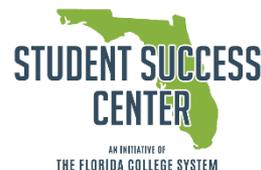




Co-Requisite Models in Developmental Mathematics: A Review of Promising Practices

April 12, 2019



Webinar Logistics

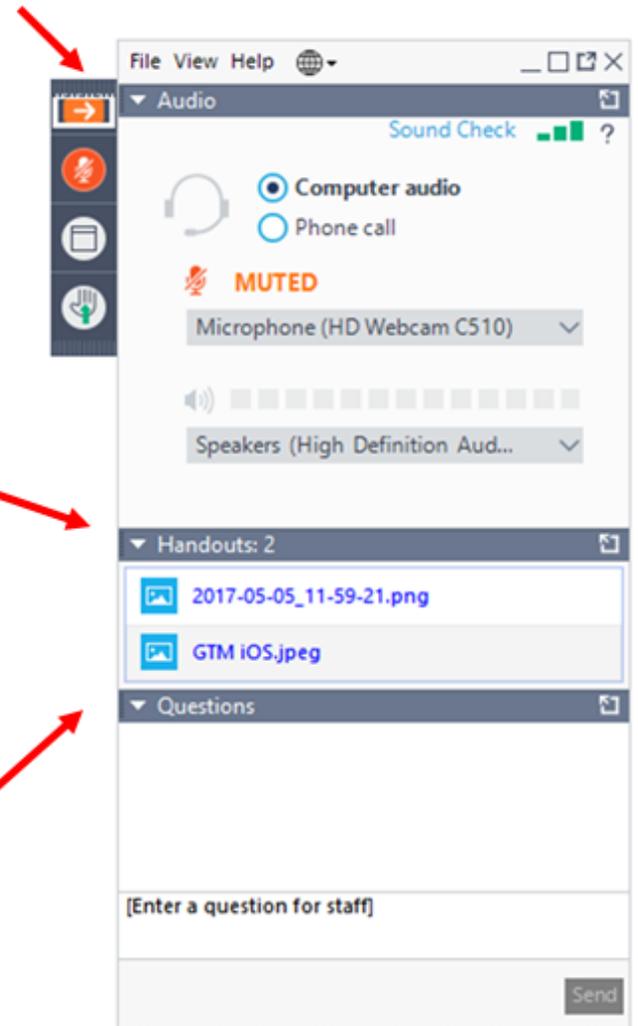
Participants will be on mute for the duration of the webinar.

Material from today's webinar:

In the handouts area you will find a copy of today's presentation.

How to submit questions:

To submit questions during the webinar, please utilize the Questions function. During the Q&A portion of the webinar, questions will be addressed.



Agenda

- **Introductions and Overview**

Dr. Carrie Henderson, Florida Student Success Center

- **Scope of Framework**

Nyema Mitchell, Jobs for the Future

- **Promising Models in Co-Requisite and Developmental Mathematics Reform**

Amy Getz – Charles A. Dana Center

Jeanette Kim – City University of New York (CUNY)

Ann Edwards – Carnegie Math Pathways

- **Panelist Follow-Up**

- **Audience Q&A**

Introductions and Overview

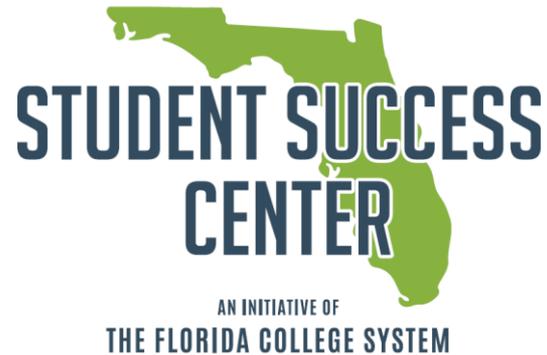


Dr. Carrie Henderson
Executive Vice Chancellor
Florida College System

Scope of Framework



Nyema Mitchell
Associate Director
Jobs for the Future



Promising Practices in Co-Requisite and Developmental Mathematics Reform



Amy Getz

Manager, Systems Implementation
for Higher Education
Charles A. Dana Center

Dana Center
Mathematics
PATHWAYS

Prepare, Enable, Empower

Amy Getz, Charles A. Dana Center, @AmyGetzUTDC

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Dana Center Principles for Math Pathways

Structural and policy changes, quickly and at scale.

Mathematics pathways are structured so that:

- 1) All students enter directly into mathematics pathways aligned to programs of study.
- 2) Students complete first college-level math requirement in first year of college, preferably in first semester.

Learn more about the DCMP model at <https://dcmathpathways.org/dcmp/dcmp-model>

Dana Center Principles for Math Pathways

Continuous improvement ensures high-quality instruction.

Students engage in a high-quality learning experience with:

- 3) Strategies to support students as learners integrated into courses and across institution.
- 4) Instruction based on evidence-based curriculum and pedagogy.

