



Carnegie Foundation
for the Advancement of Teaching

The Carnegie Pathways: Innovating for Student Success in Statway and Quantway

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Carnegie Foundation for the Advancement of Teaching

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The Problem

60-70%

Community College students need at least 1 developmental math course before enrolling in college-credit courses

80%

Percent of students never get out of the developmental math pathway

500,000

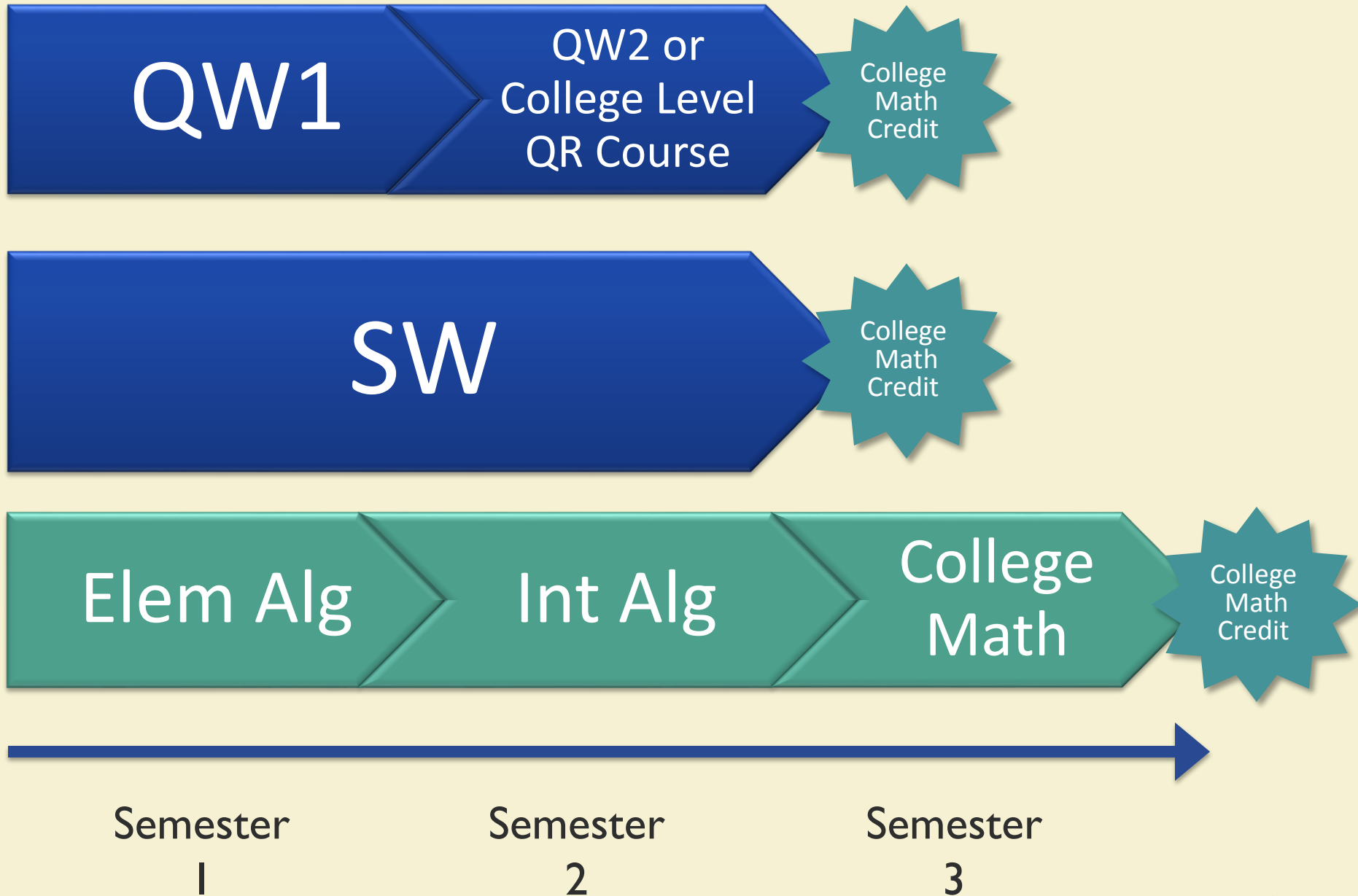
students

in every cohort will never complete math requirement

We cannot continue using the same approach and expect different results.



A New Way: Coherent, Intensive, Accelerated Learning



Theory of Change

Increase the percentage of Developmental Math students achieving college math credit within one year of continuous enrollment

Institutional Structures & Leadership

Instructional System

Productive Persistence

Language and Literacy

Advancing Quality Teaching

Guiding Principles for Learning and Teaching

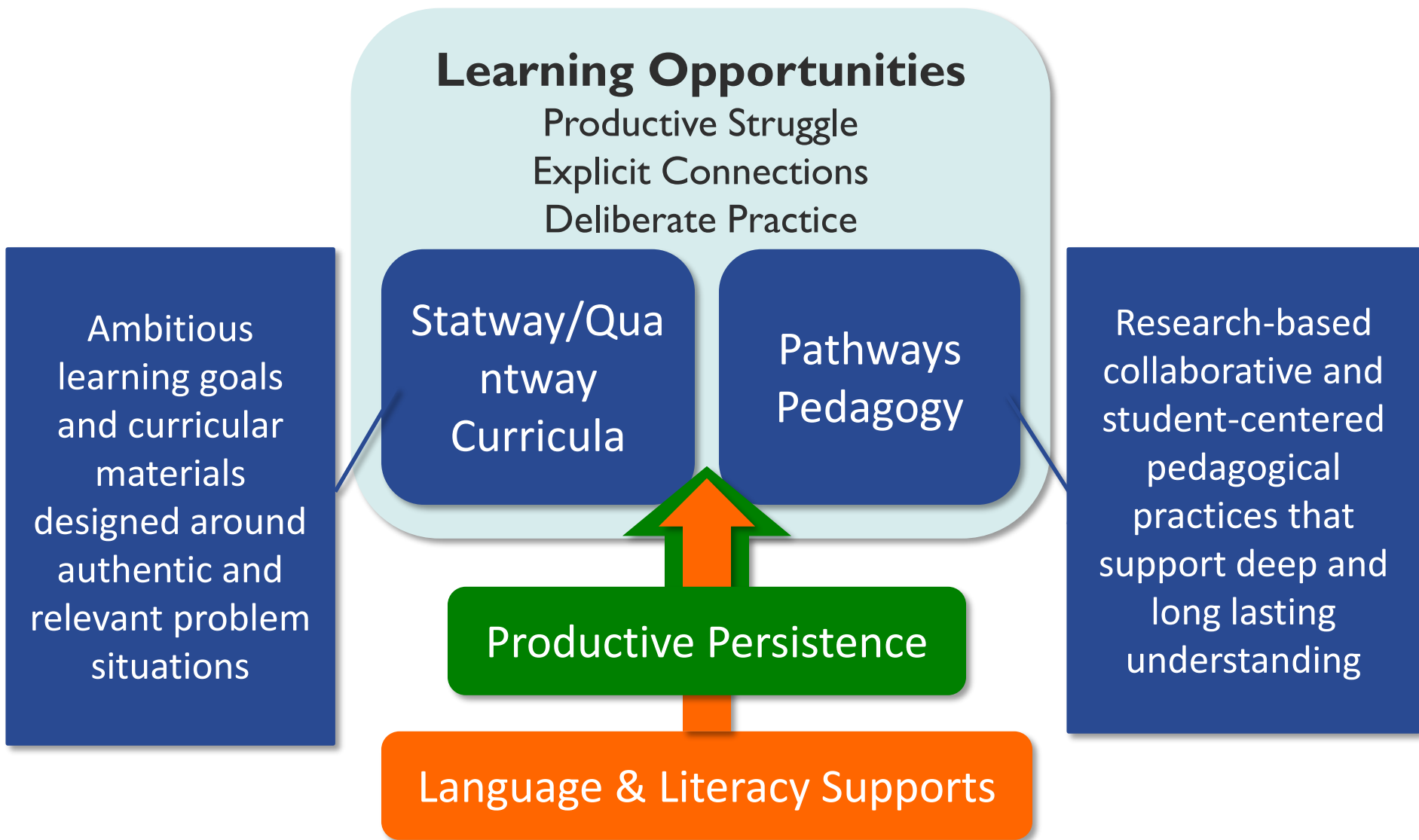
The Learning Opportunities

Productive struggle with important mathematics

Explicit connections to mathematical concepts

Deliberate practice applying concepts and procedures in order to solve problems

Pathways Instructional System



Statistics - Learning Outcomes

AMA, AMATYC, CAUSE, MAA, ASA

- Students will understand the **data analysis process** and the well-designed **statistical studies**
- Students will demonstrate the use of **distributional thinking** to reason about data in order to describe trends and patterns, judge a fit of a model to distribution, and describe similarities and differences in comparing distributions.
- Students will demonstrate an ability to use appropriate **statistical evidence to reason about population characteristics** an experimental treatment effects.

Quantway – Quantitative Literacy Outcomes

AMATYC, MAA, NNN

- Students will demonstrate **quantitative reasoning** to analyze problems, critique arguments, and draw and justify conclusions.
- **Communicate** quantitative results both in writing and orally using appropriate language, symbolism, data and graphs
- Use **technology** appropriately as a tool
- Exhibit **confidence** in quantitative reasoning through **perseverance** and ability to **transfer** prior knowledge in unfamiliar contexts

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Language and Literacy

Advancing Quality Teaching

Productive Persistence

Aim:

Students continue to put forth effort during challenges and when they do so they use effective strategies.

Students believe they are capable of learning math.

Students feel socially tied to peers, faculty, and the course.

Students believe the course has value.

Students have skills, habits and know-how to succeed in college setting.

