

# ALIGN DEGREE PROGRAMS WITH MATH PATHWAYS

Karon Klipple, Senior Director  
Carnegie Math Pathway, WestEd

Mary Crawford Mohat, Professor  
Onondaga Community College

Margo Keys, Vice President Student Services  
Chippewa Valley Technical College



# **KARON KLIPPLE, SENIOR DIRECTOR**

**What is the impact of Carnegie  
Math pathway**



CARNEGIE MATH  
**PATHWAYS**  
WestEd

# CARNEGIE MATH PATHWAYS

*Transforming students' mathematical learning experiences  
Improving course success and college completion, and  
Closing the opportunity gap*

*Karon Klipple*

*Executive Director*

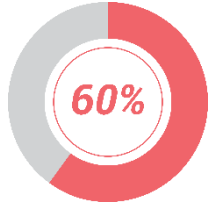




# The Challenge

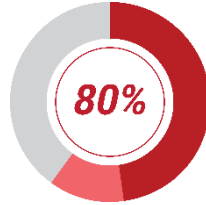
- **One quarter** of our students who start in the fall, **won't be there in the spring**
- Since 2000, **tuition has increased 142%**, and wages and financial aid haven't kept up
- **Mathematics** is one of **THE biggest barriers** to college completion. Students spend YEARS and \$\$ trying to complete mathematics and **most fail**.

# The Problem



**60-70%**

of community college students need at least one developmental math course before enrolling in college-credit courses



**80%**

of those students never get out of the developmental math pathway



**500,000 students**

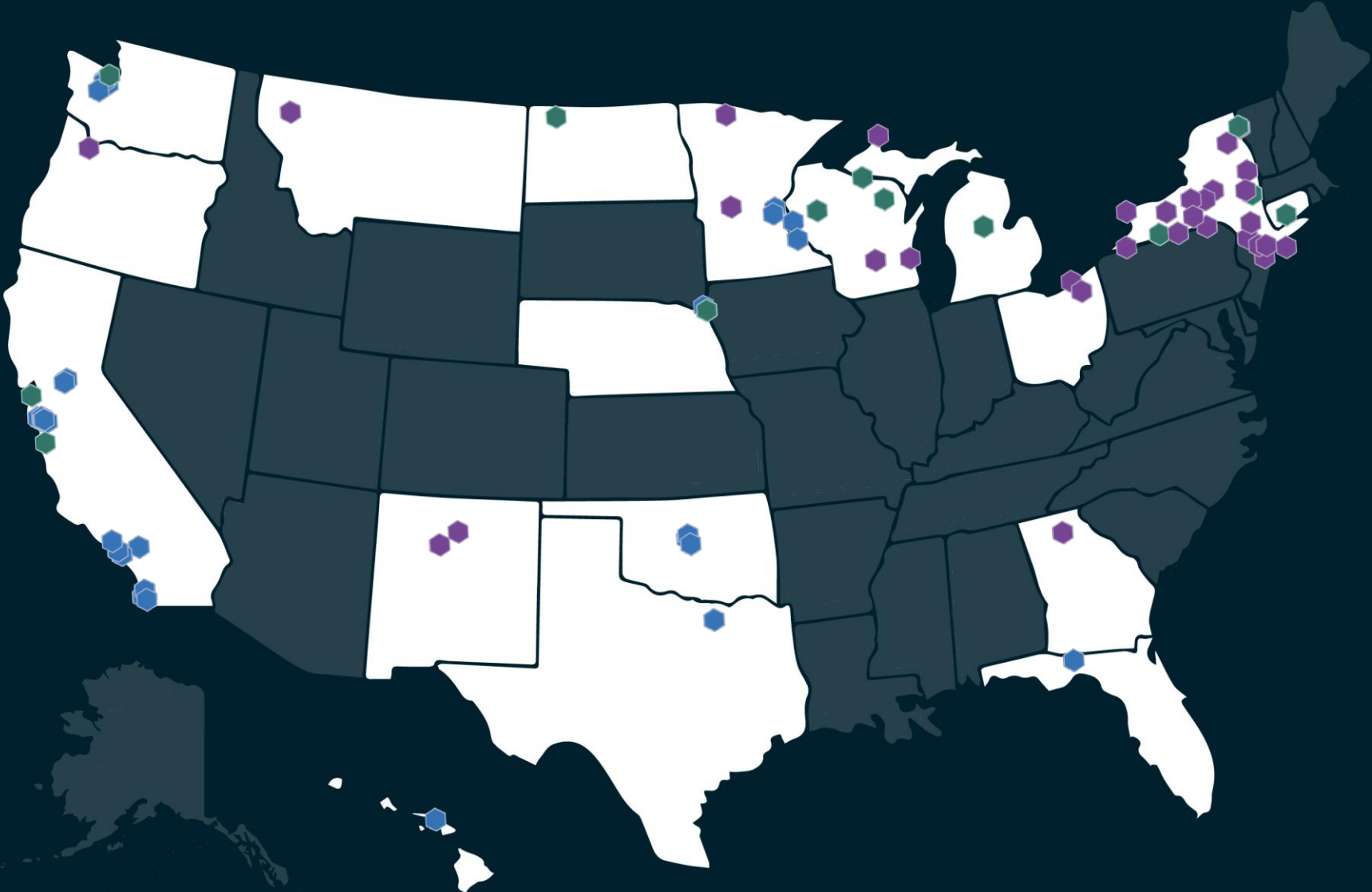
in every cohort will never complete the math requirement