Learn more about the DCMP model at <https://dcmathpathways.org/dcmp/dcmp-model>

A Pathways Perspective

TRANSITION (Entry)

MATHEMATICS PATHWAYS

(To and through gateway courses)

TRANSITION (Exit)



How do students enter the pathways?

Know your data:

- Traditional/ non-traditional
- Placement levels
- Programs of study/ undeclared
- Correlation between placement and programs



What is the desired student experience?

... with the mathematics content?
... with the college, faculty and peers?
... with learning in general?



What supports the student experience?

Curricular materials and design
Instructional practices
Course structures and delivery methods
Support services or programs



Where do students go when they exit the pathways?

Know your data:

- What programs do students go into?
- Where do they transfer and in what programs?
- How do they do in future math or quantitative courses?



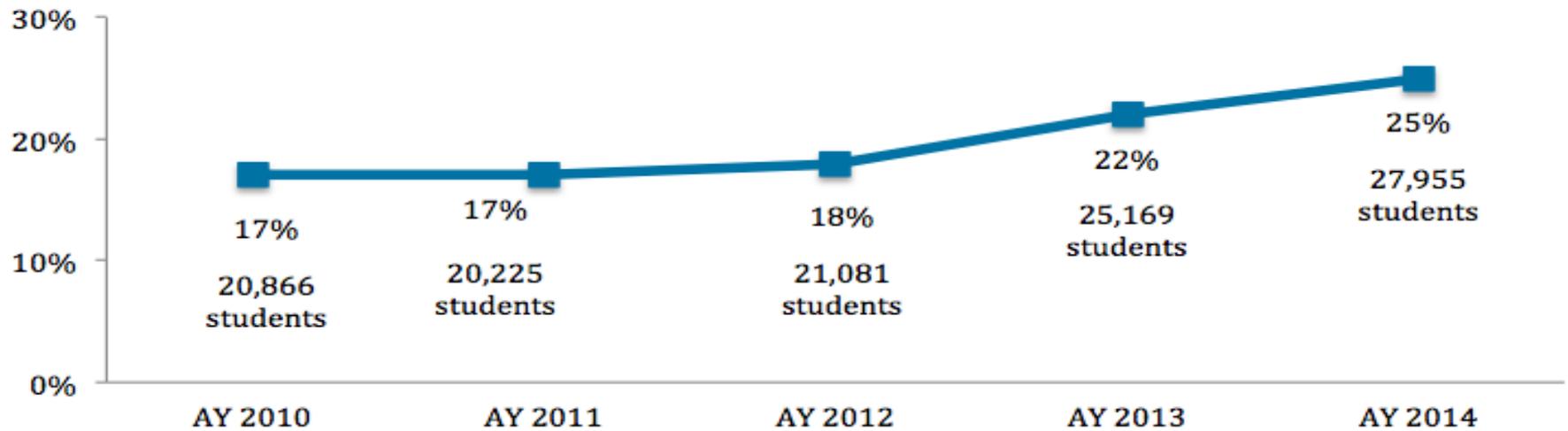
Mathematics Pathways Content

What minimum set of pathways will serve the needs of the students?
What learning outcomes does each gateway math course need to serve the appropriate pathway?
What are the readiness outcomes for each gateway course?
What will help developmental students achieve college readiness?