Theory of Change

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Institutional Structures & Leadership

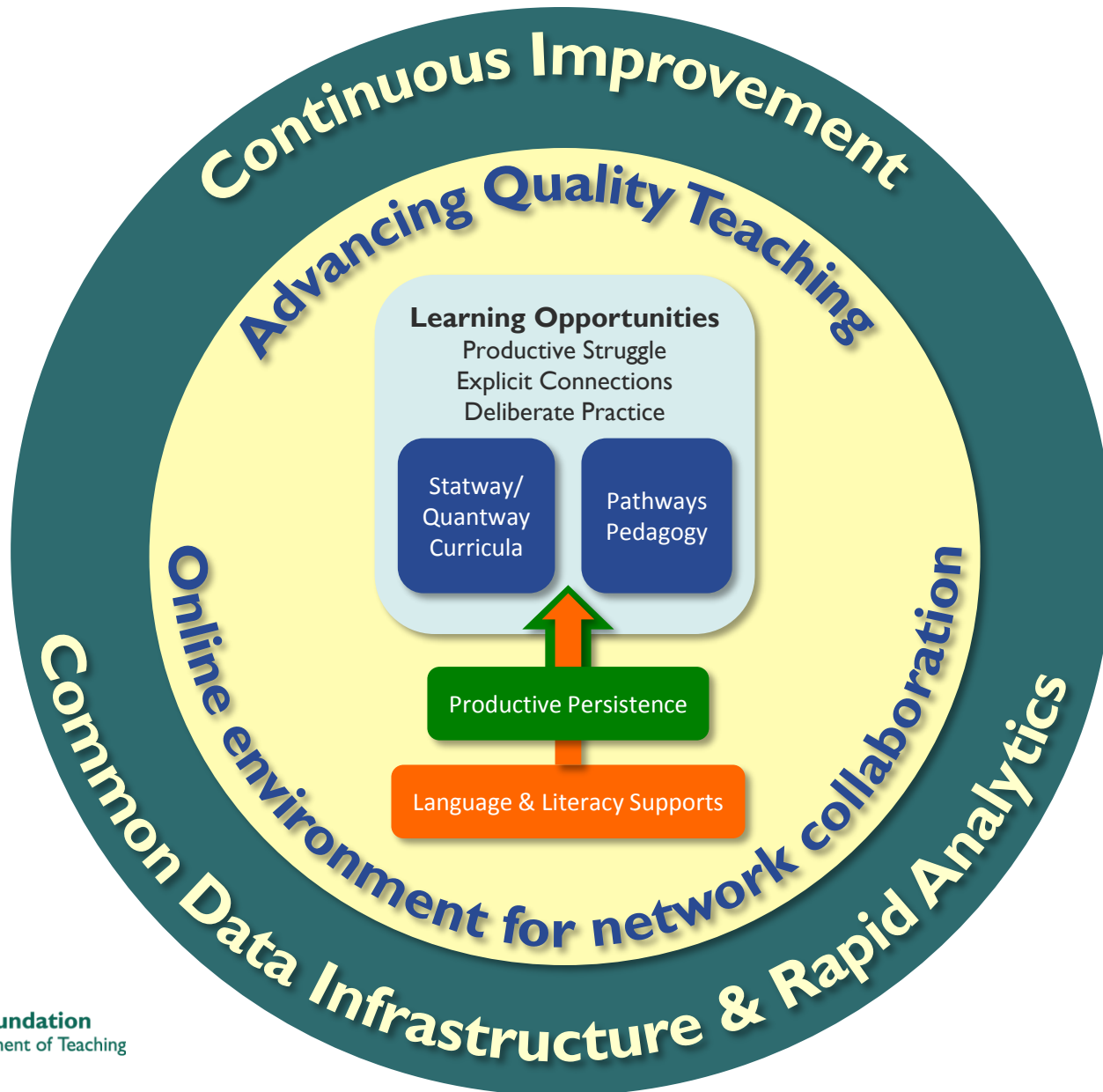
Instructional System

Productive Persistence

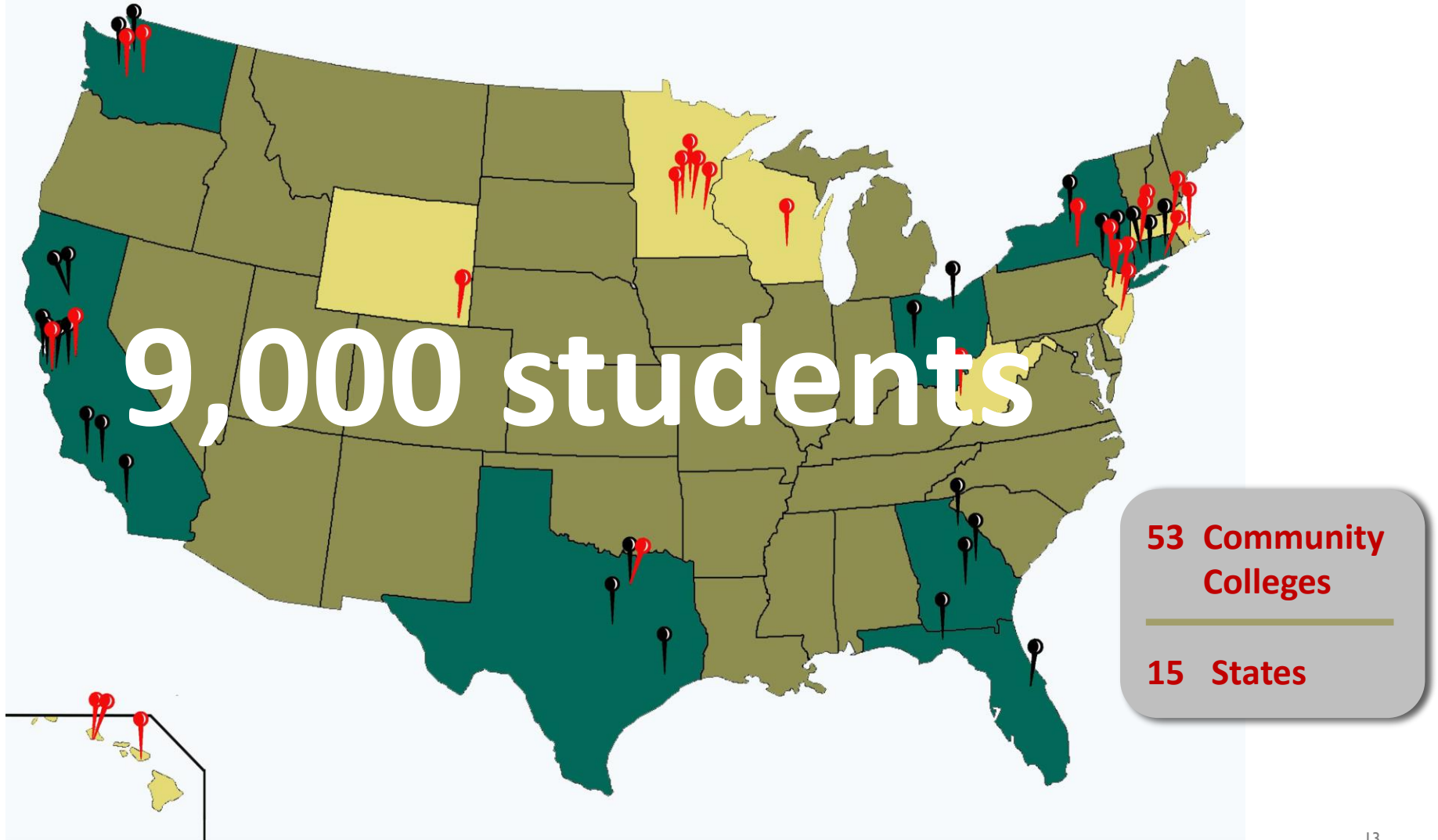
Language and Literacy

Advancing Quality Teaching

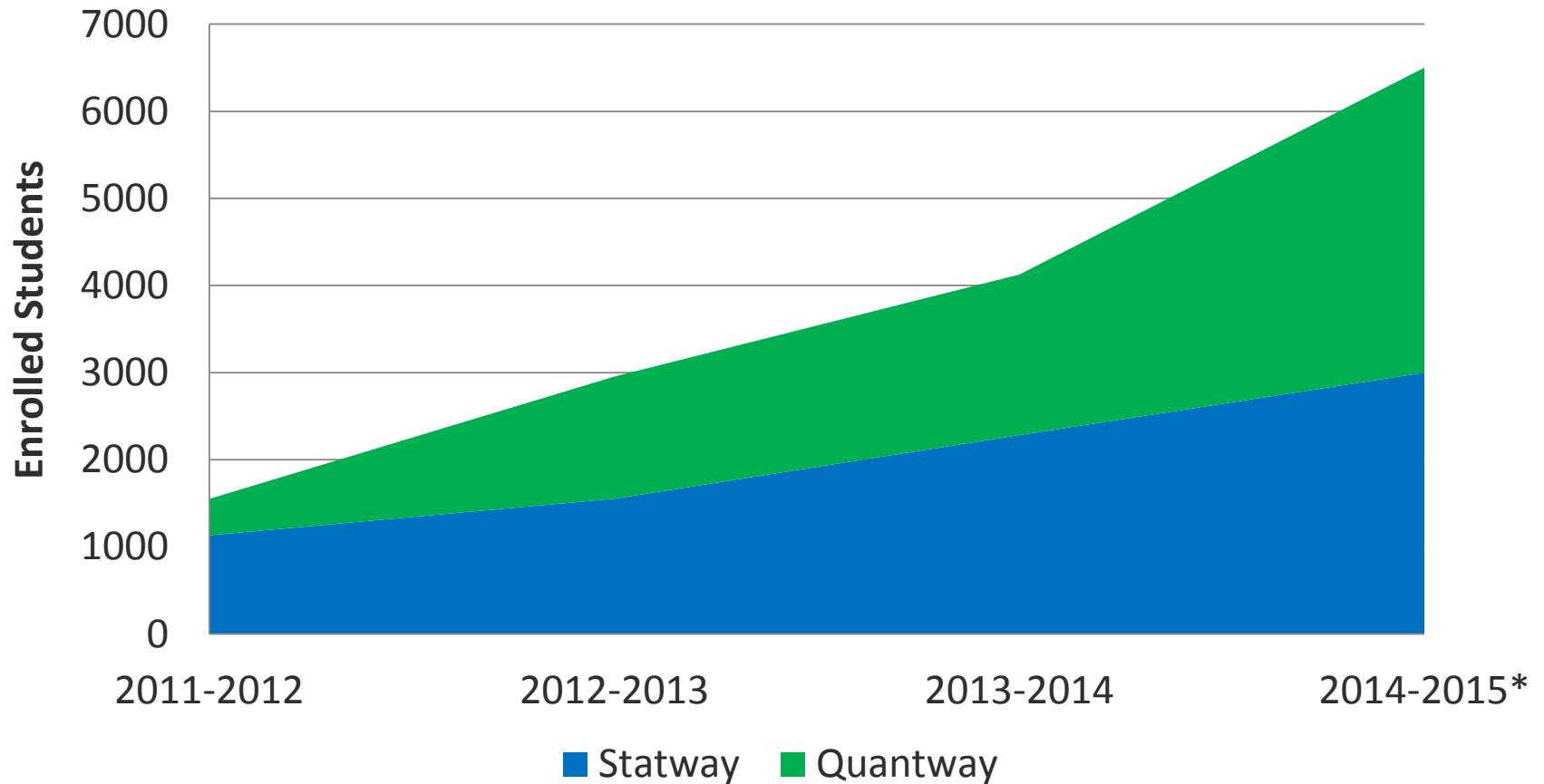
