

Multiple Measures Assessment Project (MMAAP)

August 10, 2016

Yuba College

<http://www.rpgroup.org/projects/multiple-measures-assessment-project>





Automotive Technology

Intake Assessment



Learning



Certification



$$y = f(x)$$

Yuba Community College District Mission

(emphasis added)

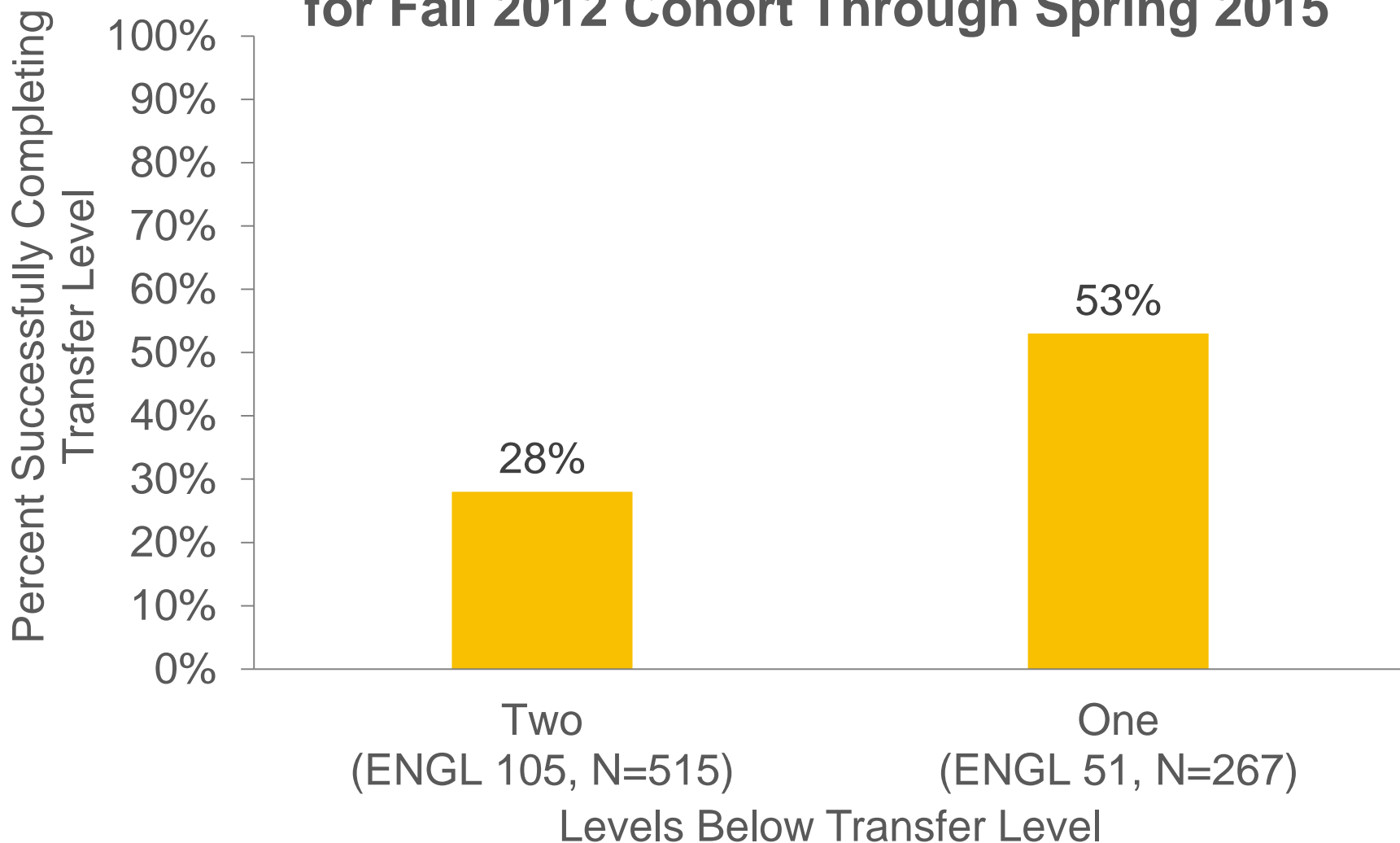
...provide rigorous, high quality degree and certificate curricula in lower division arts and sciences and in vocational and occupational fields as well as business-focused training for economic development. **An essential and important function of the District is to provide remedial instruction, English as a second language instruction, and support services which help students succeed at the postsecondary level. Additionally, an essential function of the District is to provide adult noncredit educational curricula in areas defined by the State.**

Yuba College Selected Goals

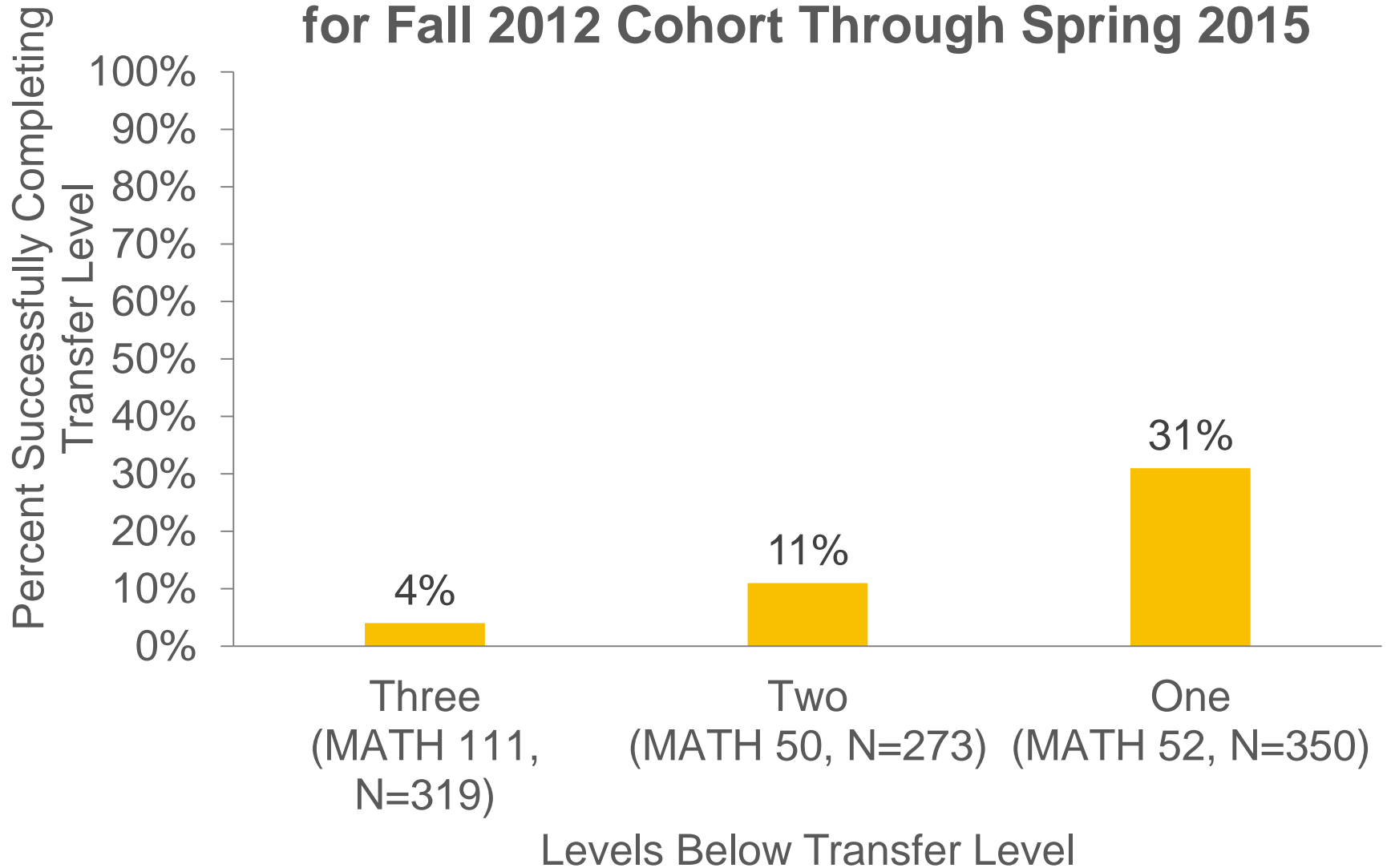
(emphases added)

- Foster a culture of **evidence-informed decision making**, including SLO development/assessment and other measures of student success.
- Research and utilize **effective** modes of delivery for our courses and services.
- Design our programs in such a way as to allow students to complete their educational goals in a **timely manner**.
- **Evaluate** our programs, services and processes to ensure continuous quality improvement.

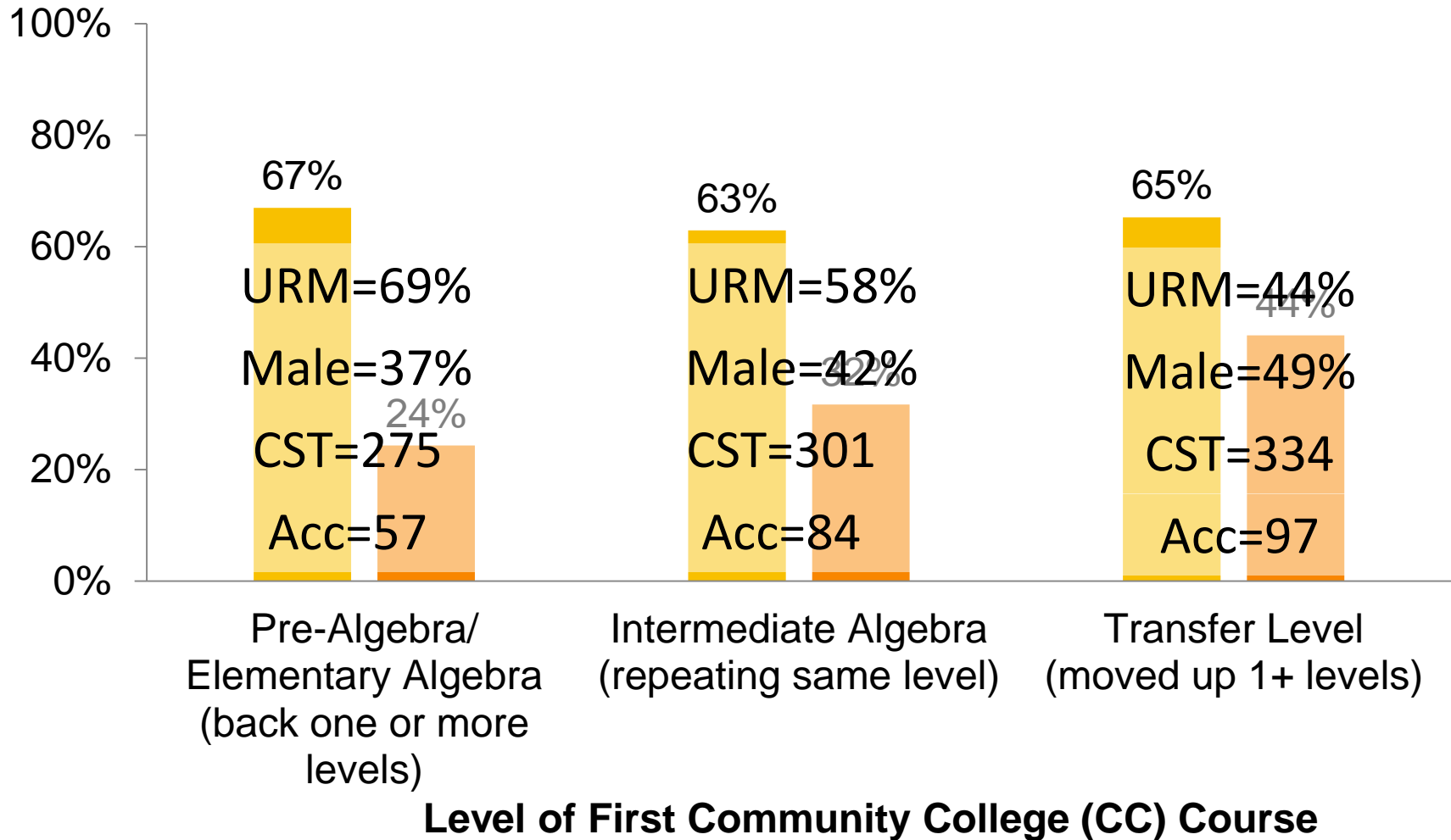
Transfer English Throughput Rates for Fall 2012 Cohort Through Spring 2015



Transfer Math Throughput Rates for Fall 2012 Cohort Through Spring 2015



Level of and Success in First College Math for Students whose Last High School Course was Algebra 2 with Grade of B or Better (n=35,806)



■ College Success Rate

■ Percent Enrolled at CC Level

MMAP Project Overview

- Collaborative effort of CCCCCO Common Assessment Initiative (CAI) designed to develop, pilot, and assess implementation of placement tool using multiple measures through joint efforts of Cal-PASS Plus, RP Group and now 50 CCCs
- Develop multiple measures models for English, Mathematics, ESL and Reading
- Identify, analyze and validate multiple measures, including high school transcript data, non cognitive variable data, and self-reported HS transcript data
- Engage pilot colleges to conduct local replications, test models and pilot their use in placement, and provide feedback
- bit.ly/MMAP2015

Why Multiple Measures?