***We cannot continue to use the same approach and expect different results.***

# We need a solution that...

- **Accelerates** mathematics completion
- Significantly **increases outcomes**
- Equips students with **rigorous learning and transferable knowledge**
- **Closes the gap**, works for ALL students
- **Increases college completion**

# Carnegie Math Pathways Today



**18**  
states

**90+**  
colleges

**30,000**  
students

# State University of New York

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- 28 SUNY Institutions part of the network
- Regional/state hub
  - Faculty professional learning
  - Faculty mentorship and coaching
  - Institutional research





# Accelerated Pathway

Ambitious, relevant,  
problem-centered  
curriculum

Language and Literacy  
Supports

Comprehensive and  
sustained professional  
learning opportunities

Student-focused,  
collaborative pedagogy

Network engagement and  
improvement

Productive  
Persistence  
interventions/  
practices



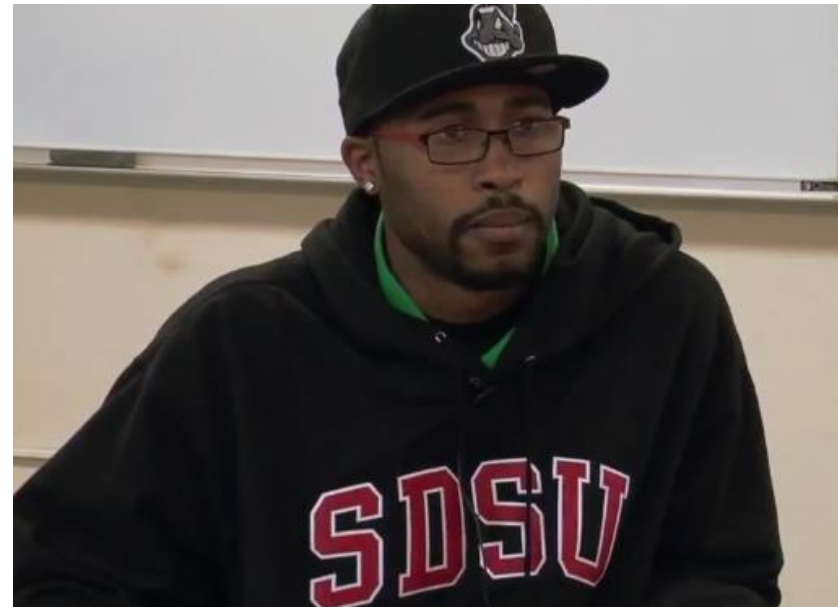


I enjoy coming to class. I want to think through the problems, not just get the answer.

Having a small group allows you to have more contact with the people around you - not necessarily having to raise your hand or be on the spot in front of the whole class. Your questions can get answered a little quicker, you can come to an understanding with your peers quicker. I think it's great.