Pathways Instructional System



Where We Are Now 2014

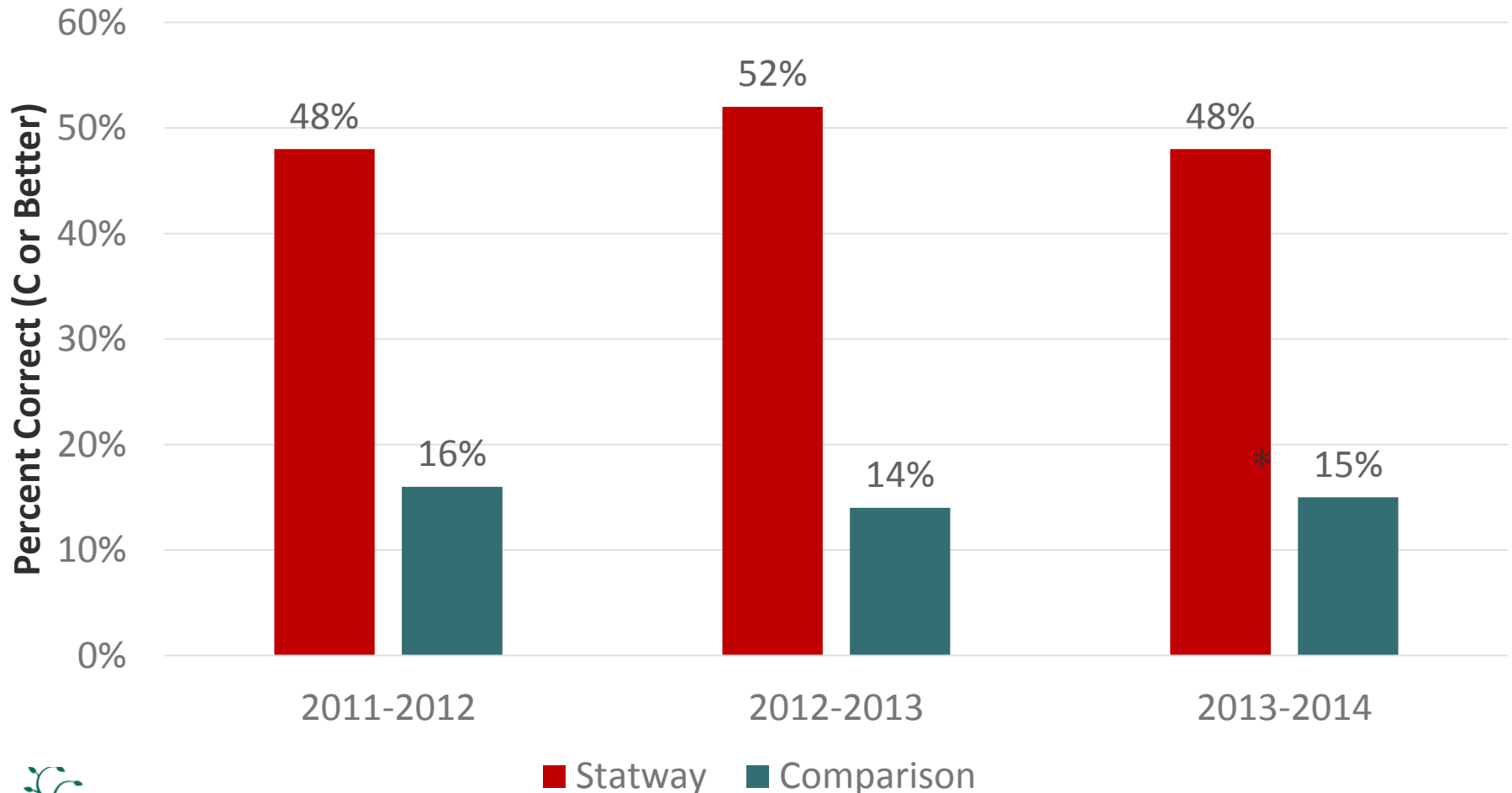


Pathways Enrollment

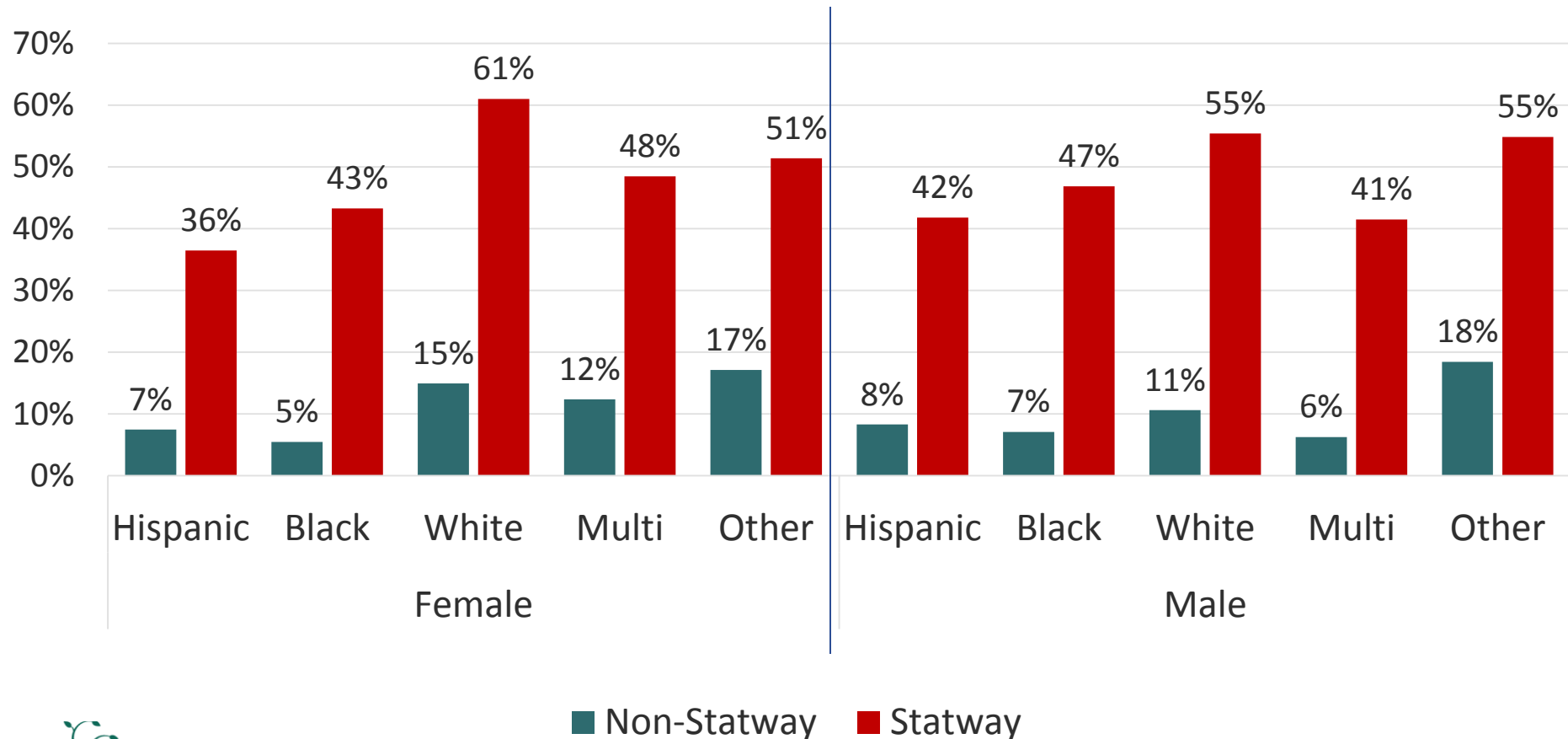


Approximately 18,000 students enrolled total

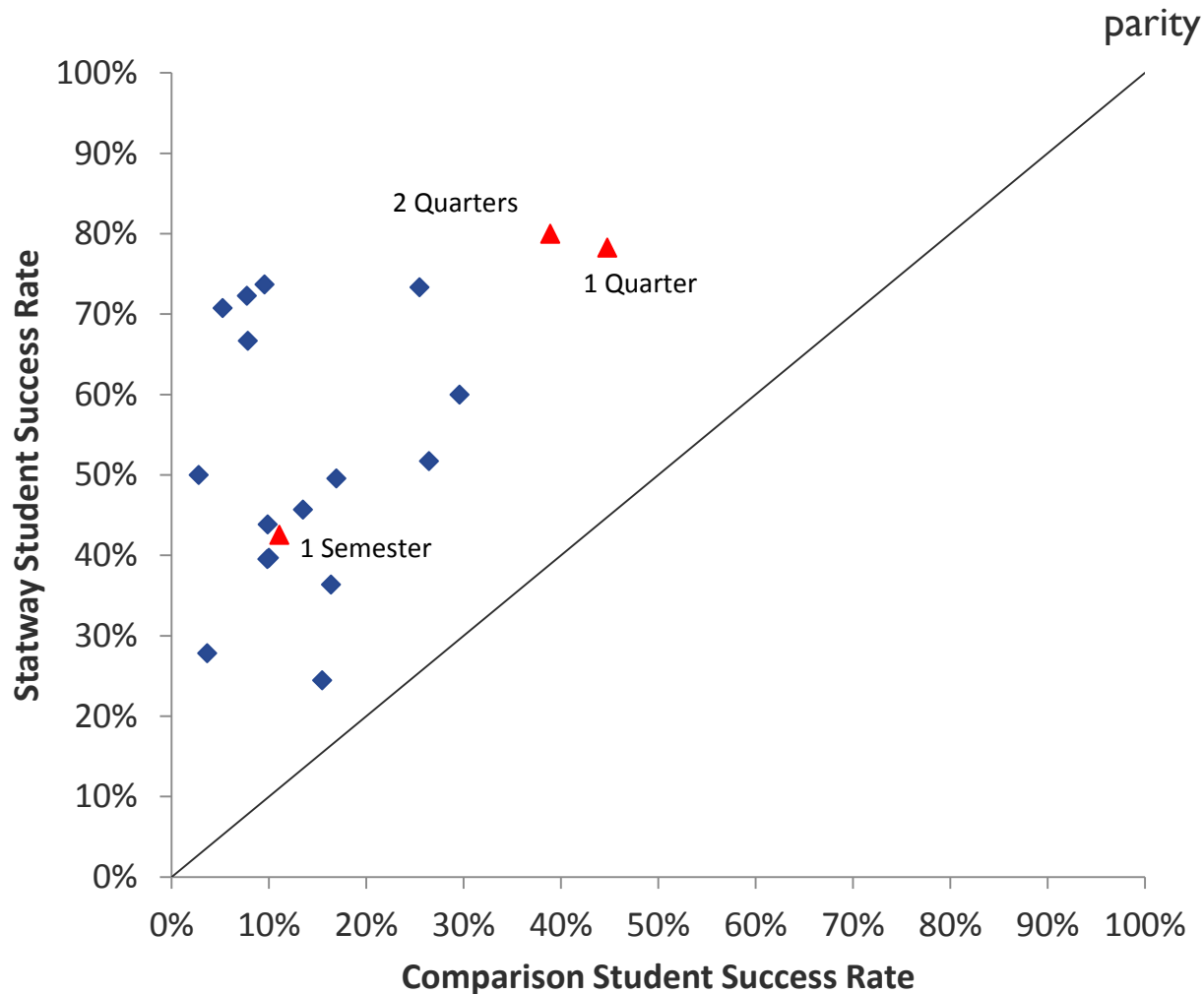
Statway's success exceeds the comparison groups in half the time



