or ELD course history but NOT taking community college ESL (included in MMAP English analysis)
- Non-native speakers with no high school information available AND taking community college ESL (not included in MMAP)
- Non-native speakers with no high school information available but NOT taking community college ESL (not included in MMAP)
High School to Community College
ESL Transition in MMAP Data

- 50,851 ESL students with complete high school transcripts:
  - 5,026 (10%) took an ESL class as their last high school language arts course.
  - 3,682 (13%) took an ESL class as their first college language arts course.
  - 465 (1%) had a record of taking any non-credit ESL course at a community college.
## Intra-Class Correlations (ICC) Between Grade Points in First Community College ESL Course and High School Origin and College Destination by Highest Level of ESL Offered

<table>
<thead>
<tr>
<th>Highest Level of ESL at Community College</th>
<th>Level of First ESL Course</th>
<th>High School Origin</th>
<th>College Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer-Level</td>
<td>Transfer-level</td>
<td>0.03</td>
<td>0.05**</td>
</tr>
<tr>
<td>485 high schools</td>
<td>1 level below transfer</td>
<td>0.03**</td>
<td>0.01</td>
</tr>
<tr>
<td>41 colleges</td>
<td>2 levels below transfer</td>
<td>0.05*</td>
<td>0.03**</td>
</tr>
<tr>
<td>One Level Below Transfer-Level</td>
<td>1 level below transfer</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>289 high schools</td>
<td>2 levels below transfer</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>30 colleges</td>
<td>3 levels below transfer</td>
<td>0.04</td>
<td>0.05**</td>
</tr>
<tr>
<td>Two Levels Below Transfer-Level</td>
<td>2 levels below transfer</td>
<td>0.05</td>
<td>0.07**</td>
</tr>
<tr>
<td>253 high schools</td>
<td>3 levels below transfer</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>27 colleges</td>
<td>4 levels below transfer</td>
<td>0.27**</td>
<td>0.09</td>
</tr>
</tbody>
</table>

*significant at 0.05 level; **significant at 0.01 level
Other ESL Measures

- Questions on intake forms such as:
  – Years speaking English
  – Years of formal education
  – Self rating of writing, reading, speaking, listening
- TOEFL Scores
- Other tests or credentials
More Results from the Field
Implementing and Improving Our Multiple Measures Process:
How Cuyamaca College Transformed Basic Skills
September 26, 2017
Katie Cabral
Brianna Hays
Tammi Marshall
## Fall 2015 vs. Fall 2016 Placement in Transfer-Level Math

<table>
<thead>
<tr>
<th>Incoming Students</th>
<th>Fall 2015 Transfer Math</th>
<th>Fall 2016 B-STEM (w/ or w/out support)</th>
<th>Fall 2016 Statistics (w/ or w/out support)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>36%</td>
<td>79%</td>
<td>90%</td>
</tr>
<tr>
<td>Black</td>
<td>9%</td>
<td>49%</td>
<td>73%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>21%</td>
<td>62%</td>
<td>85%</td>
</tr>
<tr>
<td>White</td>
<td>27%</td>
<td>62%</td>
<td>84%</td>
</tr>
<tr>
<td>All</td>
<td>24%</td>
<td>62%</td>
<td>84%</td>
</tr>
</tbody>
</table>
Success Rates Disaggregated by Ethnicity (First-Time Students)

<table>
<thead>
<tr>
<th>Incoming Students</th>
<th>Fall 2013 Cohort Transfer Math in Two Years</th>
<th>Fall 2016 Cohort Transfer Math with support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>1-9 33%</td>
<td>8 75%</td>
</tr>
<tr>
<td>Black</td>
<td>16 6%</td>
<td>29 55%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>173 15%</td>
<td>144 65%</td>
</tr>
<tr>
<td>White</td>
<td>141 16%</td>
<td>142 76%</td>
</tr>
<tr>
<td>All</td>
<td>360 15%</td>
<td>356 69%</td>
</tr>
</tbody>
</table>
Implementation of the Multiple Measures Assessment Project at Imperial Valley College

Office of Institutional Research
September 26, 2017
Imperial Valley College Challenges in Implementation

- Low participation in CalPassPlus
- No electronic transcript system in place
- Little awareness of MMAP campus-wide
- Limited IR Staff
- “Our students are different” and dealing with skepticism
Fall 2016 MMAP Implementation - English

Transfer English - Success Rates

- Non-MMAP: N=704, 58.80%
- MMAP: N=109, 71.60%

EDUCATIONAL
RESULTS
PARTNERSHIP
Fall 2016 MMAP Implementation - Math

Transfer Success Rates

<table>
<thead>
<tr>
<th></th>
<th>Non-MMAP</th>
<th>MMAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>673</td>
<td>44</td>
</tr>
<tr>
<td>Success Rate</td>
<td>62.70%</td>
<td>70.50%</td>
</tr>
</tbody>
</table>

N= 673
62.70%
N= 44
70.50%
Recommendations

• Promote MMAP awareness campus-wide
  – Involve IT, IR, SSSP, Faculty, Enrollment Management and Counseling
  – Share Data!