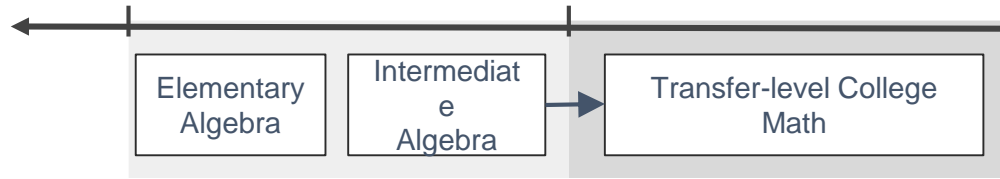
My experience has been positive. You know, I struggled with it..., but I think that's just a main part of it. You're supposed to jump in and figure it out!



Because I have had such a turn around in the way I feel as someone who is competent at doing math, it has started to translate into the other things that I do in my life. I feel like I am growing a new capacity



I couldn't imagine taking another stats class. The people in this class are more like a family than a classroom... Not only will you leave with a higher education, you will leave with friends.



# Quantway



# Statway



QW Core



**QW Core replaces dev sequence**

QW College



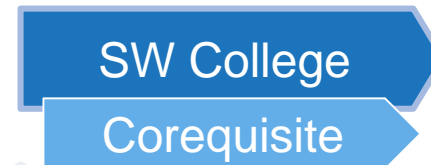
QW Pathway



SW Pathway



Statway College



**Result in transfer-level credit**

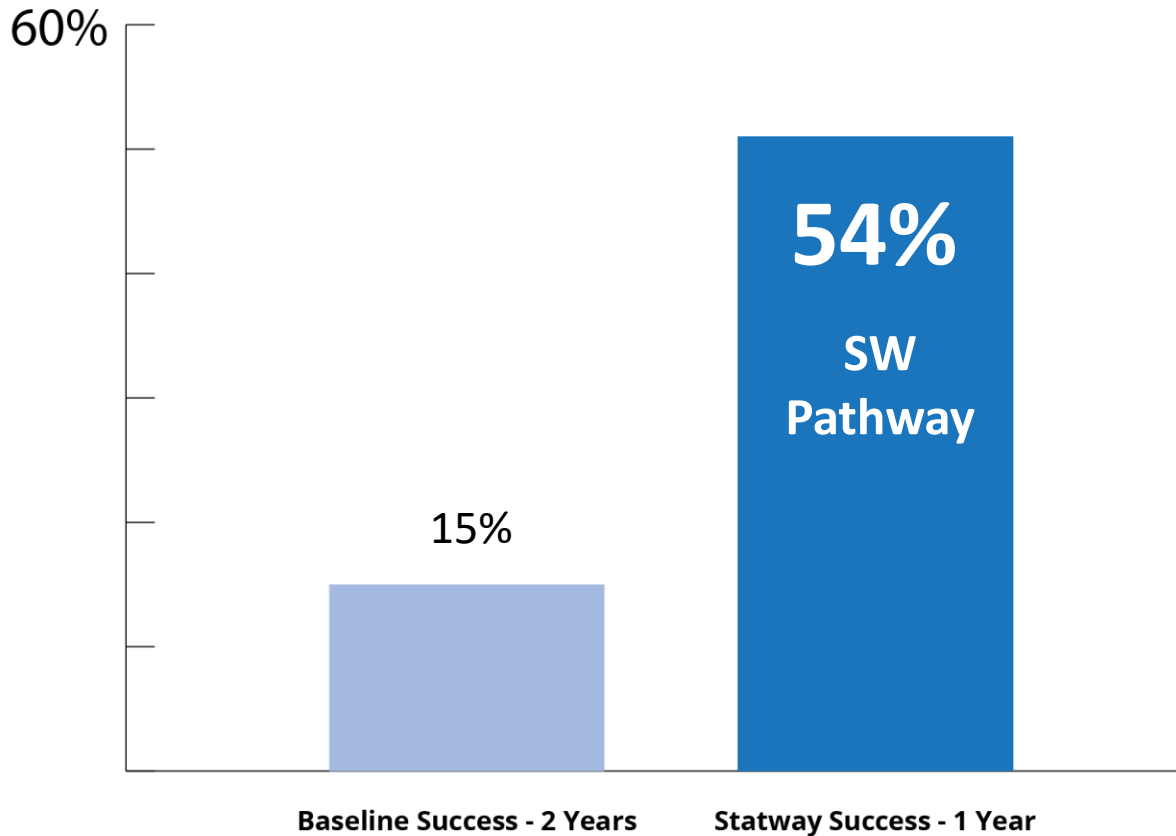


# Triple the Success in Half the Time (2011-2017)



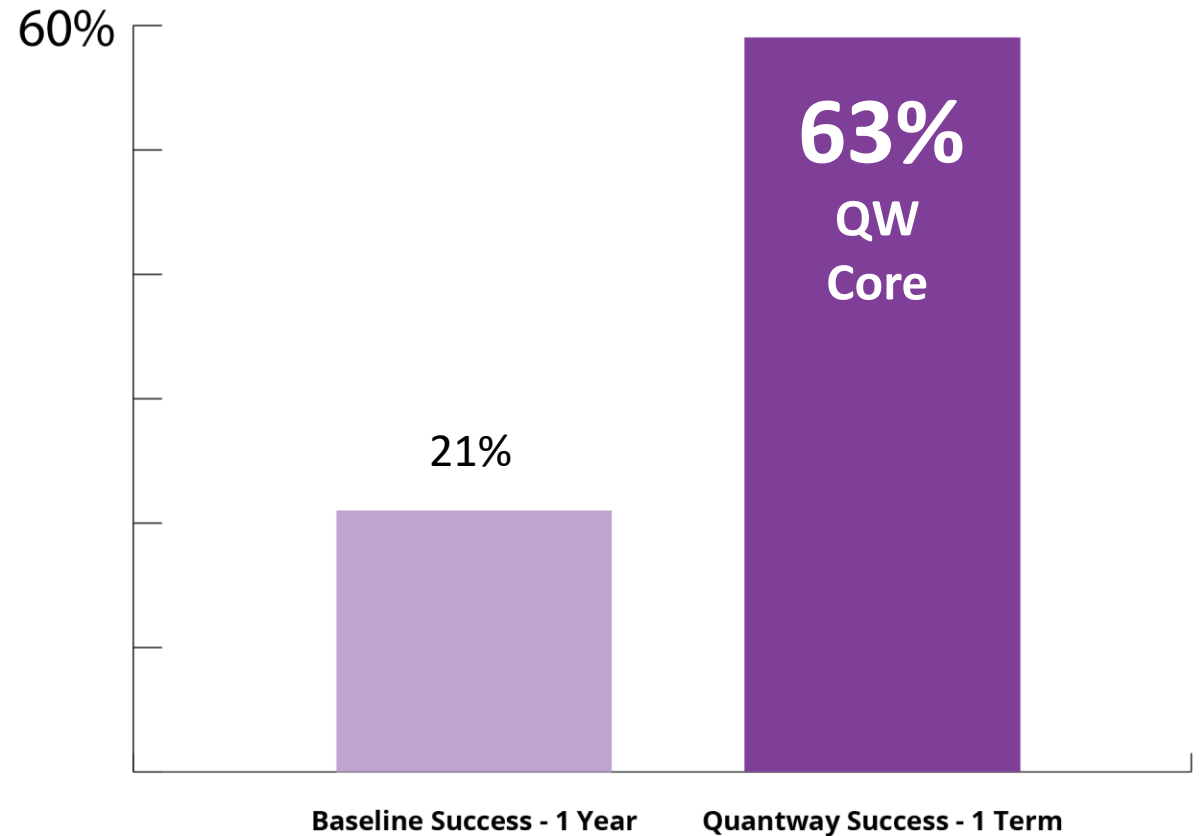
## Statway

1 year stretch pathway replaces  
3-4 courses (2-3 dev + 1 college)