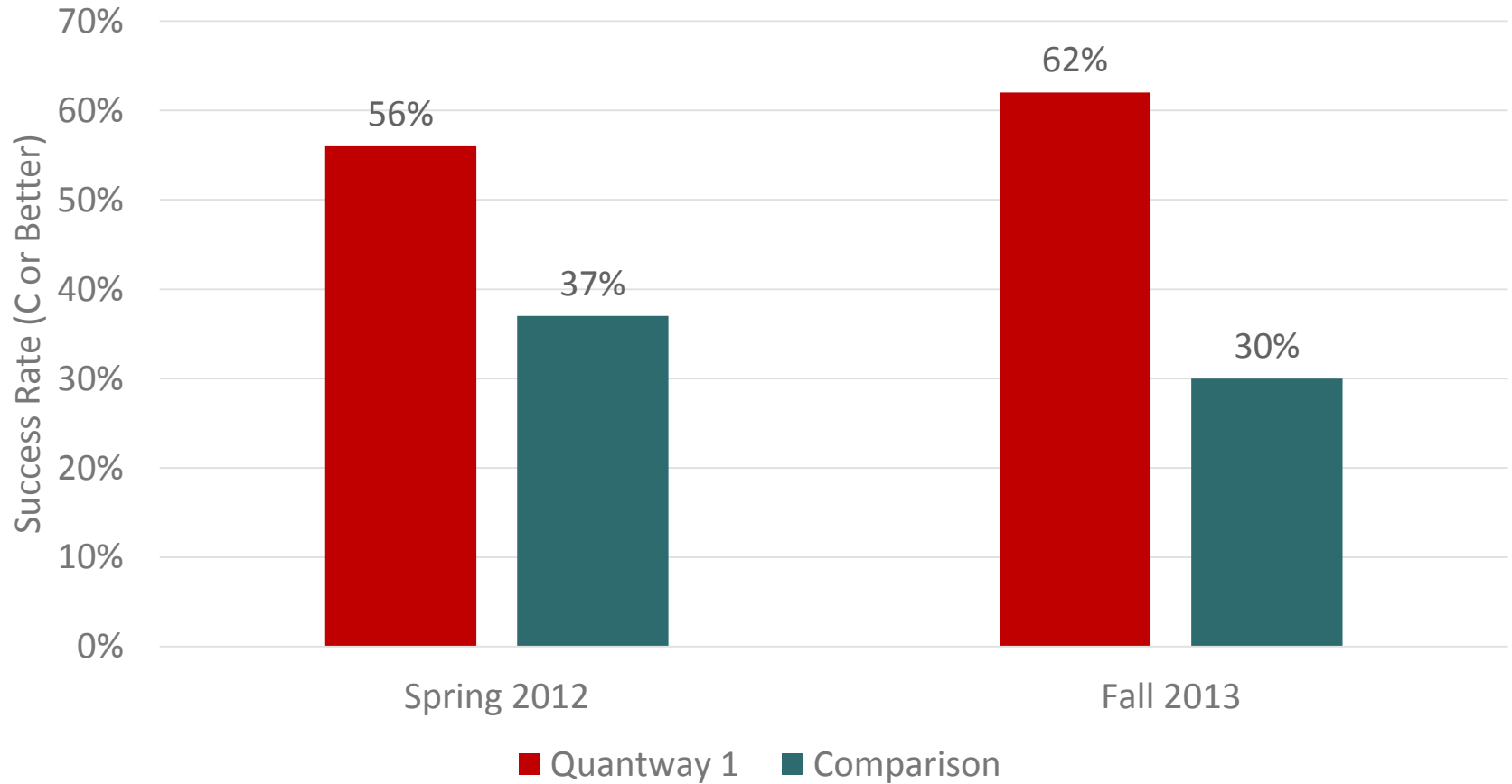
College Math Success by Subgroup



Statway Student versus Comparison Student Success Rates (C or better) AY 2013-1014



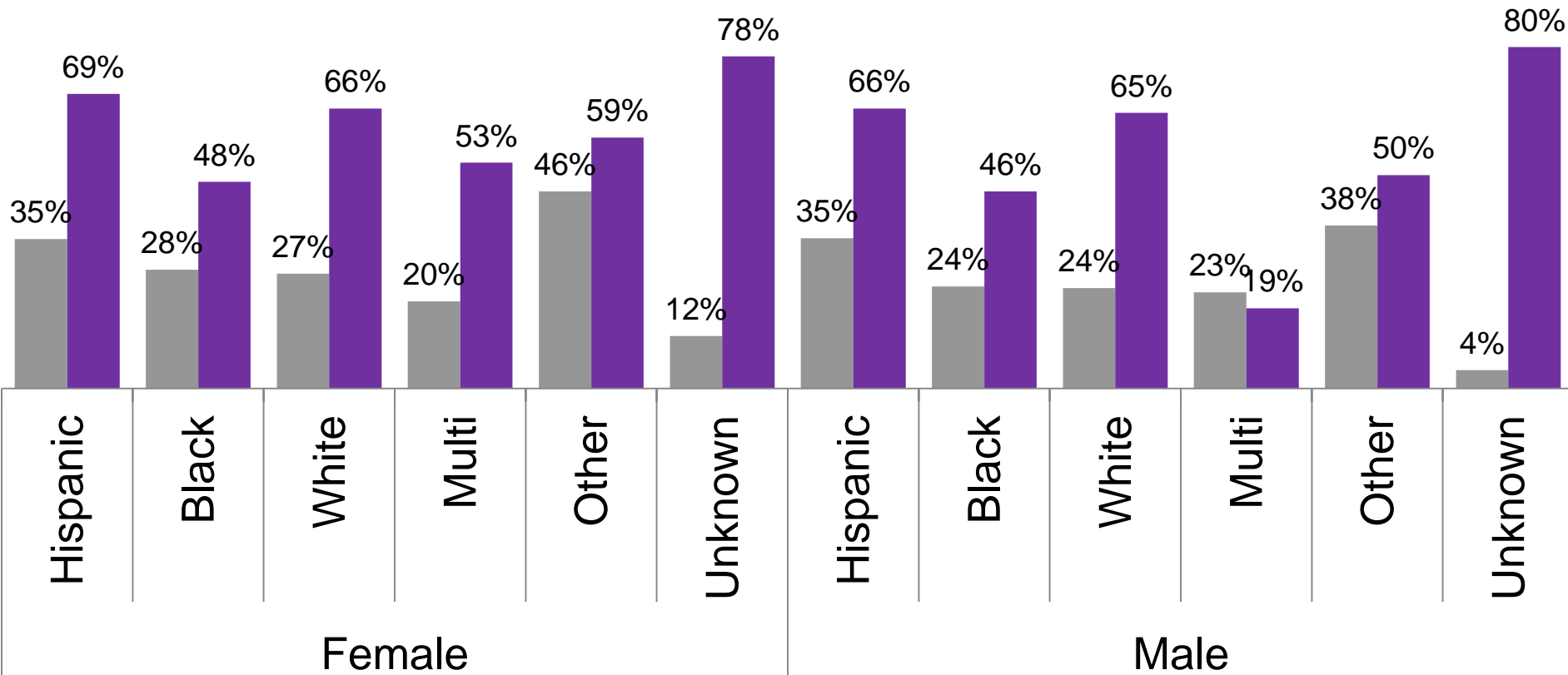
Quantway's success rate exceeds the comparison group's in one half the time



