Let Icarus Fly

Multiple Measures in Assessment and Other Cornerstones of the Re-imagination of Student Capacity

Modesto Junior College

January 6, 2016

http://bit.ly/MMAPMJC

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ERP EDUCATIONAL RESULTS PARTNERSHIP

Recognize contributions of hundreds of people

Long Beach City College

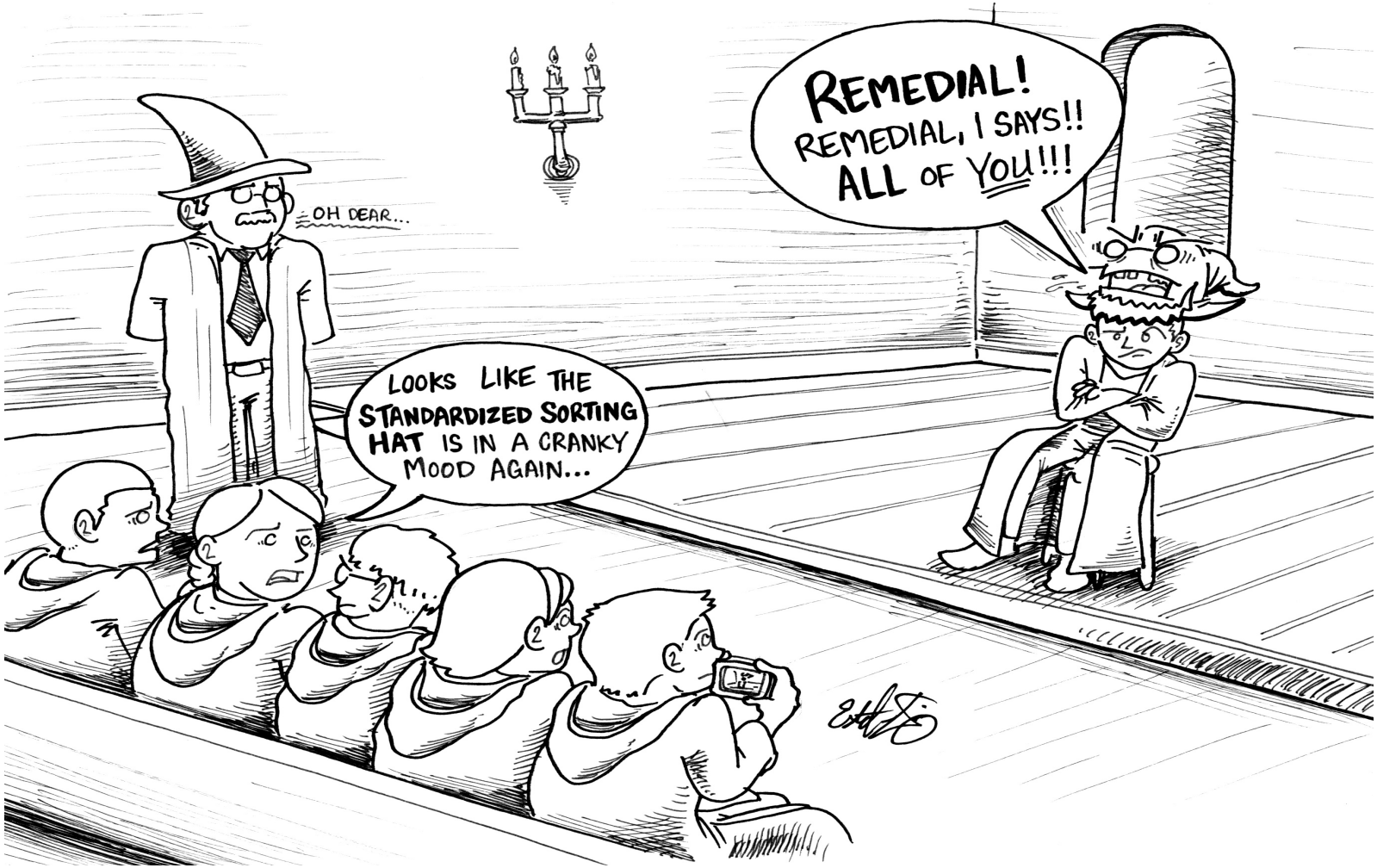
- Andrew Fuenmayor
- Karen Rothstein
- Eva Bagg
- Mark Taylor
- English Department
- Math Department
- Counseling Department
- Assessment and Matriculation
- Promise Pathways Committee
- Student Success Committee
- Executive Leadership
- And many more

Multiple Measures Assessment Project

- Mallory Newell
- Craig Hayward
- Terrence Willett
- Loris Fagioli
- Peter Bahr
- Ken Sorey
- Rachel Baker
- Nathan Pellegrin
- Alyssa Nguyen
- Danielle Duran
- Common Assessment Initiative
- Multiple Measures Work Group
- California Community Colleges Chancellor's Office
- Faculty, staff, and leadership at more than 60 pilot colleges
- And many more

Reality of assessment and placement

- Majority of students placed below transfer-level in ≥1 discipline
  - 68% nationally (Scott-Clayton & Belfield, 2015) bit.ly/CCRCPlacementAccuracy
  - 85% in California (2012 & 2011 CCCCO BSI Accountability Reports: bit.ly/BSI2012 and bit.ly/BSI2011)
- Cohort completion rates of transfer-level course drop by a third to half for every additional level placed below transfer (CCCCO Basic Skills Cohort Tracker: http://bit.ly/BSCohort)
- **50-60% of equity gap** in outcomes occur during assessment and matriculation (Stoup, 2015: bit.ly/STOUP2015


OH DEAR...
LOOKS LIKE THE STANDARDIZED SORTING HAT IS IN A CRANKY MOOD AGAIN...
REMEDIAL! REMEDIAL, I SAYS!! ALL OF YOU!!!

Evidence that conventional assessment is flawed

- Research increasingly questions effectiveness of standardized assessment for understanding student capacity
  - Little relation to college course outcomes
    - (e.g., Belfield & Crosta, 2012; Edgescombe, 2011; Scott-Clayton, 2012; Scott-Clayton & Rodriguez, 2012): bit.ly/CCRCAssess
  - Incredible variability in cutscores and 2-year colleges often use HIGHER cutscores than 4-year
    - (Fields & Parsad, 2012) bit.ly/NAGB2012
  - Underestimates capability of students of color, women, first generation college students, low SES
    - Hiss & Franks, 2014; bit.ly/DefiningPromise2014
    - Geiser, 2015: http://bit.ly/Geiser2015

Multiple measures can dramatically improve placement accuracy

- Increasing evidence of far stronger predictive utility of high school achievement for predicting performance in transfer-level courses
- Nationally:
  - Belfield & Crosta, 2012; Edgescombe, 2011; Scott-Clayton, 2012; Scott-Clayton & Rodriguez, 2012 and many more): bit.ly/CCRCAssess
  - CCCSE 2016 Report: bit.ly/CCCSEMM
- California alone
  - Willett, Hayward, & Dahlstrom, 2008; Martinez, 2011; Hetts, Fuenmayor, & Rothstein, 2012; Willett & Karanjeff, 2014; Ngo & Kwan, 2015
  - Multiple Measures Assessment Project

Emerging consensus as a clear best practice in assessment

- REL Southeast and IES Guide to assessing college readiness
  - http://bit.ly/CRGuide
- WWC Educator's Practice Guide: Strategies for Postsecondary Students in Developmental Education
  - http://bit.ly/WWCGuide

Also required by law

- Matriculation/SSSP handbook, esp. Chap 2: http://bit.ly/SSSPHandbook
  - "Assessment is a **holistic process** through which each college collects information about students to facilitate their success by ensuring their appropriate placement into math, English, and ESL curricula. Student assessments **should reflect a variety of informational sources** that create a profile of a student's academic strengths and weaknesses." p. 2.3

- Colleges **must adhere** to the following regulations and guidelines when implementing and managing any assessment instrument used for course placement:
  - …
  - Course placement recommendations **must be based on multiple measures** (sections 55502(i) and 55522(a)). **Additional indicators** of student readiness for math, English, and ESL course content **must be used** together with placement test results. p. 2.4

Required by law (cont)

- Title 5, esp. Division 6 (CCCs), Subchapter 6 (Matriculation programs): http://bit.ly/Title5Matriculation
  - 55502.(i) "Multiple measures" are **a required component** of a district's assessment system and refer to the use of more than one assessment measure in order to assess the student. Other measures that may comprise multiple measures include, but are not limited to, interviews, holistic scoring processes, attitude surveys, vocational or career aptitude and interest inventories, high school or college transcripts, specialized certificates or licenses, education and employment histories, and military training and experience. (See also 55522(a)
  - 55502 (e) "Disproportionate impact" in broad terms is a condition where access to key resources and supports or academic success may be hampered by inequitable practices, policies, and approaches to student support or instructional practices affecting a specific group. For the purpose of assessment*, disproportionate impact is when the percentage of persons from a particular racial, ethnic, gender, age, or disability group*, who are directed to a particular service or course placement based on an assessment test or other measure *is significantly different from the representation of that group* in the population of persons being assessed, and ***that discrepancy is not justified by empirical evidence*** demonstrating that the assessment test or other measure is a **valid and reliable predictor of performance** in the relevant educational setting.
  - (also 55003 (d)(2): Prerequisites or corequisites may be established only for any of the following purposes:
    - (2) the prerequisite will assure, consistent with section 55002, that a student has the skills, concepts, and/or information that is presupposed in terms of the course or program for which it is being established**, such that a student who has not met the prerequisite is highly unlikely to receive a satisfactory grade** in the course (or at least one course within the program) for which the prerequisite is being established)