## Quantway

1 semester course replaces  
2-3 courses

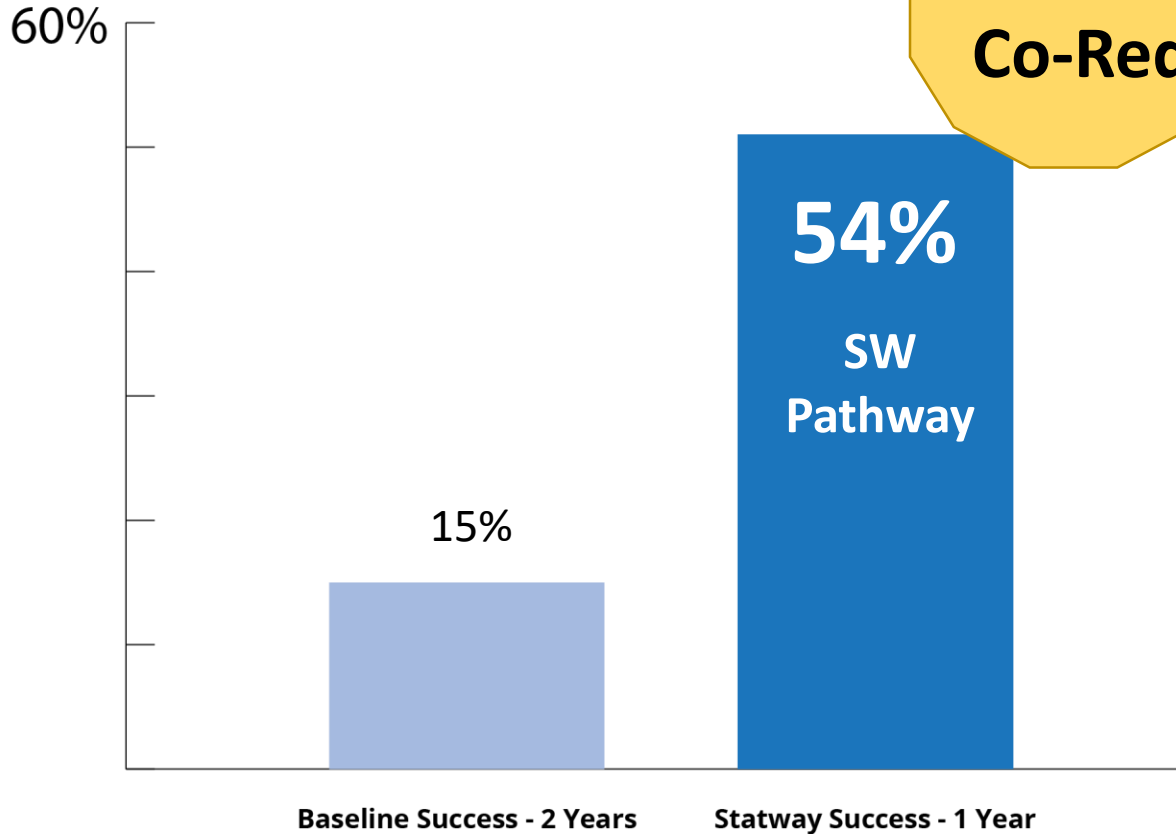


# Triple the Success in Half the Time (2011-2017)



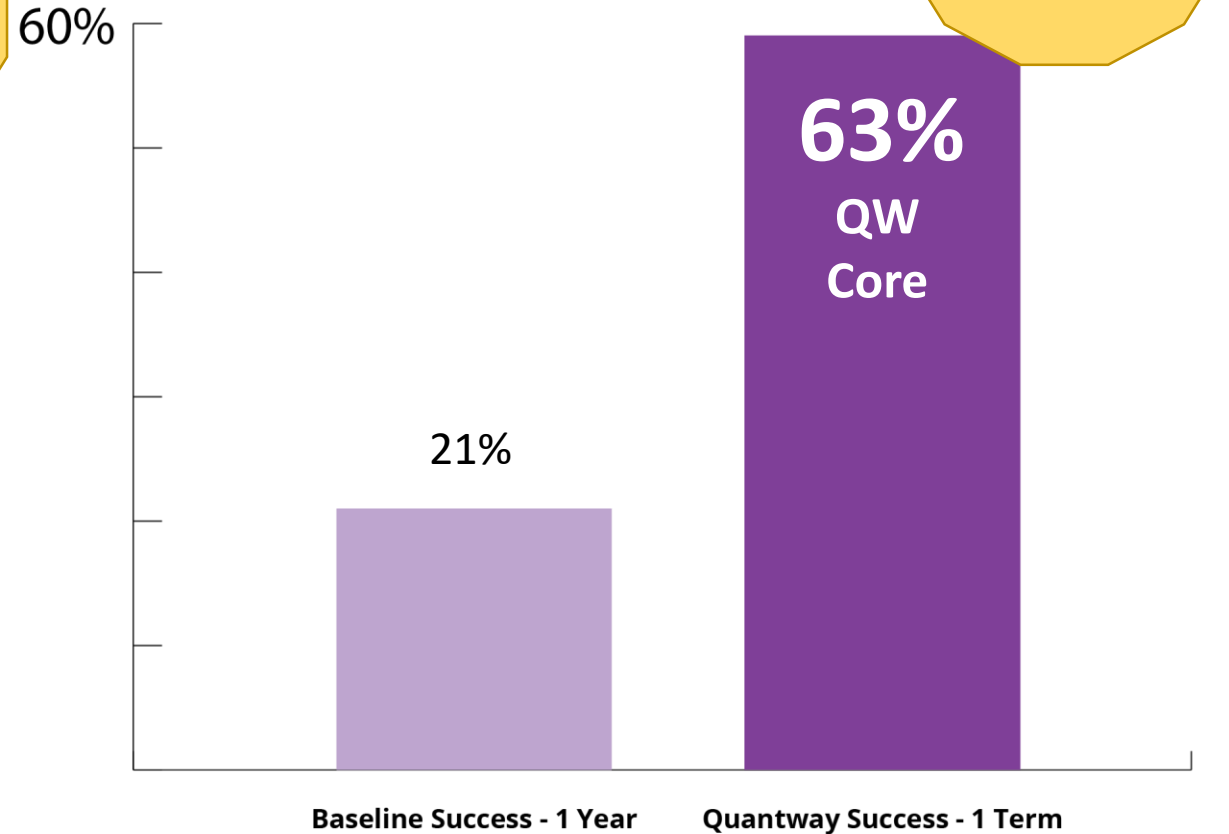
## Statway

1 year stretch pathway replaces  
3-4 courses (2-3 dev + 1 college)



## Quantway

1 semester course replaces  
2-3 courses





For every 10 traditional students,  
more than 15 Statway students earn their two-year degree/credential

For every 10  
traditional students,  
more than 22 Statway  
students earn their  
four-year degree







## Benefits for Students

- **Complete college math, and ultimately, graduate faster, saving time and money.**
- **Build meaningful math skills relevant to your academic studies and career path.**
- **Develop lifelong learning skills that build confidence and persistence.**



## Benefits for Institutions

- **Dramatically increase student success and completion rates.**
- **Retain more students- making every recruitment dollar go further.**