- Historically, tests alone have had relatively low predictive validity
- Multiple measures
 - provide a more complete picture of student ability
 - provide a way to increase the accuracy of placement, particularly reducing underplacement
 - <http://bit.ly/CCRCPlacementAccuracy>
 - are required by law
 - MM is supported by statewide senate

Regulations

(emphases added)

- § 55003. Policies for Prerequisites, Corequisites and Advisories on Recommended Preparation
 - (f) Content review with statistical validation is defined as conducting a content review (as defined in subdivision (c) of section 55000) and the compilation of data according to **sound research practices** which shows that a student is **highly unlikely to succeed** in the course unless the student has met the proposed prerequisite or corequisite.
- § 55502. Definitions.
 - (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.

Models for Combining Data

- Compensatory (blended)
 - Ex: Test score augmented by points from survey responses
- Conjunctive (both/and)
 - Ex: Test score of at least 80% and minimum grade point average of at least 2.5
- Disjunctive (either/or)
 - Ex: Higher placement of either test or prior high school achievement

Multiple bodies of work showing higher student capacity

- Developmental education redesign (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>
- Lowering cut scores
 - Henson & Hern, 2014 bit.ly/LetThemIn
 - Kalamkarian, Raufman, & Edgecombe, 2015; <http://bit.ly/Kalamkarian2015>;
 - Rodriguez, 2014; bit.ly/Rodriguez2014
- 2-4X transfer-level course completion
- Comparable or higher success rates
- Works across demographic groups
- Reduces equity gaps substantially

Data Set for Models

- CCC students enrolled in an English, Math, Reading or ESL class with matching high school data in CalPASS
- Bulk of first CCC enrollments from 2008 through 2014
- Data files include:
 - High school course grades, unweighted GPA, course type
 - Assessment data, where avail. (ACCUPLACER, CST, EAP)
 - CCC data (course grades, course level)
 - Other derived info. (e.g., delay, CCC math class type)
- Rules were developed with the subset of students who had four years of high school data (about 25% of total sample)

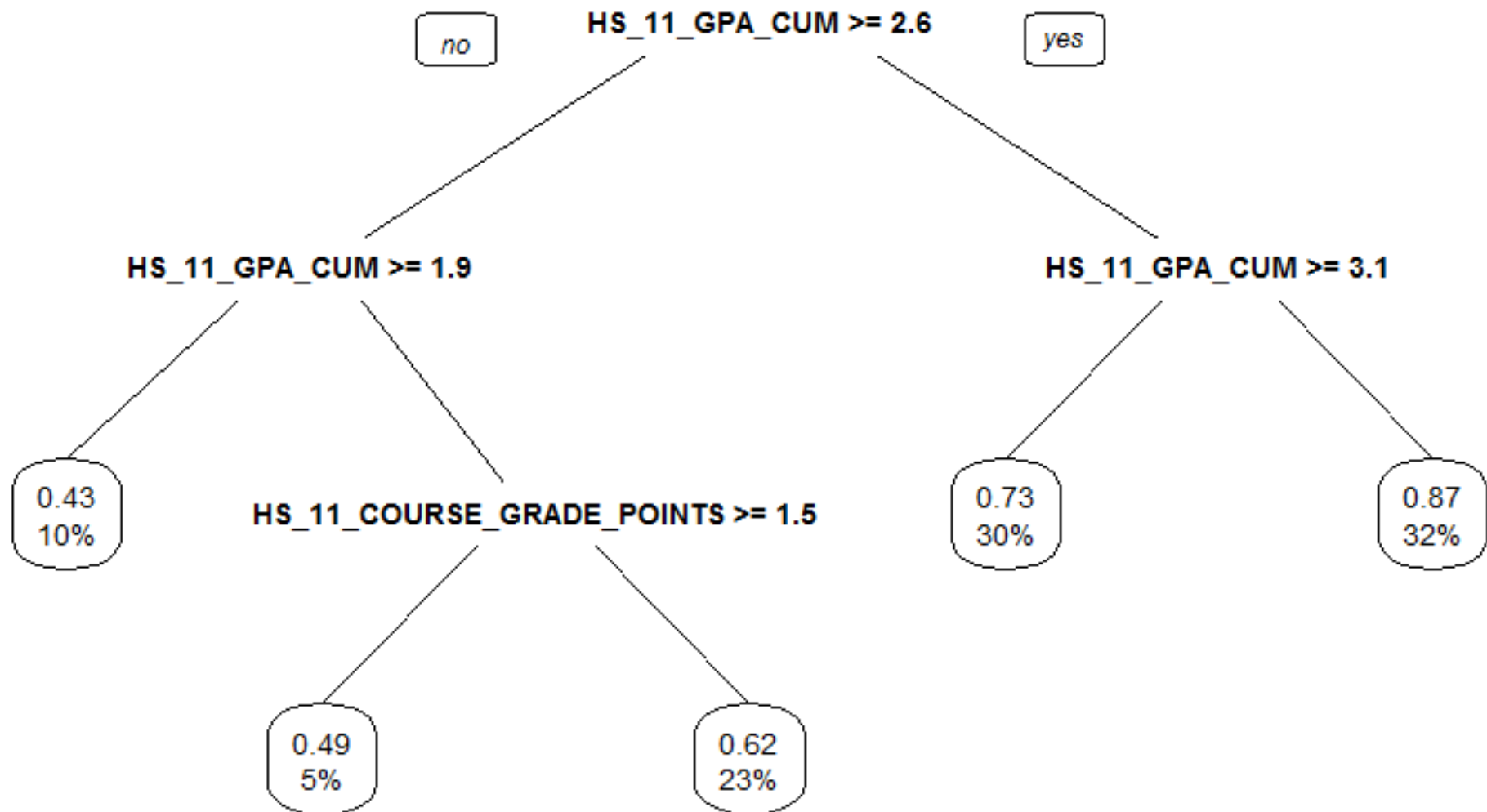
Variables Explored in the Models

- High School Cumulative GPA (primary predictor)
- 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. Alg., Int. Alg., Pre-Calc.)

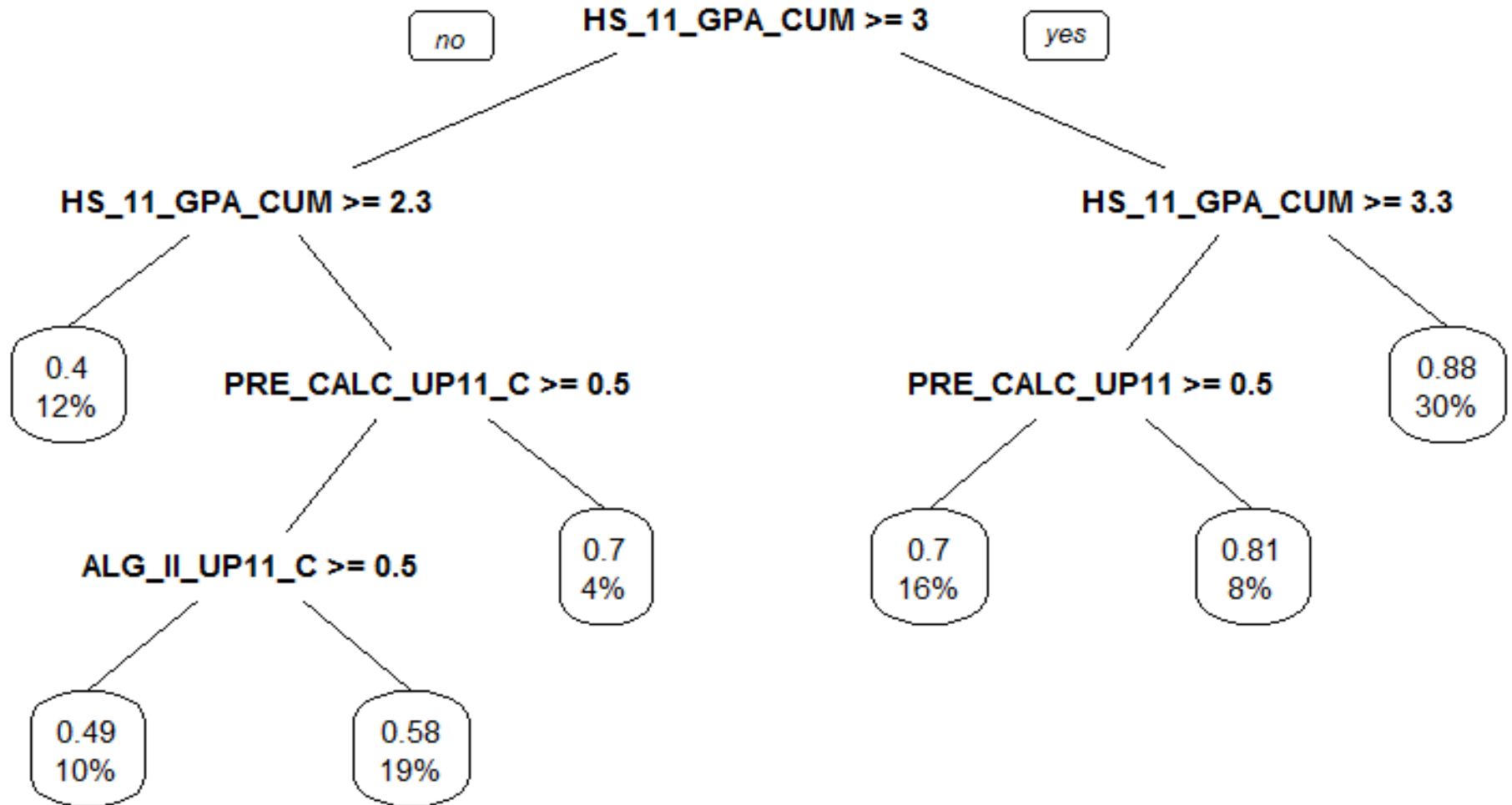
Transfer Level Rule Sets

Transfer Level Course	Direct Matriculant	Non-Direct Matriculant
College Algebra (STEM)	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 (Non STEM)	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	HS 11 GPA ≥ 2.6	HS 12 GPA ≥ 2.6