Also supported by Statewide Academic Senate

- The ASCCC supports and encourages the use of multiple measures, provided local control is maintained
  - Fall 2013 plenary: http://bit.ly/F13Plenary
  - Spring 2014 plenary: http://bit.ly/S14PlenaryResolution
    - adopting a longish paper supportive of the need for multiple measures/inadequacy of a single assessment test: http://bit.ly/S14PlenaryPaper

Multiple Measures Assessment Project

- Collaborative effort of CCCCO, Common Assessment Initiative (CAI), Cal-PASS Plus (Educational Results Partnership & San Joaquin Delta College), RP Group and now >60 CCC pilot colleges
  - Replications and extension of Student Transcript Enhanced Placement Study
- Identify, analyze, & validate multiple measures data (including HS transcript data, non cognitive variable data, & self-report HS transcript data
  - For English, Mathematics, ESL and Reading
  - Focus on predictive validity (success in course) using categorization and regression tree models (robust to missing data, non-linear effects, and interactions)
- Engage pilot colleges to conduct local replications, test models and pilot use in placement, and provide feedback

bit.ly/MMAP2017

Data Set for Models

- CCC students from **all** colleges in the system enrolled in an English, Math, Reading or ESL course past census with matching high school data in CalPASS
- >1 million cases for Math & English; >200,000 for Reading & ESL from 2008-2014
- Data files include:
  - High school courses in discipline and grades, unweighted HSGPA, course level/type
  - Assessment data, wherever avail. (ACCUPLACER, CST, EAP)
  - CCC data (course grades, course level)
  - Other derived info. (e.g., delay, CCC math class type)
  - Rules developed with subset of students with 4 years of HS data (about 25% of total sample)

Transfer-Level Rule Sets

Transfer Level Course	Direct Matriculant	Non-Direct Matriculant
College Algebra Passed Algebra II (or better) N=216,420	HS 11 GPA >=3.2 OR HS 11 GPA >=2.9 AND Pre-Calculus C (or better)	HS 12 GPA >=3.2 OR HS 12 GPA >=3.0 AND Pre-Calculus or Statistics (C or better)
Statistics Passed Algebra I (or better) N=216,420	HS 11 GPA >=3.0 OR HS 11 GPA >=2.3 AND Pre-Calculus C (or better)	HS 12 GPA >=3.0 OR HS 12 GPA >=2.6 AND Pre-Calculus (C or better)
English N=347,332	HS 11 GPA >=2.6	HS 12 GPA >=2.6

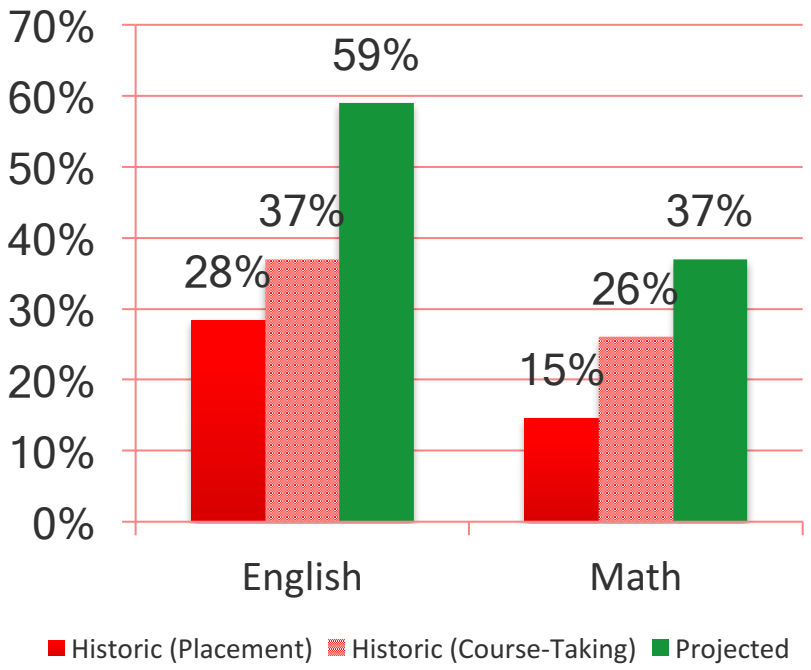
One-Level Below Rule Sets

One Level Below Course	Direct Matriculant	Non-Direct Matriculant
Reading	HS 11 GPA >=2.2	HS 12 GPA >=2.4 AND 12th Grade English C (or better) HS 12 GPA >= 2.4 AND CST English >= 322 HS 12 Grade GPA >=1.7 AND 12th Grade English C+ (or better)
ESL	HS 11 GPA >=2.7	HS 12 GPA >=2.6

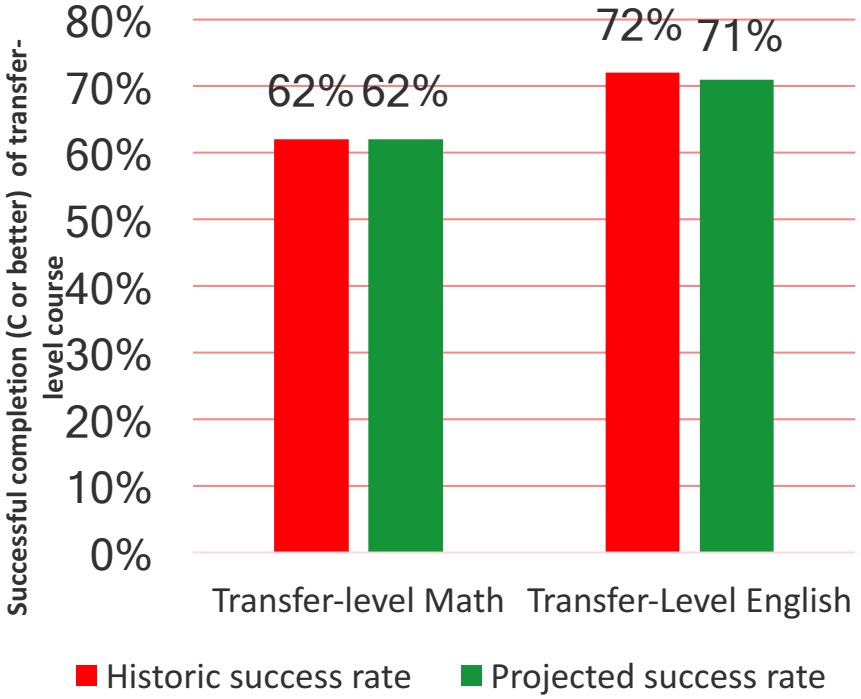
- The vast majority of ELL/ELD HS students (~85%) who enter CC begin directly in mainstream English coursework.
- Other major populations of ESL students (e.g., international students, migrants, older immigrants) will not have US high school transcripts and so other multiple measures, such as essays, must be used with those groups.