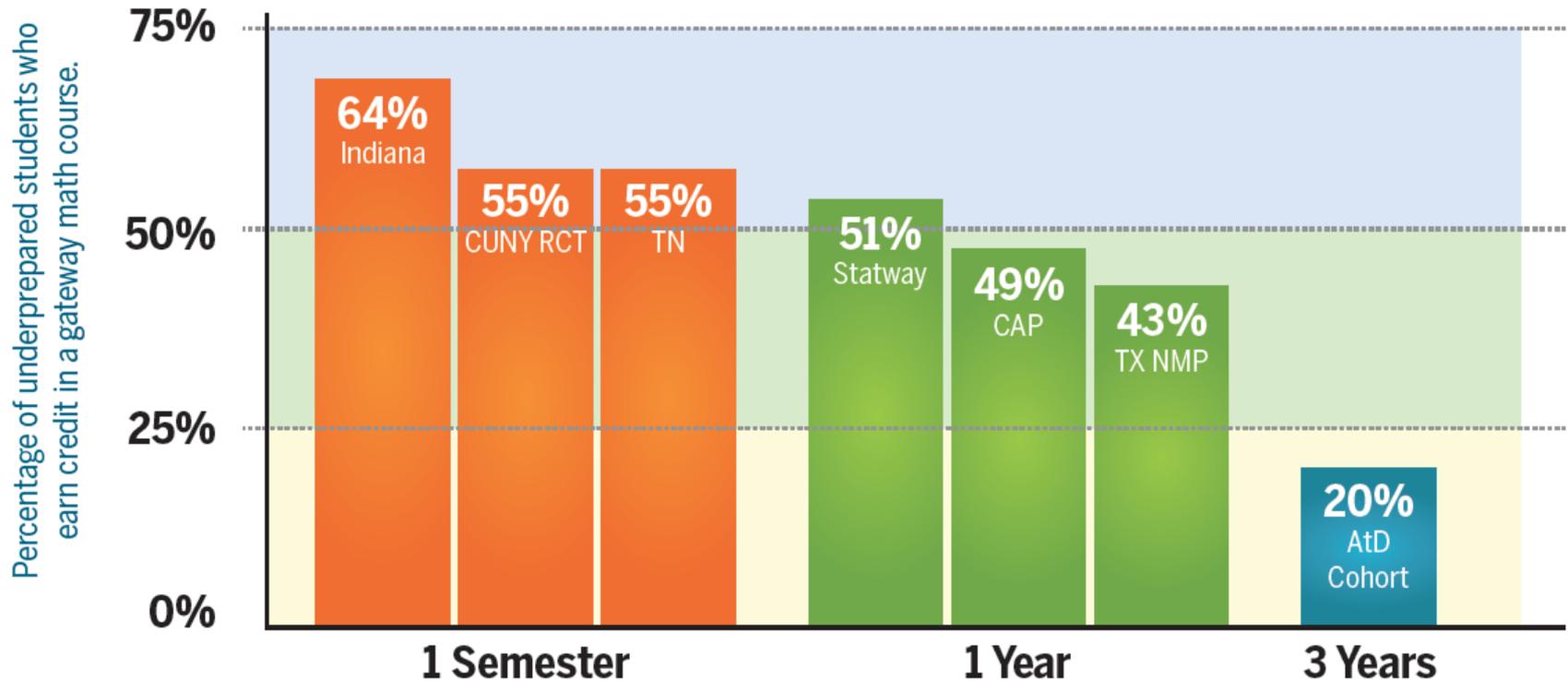
Student Success

College Level Math Completion Rates for FTIC Students in Their First Year Steadily Rising

