

# Welcome & Housekeeping

- We encourage you to use the Q&A function for questions to the presenters, and the chat for comments or to share resources (including links) throughout the meeting
- Click the "Live Transcript" button to enable closed captioning
- Please note the webinar will be recorded and emailed to all registrants. It will also be posted on the CAPR website: <https://postsecondaryreadiness.org>.

Thank you for joining us!

# Latest CAPR Research on Developmental Education Reforms: Implications for Policy and Practice

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October 25, 2023

Nikki Edgecombe, CCRC  
Elizabeth Kopko, CCRC  
Sharon Fox, NorthWest Arkansas Community College  
Susan Sepanik, MDRC  
Nancy Shapiro, University System of Maryland

*This research is supported by the Institute of Education Sciences, U.S. Department of Education, through Grants [R305C140007](#) and [R305U200010](#) to Teachers College, Columbia University. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education. CAPR is also grateful to the Ascendium Education Group and the Bill & Melinda Gates Foundation for their support of this research.*

# Agenda

- CAPR Introduction
- Implementing Multiple Measures Assessment to Increase Access to College Level Courses
- Practitioner Perspective on Alternative Placement
- Supporting Underprepared Students: Math Pathways
- Role of Research in State Reform Efforts
- Q&A

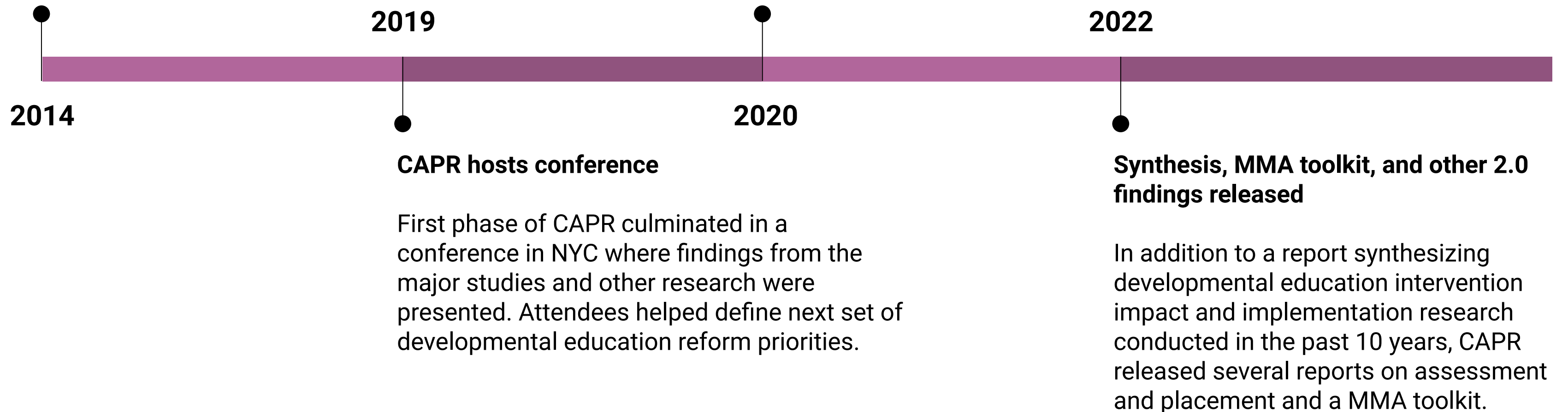
# CAPR Over the Years

## CCRC and MDRC launch CAPR

CAPR began with 3 major research studies: a national study of developmental education and evaluations of multiple measures placement and of the Dana Center Mathematics Pathways

## CAPR 2.0 begins

With funding from IES and Ascendium, CAPR begins long-term follow-up studies of original evaluations and multiple measures research and technical assistance