Projected impact on placement and success

Placement into transfer-level



Projected success sates

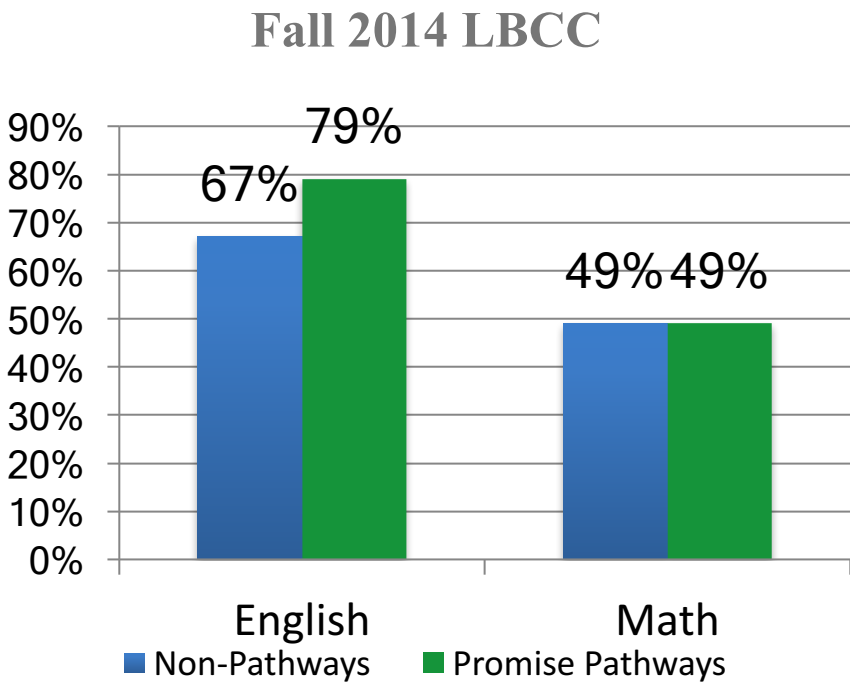


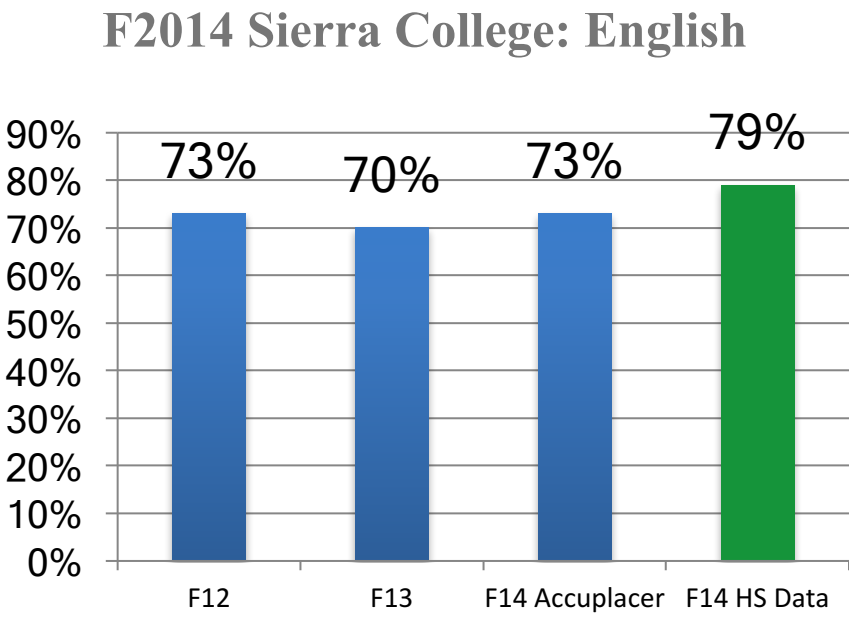
Common Concerns/Multiple Measures Myths

- Students placed via multiple measures will not be successful
- ***Our*** assessment test/system is different/better/more awesome
  - It won't work at my school/type of institution
- High school GPA is only predictive for recent graduates
- It's too hard to get or use transcripts/it's not worth it
- Will threaten my college's enrollment/FTES

Students placed by multiple measures are as or more successful

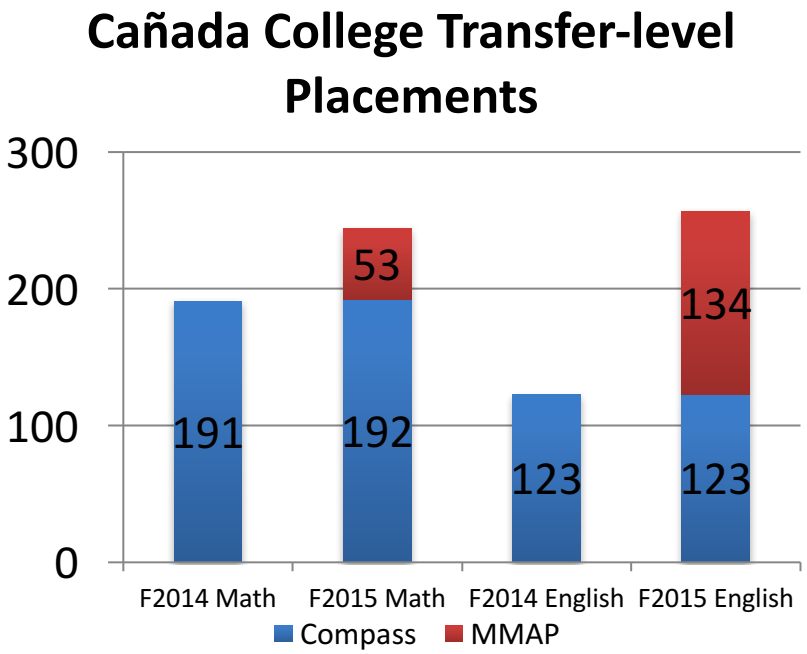
Maintains or improves success rates in transfer-level courses