■ All Texas Community Colleges

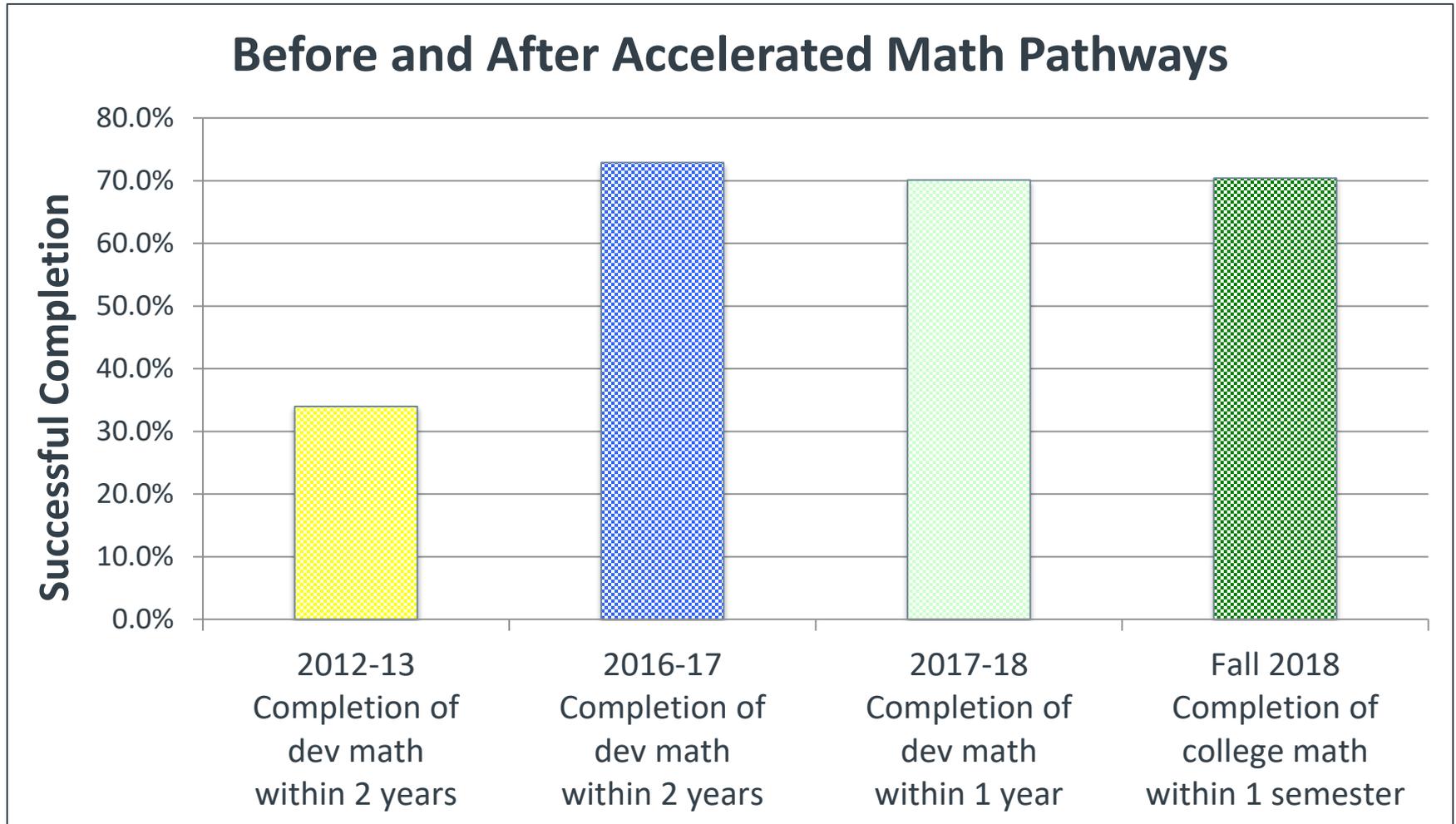


Evidence Across Sites and Models



Sources: Indiana (Complete College America, 2016); CUNY (Logue et al., 2016); Tennessee (Tennessee Board of Regents, 2016); Statway (Sowers & Yamada, 2015); CAP (California Acceleration Project, 2015); TX NMP (Rutschow & Diamond, 2015); and AtD (Bailey et al., 2010).

A Case Study from Paris, Texas



Lack of Full-Scale Implementation Raises Equity Concerns

Selection into DCMP in Colleges with Multiple Dev Ed Options

Student Background	DCMP	Other Dev-Ed
Race		
White	43.75%	25.71%***
Asian	1.14%	1.37%
Black	21.08%	16.16%***
Hispanic	31.27%	53.76%***
Other	2.76%	3.00%
Female	64.10%	60.79%***
Filed FAFSA	31.02%	29.75%†
Family Income (among FAFSA filers)	\$47,753	\$41,121**
N	4,461	24,394

†p>.1, *p>.05, **p>.01, ***p>.001

Schudde, L. & Meiselman, Y. Assessing the Relationship between Dana Center Mathematics Pathways Participation and Early College Outcomes for Dev-Ed Math Students: Fall 2015 and 2016 Cohorts

Free Resources on Curriculum Design

DCMP Resource site: dcmathpathways.org

→ Take Action → Classroom Level → Planning and Implementing

Or go to Resources and search for co-requisite

Resources specific to co-requisite include:

- Recommendations for defining structure and content
- Design webinar
- Sample co-requisite materials

Charles A. Dana Center: Webinar Opportunity

- The Charles A. Dana Center is offering a workshop on implementing co-requisite math courses in May.
 - For further information, please check out the link below:
<https://www.utdanacenter.org/our-work/higher-education/higher-education-services/implementing-improving-and-scaling-co-requisite-mathematics-courses>



Jeanette Kim

Interim University Assistant Dean
Pre-matriculation Programs and
Program Assessment
City University of New York (CUNY)

CUNY Start

Maximizing the Pre-Matriculation Space to Address Remedial Needs

Co-requisite Models in Developmental Mathematics - Webinar
The Florida College System – April 12, 2019

Jeanette Kim, City University of New York

E: Jeanette.Kim@cuny.edu



CUNY Start: Program Elements

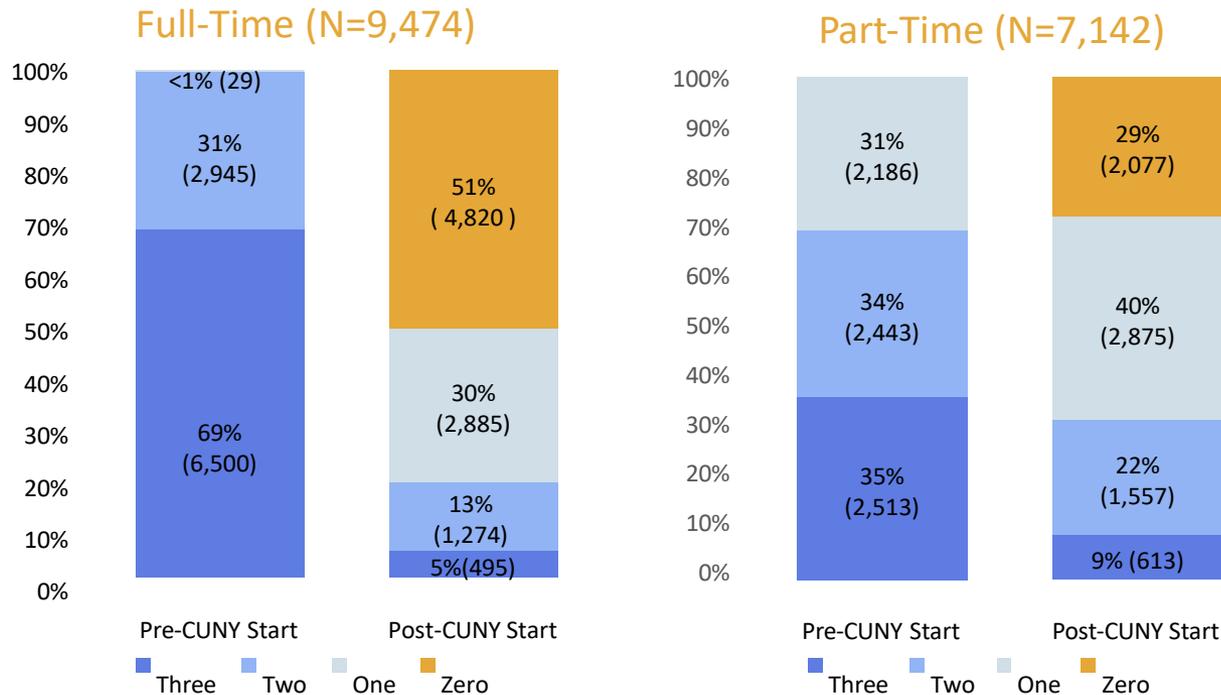
- Coordinated through CO; implemented at 10 campuses
- FT program (25hrs/wk); PT program (12 hrs/wk)
- Low student fee (\$75 for FT; \$35 for PT)
- Students defer matriculation for one semester
- Centrally developed curriculum
- Centrally supported professional development
- Teachers trained using apprenticeship model
- Intensive advisement