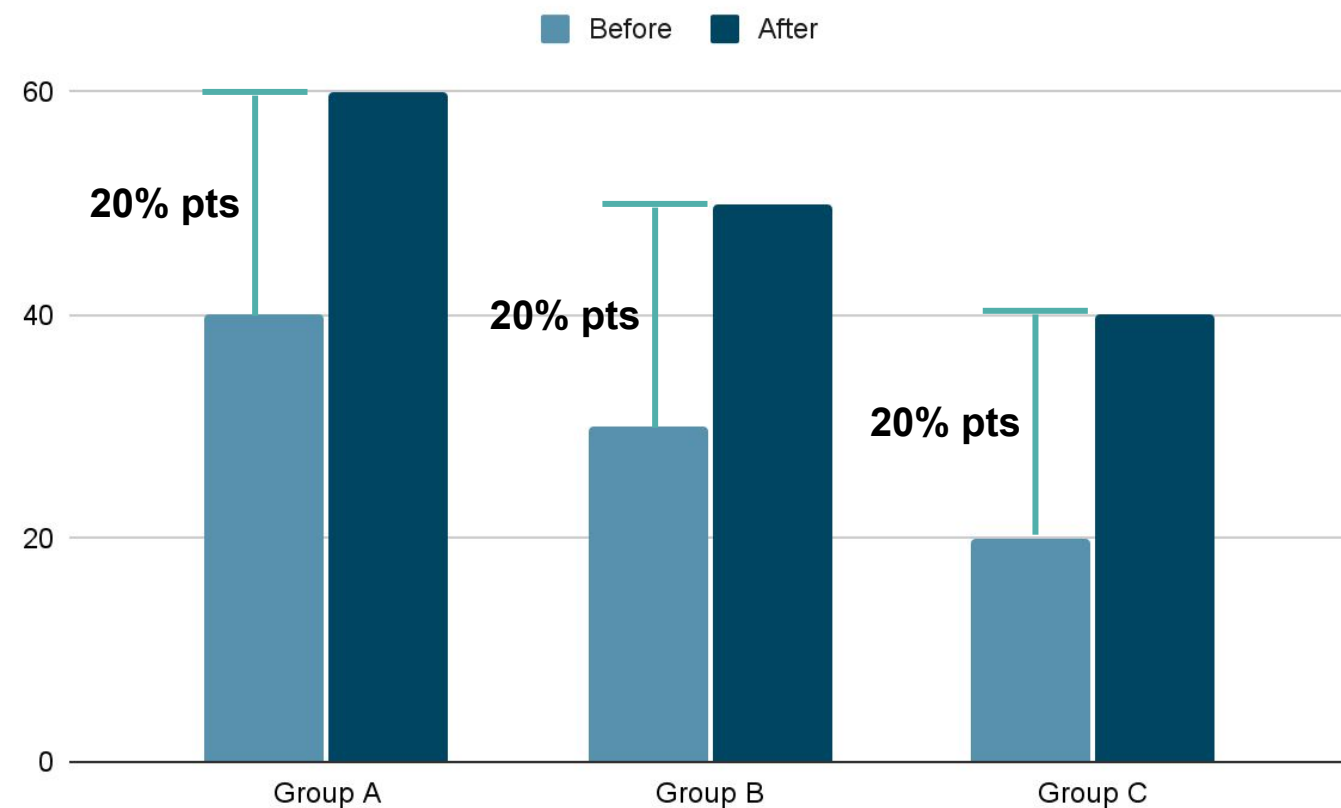
# Insights from the Research



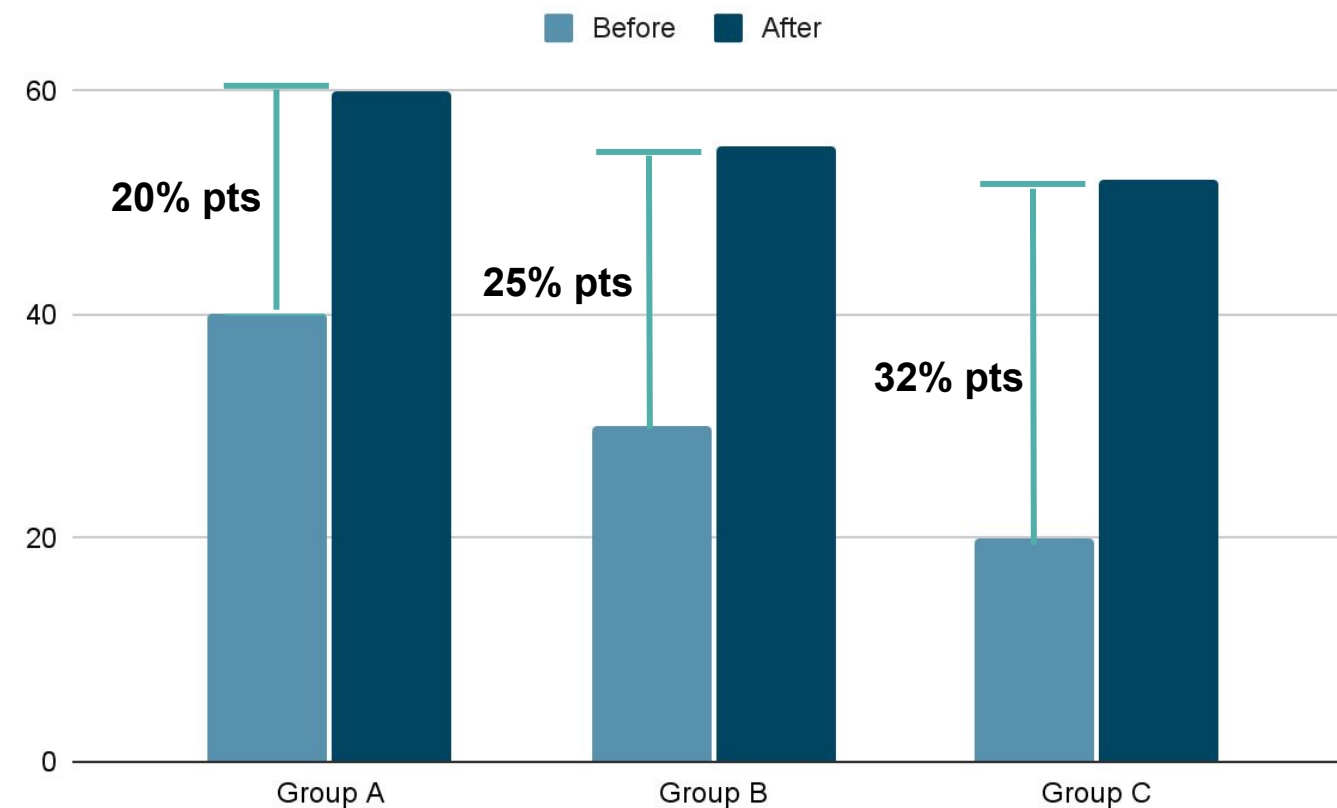
- 1. Grant students access to college-level math and English courses.**
- 2. Provide targeted and tiered supports to address students' academic and nonacademic needs.**
- 3. Employ contextualized curriculum and student-centered pedagogy.**
- 4. Use equity-minded approaches for design and implementation.**
- 5. Implement developmental education reforms alongside comprehensive, sustained supports to improve long-term outcomes.**

# Generating More Equitable Outcomes

On the whole, developmental education reforms with positive impacts have improved outcomes for all groups equally.



To achieve more equitable outcomes, reforms must begin to reduce existing disparities in outcomes across groups as well.



# **Implementing Multiple Measures Assessment to Increase Access to College-Level Courses**

**Elizabeth Kopko  
CCRC**



# A Need for Placement Alternatives

- Single-test placement systems do a **poor job of placing students** (Belfield & Crosta, 2012; Scott-Clayton, 2011)
- Multiple measures assessment (MMA) provides a **more holistic picture of students' academic preparation** by relying on a broader set of measures that reflect achievement over time (e.g., high school GPA, coursetaking patterns, noncognitive assessments)
- CAPR researchers led an efficacy study to determine the causal effect of using an **algorithmic approach to MMA** compared to status quo

# Study Design

- Seven State University of New York (SUNY) community colleges
- Developed **algorithms (combining test scores + HS transcripts)** to predict students' probability of success in college-level courses
- Students testing between fall 2016 and fall 2017 were **randomly assigned** to be placed using either the existing placement method (business-as-usual) or the MMA algorithm (program group)
- Academic outcomes of 12,796 students were tracked for **at least nine semesters** from random assignment

# How MMA Changed Students' Course Placements

Test Scores: College-Level

Test Scores: College-Level

Test Scores: Dev Ed

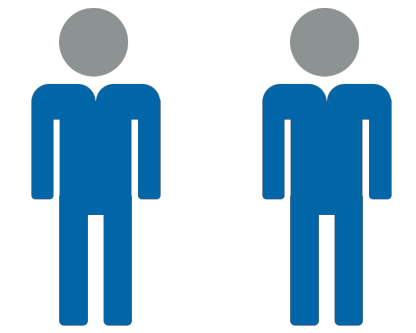
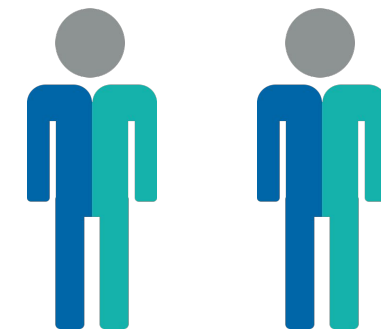
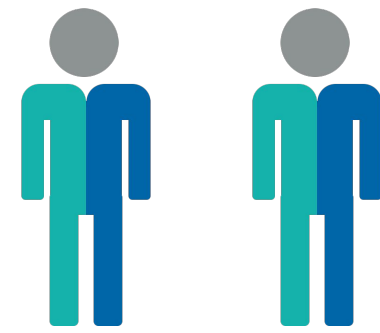
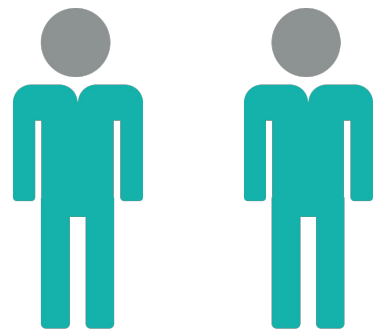
Test Scores: Dev Ed

MMA: College-Level

MMA: Dev Ed

MMA: College-Level

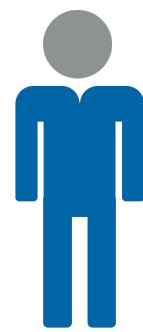
MMA: Dev Ed



**RANDOMIZATION**

Business-as-Usual  
(Placed by *Test Scores*)

Program Group  
(Placed by *MMA*)