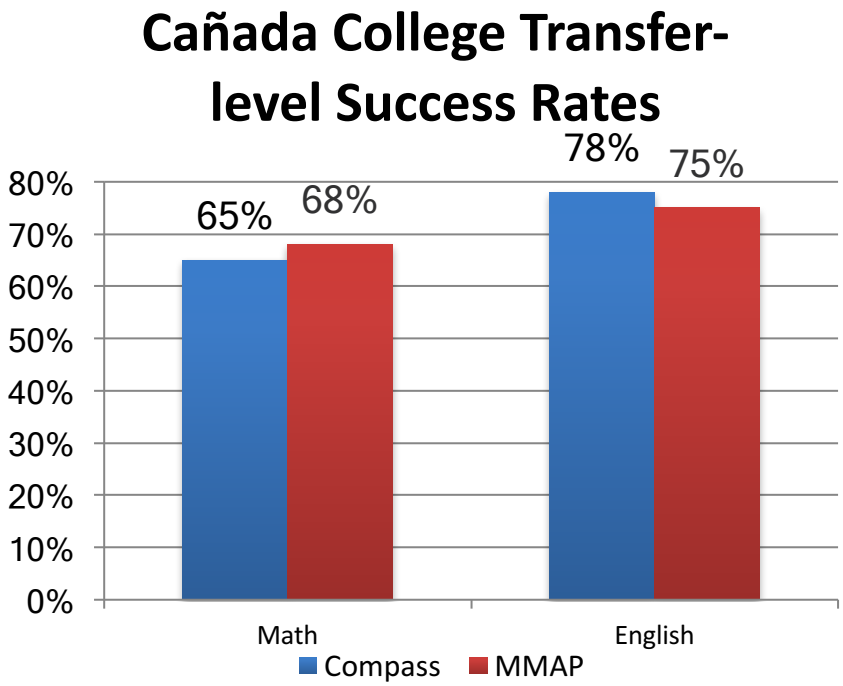




http://bit.ly/MultipleMeasuresRP

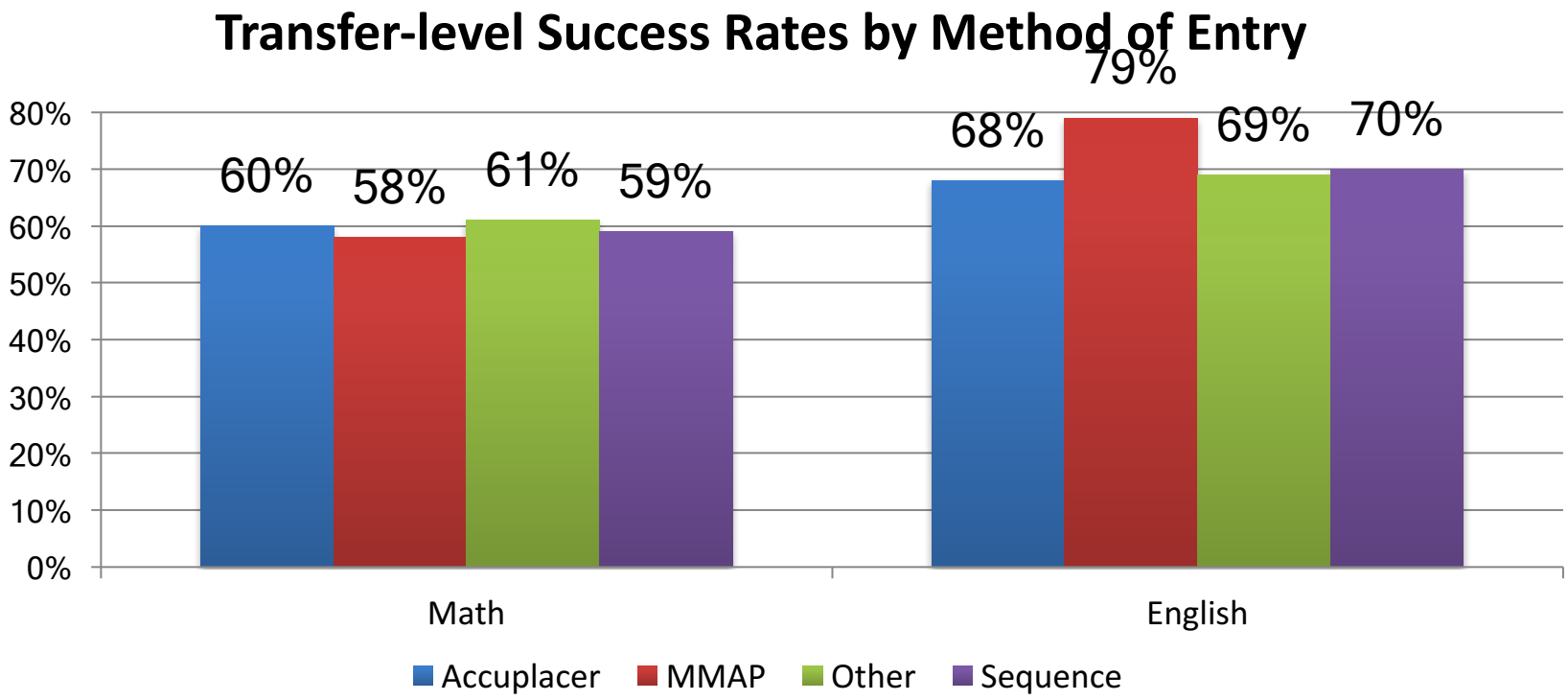
Fall 2015:Cañada College





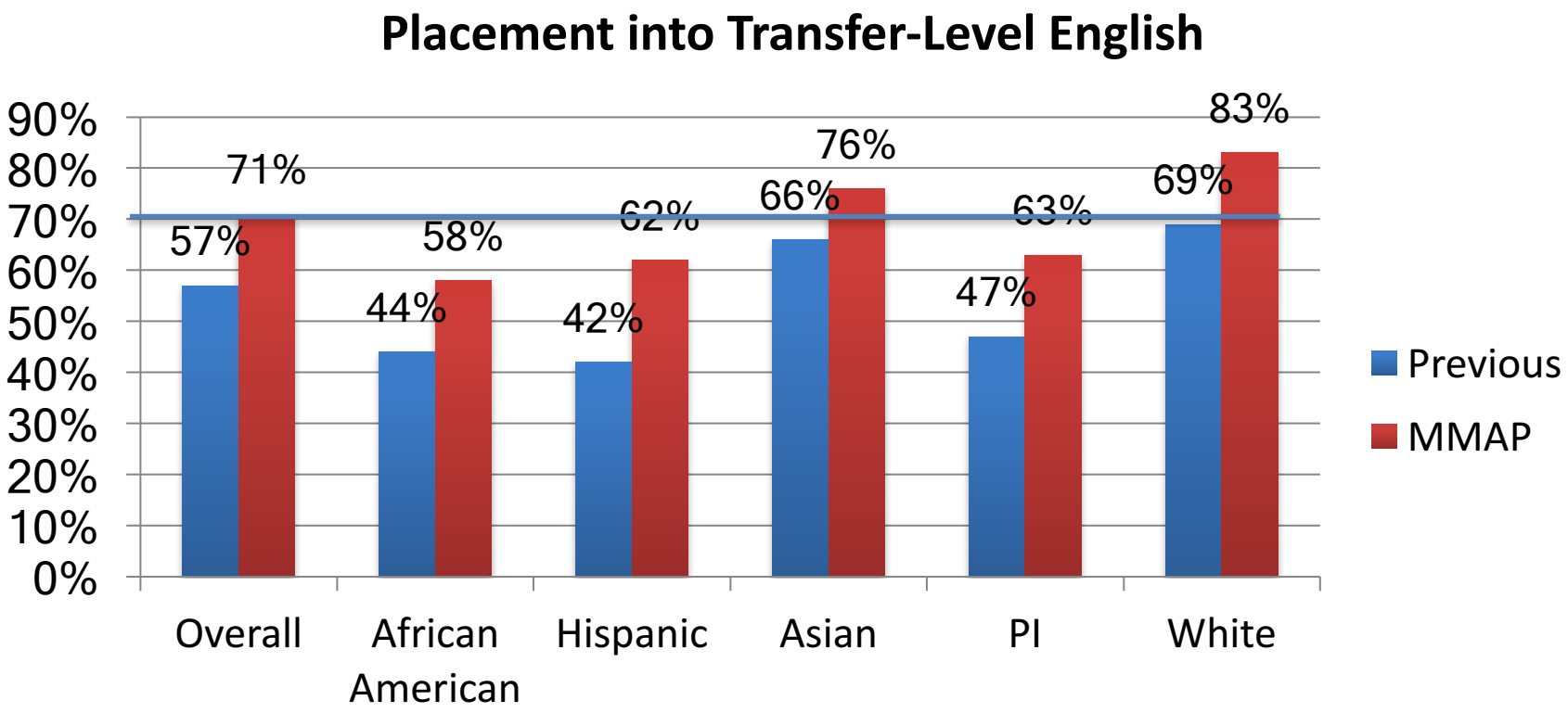
http://bit.ly/MMAPPilotLessons

Fall 2015: SDCCD Pilot

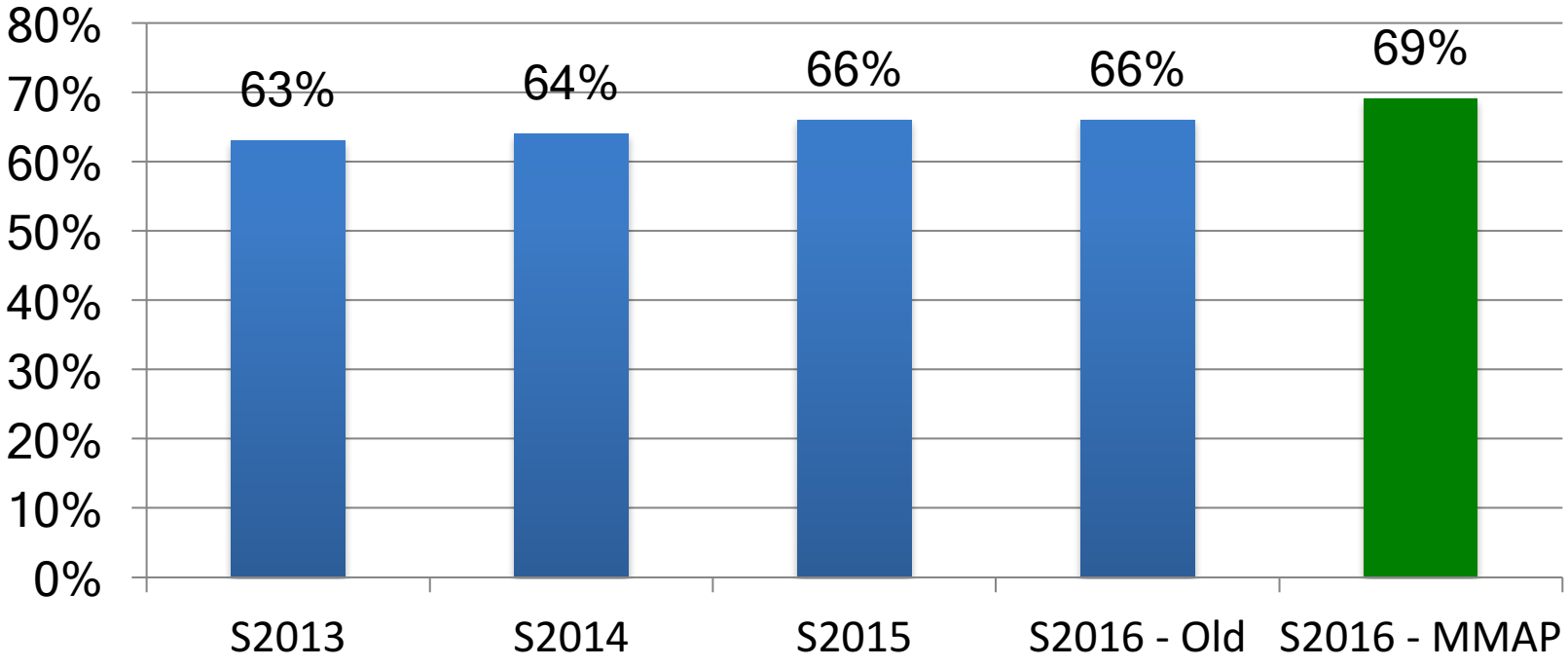


http://bit.ly/MMAPRPConf2016

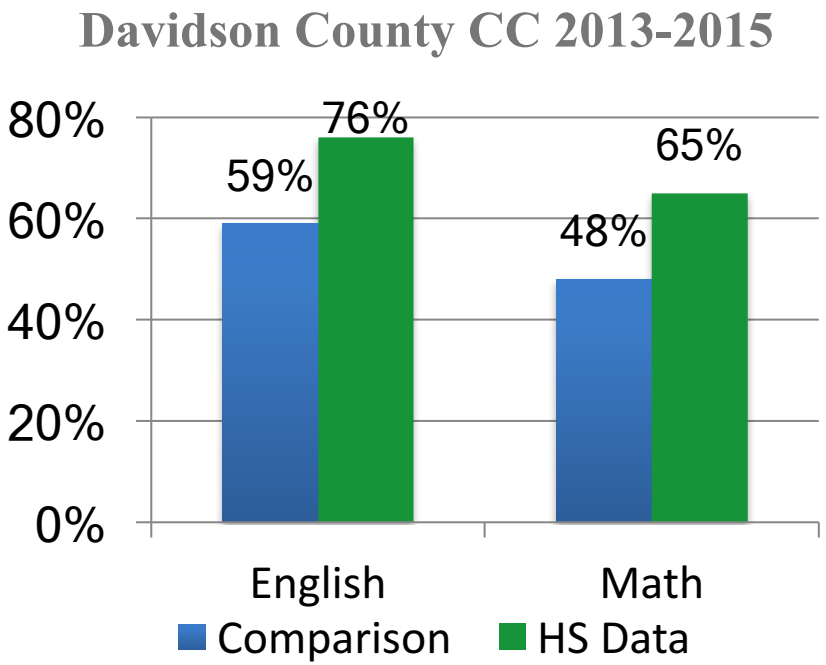
New Spring 2016 English Pilot – Mira Costa



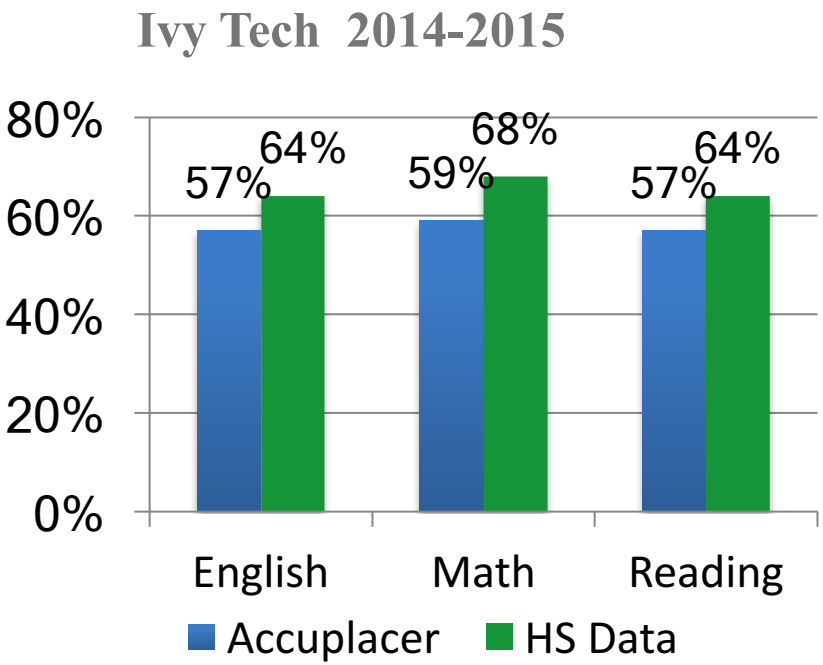
Mira Costa Transfer-Level English Success rate by year/placement type