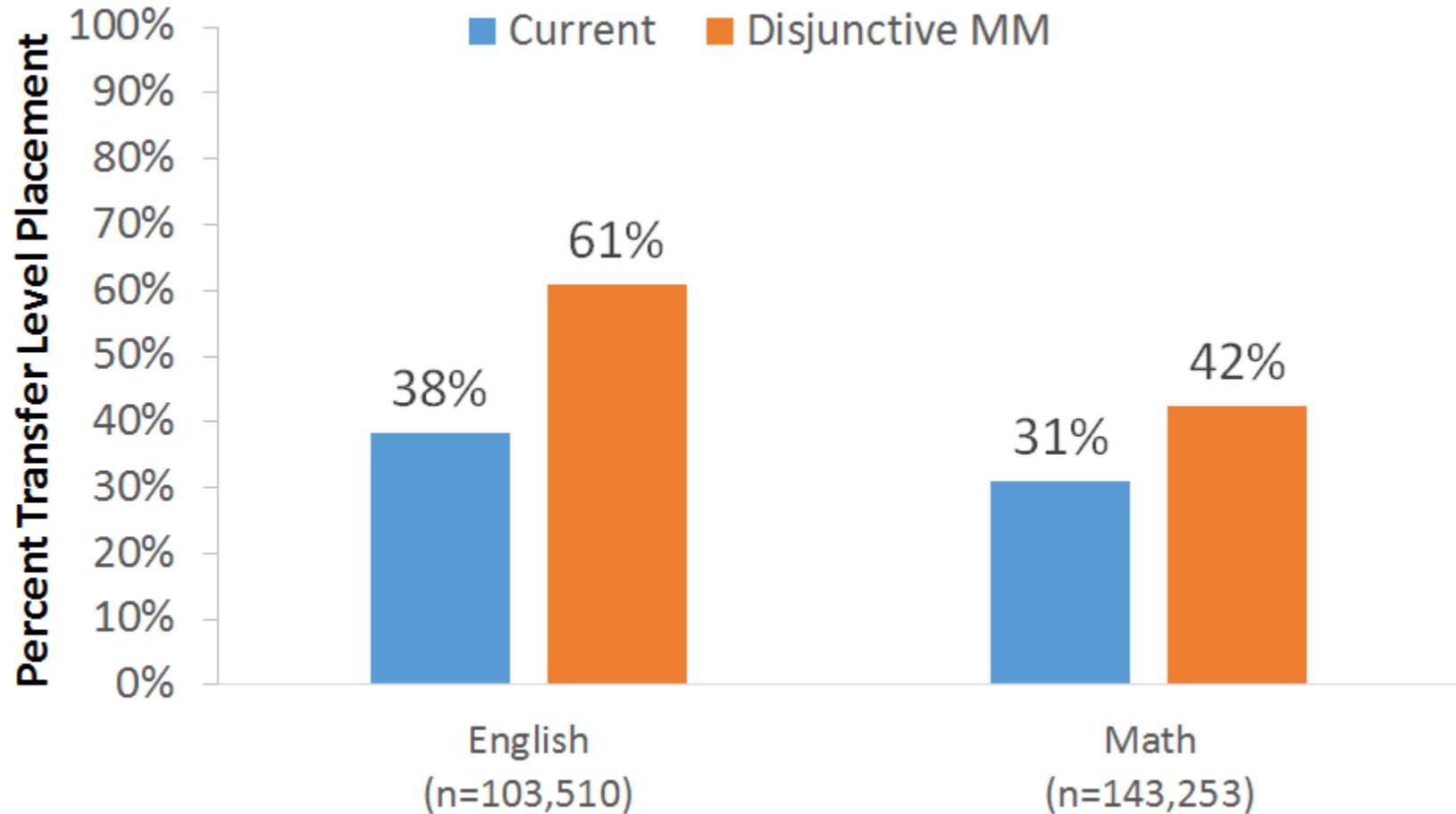
Transfer Level English Tree



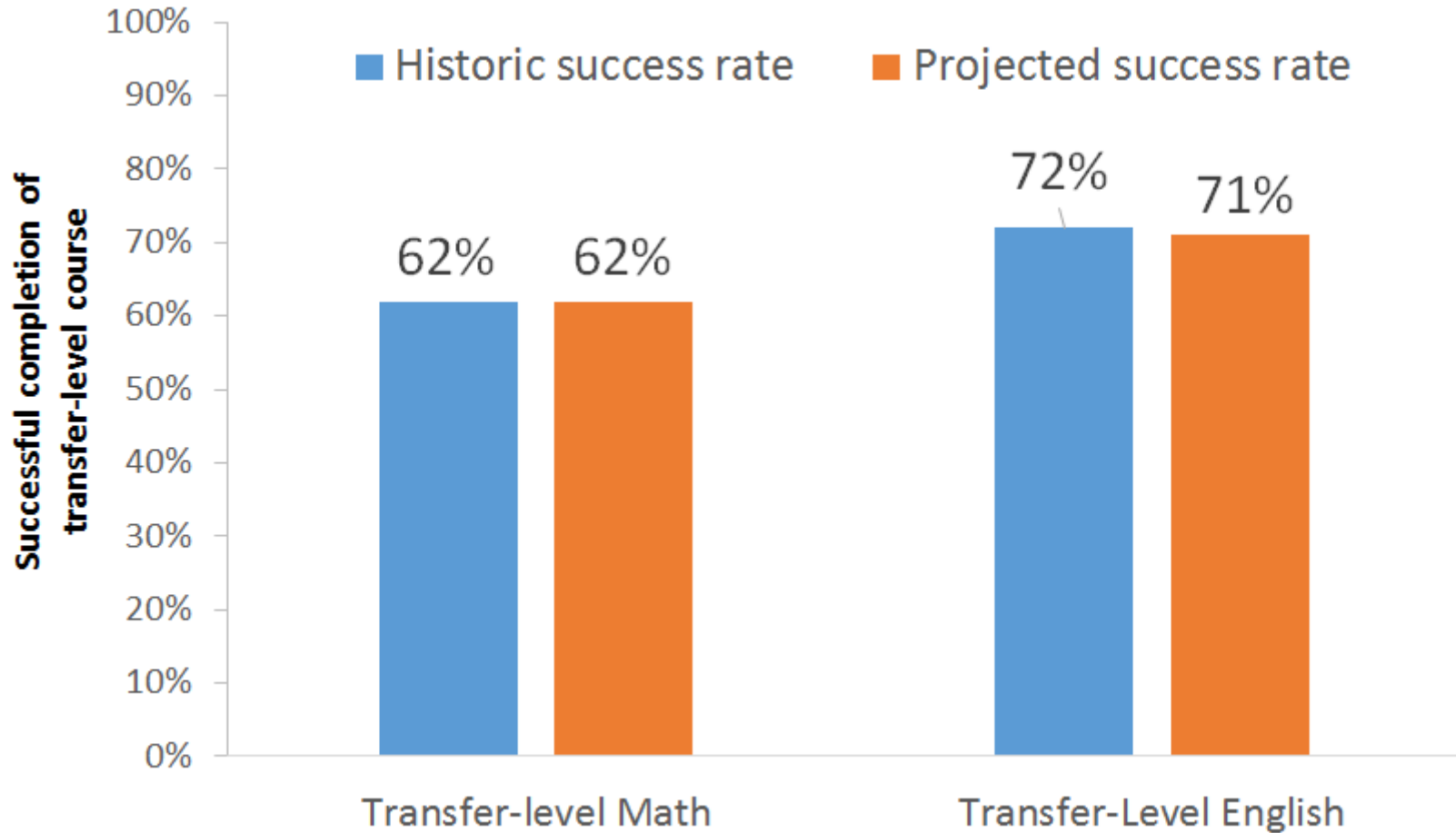
Statistics Tree – Direct Matriculants



Potential Statewide Transfer Level Placement

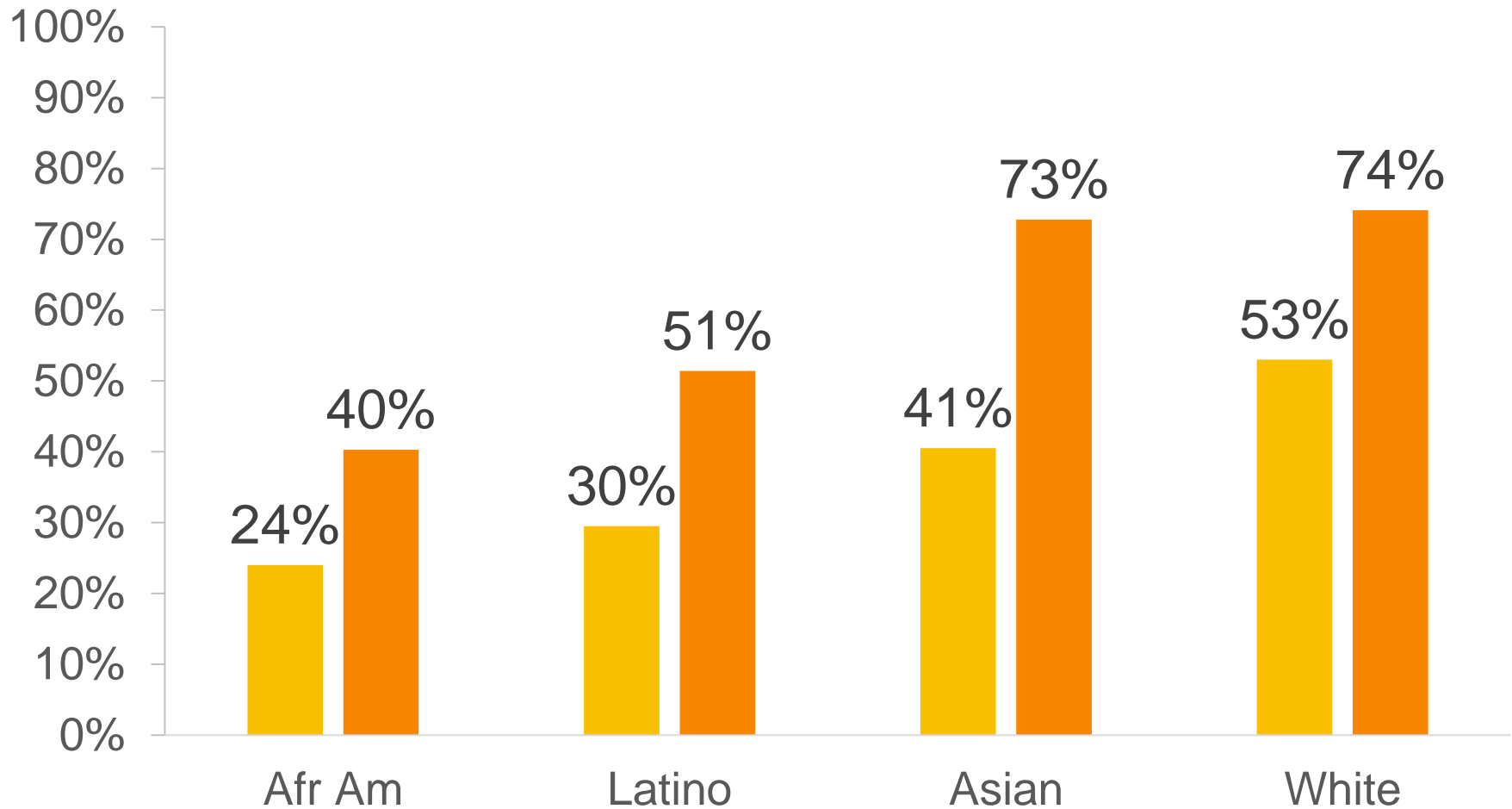


Projected impact on course success rates (completion of course with C or better)