CUNY Start Math

- Designed to engage students with deep math needs
- Blend of pre-algebra and algebra topics
- Inquiry based approach
- Promotes conceptual understanding and reasoning
- Emphasis on student talk and collaborative learning
- Aligned to CUNY's standards for exit from remediation (CEAFE)
- Offered as semester-long, summer, or 8-week intensive program

CUNY Start Participation Gains

Number of Developmental Education Needs Before/After CUNY Start Completion (Fall 2009 through Spring 2018; FT and PT Cohorts)



Note: Outcomes data shown for program completers only. Initial remedial needs are based on the CUNY Assessment Test scores. Proficiency gains are based on course performance and exit test scores.

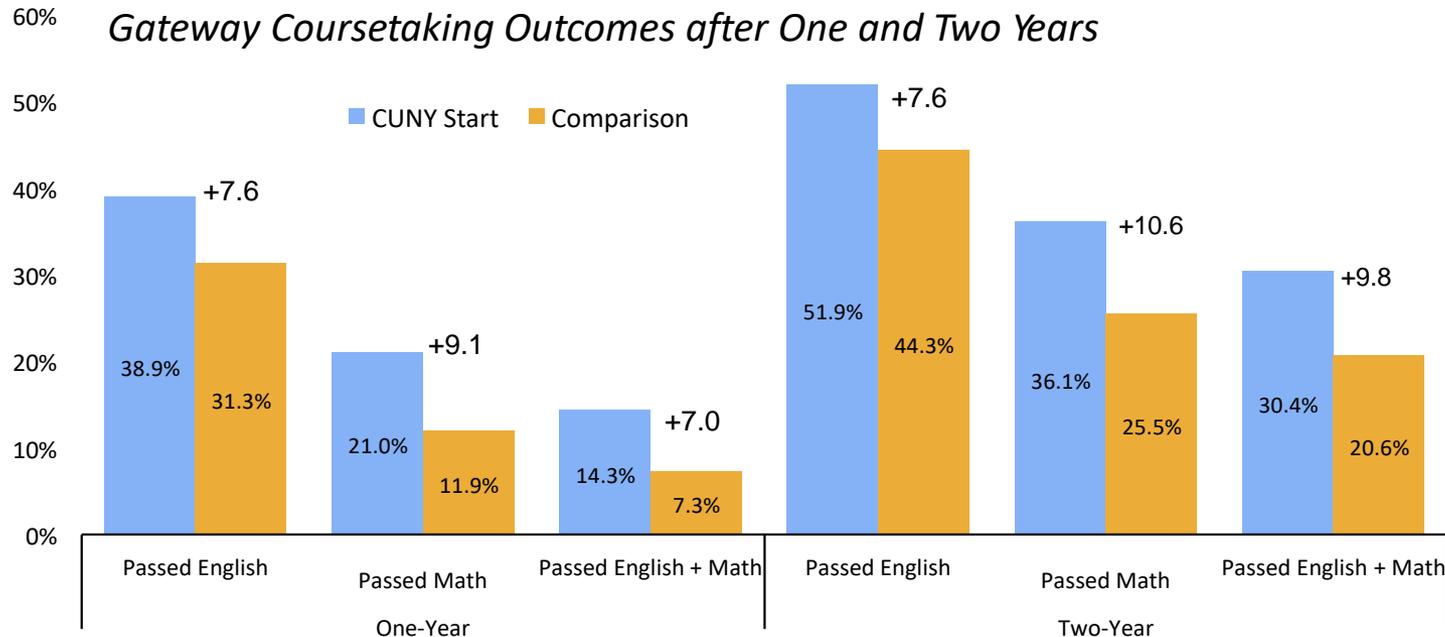
(Source: CUNY Start program database)

MDRC (RCT evaluation) Key Findings

- CS students made more progress through their remedial requirements than control group students – especially in math
- CS students attempted more credits in 2nd semester than control group (7.0 college-level credits vs. 5.2 college-level credits)
- During 2nd semester, CS students enrolled at CUNY College at higher rates than control group students
- Particularly strong math outcomes – 57% of CS students became college ready in math vs. 25% of control group

Becoming College Ready: Early Findings from a CUNY Start Evaluation (MDRC, July 2018)

CUNY Start Quasi-experimental Analysis – Post Matriculation



Note: Results shown from propensity-score analysis of CUNY Start students and CUNY first-time freshmen. Total sample size was 11,198 (5,599 CUNY Start and 5,599 non-CUNY Start students).