Transfer-level course completion, recent national examples at scale: http://bit.ly/CCCSEMM



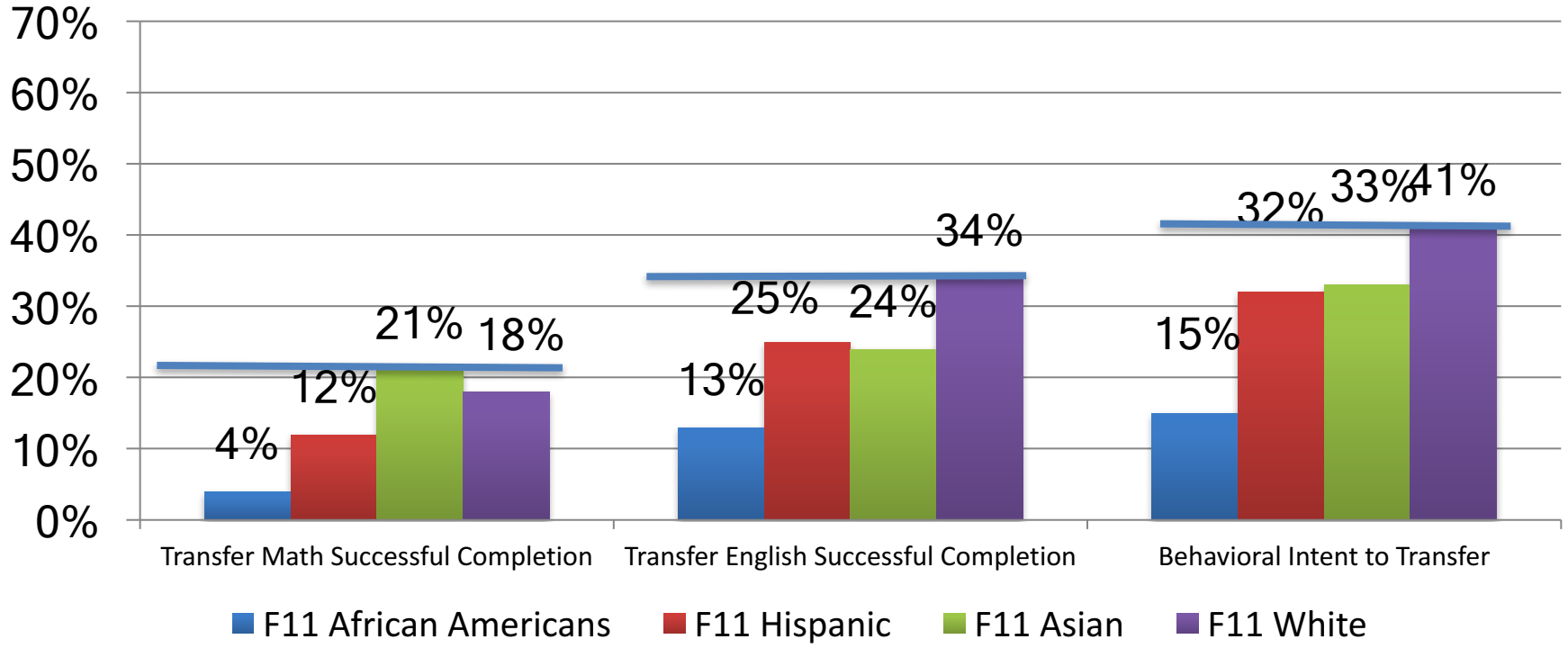
Rules used for English and Math: HSGPA >=2.6 and completion of four years of mathematics including one year beyond Algebra 2



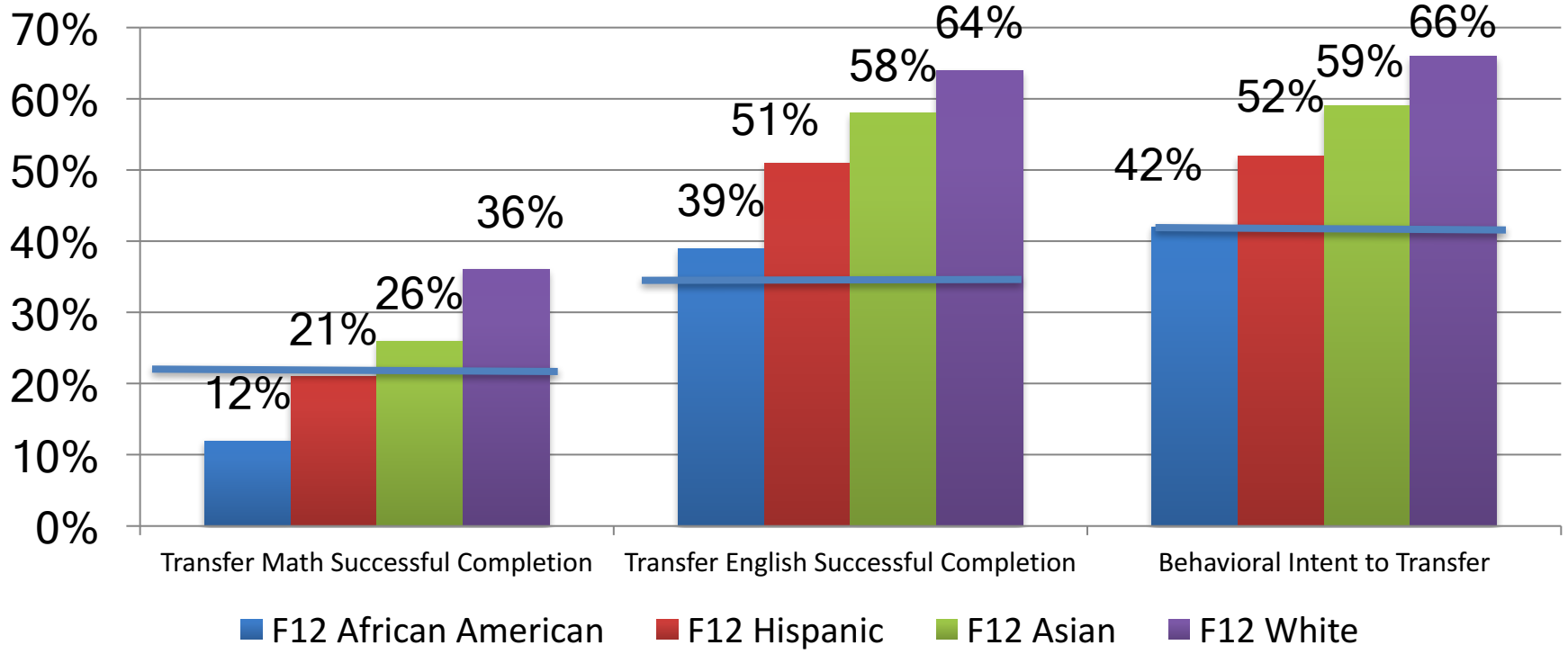
Rules used for English and Math: HSGPA >=2.6

Powerful consequences for sequence completion/throughput and equity

Potential equity & completion impact: LBCC F2011 Baseline Equity Gaps for 2-year rates of achievement



LBCC: F2012 2-year rates of achievement



Nationwide pattern of multiple measures being more predictive regardless of test compared

Their test wasn't different - Compass

Course	Compass Test	Compass	HSGPA	HSGPA + Compass
English 1	Writing Skills	.31	.57	.62
Arithmetic	Pre-Algebra	.57	.34	.66
Algebra	Pre-Algebra	.36	.65	.80
Intermediate Algebra	Algebra	.47	.66	.84
College Algebra	Algebra	.41	.76	.88
College Algebra	College Algebra	.51	.76	.94

http://bit.ly/COMPASSValidation (Table 4 - Median Logistic R)

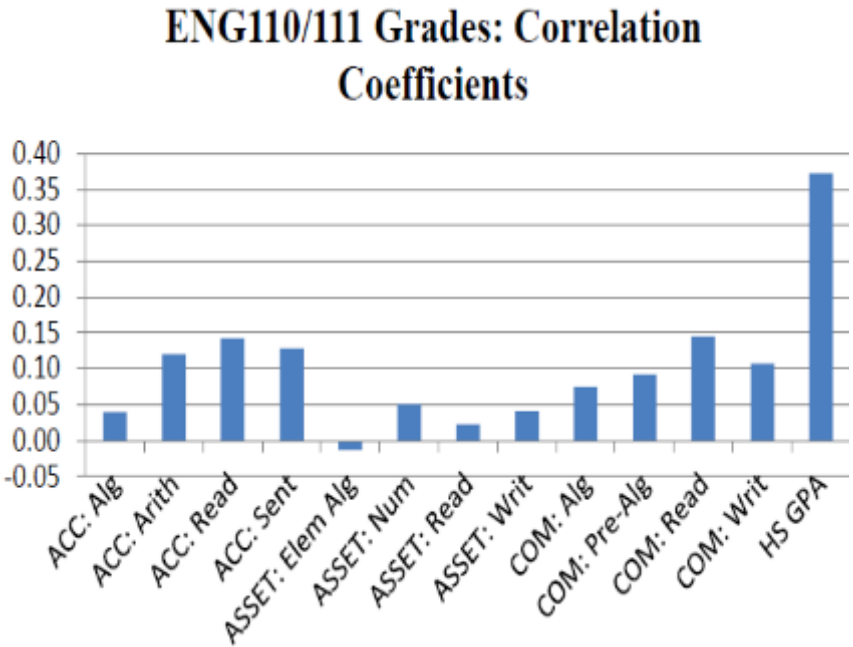
Their test wasn't different - Accuplacer