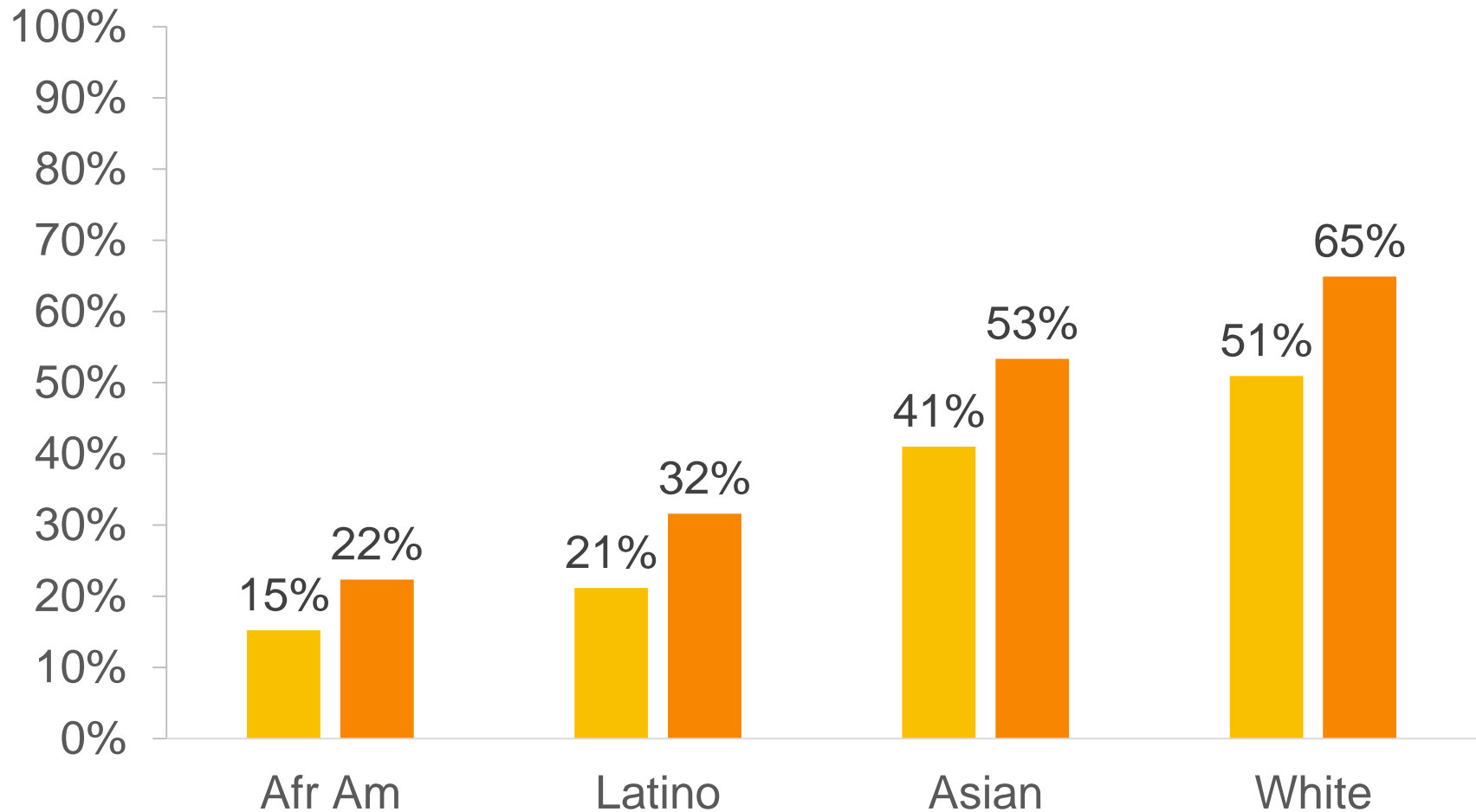
Transfer Level English Placement

■ Current ■ Disjunctive MM



Transfer Level Math Placement

■ Current ■ Disjunctive MM

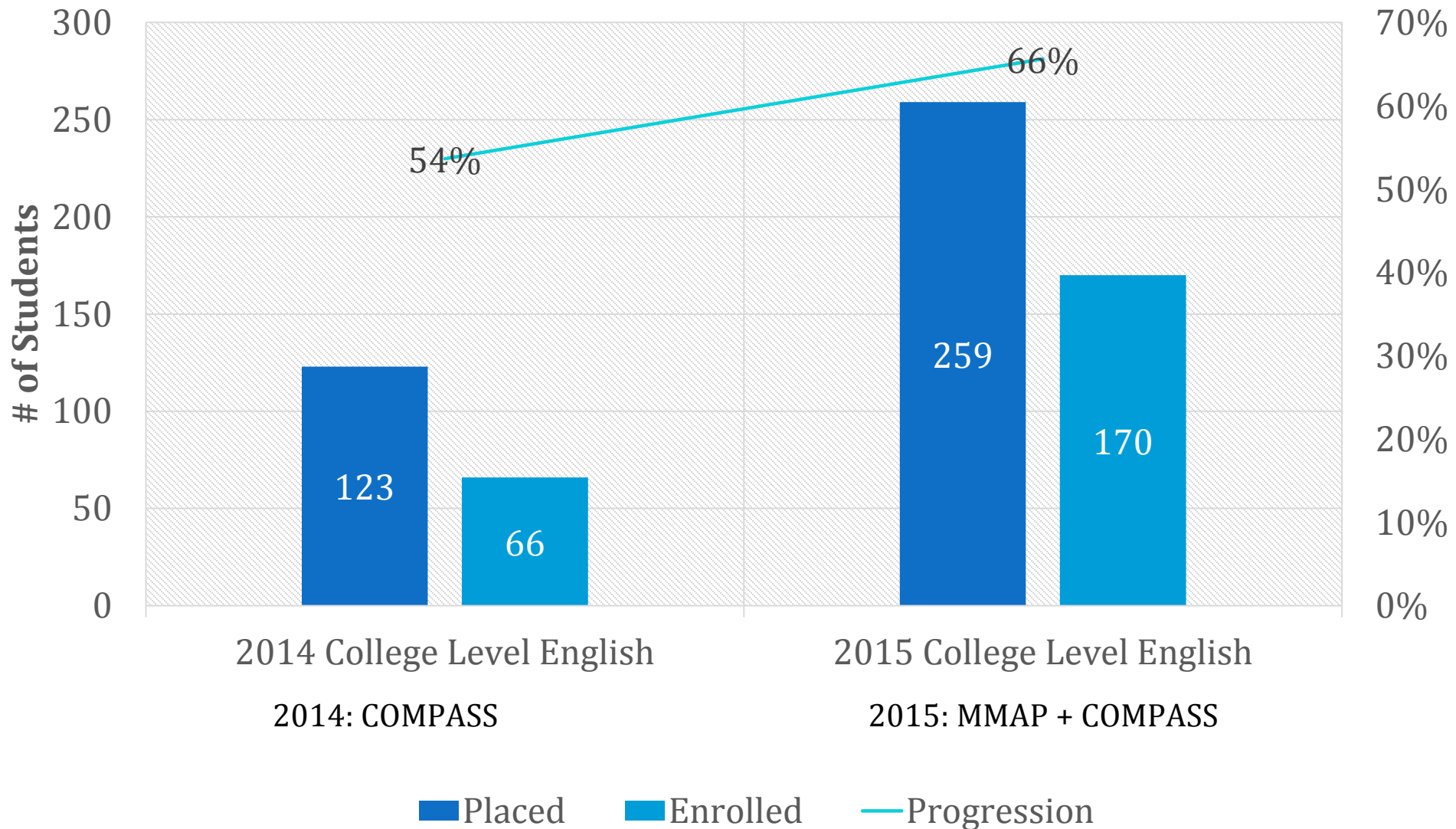


Transfer Level Rule Sets

Transfer Level Course	Direct Matriculant	Non-Direct Matriculant
Reading	HS 11 GPA ≥ 2.7	HS 12 GPA ≥ 2.8
ESL	HS 11 GPA ≥ 2.7	HS 12 GPA ≥ 2.6

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

Progression from Placement to Enrollment English: 2014 vs. 2015



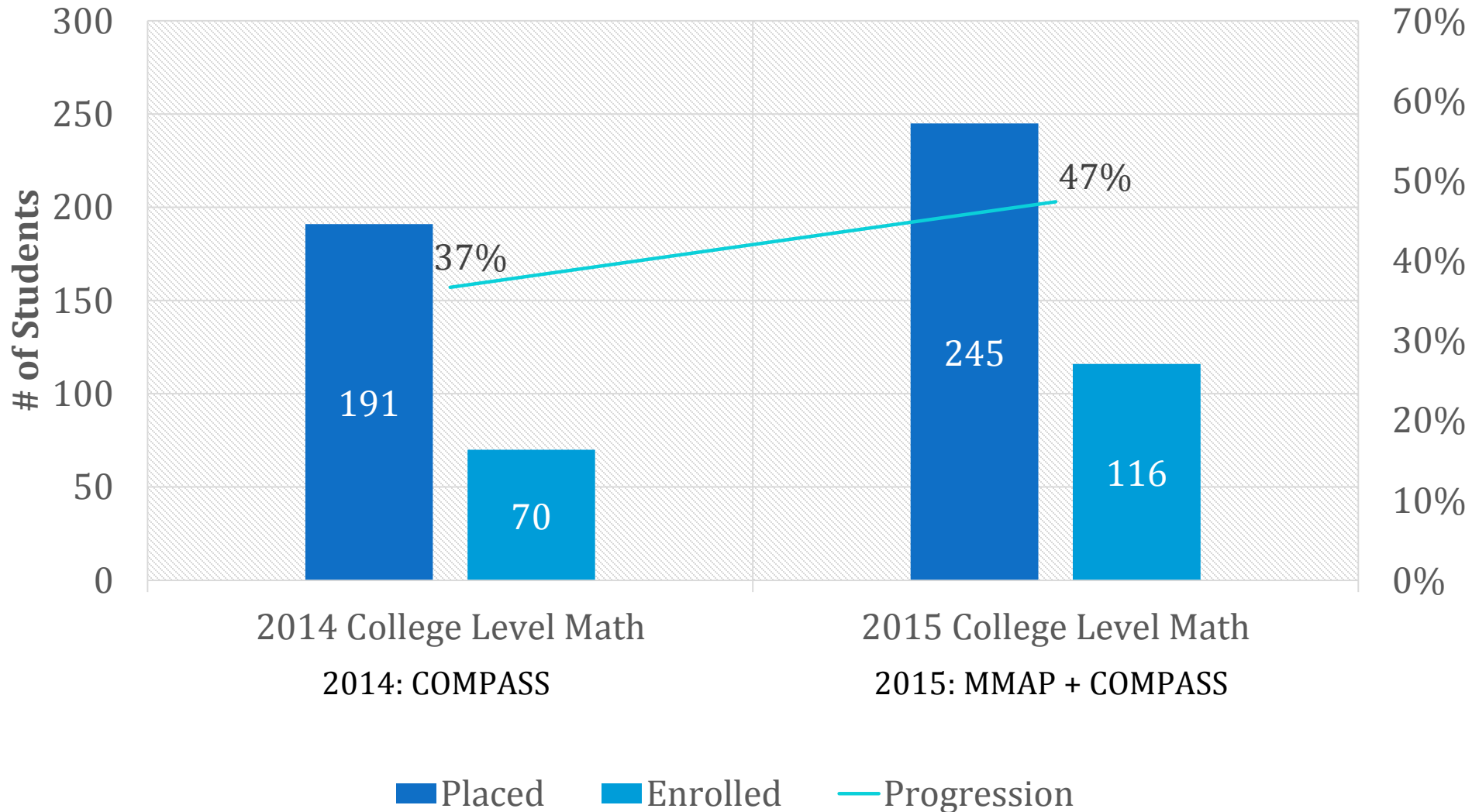
English 100 Course Outcomes by Grade Distribution