(Source: Authors' calculations using data from the CUNY Institutional Research Database (IRDB))

Starting to Succeed: The Impact of CUNY Start on Academic Momentum: Gateway Course Completion (Jenkins Webber, July 2018)

Broader Access & College Completion



- **Working with non-traditional students**
 - HSE non-math completers
 - ECI students, other pre-college populations
 - Returning adult learners
- **Supporting multiple repeaters**
- **Pipeline to ASAP**

For more information about CUNY
Start:

www.cuny.edu/cunystart

Jeanette Kim

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Ann Edwards

Senior Research Associate, WestED
Director of Learning and Teaching
Carnegie Math Pathways



CARNEGIE MATH
PATHWAYS
WestEd

Designing Corequisite Courses: Lessons Learned from Statway and Quantway

Ann Edwards, Director of Learning and Teaching, Carnegie Math Pathways

Florida Student Success Center
April 12, 2019



What do we mean by Corequisite?

- Where one course must be taken in conjunction with, and at the same time as, another course.
- Example:

College-level statistics

- 3 transfer credits
- 3 contact hours

+

Corequisite support course

- 3 non-transfer credit
- 3 contact hours

Accelerated Pathway

Ambitious, relevant, problem-centered curriculum that promotes productive struggle

Language and Literacy Supports



Student-focused, collaborative pedagogy

Comprehensive and sustained professional learning opportunities

Productive Persistence interventions/practices

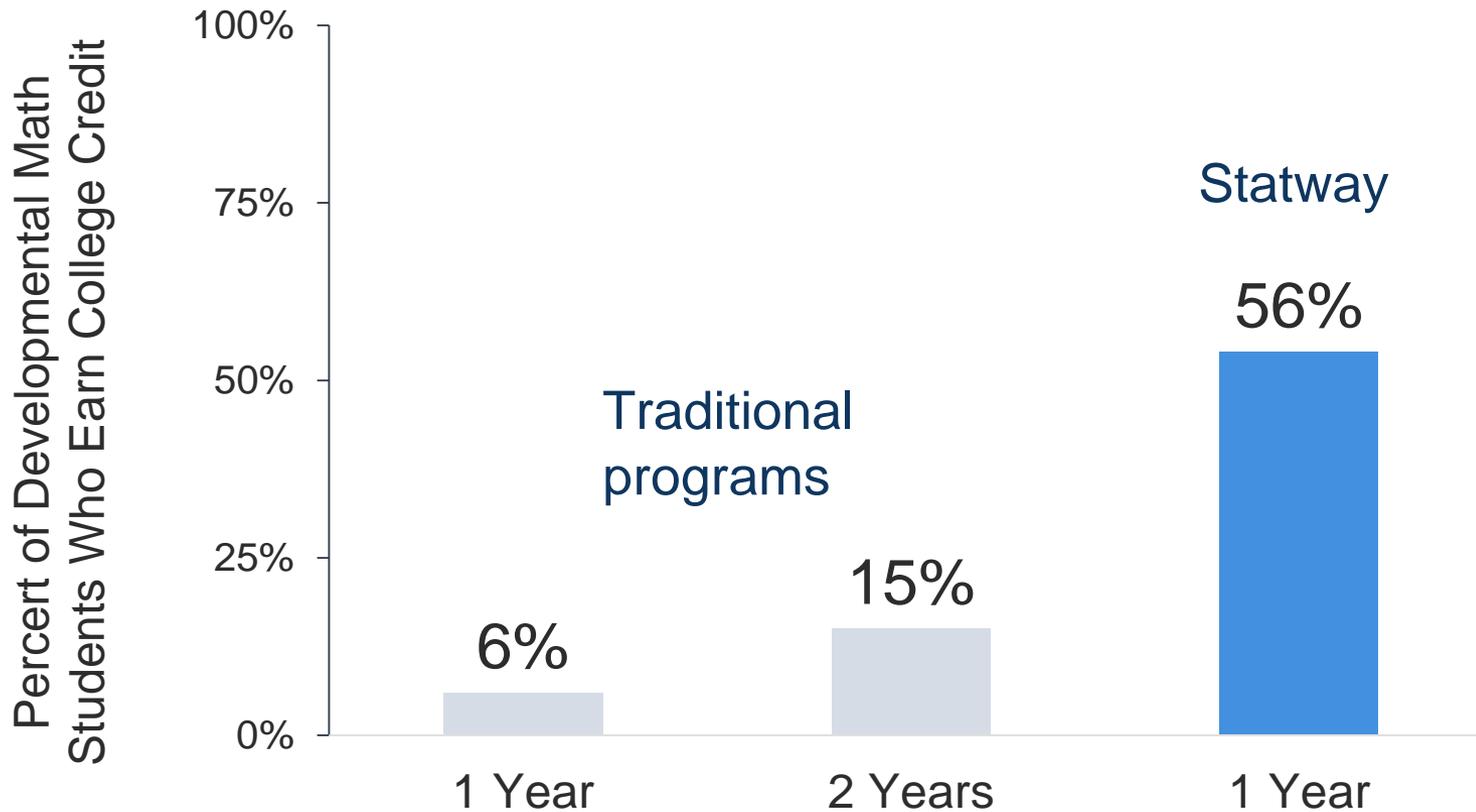
Network engagement and improvement

Quantway

Statway

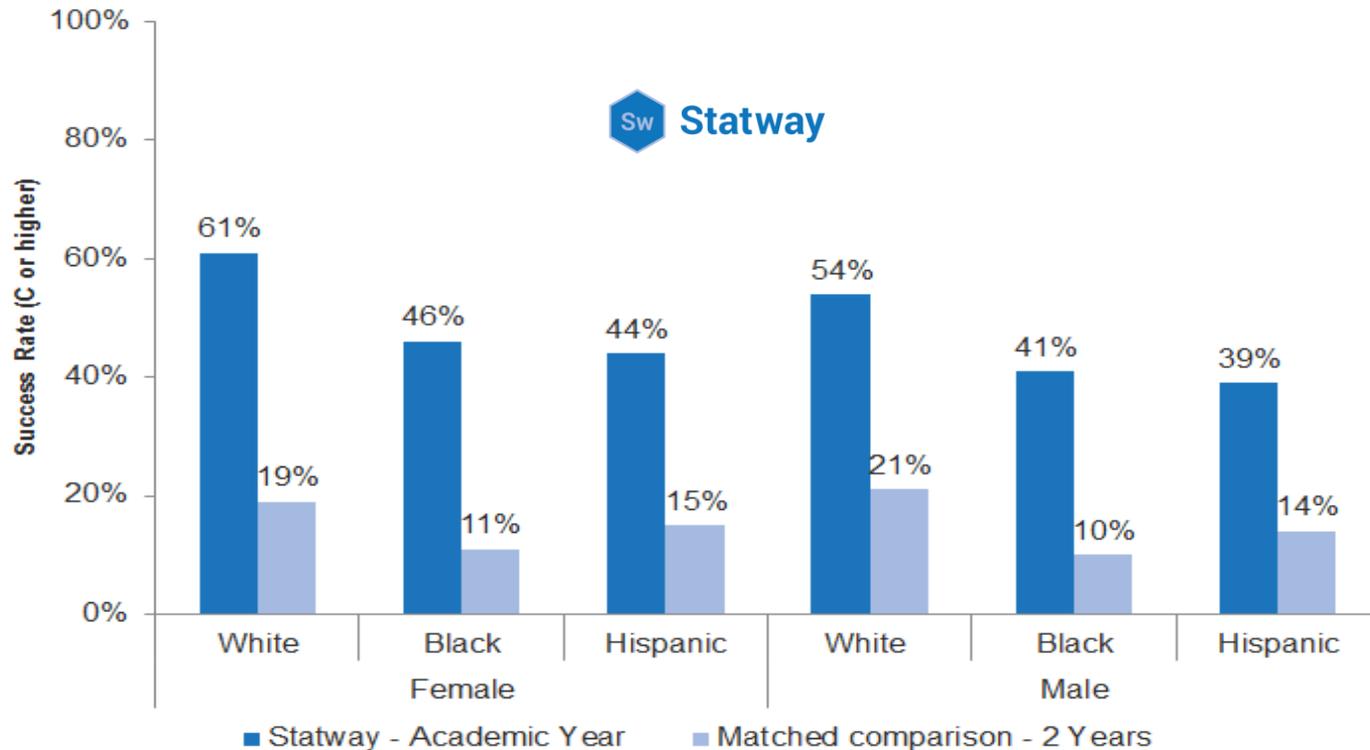


Triple the Success in Half the Time



Traditional Programs Versus Statway: Student Success (All Fall Cohorts)

Advancing Equity – Improving Outcomes For Diverse Subgroups



Results based on analysis done for Yamada, H. & Bryk, A. (2016) Community College Pathways' Program Success: Assessing the First Two Years' Effectiveness of Statway® and (forthcoming) Huang, M., & Yamada, H. (2017). *Maintaining Success Rates: Does Statway® sustain its impact as it scales to new classrooms and institutions?* Stanford, CA: Carnegie Foundation for the Advancement of Teaching.