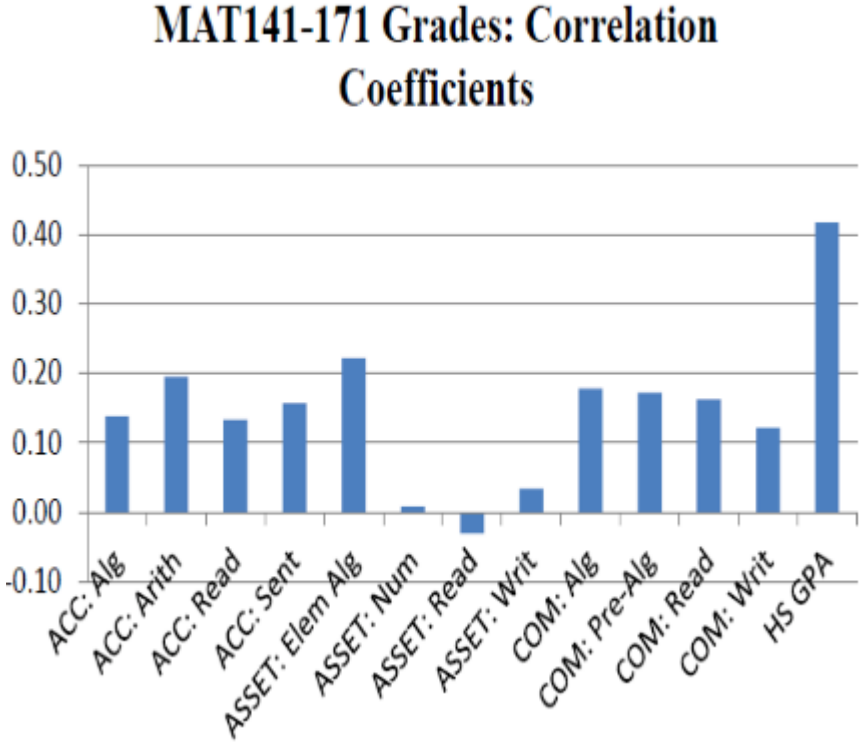
English	Accuplacer	11th Grade GPA
Transfer	.10	.27
1 level below	.12	.24
2 levels below	.12	.25
3 levels below	.12	.18
4 levels below	.07	.21

Math	Accuplacer	11th Grade GPA
Transfer - STEM	.19	.24
Transfer – Stats	.16	.31
Transfer – GEM	.09	.26
1 level below	.21	.28
2 levels below	.11	.26
3 levels below	.11	.23
4 levels below	.05	.19

MMAP (in preparation): Correlation with success (C or better) in course in CCC

Their tests weren't different - NC

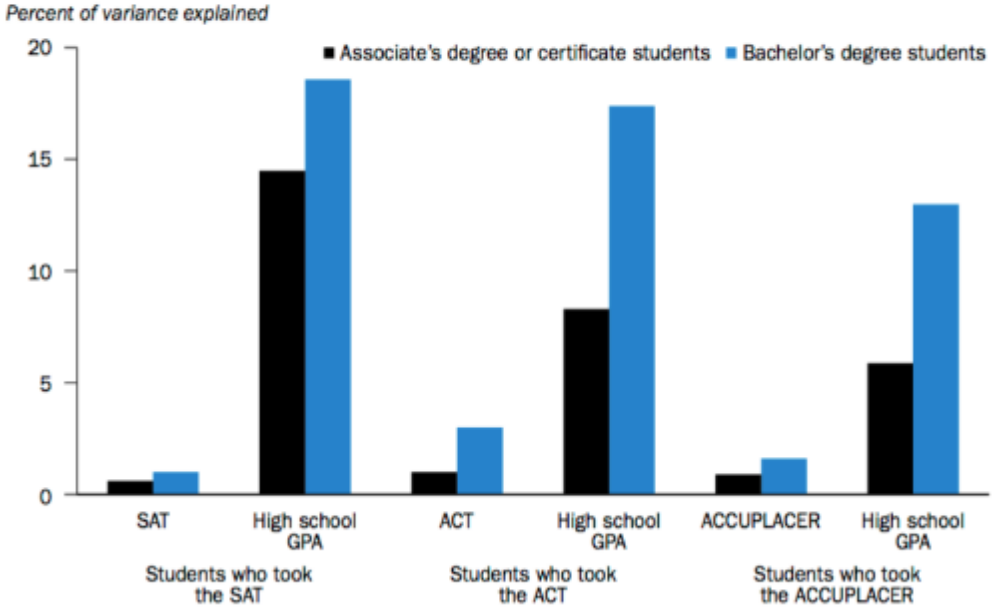




From Bostian (2016), North Carolina Waves GPA Wand, Students Magically College Ready adapted from research of Belfield & Crosta, 2012 – see also Table 1)

Their tests weren't different - AK

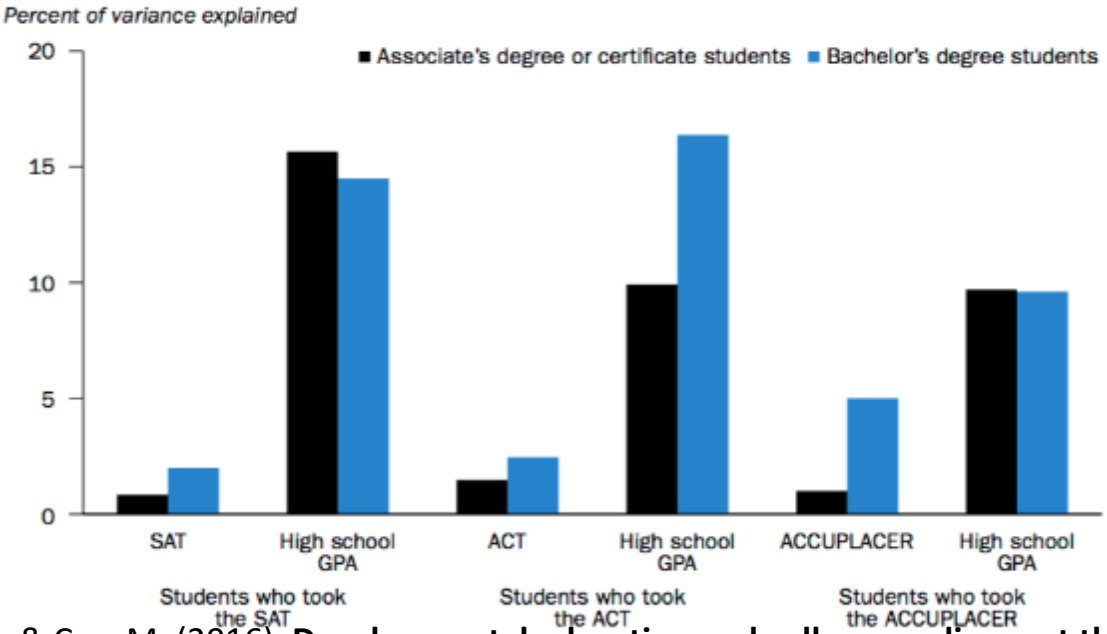
Figure 6. Among University of Alaska students who enrolled directly in college English courses, high school grade point average explained more of the variation in college English grades than did exam scores, 2008/09–2011/12



From Hodara, M., & Cox, M. (2016), **Developmental education and college readiness at the University of Alaska**: http://bit.ly/HSGPAAK