Students placed by MMAP		
GRADES	FALL 2015 NUMBER	FALL 2015 %
A or A-	28	29%
B+, B or B-	31	32%
C+ or C	14	14%
D or F	14	14%
W	10	10%
TOTAL	97	100%
Overall Course Success	73	75%

Students placed by Compass		
GRADES	FALL 2015 NUMBER	FALL 2015 %
A or A-	31	56%
B+, B or B-	9	16%
C+ or C	3	5%
D or F	9	16%
W	3	5%
TOTAL	55	100%
Overall Course Success	43	78%

Progression from Placement to Enrollment

Math: 2014 vs. 2015



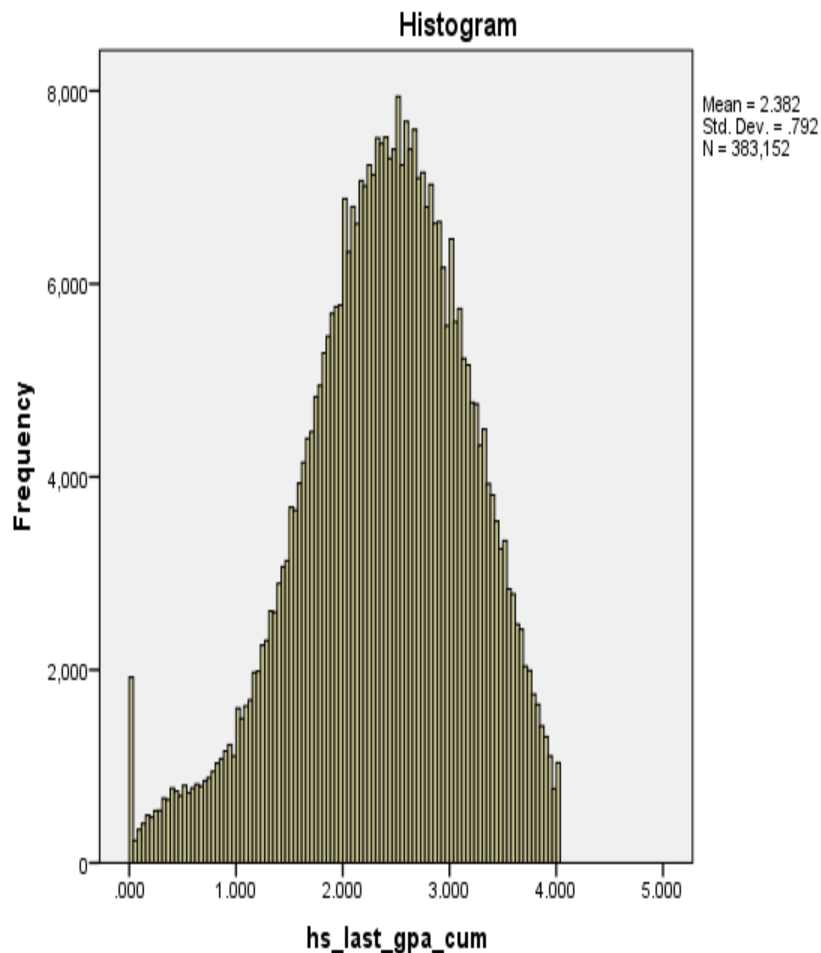
Math Course Outcomes by Course Number

Students placed by MMAP			Students placed by Compass	
Course Number	FALL 2015 Number	FALL 2015 Success %	FALL 2015 Number	FALL 2015 Success %
125	1	100%	3	67%
130	2	50%	16	81%
200	20	70%	59	56%
222	1	0%	4	100%
225	2	100%	9	67%
241	5	60%	10	50%
251	5	80%	34	76%
252	1	0%	2	100%
253	1	100%	1	100%
275	0	n/a	0	n/a
Total	38	68%	138	67%

Common Concerns about MMAP

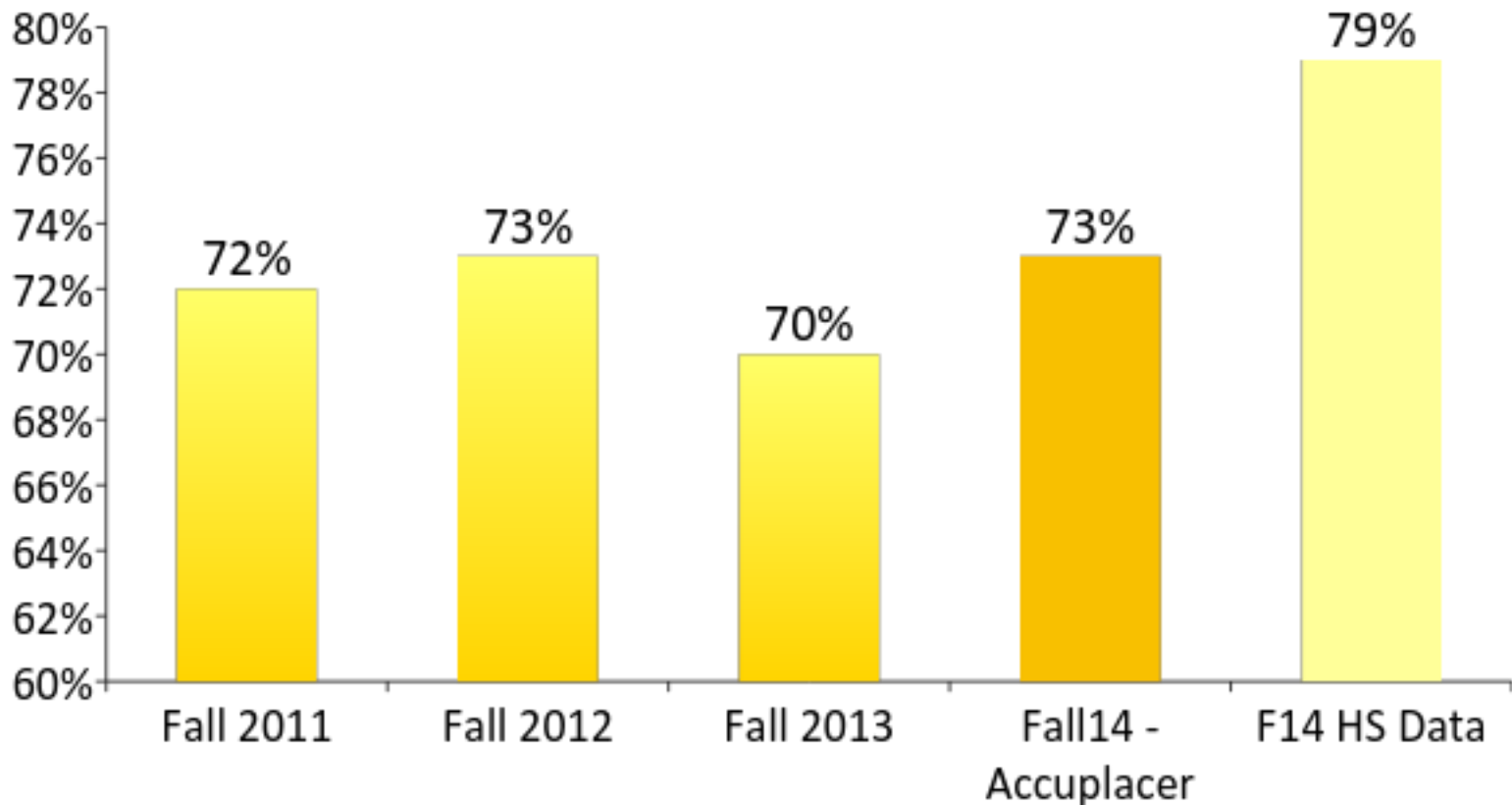
- High school grades are inflated
- Students placed via MMs will not be successful
- Our courses will have lower pass rates
- Our test is different
- Students would be better off in remedial coursework
- Students will only get a “C” in transfer-level work
- Students who get a “C” in transfer-level won’t be able to transfer
- High school GPA is only good for recent graduates

Evidence for grade inflation low at best



- Little evidence for grade inflation over last decade
- Earlier observations of grade inflation may have been partly artifactual
 - adjustments to GPA for AP/IB/Honors
- Zhang & Sanchez, 2014: <http://bit.ly/ACTGradeInflation>
- Most importantly – not consistent with the data

Sierra College: Higher success rates for students placed via MMs



Our tests are 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

Remedial courses are better for students

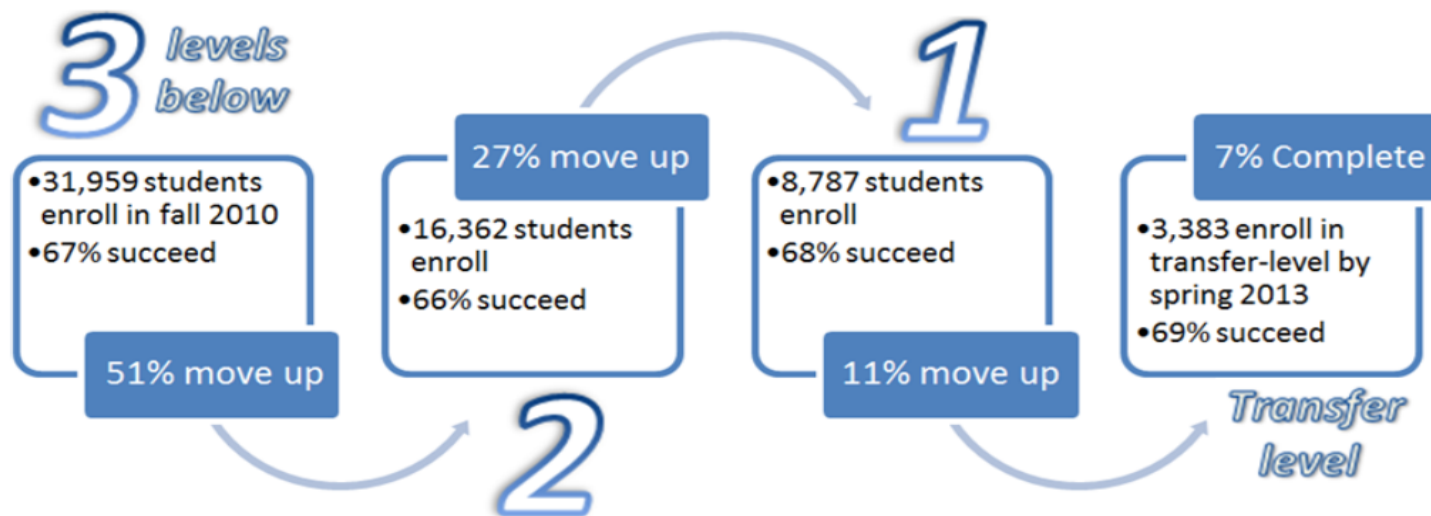


Figure 2. Statewide progression of students from three levels below transfer to transfer-level math from fall 2010 through spring 2013. source: Hayward and Willett (2014)