Developmental Math Success by Subgroup

Quantway Comparison Fall 2013

■ Non-Quantway ■ Quantway



of Students

Female

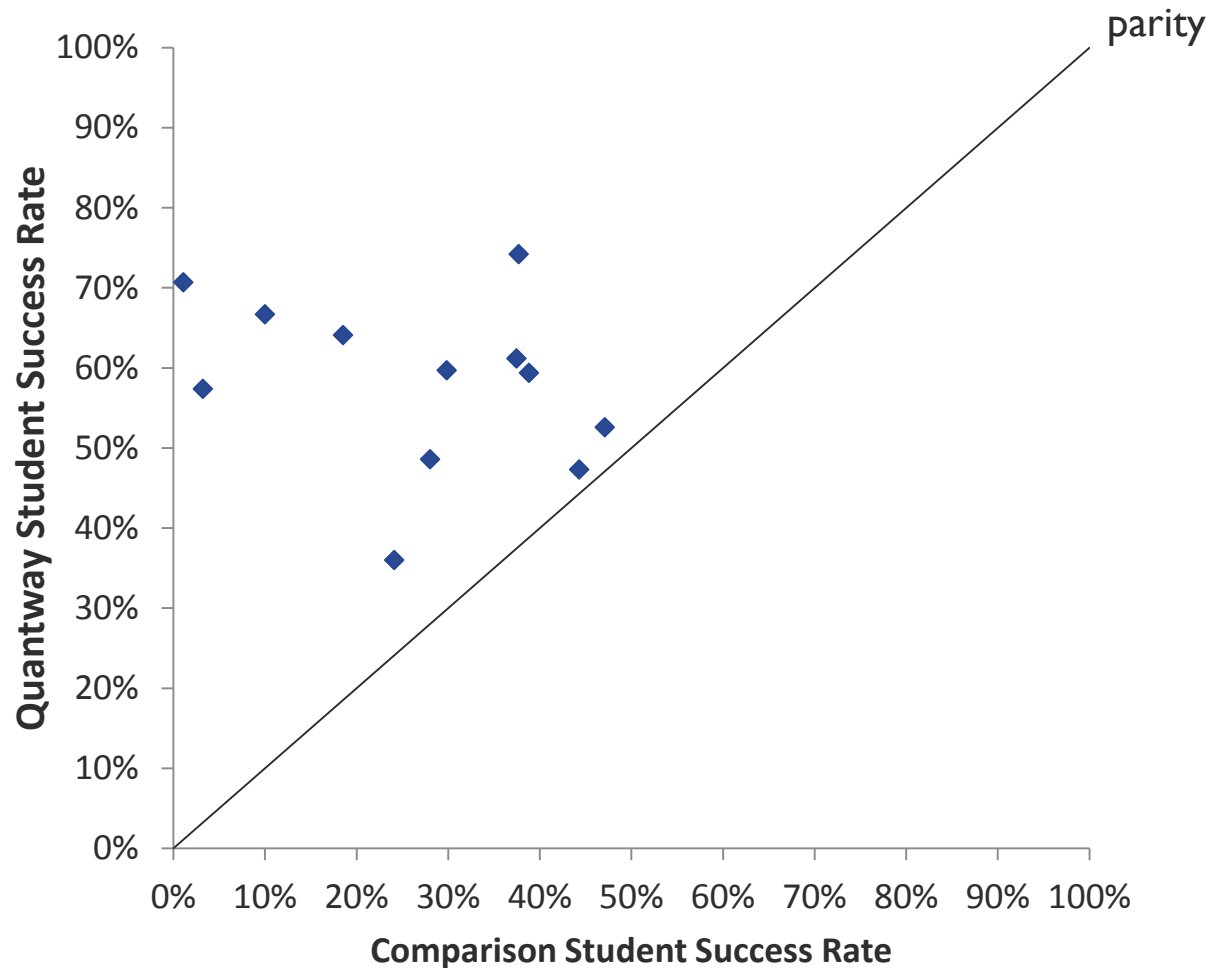
Male

Hispanic Black White Multi Other Unknown Hispanic Black White Multi Other Unknown



Non-QW	622	781	792	103	91	57	438	494	565	80	89	46
QW	126	161	154	17	17	18	93	106	113	16	14	10

Quantway Student versus Comparison Student Success Rates (C or better) AY 2013-1014



What Students are Saying

“ I praise the fact that someone finally had enough sense to realize that a great deal of students have been kept from furthering their education due to this overpowering wall, and now there is hope for alot of us, not only to pursue higher education but to learn something that would really apply to our everyday life. ”



What Students are Saying



“It gave me hope at the beginning of this quarter. And so now it’s kind of like ‘I can [do this]’ but I’m also doing something that I think is very useful...The stereotypes [that minorities and females can’t do math] aren’t true!”

What Students are Saying

“This class has helped me in my other classes. This has...exercised my mind enough for me to become a better writer, believe it or not.”



What Faculty Are Saying



“In [the network], we are working with other faculty, interacting with other teachers, both in my own college and across the country, and we learn from each other.”

Kristen Spiegelberg, Cuyahoga Community College

“It has provided both personal and professional growth ... I have been exposed to experts in his field and others who understand what I am attempting to achieve.”



Duane Benson, South Georgia College

Ann Edwards, Director of Advancing Quality Teaching
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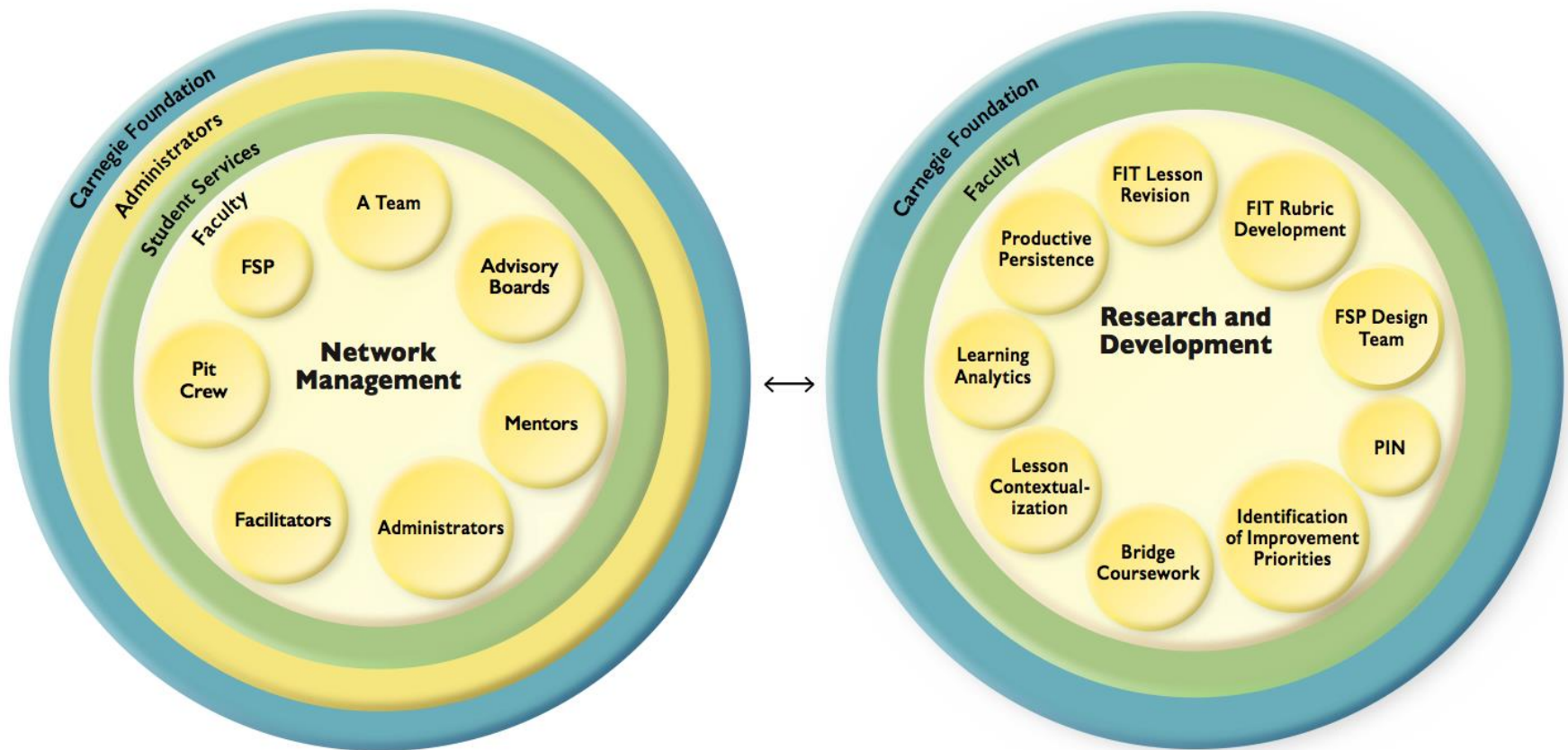
Karon Klipple, Director of Community College Pathways
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Community College Pathways — Network Improvement Communities



What Statway Students Are Saying

“I praise the fact that someone finally had enough sense to realize that a great deal of students have been kept from furthering their education due to this overpowering wall, and now there is hope for a lot of us, not only to pursue higher education but to learn something that would really apply to our everyday life. ”

Course relevance

“I feel that if one person put in the work to really understand the concepts they can pass. I was never a "math person" but coming into Statway has completely made a 360 degree turn about how I feel about math. It is great!”