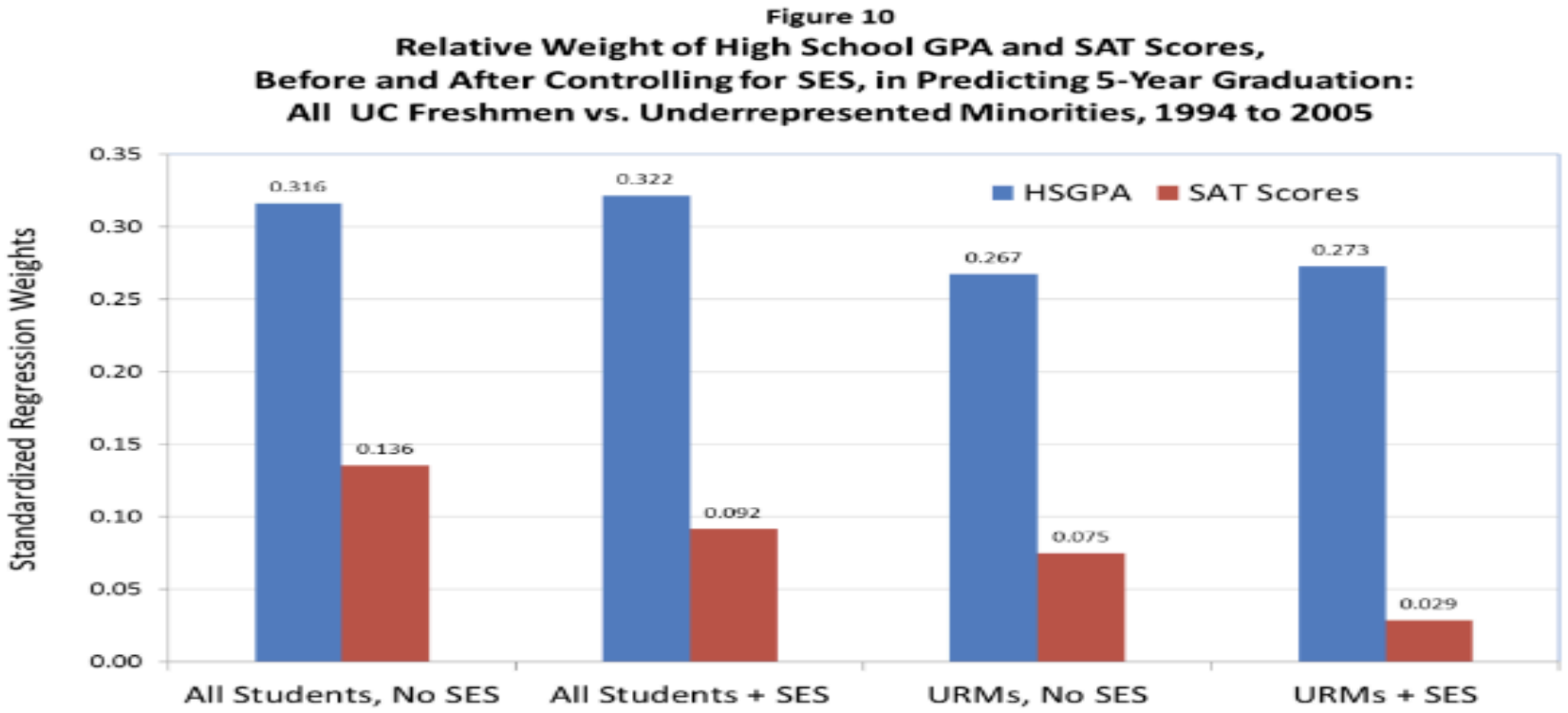
Their tests weren't different - AK

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



From Hodara, M., & Cox, M. (2016), **Developmental education and college readiness at the University of Alaska**: http://bit.ly/HSGPAAK

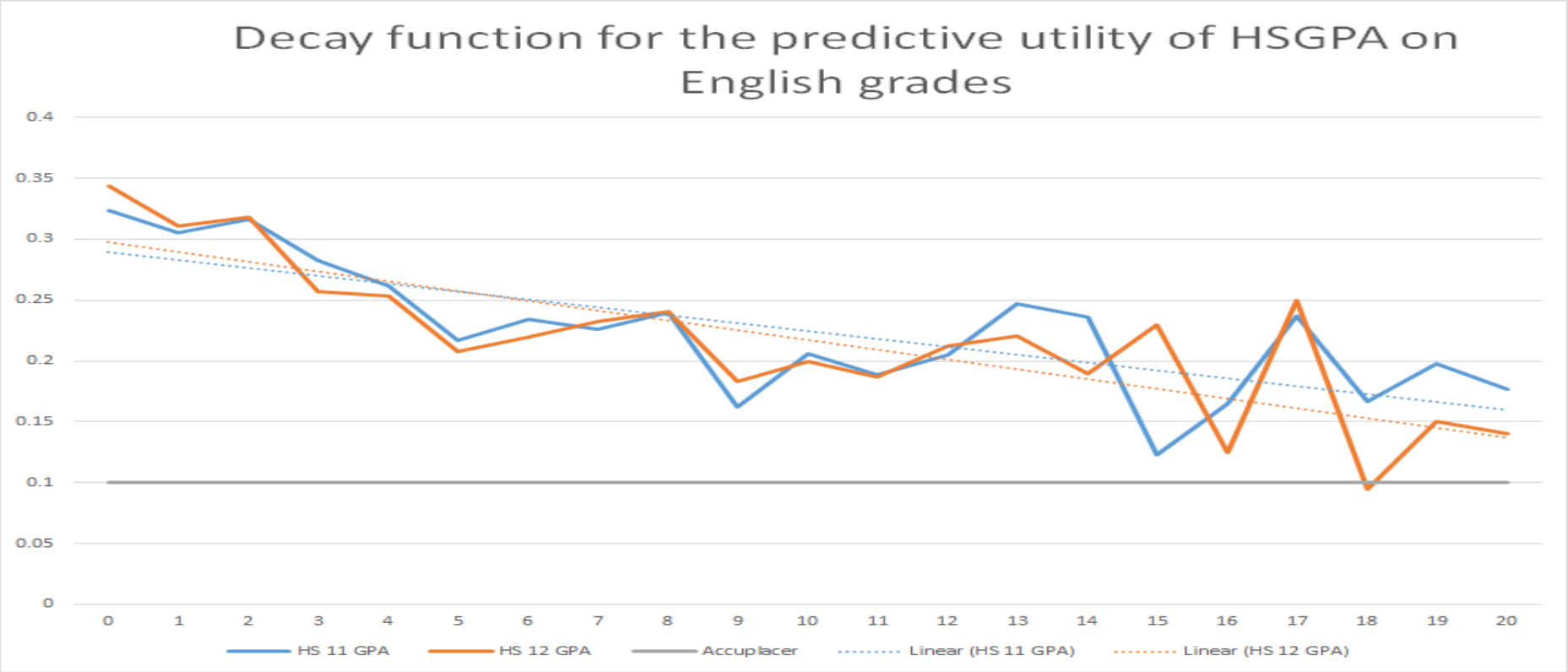
Their tests weren't different – University of California



http://bit.ly/Geiser2015

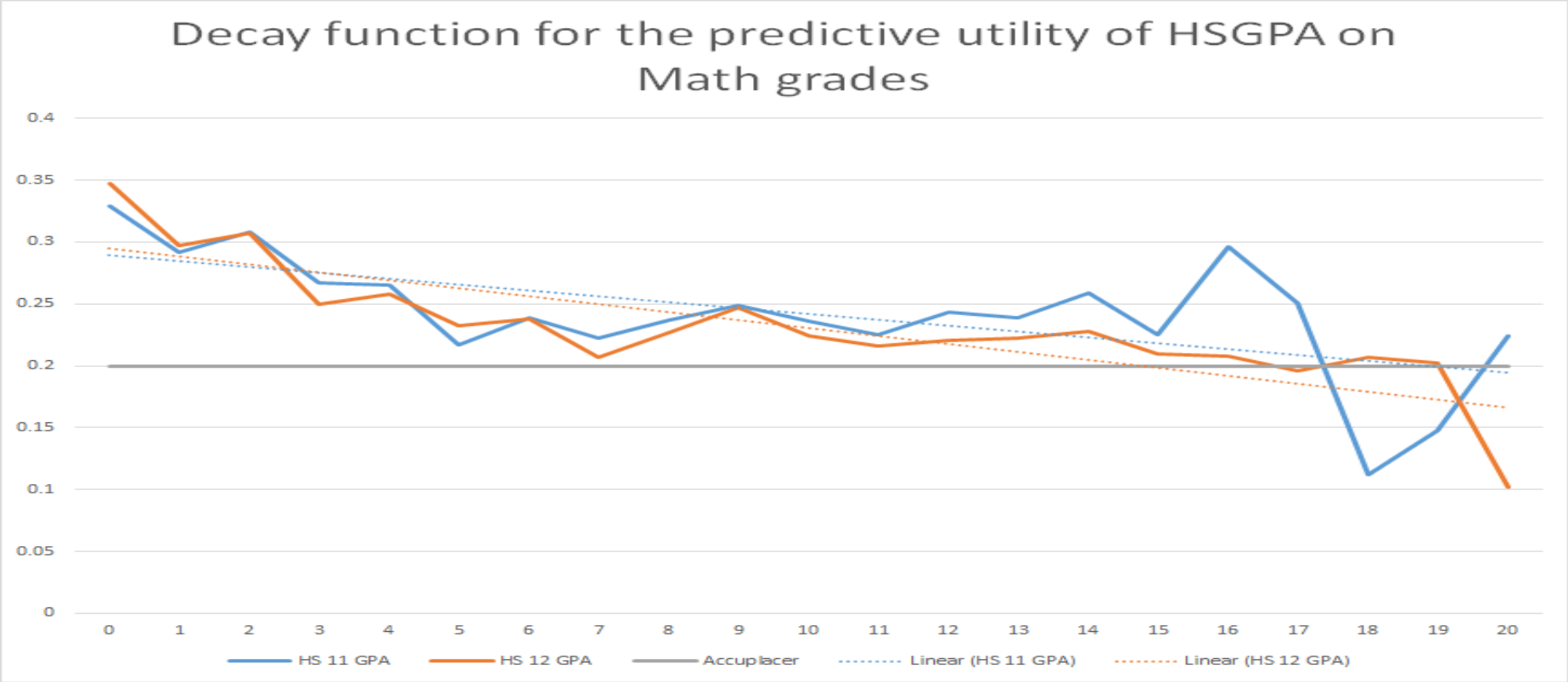
High School GPA is as or more predictive than tests for far longer than people think

Predicting Transfer-Level English



MMAP (in preparation): correlations b/w predictor and success (C or better) in transfer-level course by # of semesters since HS

Predicting Transfer-Level math



MMAP (in preparation): correlations b/w predictor and success (C or better) in transfer-level course by # of semesters since HS