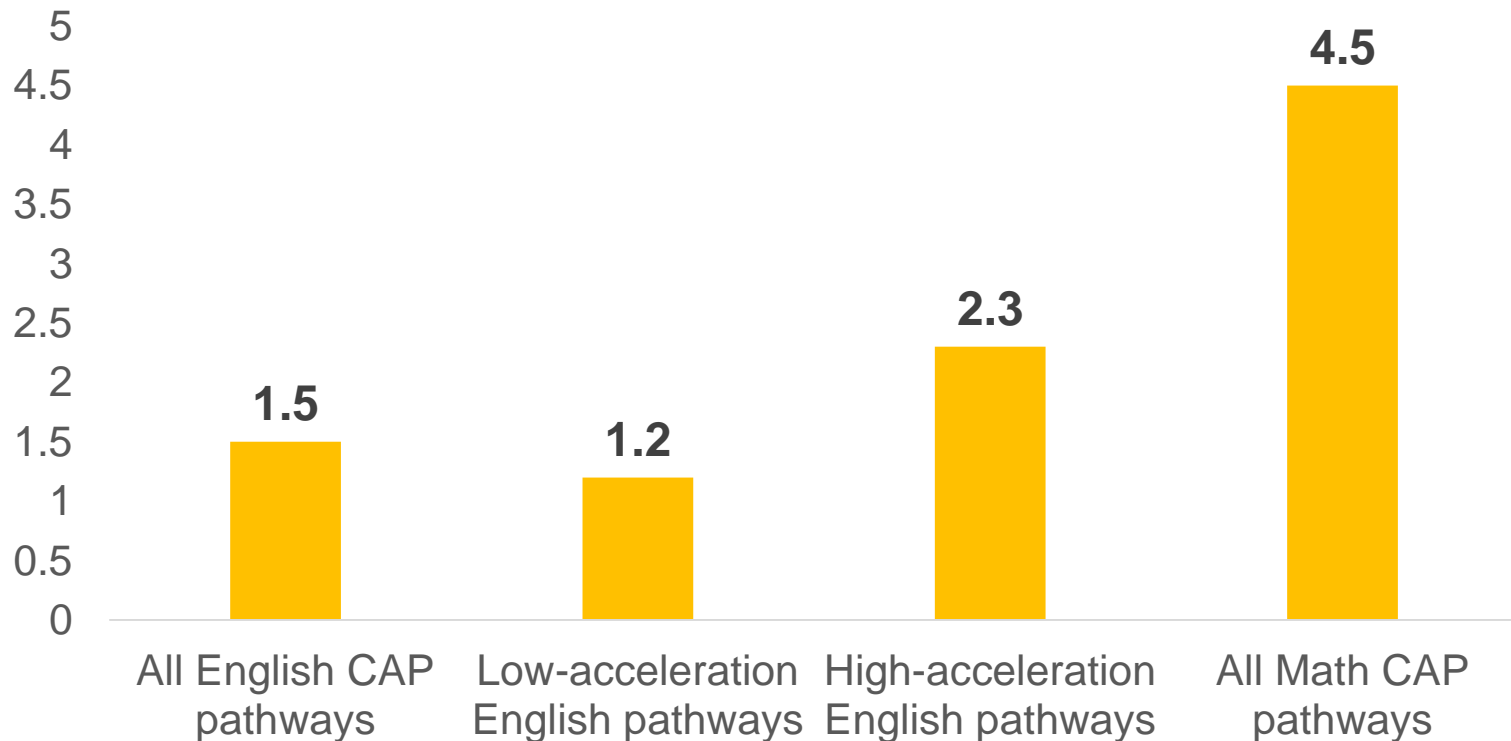
Belfield & Crosta (2012): Given the frequency of underplacement, the poor predictive validity of assessment tests and the lack of positive outcomes for student placed into remediation, it would be statistically defensible and really quite reasonable to just put all students into transfer-level work.

Main Findings

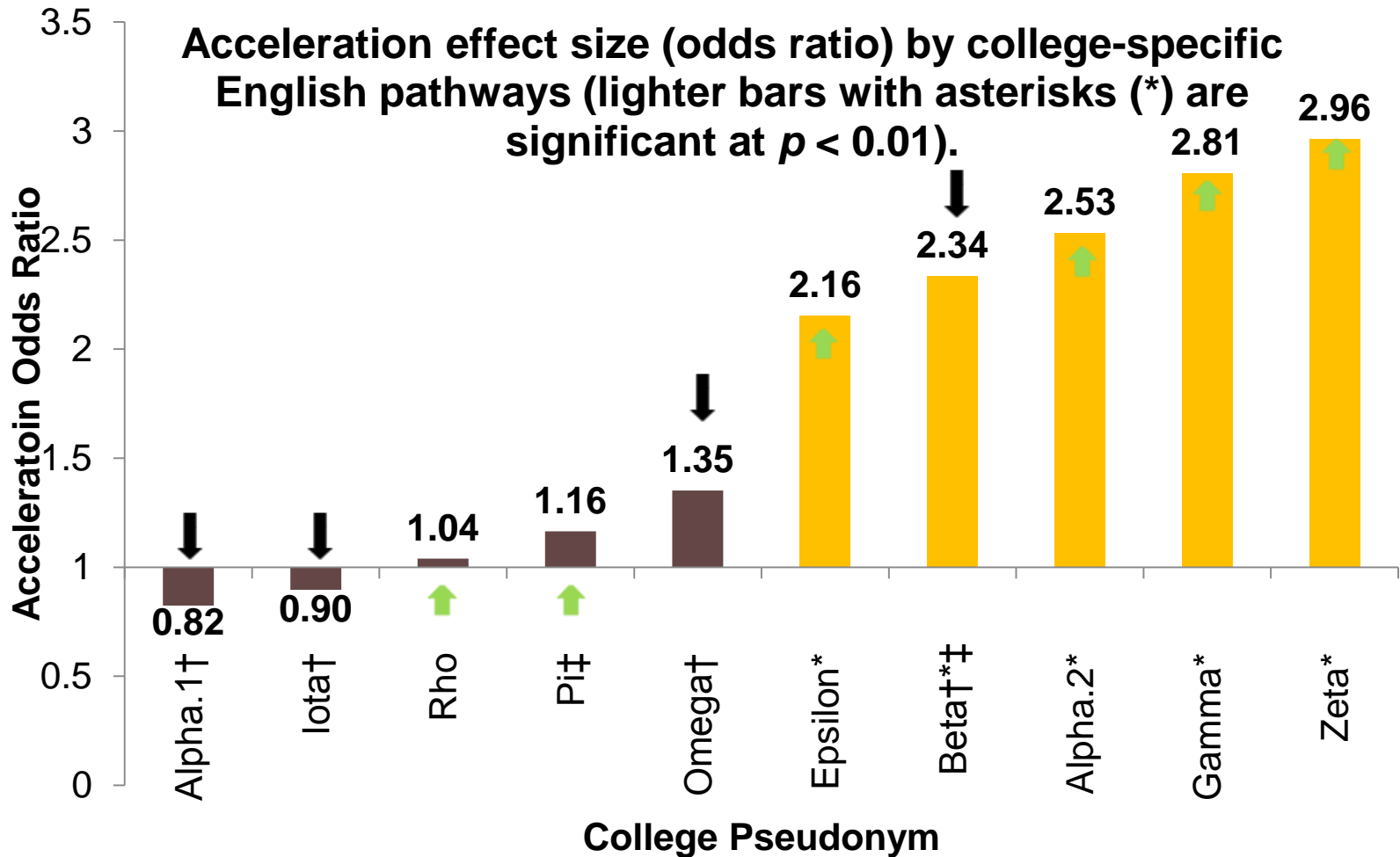
- Acceleration effects were large and robust
- Acceleration worked for students of all backgrounds
- Acceleration worked for students at all placement levels
- Implementation Mattered™

CAP Acceleration increased odds of sequence completion

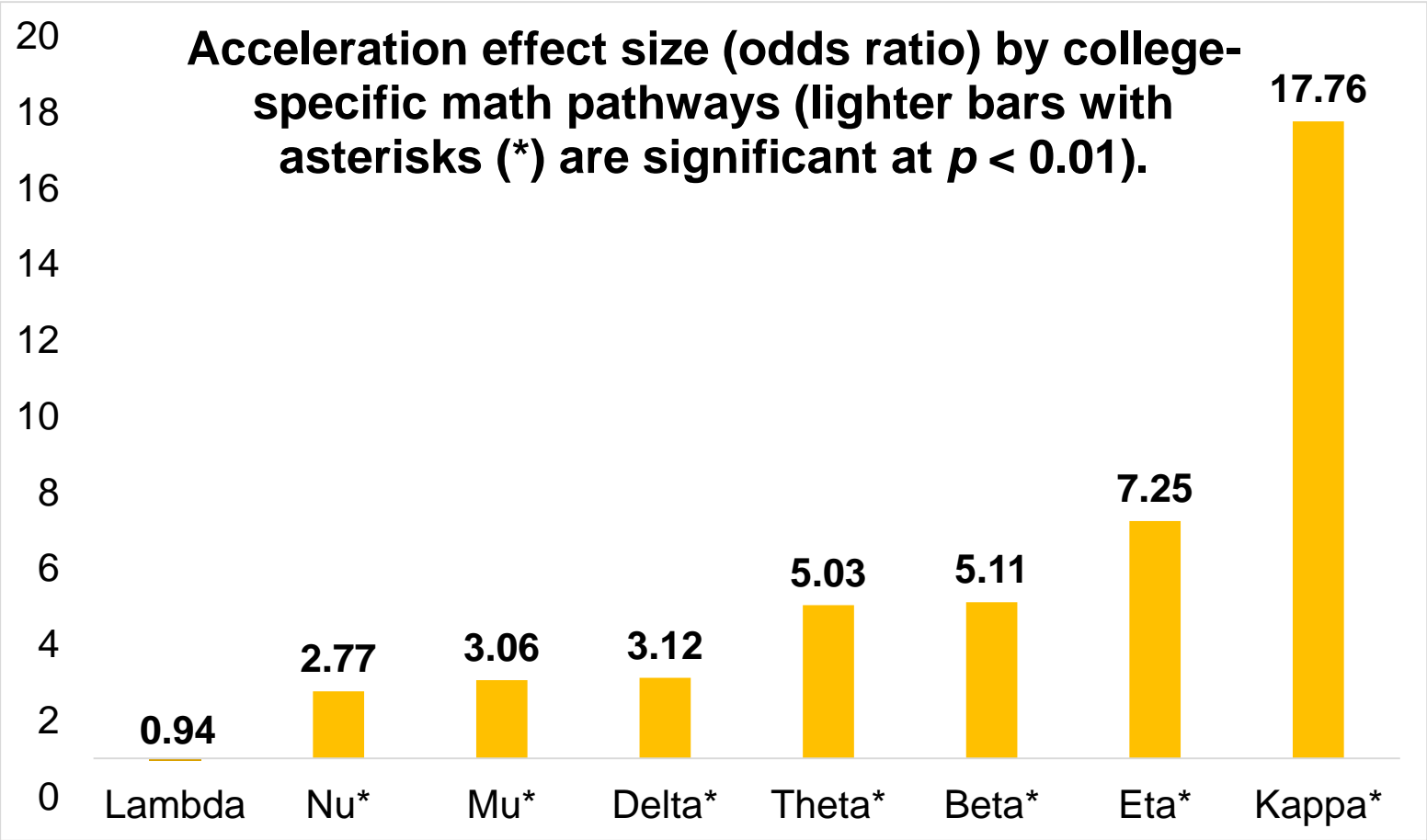
Acceleration Odds Ratio (Effect Size) for English CAP Colleges