College-Level

College-Level

Dev Ed

Dev Ed

College-Level

Dev Ed

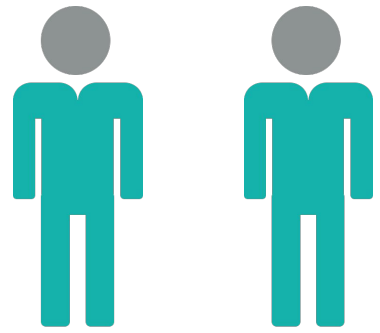
College-Level

Dev Ed

# How MMA Changed Students' Course Placements

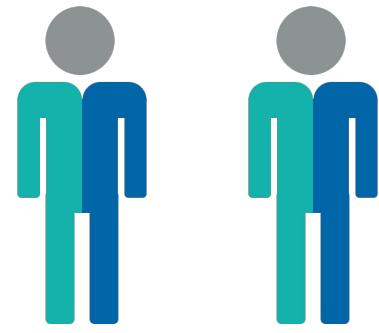
Test Scores: College-Level

MMA: College-Level



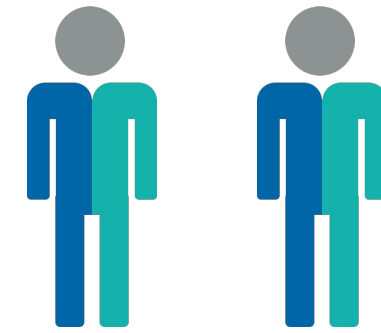
Test Scores: College-Level

MMA: Dev Ed



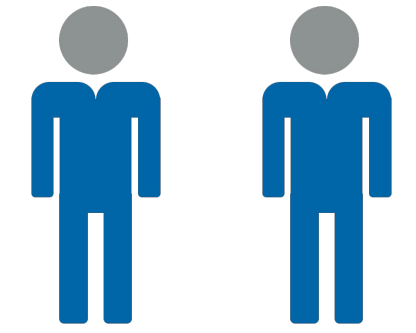
Test Scores: Dev Ed

MMA: College-Level



Test Scores: Dev Ed

MMA: Dev Ed

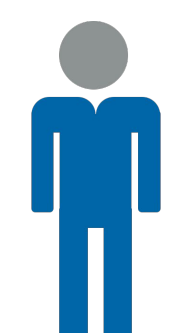


**RANDOMIZATION**

Business-as-Usual  
(Placed by *Test Scores*)



Program Group  
(Placed by *MMA*)



College-Level

College-Level

Dev Ed

Dev Ed

College-Level

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College-Level

Dev Ed

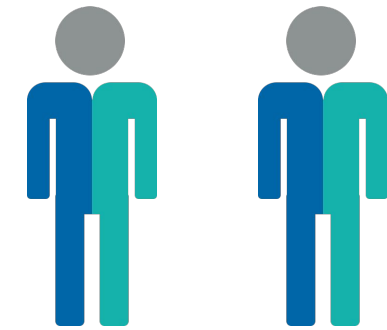
# Bump Zones

**Bump-up zone.** Students had ACCUPLACER scores that fell below the threshold for placement in college-level courses but had algorithm scores that exceeded the threshold for placement in college-level courses.

**Bump-down zone.** Students had ACCUPLACER scores that exceeded the threshold for placement in college-level courses but algorithm scores that fell below the cutoff for college-level course placement.

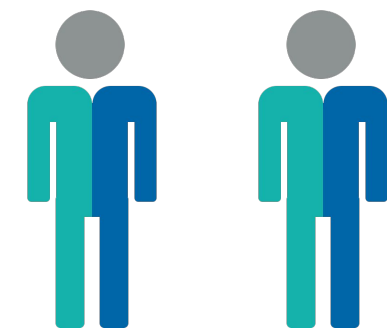
*BAU: Dev Ed*

*Program Group: College-Level*



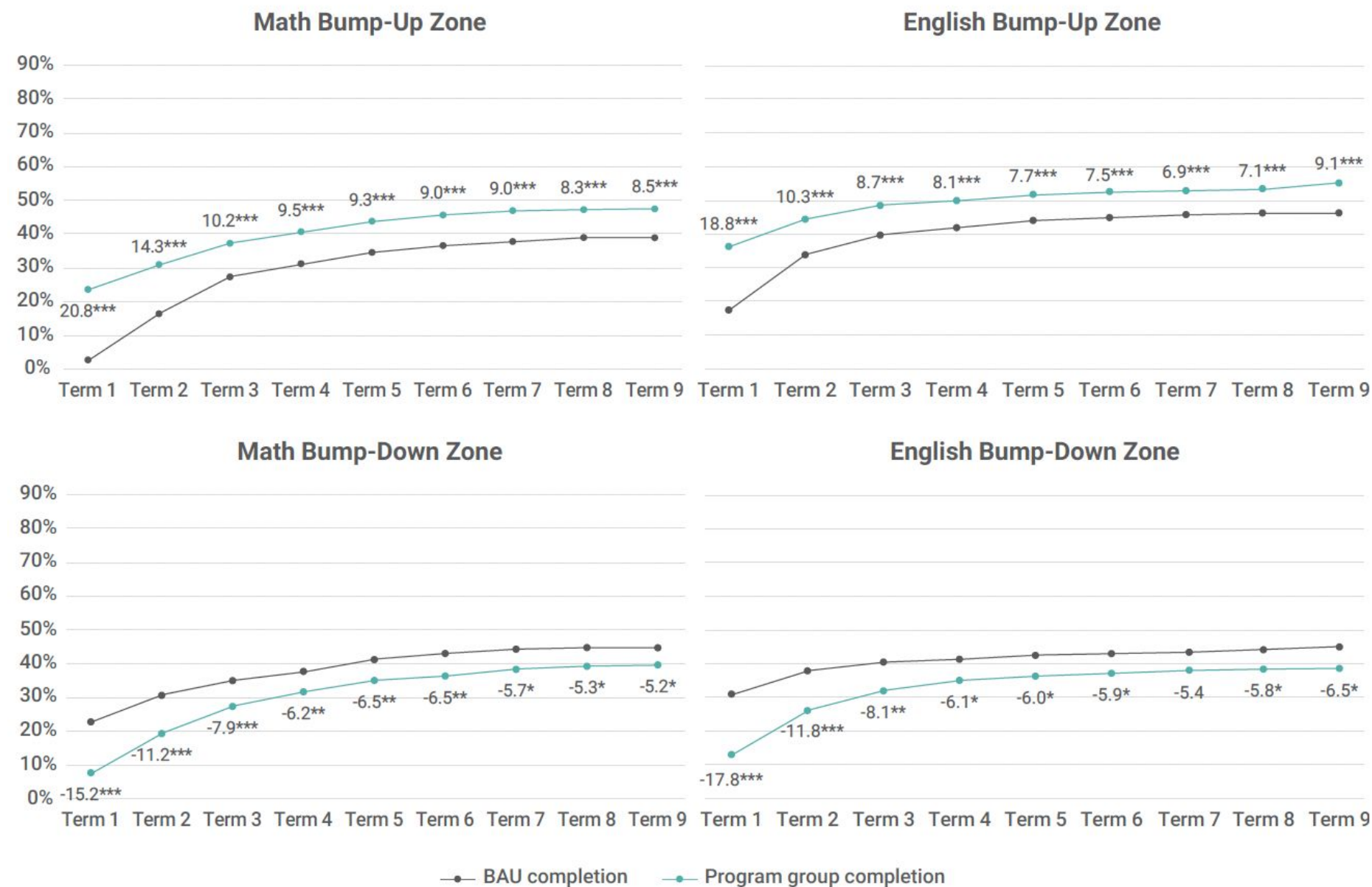
*BAU: College-Level*

*Program Group: Dev Ed*



# When given access to college-level coursework via MMA, many students succeed; Students who are denied immediate access fare poorly.