• Work with local high schools
  – Form articulation agreements, dual-enrollment, etc.
  – Report back to your feeder schools

• Training with IT and SSSP/Assessment on record keeping
• Training with Counselors on interpreting recommendations
VC: % Assessed into ENGL V01A by Ethnicity

Success Rate Increased from 73.3% to 74.4%

- **ALL**: Fall 2012 = 27, Fall 2015 = 33, Fall 2016 = 43 (106% increase)
- **African American**: Fall 2015 = 18, Fall 2016 = 37 (106% increase)
- **Asian**: Fall 2015 = 21, Fall 2016 = 30 (50% increase)
- **Hispanic**: Fall 2015 = 18, Fall 2016 = 23 (48% increase)
- **White**: Fall 2016 = 65 (23% increase)

80% of 2016 White Placement
More students, higher success rate

- Success rates of 1st-Time fall 2016 students are compared to those of 1st-Time fall 2015 students.

<table>
<thead>
<tr>
<th>CTEP Score Group</th>
<th>Fall 2016</th>
<th>Fall 2015</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Enrollments</td>
<td>Successful</td>
</tr>
<tr>
<td>78 or Higher</td>
<td>311</td>
<td>250</td>
</tr>
<tr>
<td>74 to 77</td>
<td>112</td>
<td>87</td>
</tr>
<tr>
<td>73 or Less</td>
<td>142</td>
<td>115</td>
</tr>
<tr>
<td>No CTEP</td>
<td>54</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total Av. Rate</strong></td>
<td><strong>619</strong></td>
<td><strong>496</strong></td>
</tr>
</tbody>
</table>
Multiple Measures at Mira Costa

*3.0 or above OR 2.5 GPA plus a B in English course, self-reported transcripts. N=1,329 for MMAP
Success by Placement Type at Mira Costa for Transfer-Level English

- Pre-Reform
- Post_Reform
- Compass
- MMAP
- EAP

<table>
<thead>
<tr>
<th>Type</th>
<th>S2016</th>
<th>F2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Reform</td>
<td>65%</td>
<td>68%</td>
</tr>
<tr>
<td>Post_Reform</td>
<td>69%</td>
<td>75%</td>
</tr>
<tr>
<td>Compass</td>
<td>64%</td>
<td>70%</td>
</tr>
<tr>
<td>MMAP</td>
<td>67%</td>
<td>80%</td>
</tr>
<tr>
<td>EAP</td>
<td>71%</td>
<td>72%</td>
</tr>
</tbody>
</table>

n=1,094 n=179 S2016
n=498 n=1,150 F2016
Cañada College Transfer-level Placements

F2014 Math: 191
F2015 Math: 192
F2014 English: 123
F2015 English: 134

Cañada College Transfer-level Success Rates

Math:
- Compass: 65%
- MMAP: 68%

English:
- Compass: 78%
- MMAP: 75%

Rule set: English = 2.3 AND B- or better; Math = 3.2 AND C or better

bit.ly/MMAPPilotLessons
Self-Reported Transcript Data and Non Cognitive Variables
Self-reported high school transcript data

- 69 community colleges are now collecting self-reported data through the Open CCCApply application
  - this includes a mix of pilot and non-pilot colleges

- The team is currently trying to get access to these data to analyze the validity of self-reported data.
  - however preliminary data from the pilot colleges shows reliability between self-reported transcript data and actual transcripts
Preliminary Self-Report Data

- Overall strong correlation between self-reported high school GPA and actual GPA observed: $r(12,048) = 0.707$

- Students with lower overall GPA somewhat less likely to report accurately

- Correspondence could be improved by
  - encouraging students to bring/consult transcripts at beginning of application and/or
  - making clear that inaccurate information could invalidate application
    - (though it would rarely be in college’s or student’s best interest for college to follow through on that threat).
14 pilot colleges have reported they are in the process of collecting Social-psychological (noncognitive variables) data. The team is currently following up to try to get access to these data, which include: Grit, Hope, Mindset, Conscientiousness, Teamwork Scale, Academic Self-Efficacy Scale, College Identity Scale.

Preliminary results from a few colleges have not shown consistent relationships between the measured variables and course outcomes, but this could be due to many factors: timing of survey (during testing, application, etc.), length of survey, and frame of reference.
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