It doesn’t have to be hard or expensive

Self-reported HSGPA potential alternative

- UC admissions uses self-report but verifies after admission
  - 2008: 9 campuses, 60000 students. No campus had >5 discrepancies b/w reported grades and student transcripts: http://bit.ly/UCSelfReportGPA
- College Board: Shawn & Matten, 2009: "Students are quite accurate in reporting their HSGPA", r(40,299) = .73: http://bit.ly/CBSRGPA
- ACT research often uses self-reported GPA, generally find it to be a highly powerful predictor and highly correlated with students actual GPA: ACT, 2013: $r(1978) = .84$ http://bit.ly/ACTSRGPA

GPA vs. Self-reported HSGPA

HSGPA Level	N	Mean HSGPA		Mean diff.
		Actual	Self-reported	
3.50–4.00	599	3.79	3.75	–0.04
3.00–3.49	451	3.24	3.23	–0.01
2.50–2.99	408	2.81	2.76	–0.05
2.00–2.49	265	2.24	2.35	0.11
1.50–1.99	172	1.77	2.04	0.27
0.00–1.49	85	1.03	1.85	0.82
Total	1,980	2.95	3.02	0.07

- ACT, 2013: http://bit.ly/ACTSRGPA

GPA vs. Self-reported HSGPA

School-Reported HSGPA	Self-Reported HSGPA: A (n = 13,658)	A– (n = 10,214)	B+ (n = 8,066)	B (n = 5,671)	B– (n = 1,704)	C+ (n = 675)	C (n = 261)	C– (n = 48)
A (n = 14,825)	**78%**	32%	8%	3%	1%	2%	3%	2%
A– (n = 10,547)	17%	**45%**	34%	14%	4%	2%	3%	4%
B+ (n = 7,795)	4%	17%	**39%**	35%	16%	7%	4%	8%
B (n = 4,796)	1%	4%	17%	**35%**	40%	29%	18%	17%
B– (n = 1,649)	0%	1%	2%	10%	**28%**	36%	32%	15%
C+ (n = 550)	0%	0%	1%	2%	9%	**19%**	28%	29%

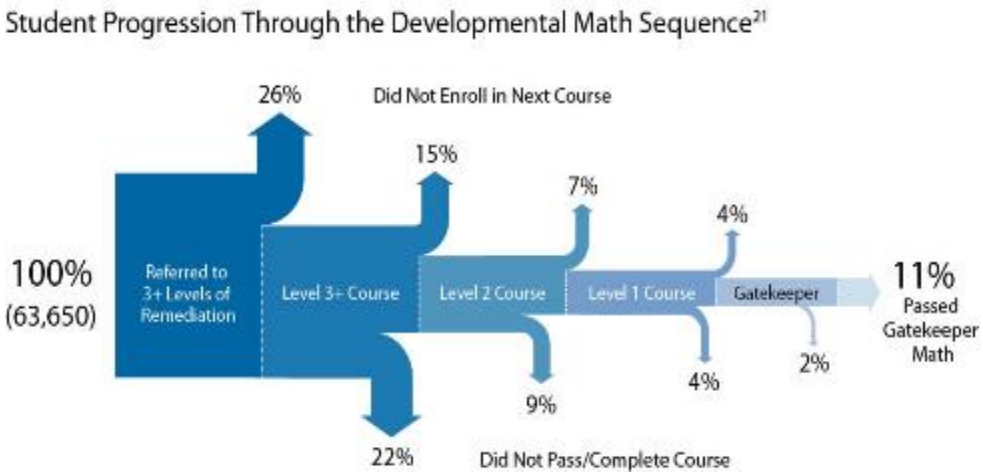
- College Board, 2009: http://bit.ly/CBSRGPA

Under-reporting was 2-4X as common as over-reporting.

It might actually help outcomes AND FTES

Testing & underplacement pushes students away

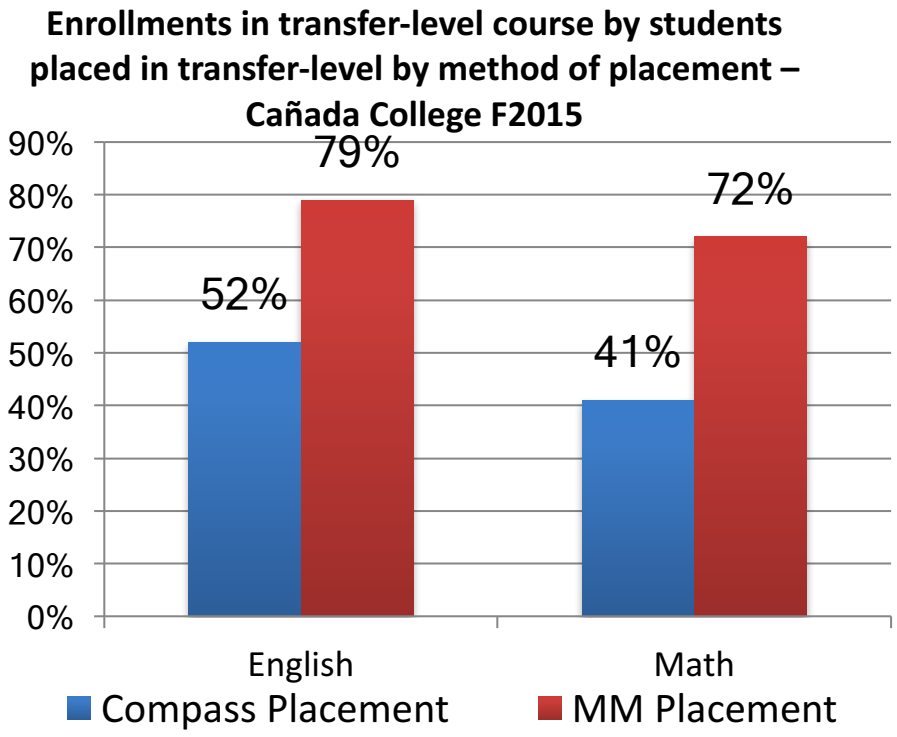
- Failure to enroll in the first course in the sequence often single biggest loss point in the developmental course.
  - (Bailey, Jeong, & Cho, 2010) http://bit.ly/Bailey2010



http://bit.ly/CCRCWhatWeKnow

Validating student effort/performance attracts students to college

- "Students were profoundly grateful not to have to take the assessment test." – Canada College Multiple Measures Presentation at RP Group Conference April 8, 2016



http://bit.ly/MMAPPilotLessons

Does this solve everything for every student?

- No
- This method can’t be used (yet?) for:
  - international students
  - students who didn’t attend high school
  - students who are returning to education decades after high school
- Not every student placed this way will will succeed
  - just as every student placed via the test hasn’t succeeded

However…

- None of these reflect legitimate reasons for a college not to engage in this work
- They represent reasons to get motivated to find additional solutions for those students as well such as:
  - Noncognitive and other variables in assessment
  - Better aligned and concurrent rather than sequential support
    - Redesigned developmental education: California Acceleration Project (e.g., Hayward & Willett, 2014) bit.ly/CAPEval
    - Corequisite developmental education (e.g., Coleman, 2015) bit.ly/2015ALP, CCA http://bit.ly/CCACoreq
  - Adjusting cut scores
    - Henson & Hern, 2014 bit.ly/LetThemIn
    - Kalamkarian, Raufman, & Edgecombe, 2015; http://bit.ly/Kalamkarian2015;
    - Rodriguez, 2014; bit.ly/Rodriguez2014

Reality - it's ultimately not really about any single one of these concerns.

- We can make it as complicated as we want but…
- It's about institutional structure, choices, and leadership
  - Cañada College went from zero to implementation in 3 months, including full local replication of statewide MMAP research
- A **large** proportion of the benefit for students and institutions could be accomplished at every institution in this room by adding a handful of questions at application or assessment and writing at most a couple hundred lines of code
  - By next week.
  - Mira Costa College went from sign-up as a MMAP pilot college to implementation of new multiple measures placement rules for students in English (using self-report) in the last 4 business **days** before Thanksgiving F2015

Summary

- Concerns don't hold water - reveal stereotypes about community college students that just aren't true

- On average, evidence-based multiple measures
  - improves success rates in transfer-level courses
  - dramatically increases transfer-level placement & completion of sequence
  - **saves students 1-2 semesters of developmental education**

- Coupled with work on acceleration, corequisite developmental education, and cutscore reform, demonstrates that higher education generally and community colleges specifically have been systematically and substantially underestimating our students' capacity

- Building new guided pathways without re-examining student capacity likely to fail

Support for getting started

- Multiple Measures Assessment Project Support (free)
  - bit.ly/MMAP2017
  - http://bit.ly/MMAPResources
  - bit.ly/ImplementMMAP
- MMAP Project Team Support
  - Webinars
    - Including implementation: bit.ly/ImplementMMAP
  - In person convenings
    - Connection to peers and tips, tricks, and pitfalls they've experienced
  - Tools and support for research methodology and data analysis: /bit.ly/ToolsMMAP
    - (note – links at archive page may not work but should work if you add "archive." before the rpgroup.org (i.e.,http://archive.rpgroup.org/…)
  - Provision of statewide model placement recommendations and/or data for local, evidence-based model: bit.ly/MMAPRecs
- Arnold Foundation grant support for implementation of rigorous RCT implementation and evaluation

Thank you!

Contact Information

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The Fierce Urgency of Now

- ~Two million new community college students per year
- “We are now faced with the fact that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history, there "is" such a thing as being too late. This is no time for apathy or complacency. This is a time for vigorous and positive action.”
  - Dr. Martin Luther King, Jr.