A growth mindset

“I panic a lot when I hear anything to do with testing”

Math and test anxiety

What Students are Saying

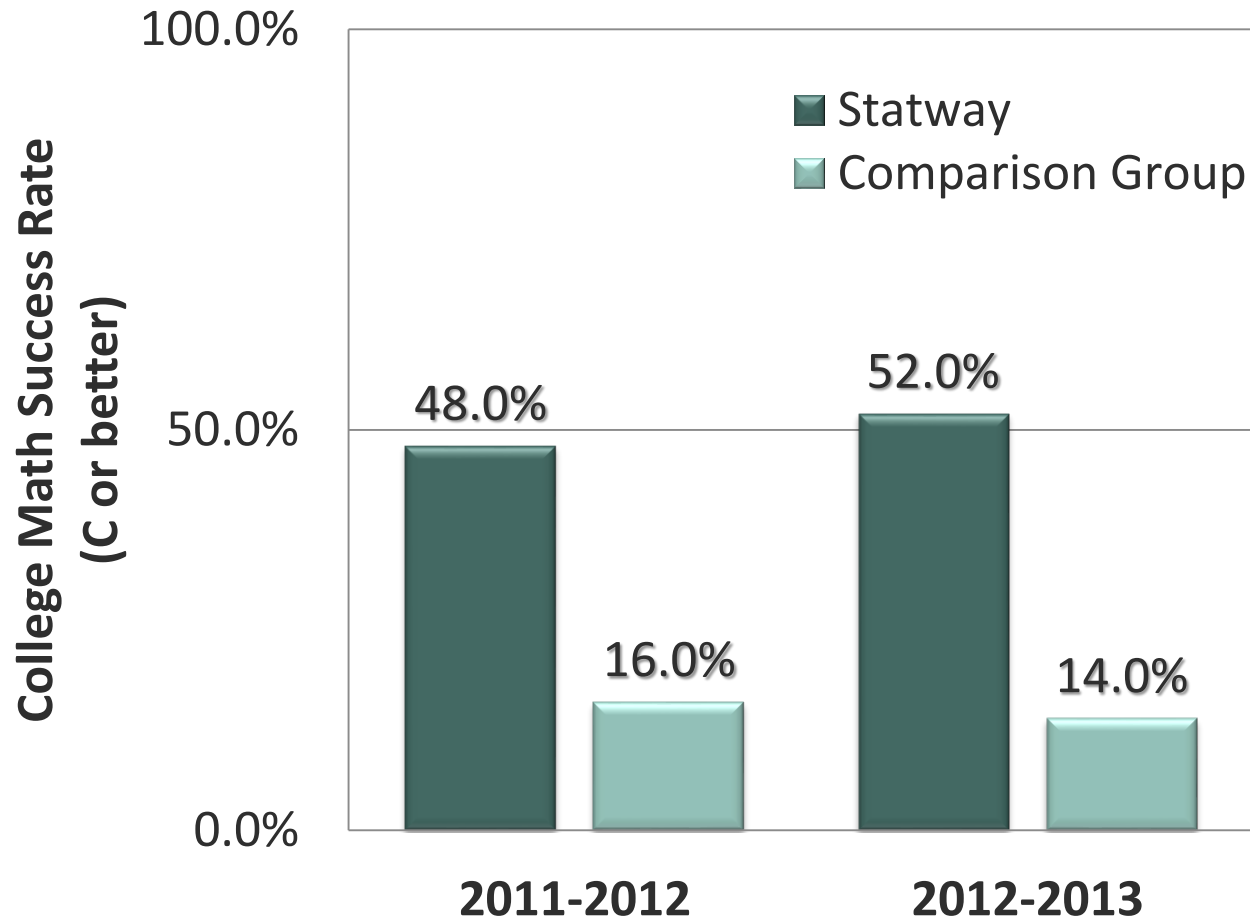
“ It really makes you think critically for math instead of just getting answers.”

“This class was really interesting and even though I hate math, I started to like it.”

“This course actually relates to the real world and made math more easy.”

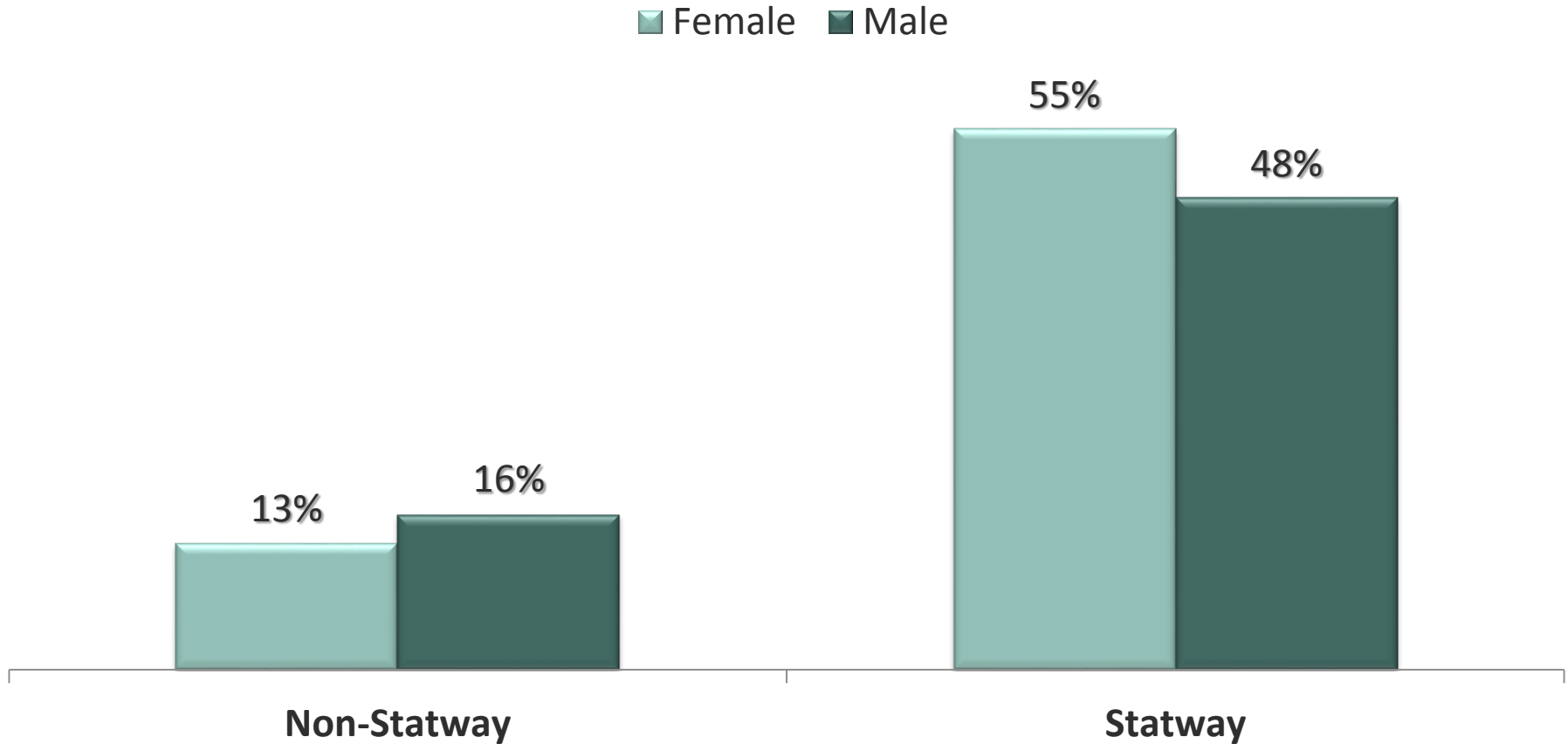
“...less calculation, fewer formulas, greater thinking....It will help you in everyday life.”

Statway's success exceeds the comparison groups in half the time



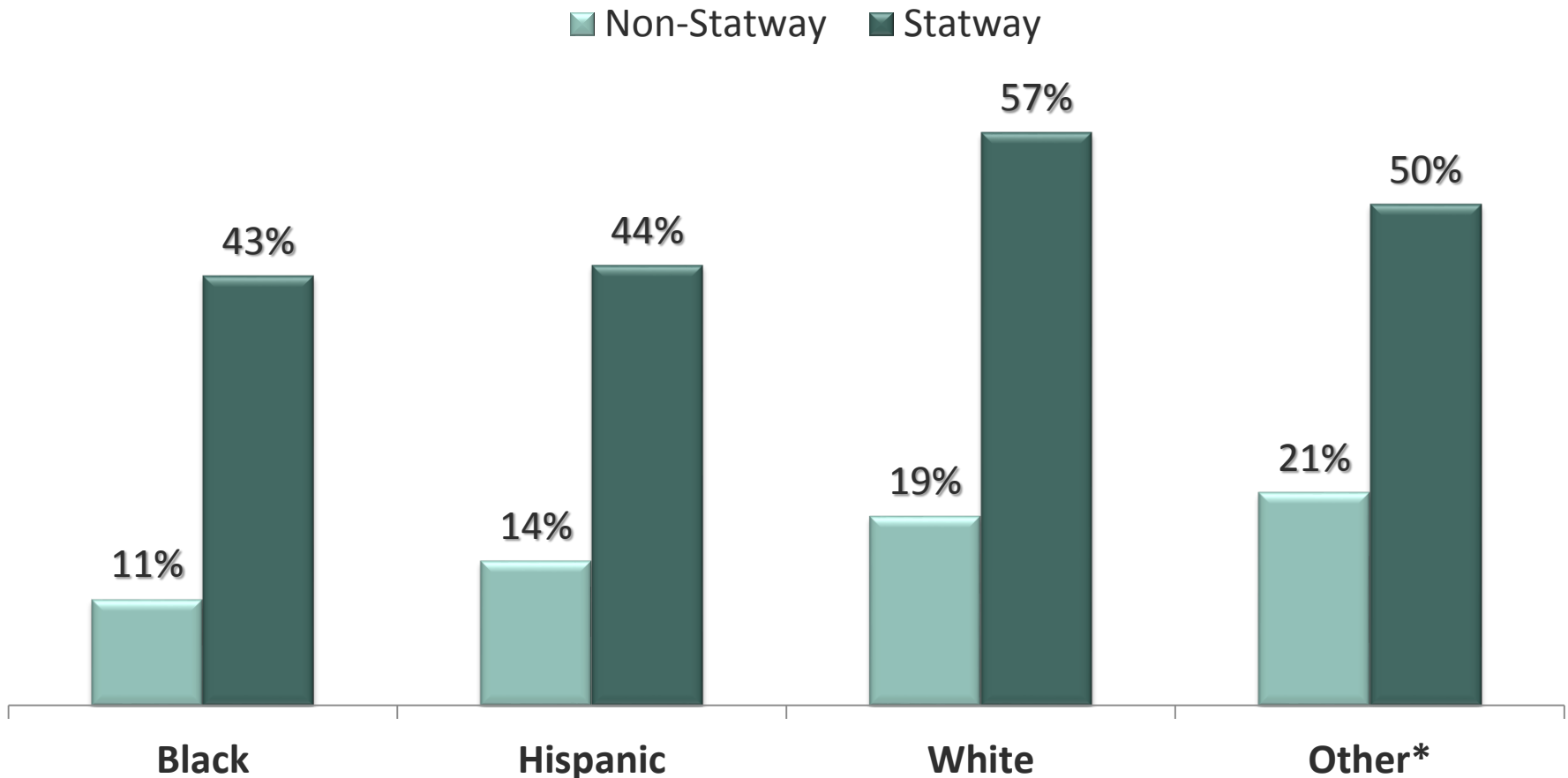
The success rate of the comparison group was calculated as successfully fulfilling college math within two years as opposed to one year for the Statway group.