College-Level Course Completion Among Students in Bump Zones

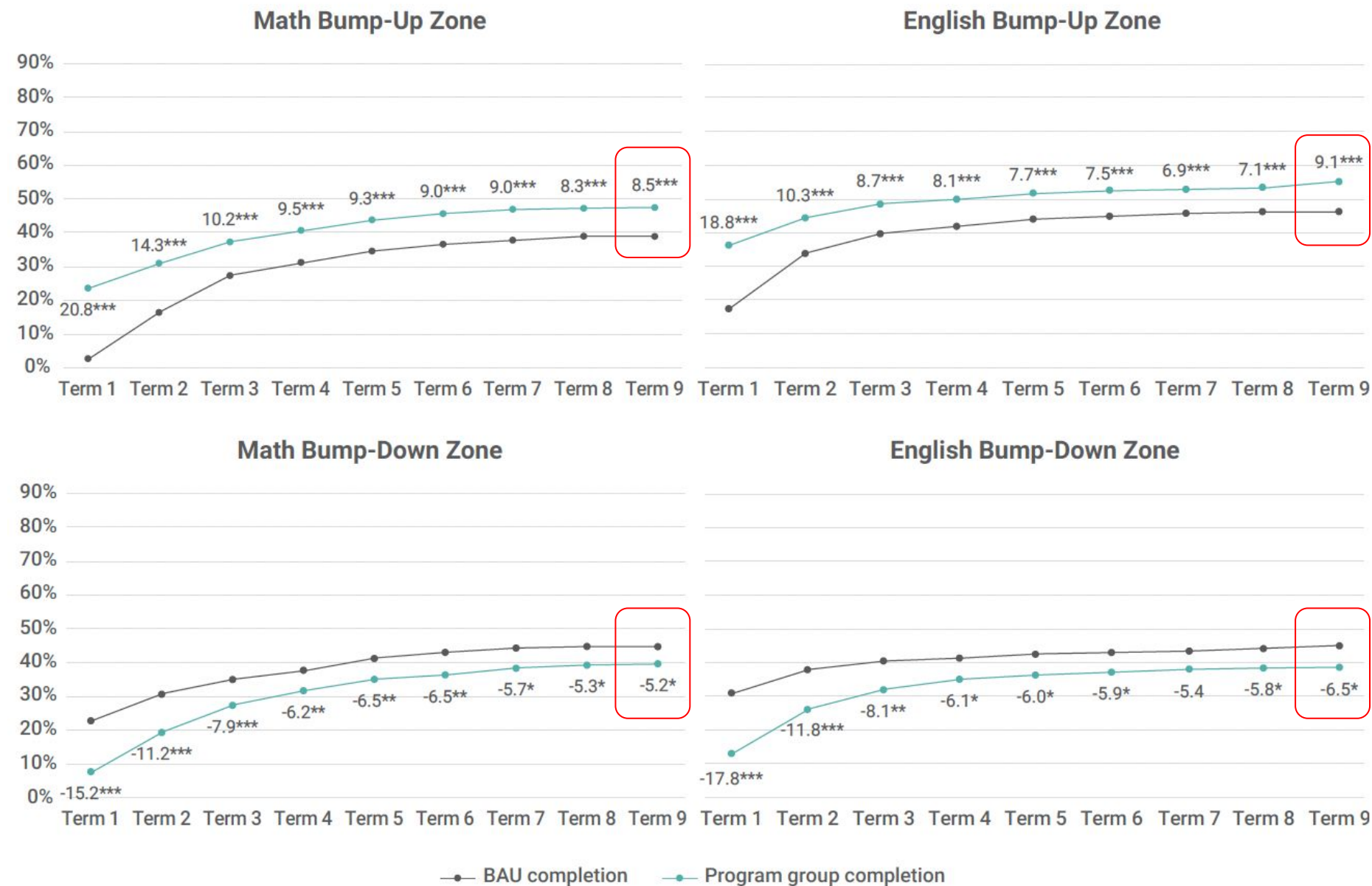


NOTE: Data labels represent impact estimates, or the percentage-point difference between the mean outcomes for business-as-usual (BAU) and program group students.

\*\*\*p < .01, \*\*p < .05, \*p < .10.