Corequisite Implementation

Carnegie Math Pathways Corequisite Design

Active, collaborative learning

Productive struggle

Rich authentic contexts

Social-emotional learning supports

Language and literacy supports

Alignment between college & coreq components

Flexibility of implementation

Guides for recommended use of materials

Year 1: Administration

Spring 2018 and Fall 2018

Quantway Corequisite

- 3 institutions
- 8 sections
- 7 faculty
- 185 students

Statway Corequisite

- 3 institutions
- 13 sections
- 8 faculty
- 225 students

Year 1: Administration

Institution	College Contact Hours	Corequisite Contact hours	Transfer Credits	Non-Transfer Credits
A	3	3	3	3
B	4	2	4	1
C	4	0	3	0
D	3	3	3	3
E	5	5	5	5
F	3	2	3	2

Year 1: Results

Student Success Rate = 65.1%

	Pathway	# of Students (# of Sections)	Total Contact Hours	Corequisite Success Rate
Institution A	Quantway	149 (6)	6	83% (SD 13%)
Institution B	Quantway	18 (1)	6	89%
Institution C	Quantway	18 (1)	4	39%
Institution D	Statway	184 (11)	6	52% (SD 19%)
Institution E	Statway	29 (1)	5	66%
Institution F	Statway	12 (1)	5	50%

Elements of Successful Implementation



Faster completion, reducing transitions between courses



CMP's Instructional Approach & Alignment of Components



Higher contact hours

Institution's Total Contact Hours	Corequisite Success Rate
4	38.9%
5	61.0%
6	67.0%

Elements of Successful Implementation



Cohort Model



Preparation Time



Instructor Support and Collaboration



Student Expectations and Encouragement

Challenges

Limited Time

- Material and content selection
- Pedagogy
- Assessments

Student Preparedness

- Range of reading levels
- Range of fundamental mathematics skills

More Lessons Learned

Streamlining materials



Support for faculty

- Training
- User Guides
- Facilitating Faculty Collaboration



Collaboration with administrators



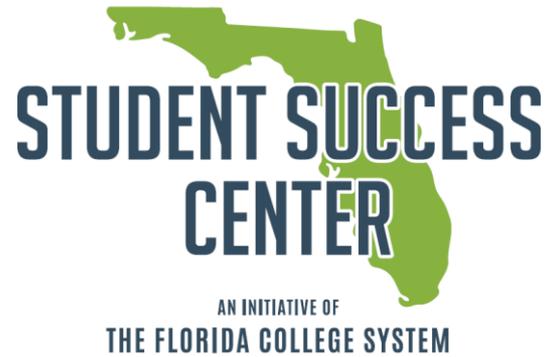


CARNEGIE MATH
PATHWAYS



www.carnegiemathpathways.org

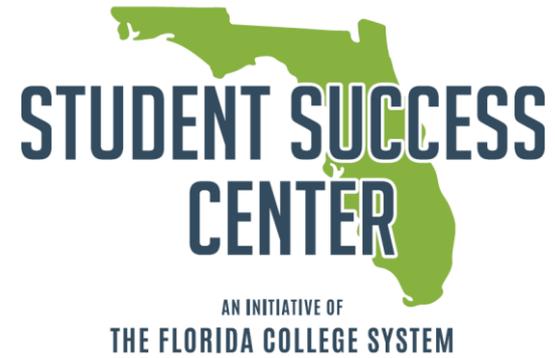
This program of work is supported by The William and Flora Hewlett Foundation, the Bill & Melinda Gates Foundation, the Lumina Foundation, the Kresge Foundation, the Carnegie Corporation of New York, Ascendium Education Group, the ECMC Foundation, and the National Science Foundation's grant DUE-1322844 and grant DUE-1820830 in cooperation with the Carnegie Foundation for the Advancement of Teaching and WestEd



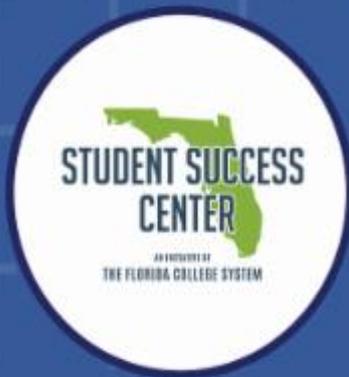
Panelist Follow-Up

Questions:

- **What is a common misperception of “co-requisite”?**
- **What are two important lessons other colleges should know that are considering implementing bridge programs?**
- **What are 1-2 immediate challenges to scaling math reforms in community colleges?**



Q & A



SAVE THE DATE

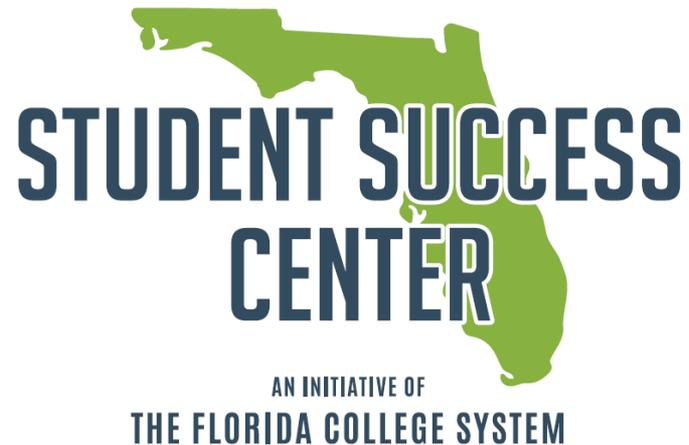
Mathematics Re-Design Institute

June 27, 2019

University of Florida,
Hilton Conference Center

Gainesville, Florida





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