Statway is effective across different gender groups – 2012-2013



Note. Data from unknown gender status were excluded; very few were unknown. “Other” also contains data from unknown race/ethnicity status.

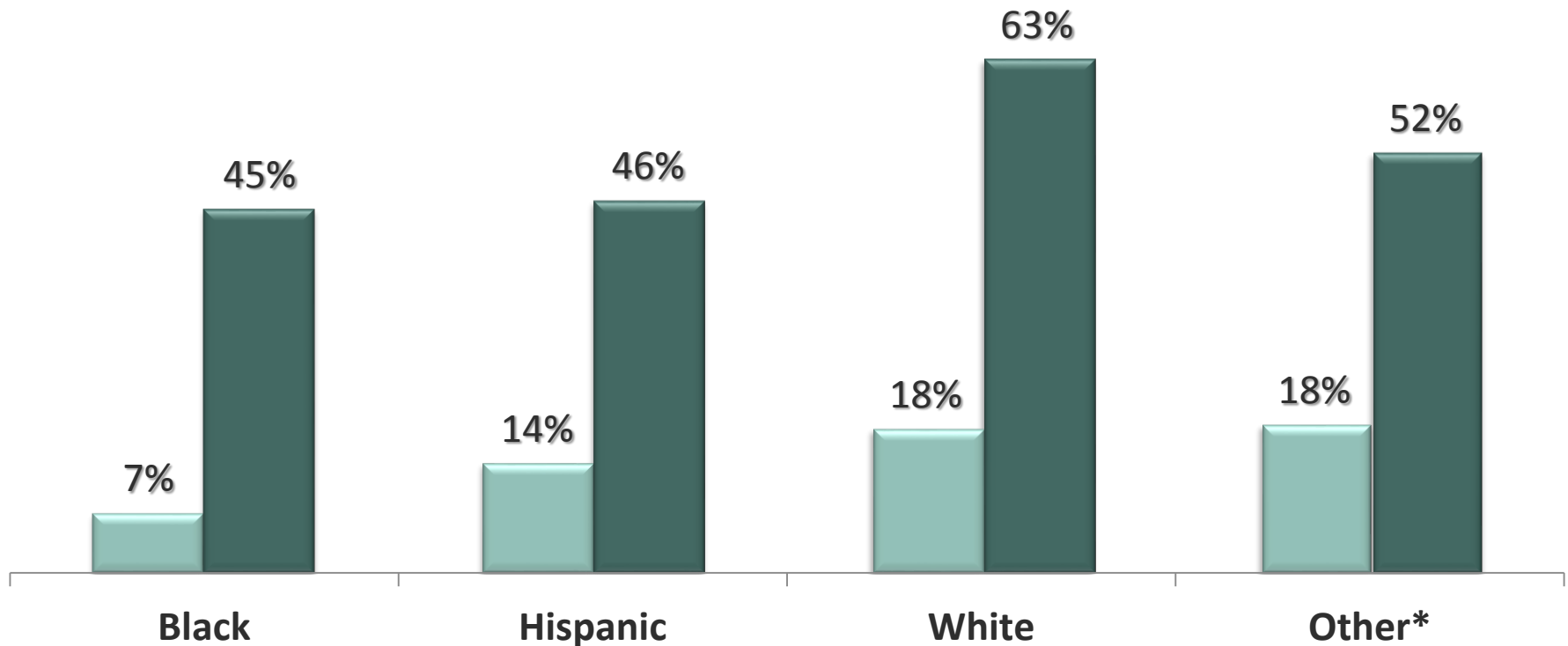
Statway is effective across different race/ethnicity groups – 2011-2012



Note. Data from unknown gender status were excluded; very few were unknown. “Other” also contains data from unknown race/ethnicity status.

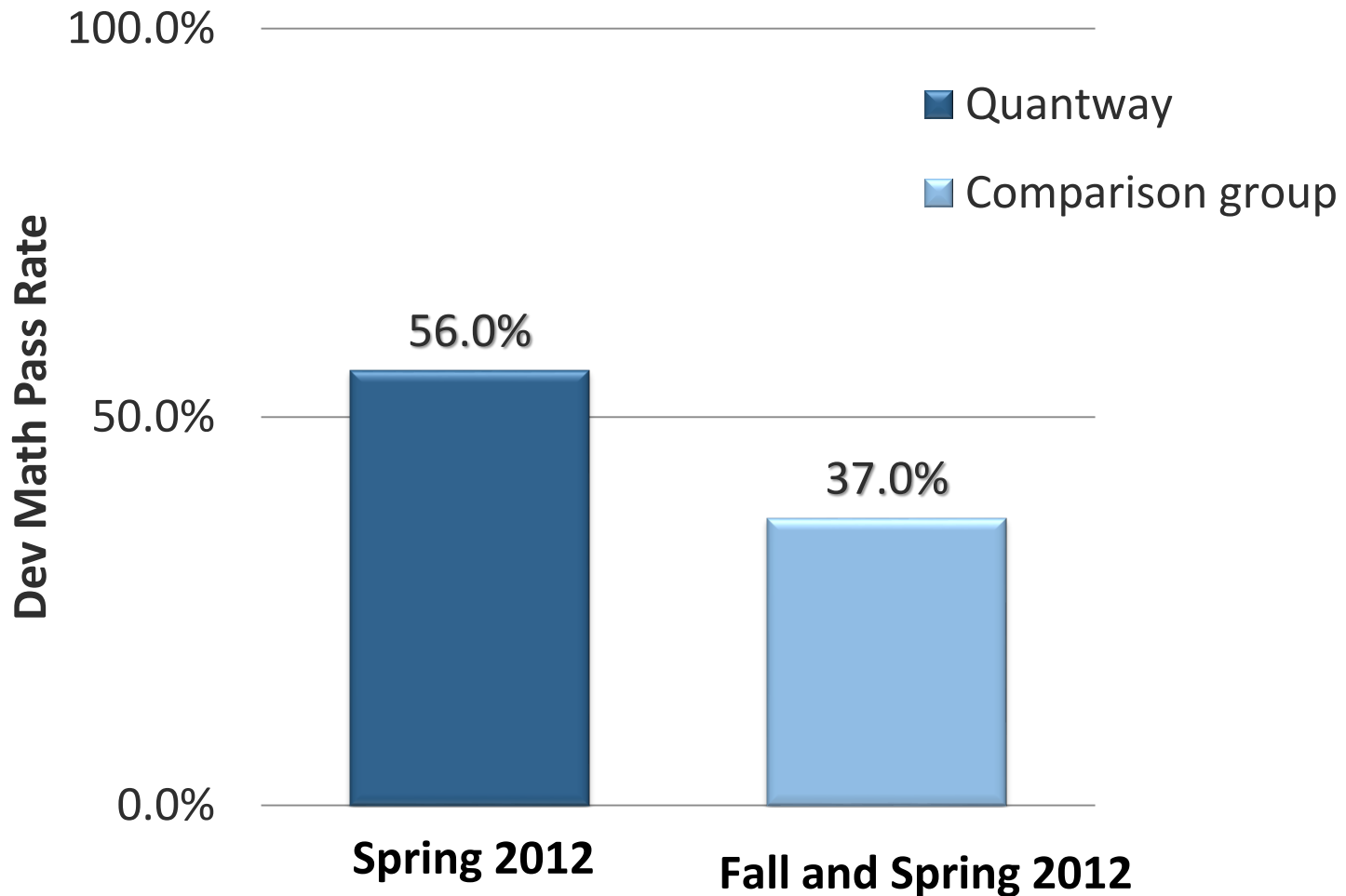
Statway is effective across different race/ethnicity groups – 2012-2013

■ Non-Statway ■ Statway



Note. Data from unknown gender status were excluded; very few were unknown. “Other” also contains data from unknown race/ethnicity status.