# Bumping up students in math was just as effective as bumping up students in English.

College-Level Course Completion Among Students in Bump Zones

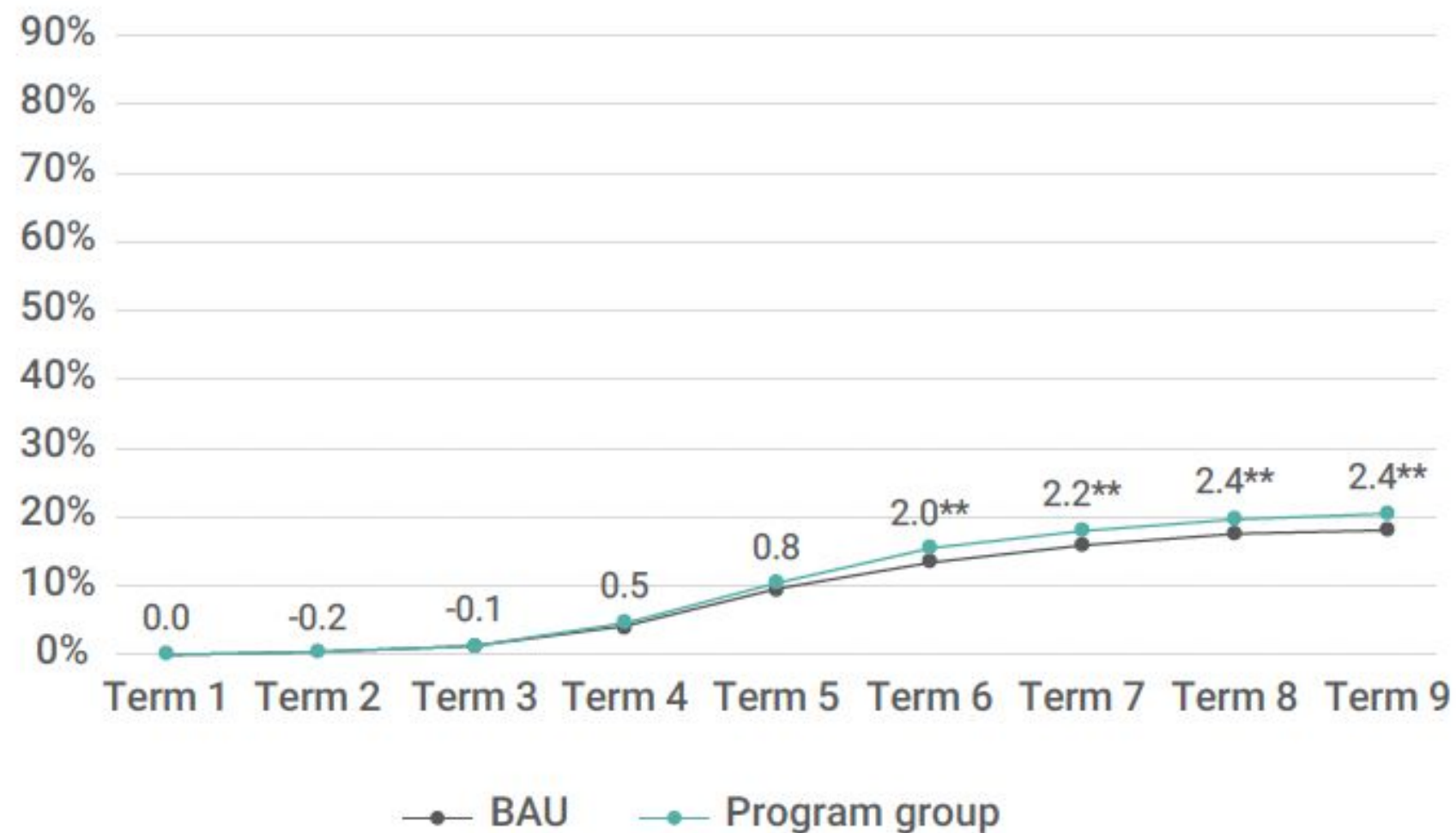


NOTE: Data labels represent impact estimates, or the percentage-point difference between the mean outcomes for business-as-usual (BAU) and program group students.

\*\*\*p < .01, \*\*p < .05, \*p < .10.

# Access to college-level coursework may drive academic momentum and success.

## Credential Attainment or Transfer Among Students in the English Bump-Up Zone



NOTE: Data labels represent impact estimates, or the percentage-point difference between the mean outcomes for business-as-usual (BAU) and program group students.

\*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .10$ .



# MMA had little to no impact on differences in outcomes within student demographic groups (among students in the full sample).

- After nine terms:
  - Female program group students were 2 pp more likely to complete a college-level math course
  - Female, Pell-recipient, and Black program students were more likely to complete a college-level English course (3 pp, 3pp, and 4 pp, respectively)
- MMA did not reduce any disparities between gender subgroups, Pell status subgroups, or race/ethnicity subgroups in the rate of completion of college-level math or English courses

# Implications

- MMA should be used to expand access to college-level courses by giving many more students college-level placements.
- Colleges should use a form of MMA that is relatively easy to adopt and that mitigates the risk of lowering any student's placement.
- MMA's potential to improve equity requires deliberate consideration of the experiences of underserved populations.



# Practitioner Perspective on Alternative Placement

Sharon Fox

Dean, Communication and Arts

visit our website [www.nwacc.edu](http://www.nwacc.edu)

# What should you know about NWACC?

It is the largest Community College in Arkansas

- Students F23: 8,409
- Open enrollment institution
- Economic impact (2020-21 study): \$254.2 million

# CAPR Data Colleges in Arkansas

- **Northwest Arkansas Community College**
- South Arkansas University Technical College
- University of Arkansas, Cossatot
- Arkansas State University, Mid South
- South Arkansas University, Magnolia
- Arkansas State University, Jonesboro

# Developmental Options at NWACC

## English

- Composition I
- Composition I plus Lab (co-req)
- Composition I with Reading Class/Writing Class (co-req - stopped Fall 2021)
- Composition I plus Studio (co-req - started Spring 2022)
- Composition I plus Comp Review (ELL)

## Math

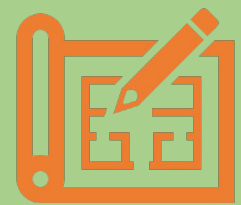
- Pre-reqs – foundations of algebra, beginning algebra, intermediate algebra,
- College Algebra
- College Algebra with Intermediate Algebra (co-req)
- College Algebra with Review (co-req)
- Quantitative Reasoning
- Quantitative Reasoning with Review (co-req)

# Multiple Measures: NWAACC



Pilot Implemented:

Fall 2020 – pandemic!



Focus Prior to implementation: Accuplacer; ACT; SAT

Writing Sample

# Standards of College Readiness for Reading and Writing

NorthWest Arkansas Community College

June 22, 2020

Any of the following scores/measures equals placement into ENGL 1013, College Composition:

- 19 ACT English
- 19 ACT Reading
- 480 SAT Critical Reading
- 480 SAT Writing
- 78 ACCUPLACER Classic Reading Comprehension
- 83 ACCUPLACER Classic Sentence Skills
- 260 ACCUPLACER Next Generation Writing
- 252 ACCUPLACER Next Generation Reading
- 2.85 High school G.P.A.
- 165 GED
- 428 ACT Aspire 10 Reading
- 428 ACT Aspire 10 English
- 5 International Baccalaureate (IB) (any test)
- 4 ELPA (Level)
- 3 Advanced Placement (any subject test)
- Completion of college coursework elsewhere (verified by transcript) with a grade of C or better from an accredited college or university.





# Who needed to be in the discussion?

- Math
- English
- English for College and Career
- Assessment
- Registrar
- Financial Aid
- Enrollment Services
- Veteran Services
- First Year Successful Student
- Chief Academic Officer
- Associate VP for Learning and Institutional Effectiveness
- Chief Information Officer
- Institutional Research
- Testing Services
- Disability Resource Center
- Adult Education

# The first semester of implementation: Fall 2020

Fall 2020				
New Freshmen Placing Dev by Test Scores				
Possibly Placed by Multiple Measures				
High School GPA				
ENGL 1013	2-2.99	3-3.49	3.5+	Total
A	7	23	23	53
B	10	27	7	44
C	7	21	5	33
D	1	7	4	12
F	5	4	2	11
FP	14	15	2	31
I			1	1
W	3	3	3	9
WN	2	3		5
<b>Total</b>	<b>49</b>	<b>103</b>	<b>47</b>	<b>199</b>
Successful (A-C)	24	71	35	130
% Successful	49%	69%	74%	65%
Overall New Freshmen ENGL 1013 Success Rate				
Successful (A-C)	202	195	175	572
% Successful	56%	65%	81%	64%
High School GPA				
MATH 1203	2-2.99	3-3.499	3.5+	Total
A			4	4
B		6	6	12
C		4	3	7
D		3		3
F	1	7	1	9
FP		4	1	5
W		3	1	4
WN		1	2	3
<b>Total</b>	<b>1</b>	<b>28</b>	<b>18</b>	<b>47</b>
Successful (A-C)	0	6	10	16
% Successful	0%	21%	56%	34%
Overall New Freshmen MATH 1203, 1203R Success Rate				
Successful (A-C)	34	65	97	196
% Successful	47%	45%	75%	56%
Notes				
Fall 2020 'B' New Freshmen Only				
ENGL 1013 and MATH 1203, 1203R Only				
Did not research previous ENGL or MATH coursework				



# Math

- HS GPA (threshold varies)
- HS course-taking (Pre-Calculus or Statistics with a C)
- ACT/SAT/Accuplacer

# English

- HS GPA (threshold 3.0)
- ACT/SAT/Accuplacer

## Where are we right now?



	Fall 2018	Fall 2023	%F18	%F23
Taking ENGA course	642	386	8.1%	4.6%
Taking Dev MATH course	1,268	744	16.0%	8.9%
Taking both ENGA/Dev MATH courses (*Also counted in ENGA/Dev MATH breakout)	366	205	4.6%	2.5%
Total Students	7,938	8,317		



# Obstacles

Advisor turnover

Equity: IEP, ELL students,  
etc.