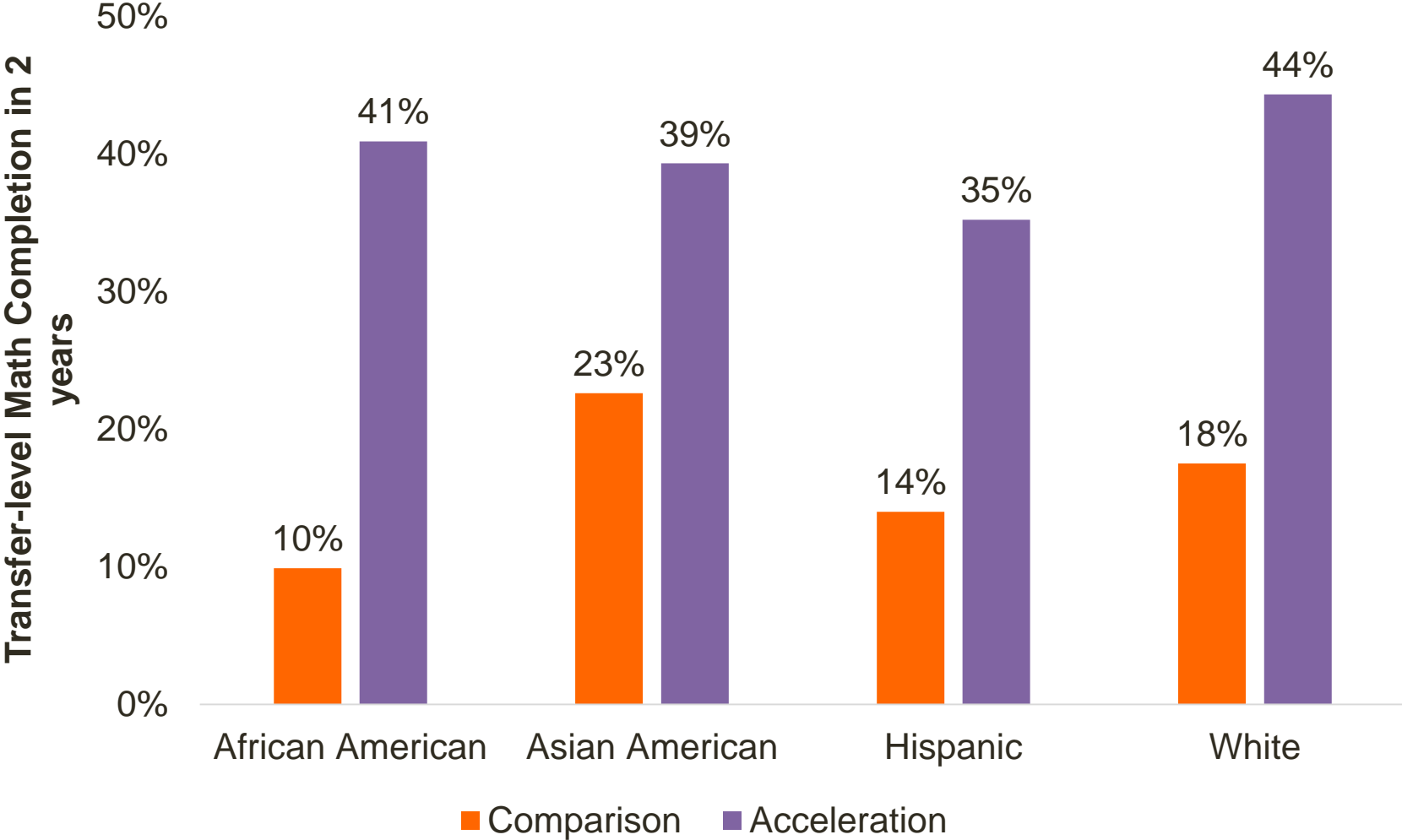
Pathway-specific results: English



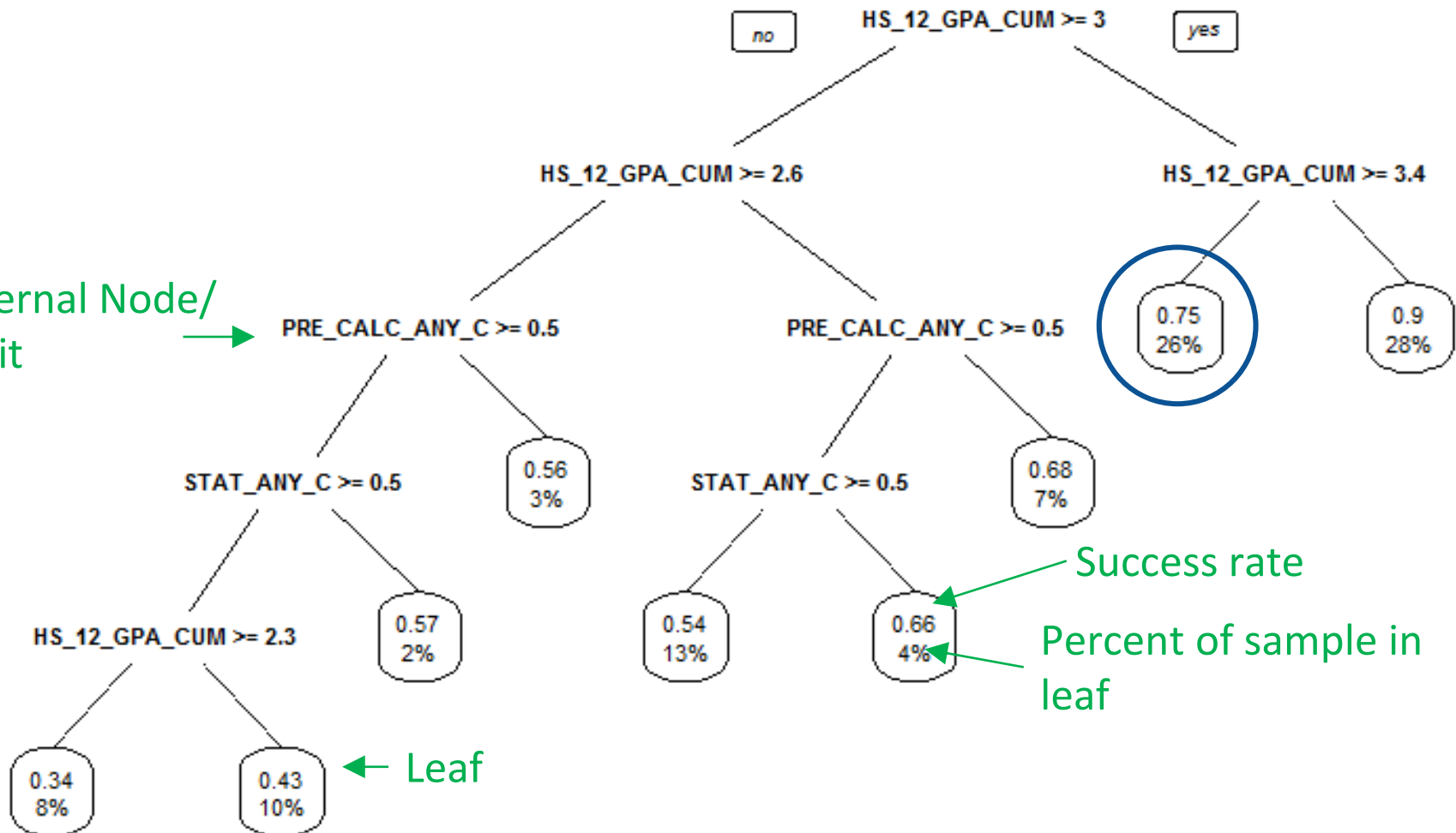
Pathway-specific results: Math



CAP: Completion of transfer-level math for traditional and accelerated pathways by ethnicity