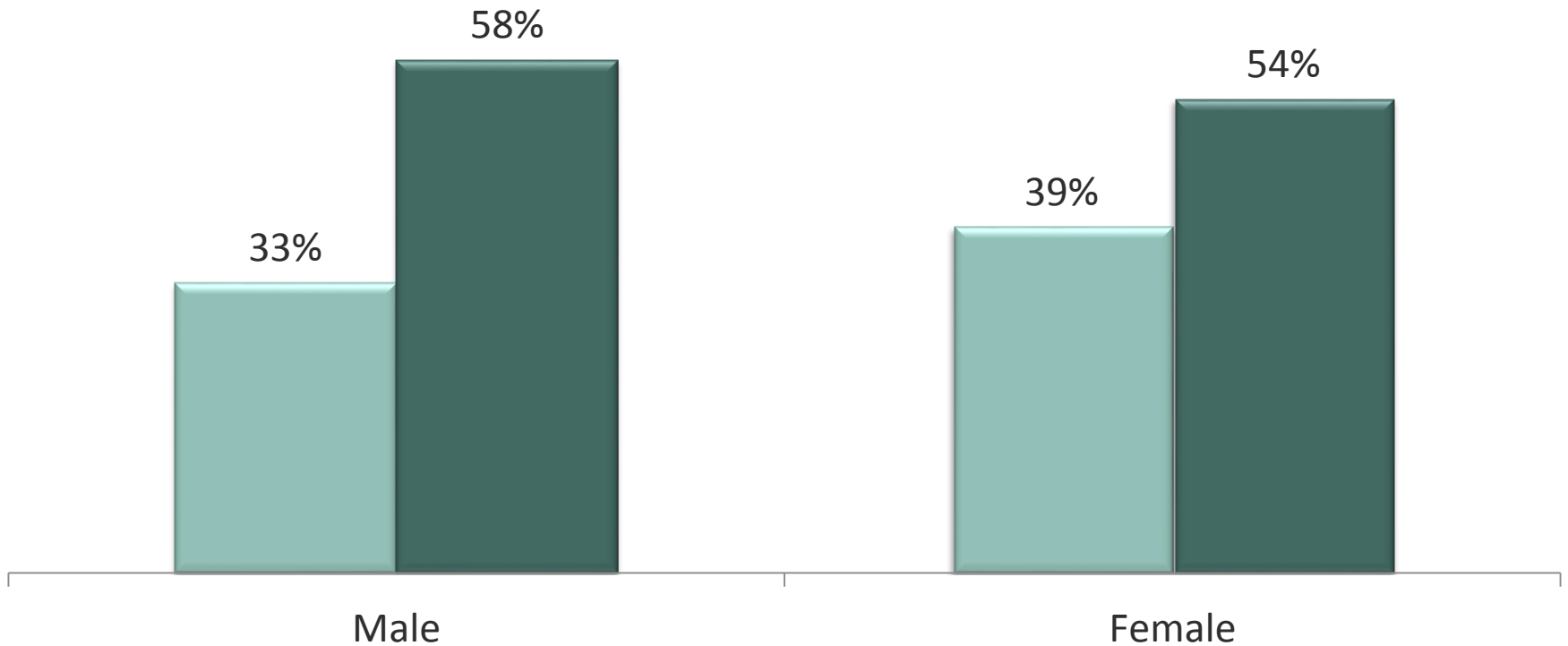
Quantway's success rate exceeds the comparison group's in one half the time



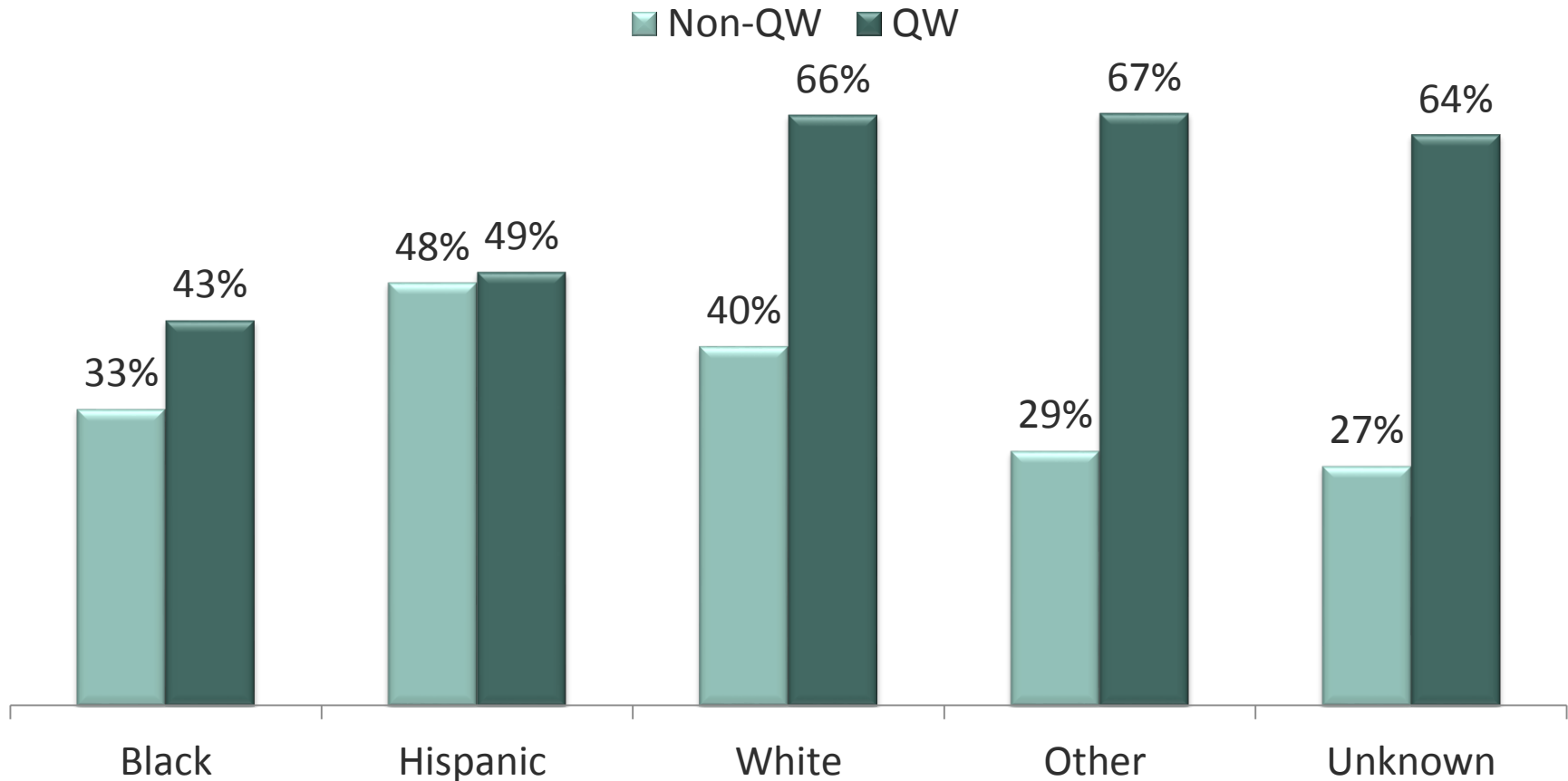
The pass rate of the comparison group was calculated as successfully fulfilling dev math within two semesters as opposed to one semester for the Quantway group.

Quantway is effective across different gender groups – Spring 2012

■ Non-QW ■ QW

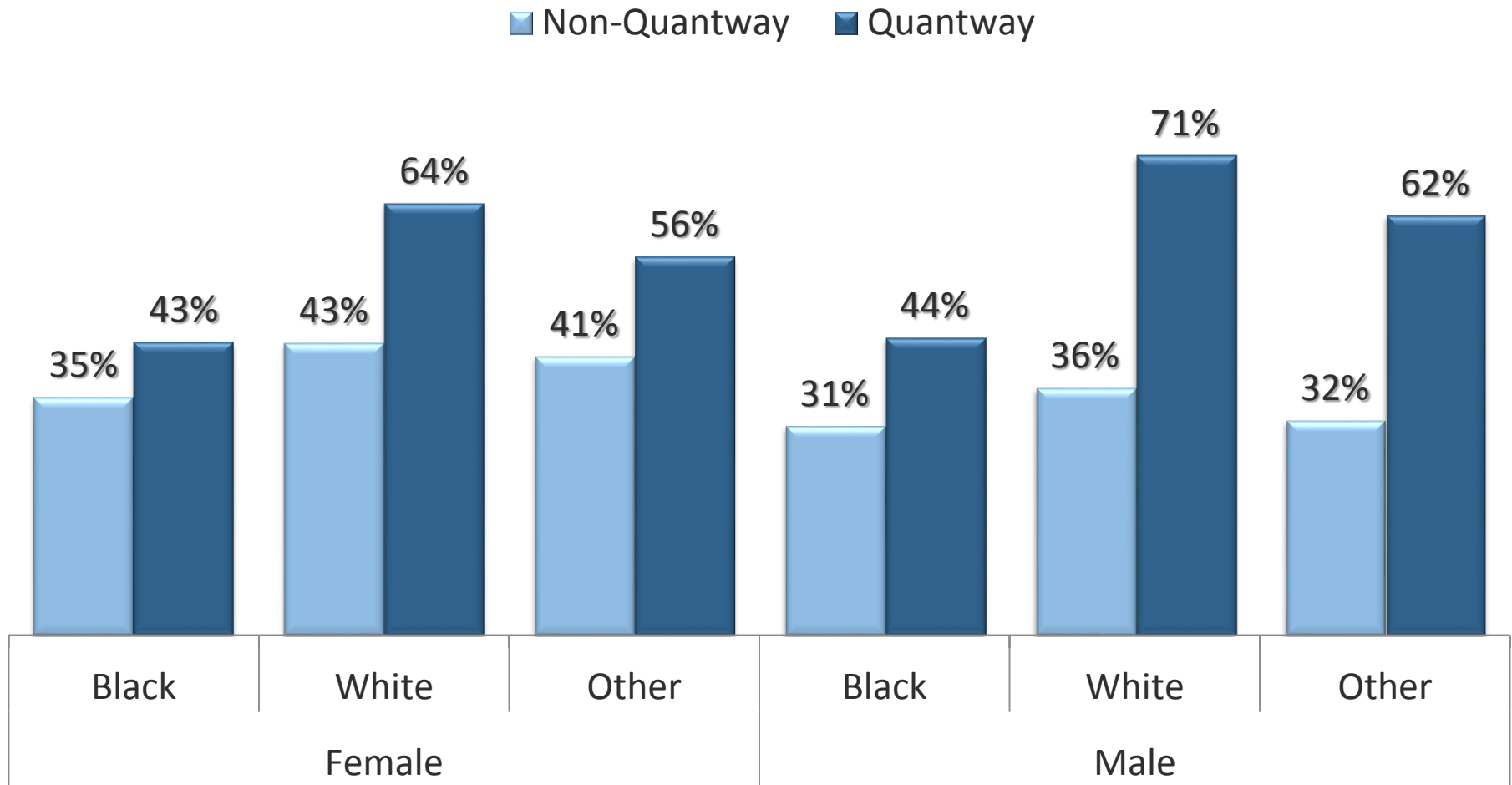


Quantway is effective across different race/ethnicity groups – 2012



Note. “Other” also contains data from unknown race/ethnicity status.

Quantway is effective across different gender and race/ethnicity groups – Spring 2012



Note. “Other” also contains data from unknown race/ethnicity status.