Previous college classes: no  
standard for the course  
taken

First week growing pains:  
LOEP, incomplete  
information

# What's next?

- Final decisions on cut-off scores for Math and English courses (at all levels).
- Successful placement of our ELL students
- Successful placement of students with IEPs

Planned implementation: Fall 2024 catalog

# **Supporting Underprepared Students: Math Pathways**

**Susan Sepanik  
MDRC**

# Dana Center Math Pathways

## Long-term Follow-up Study

- *What is Dana Center Math Pathways?*
  - Developmental math reform began in 2011
  - Four key components:
    - Multiple math pathways aligned to different fields of study
    - Accelerated developmental math sequence
    - Evidence-based, student-centered curriculum and pedagogy
    - Student success strategies





# Dana Center Math Pathways Long-term Follow-up Study



- **Long-Term Follow-up**
  - Individual-level randomized controlled trial at 4 Texas colleges
  - Follows students for 5 years after random assignment
  - Looks at:
    - College Math Completion,
    - Academic Progress (credits earned),
    - Academic Attainment (credential attainment or enrollment at a 4-year college)

# Dana Center Math Pathways Long-term Follow-up Study

- **Long-term Follow-up Findings**

- After 5 years, DCMP still had a positive impact on:
  - Completion of first college-level math course (6 pp)
- After 5 years, no significant impacts were found on:
  - Overall college credits earned
  - Credential attainment or enrollment at a 4-year college
- DCMP best supported students who tested two or more levels below college ready and female students.
- No significant differences were found between racial and ethnic groups

# The Role of Research in State Reform Efforts

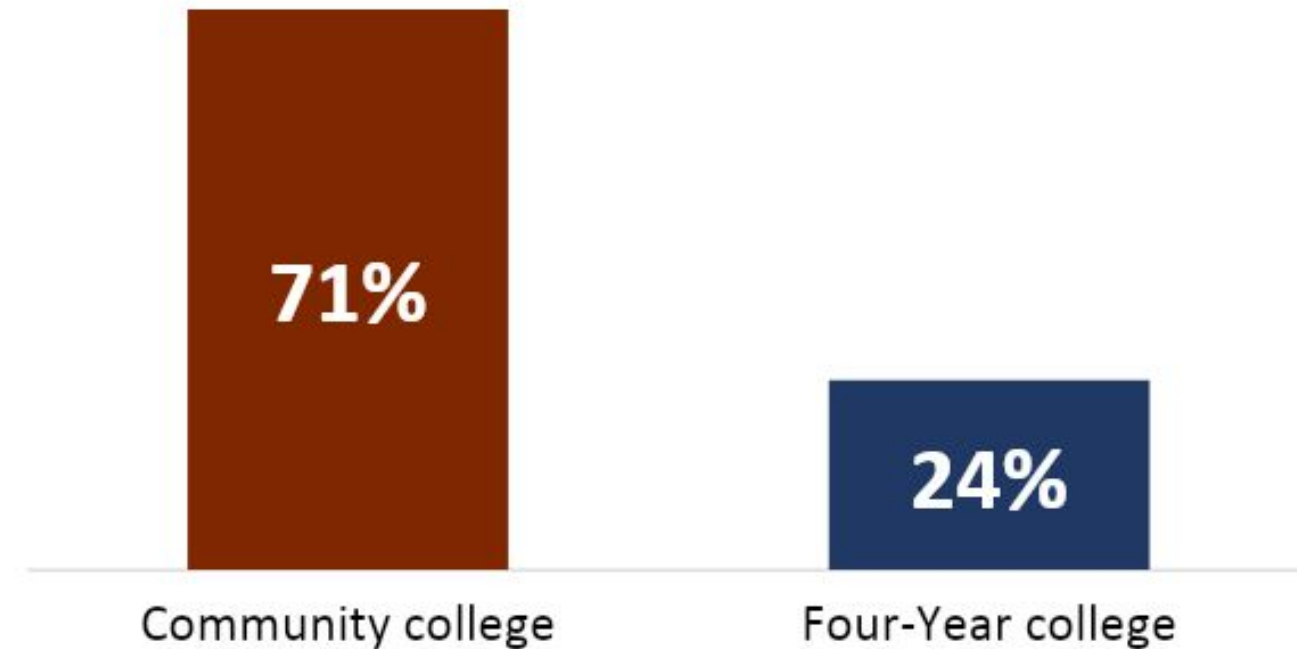
Nancy S. Shapiro  
University System of Maryland

October 25, 2023

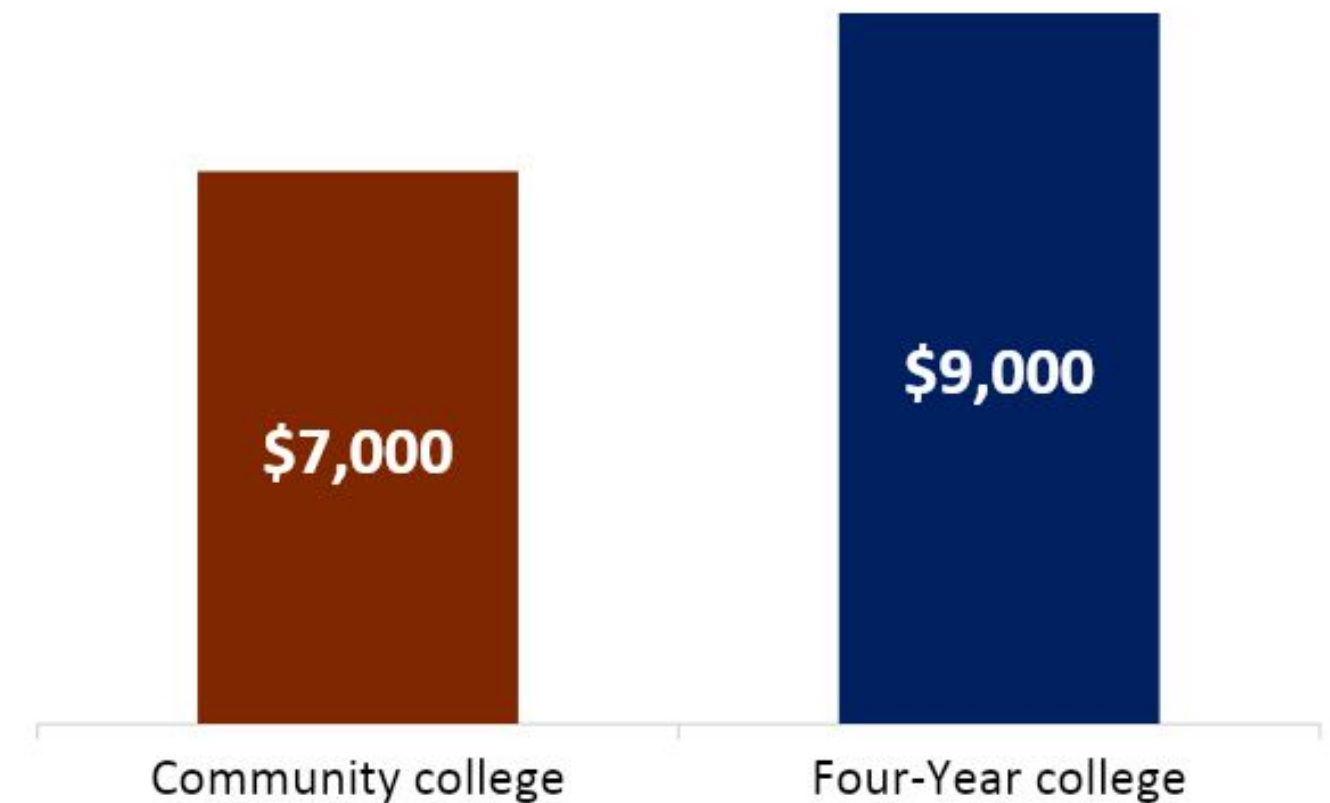


# What problem were we trying to solve in Maryland?

Students testing into developmental math in Maryland



Cost of Developmental Education (per student per year)