Will only get a "C" in transfer course



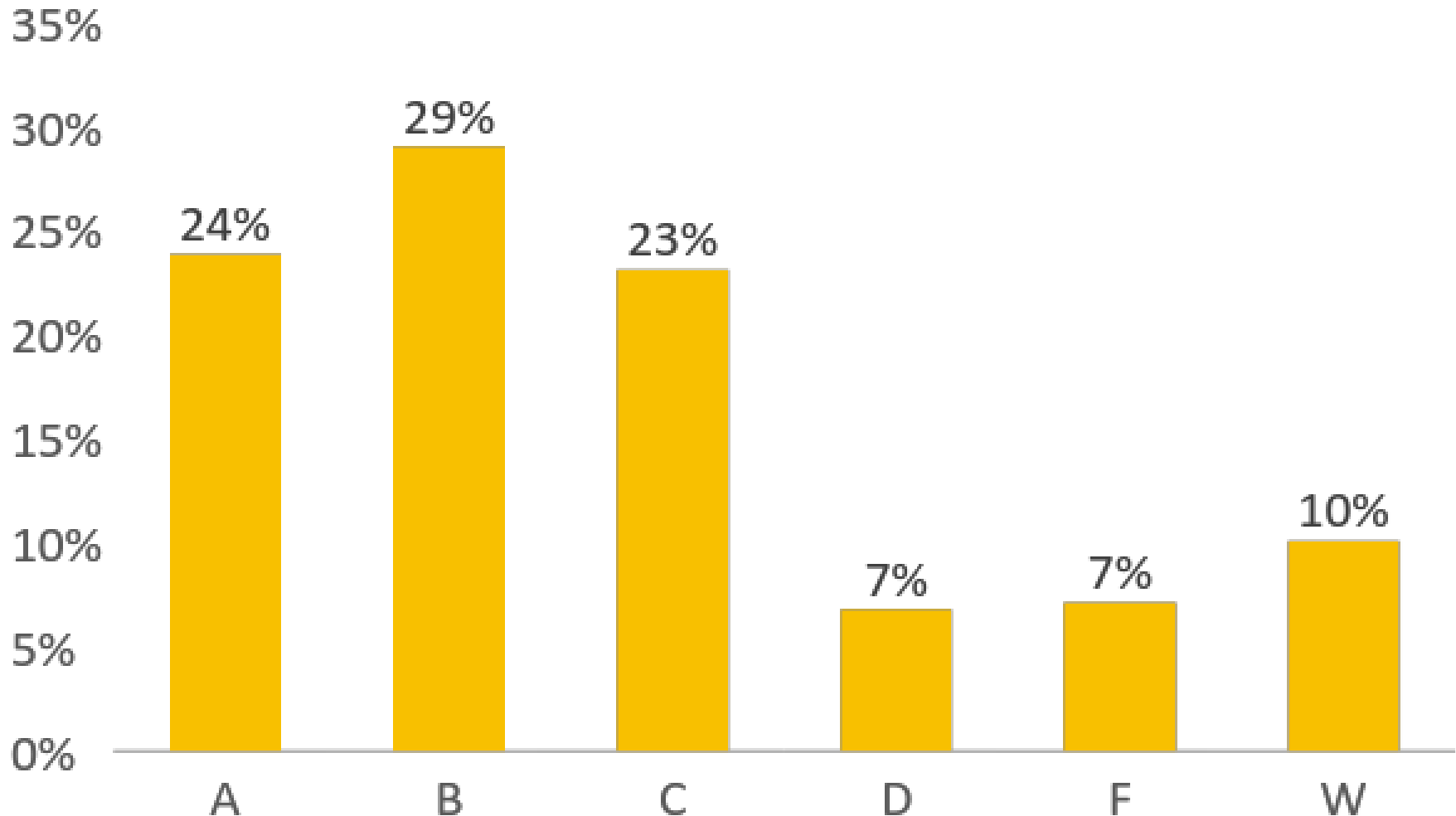
Internal Node/
Split

Success rate

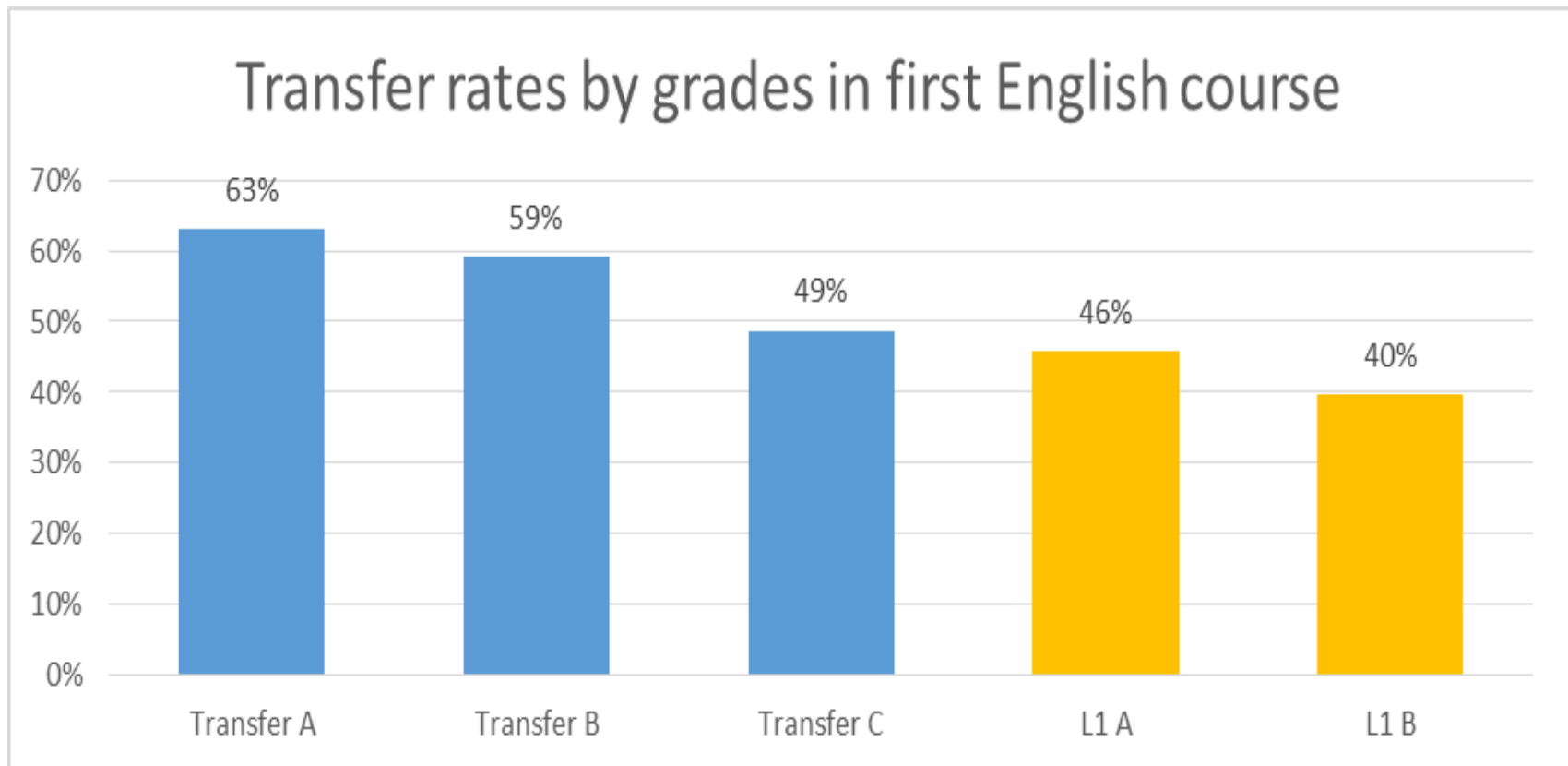
Percent of sample in
leaf

Leaf

Distribution of Statistics Node 8 (Circled)



Students who get a “C” in transfer-level won’t be able to transfer

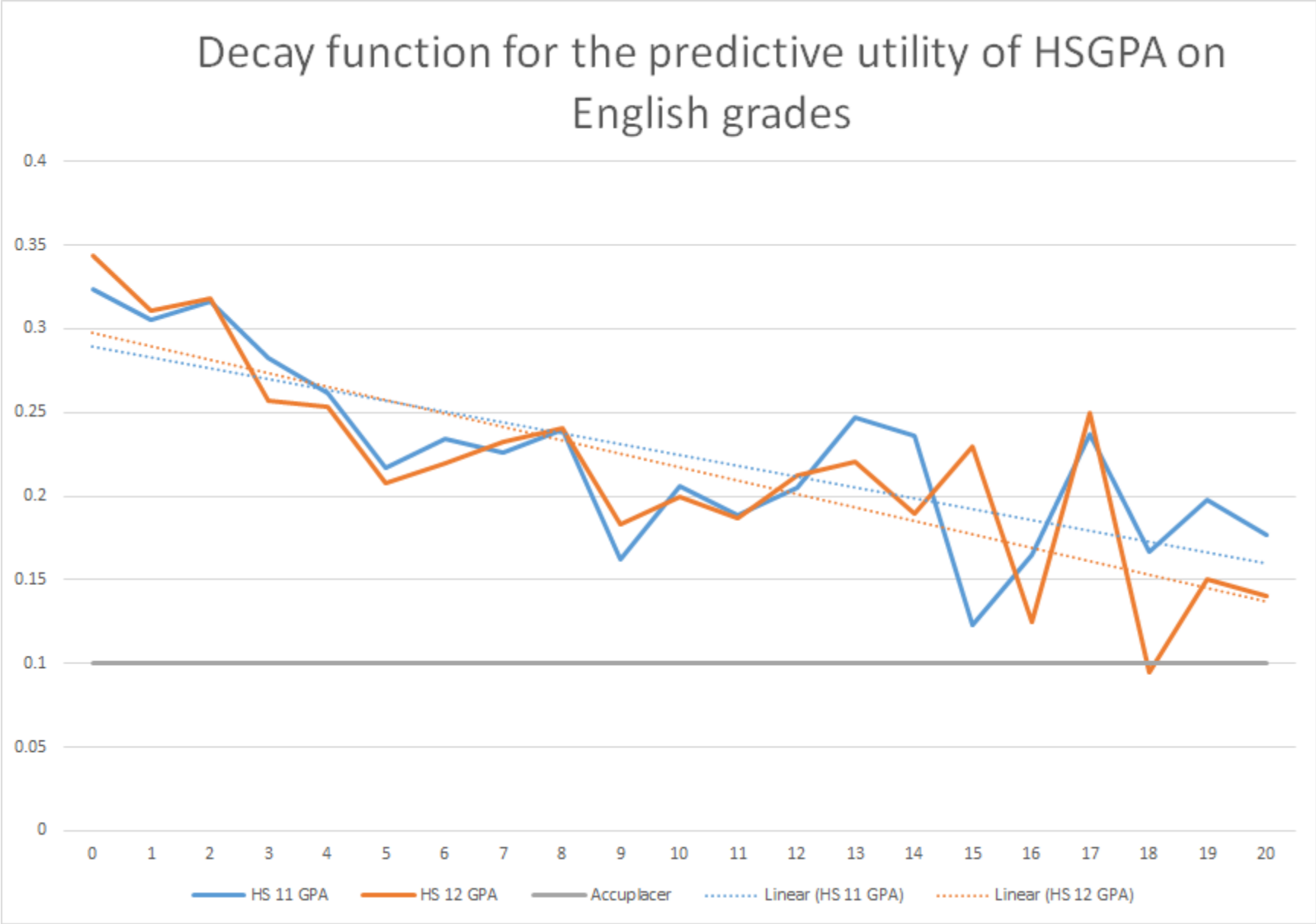


Irvine Valley College, first course enrolled in, Spring 2000 to Fall 2011 who took an English course. N= 28,279, transfer within 4 years.

High school GPA is only good for recent graduates

Decay function for the predictive utility of HSGPA on English grades

Correlation between Predictor and 1st CC English Grade

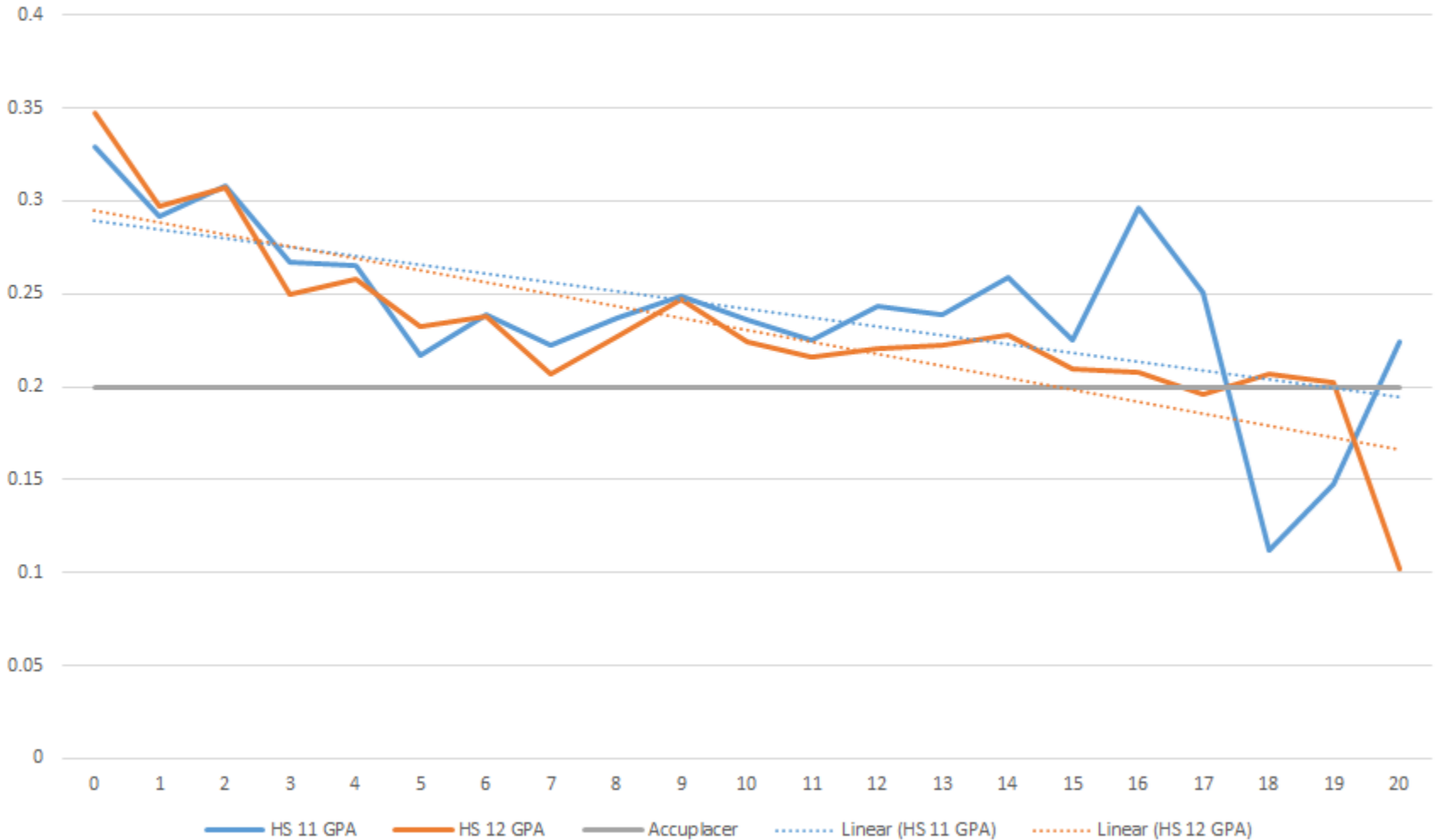


Semesters of Delay (approx. 6 months each)

High school GPA is only good for recent graduates

Decay function for the predictive utility of HSGPA on Math grades

Correlation between Predictor and 1st CC Math Grade



Semesters of Delay (approx. 6 months each)

MMAP Pilot Colleges

- NCV and Self-Report Piloting
- Implementation
- Outcomes
- Evaluation methods
 - Success rates
 - Throughput rates
 - Student and instructor surveys
- Next steps

How do we get started?

- MMAP Getting Started Guide and Welcome Packet:
<http://bit.ly/MMAPStart>
 - Convene locally appropriate decision-making group(s)
 - Identify/recruit key stakeholders/decision-makers
 - Discuss existing research and local implementation options
 - Review webinars, especially on how to implement:
<http://bit.ly/MMAPWebinars>
 - Work with Cal-PASS Plus to identify feeder district patterns, download retrospective data &/or upload new applicants for K-12 data

Group Work

- Who should be involved by function (i.e. Department Faculty, A&R, IT, Research, etc.)?
- What committees may be involved?
- What resources are needed?
- What funding sources are available?
- When is the next meeting?

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