## What is the USM and why did this land in our office?



- USM is the **most diverse public system** in the country
  - Serves **170,000** students
  - **Institutionally** and **geographically** diverse



- Acts as a “**convener**” within and across the system



- Had an existing **P20 Policy Office** and access to **federal grant money**

## Common goals

- **Reduce time spent** in developmental/remedial math
- Increase the percentage of 1<sup>st</sup> year students successfully completing **developmental math** and **general education math**
- **Develop math pathways** to place students in more appropriate courses for their educational goals and degree program area
- Provide **better advising** for incoming first-years to support other goals



**New developmental courses are designed and piloted**



**Students enroll in either the new or existing developmental math course**



**Data are collected from participating institutions over four semesters.**

**Cohort 1: Summer/Fall 2017 to Winter/Spring 2018**

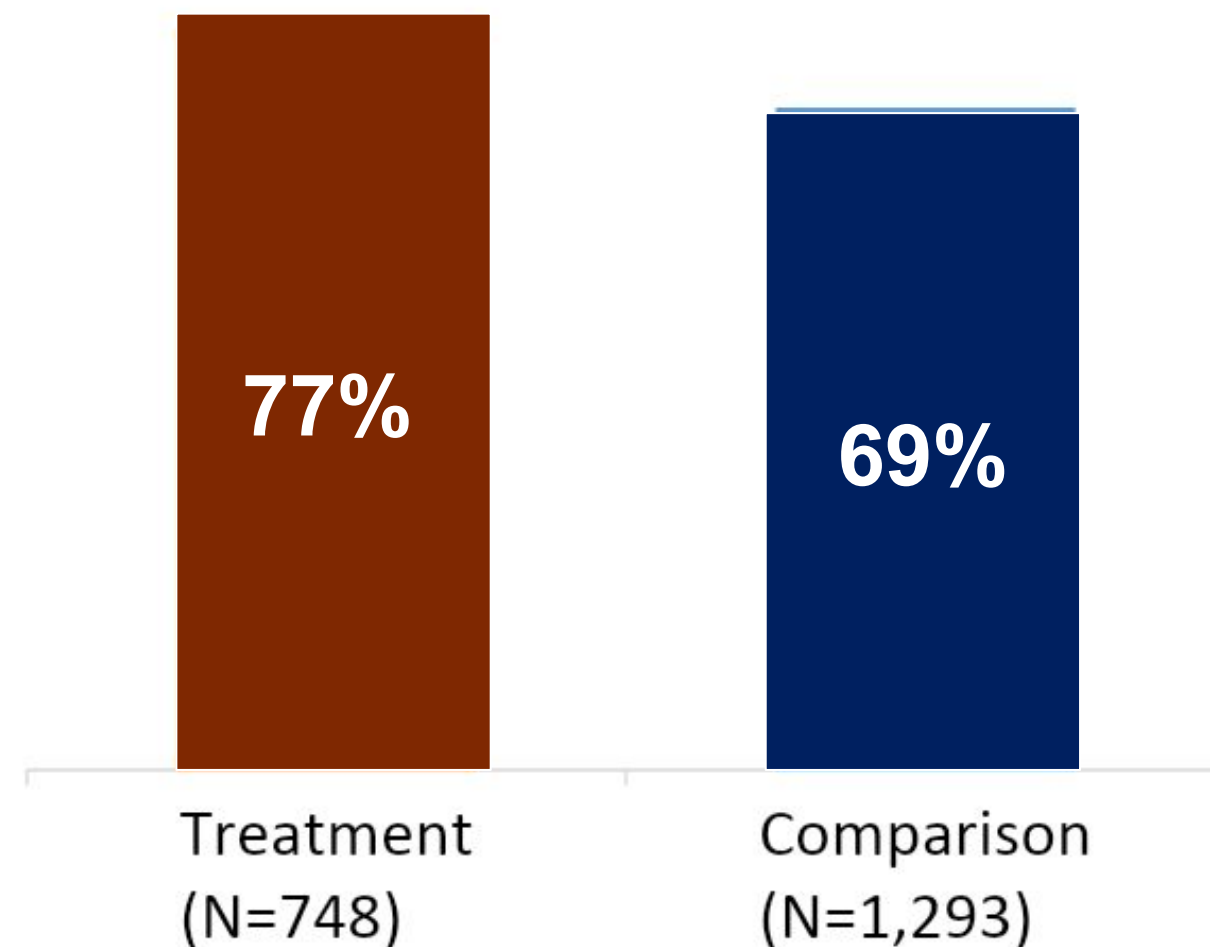
**Cohort 2: Winter/Spring 2018 to Summer/Fall 2019**



**Additional enrollment/graduation data are collected from National Student Clearinghouse for transfer students**

## **MMRI program logic**

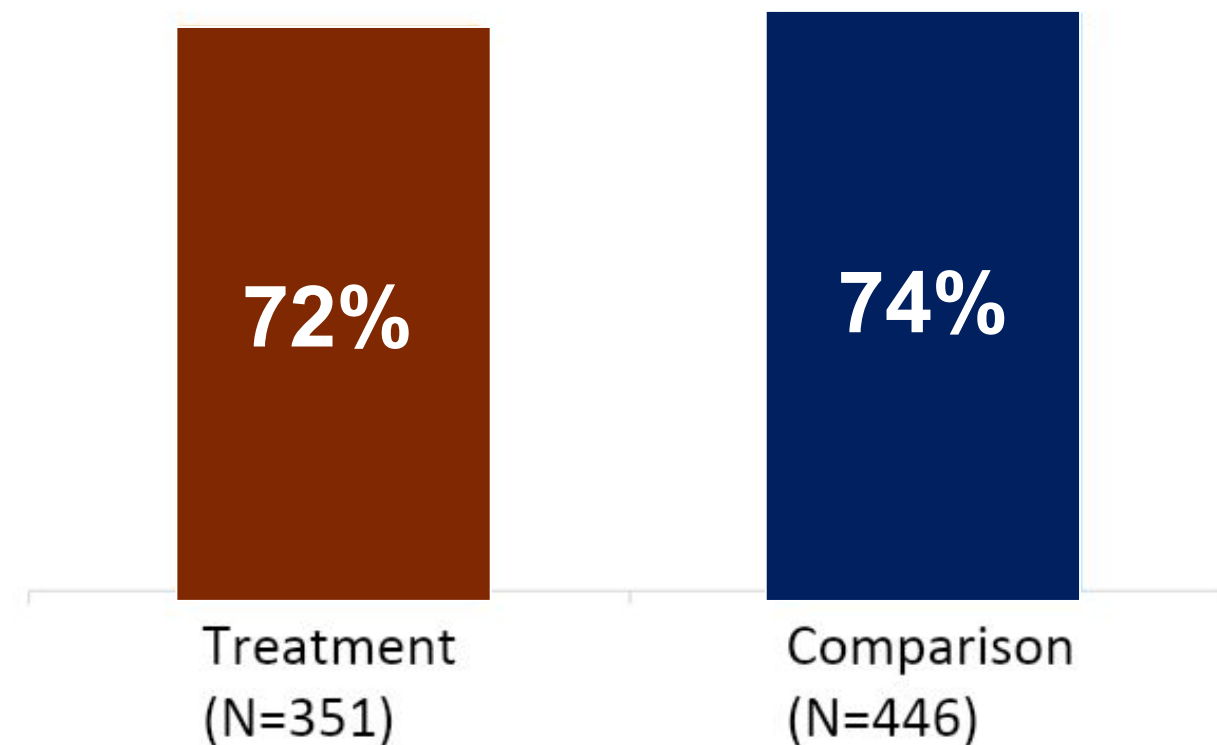
# Success in developmental math



- Were there differences between treatment and comparison students in the rate at which they passed developmental math?
- **Yes.** A statistically significantly larger proportion of treatment than comparison students **passed developmental math.**

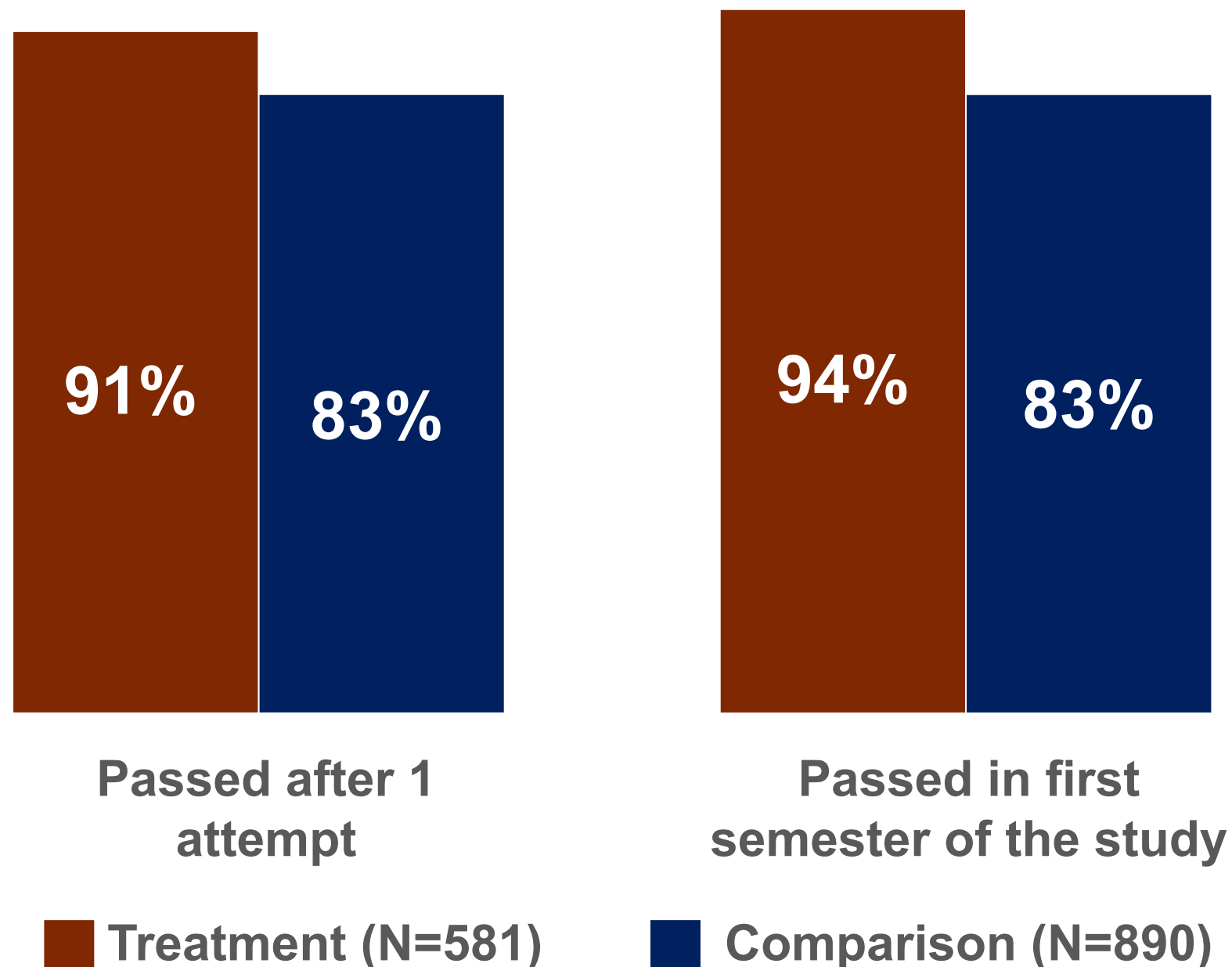


# Success in credit-level math



- Were there differences between treatment and comparison students in the rate at which they passed credit bearing math?
- **No.** Once enrolled in a credit bearing math course, there were **no significant differences in passing rates** between treatment and comparison students.

# Reducing the number of attempts to pass



- Among students passing developmental math, were there differences between treatment and comparison students in the number of unique attempts they made before passing, or the number of semesters that elapsed before passing?
- **Yes.** Treatment students made statistically significantly **fewer attempts to pass and passed in fewer semesters** than comparison students.

# The Treatment was 36% more cost effective helping students enroll in credit bearing math compared to the Comparison

<b>Components</b>	<b>Statistics Approach (Treatment)</b>	<b>Algebra Approach (Comparison)</b>
Number of students (N = 2,041)	748	1,293
Effectiveness measure: Enrollment credit-bearing math	49%	34%
Number who enrolled in credit-bearing math	367	440
Total cost (student expenses)	\$1,833,960	\$3,424,940
CE ratio: Average cost per successful student	\$5,000	\$7,790
Efficiency gain	<b>+36%</b>	

# Summary

- Statistics-based developmental math approaches can be cost effective and help underprepared students pass the math required by most majors
- Subgroup results show similar outcomes for part-time and older students
- Promising approach for reducing costs of and improving access to post-secondary educational opportunities and equity

# Q&A

**Nikki Edgcombe**  
**CCRC**

# Hot Off the Press!

## **The Long-Term Effectiveness of Multiple Measures Assessment: Evidence from a Randomized Controlled Trial**

Elizabeth Kopko, Hollie Daniels, & Dan Cullinan  
October 2023



## **Long-Term Effects of Dana Center Math Pathways Model: Evidence from a Randomized Trial**

Susan Sepanik & Sukanya Barman  
October 2023



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**[PostsecondaryReadiness.org](https://PostsecondaryReadiness.org)**

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