- **Build capacity for classroom and institutional reform through connection with a nation network.**

The background of the slide is a light beige color with a subtle gradient. It is decorated with several realistic water droplets of various sizes, scattered across the top and right sides. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# **WHY IT WORKS**

TEACHING WITH CARNEGIE MATH PATHWAYS

MARY CRAWFORD MOHAT

MATH PROFESSOR

# DESIGN PRINCIPLES

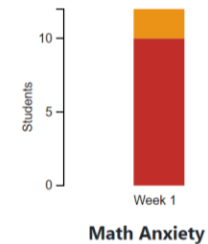
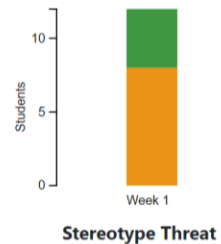
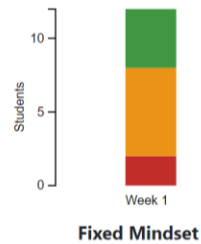
- **RESEARCH-BASED INSTRUCTION AND PROFESSIONAL DEVELOPMENT**
- **PRODUCTIVE PERSISTENCE**
- **NETWORKED COMMUNITY**
- **RELEVANT ANALYTICS**
- **RELEVANT CONTENT**

# RELEVANT ANALYTICS

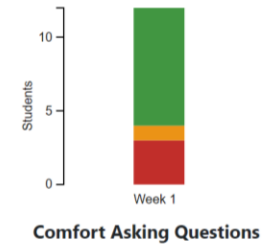
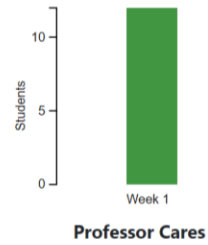
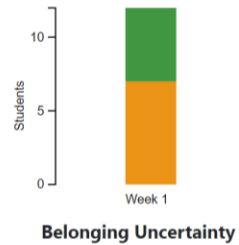
## Classroom Productive Persistence Summary for [4X82Q79Q] MAT 084-309 Fall 2018

Visualization mode:   Data set:

### Students' perceptions of themselves as mathematical learners and doers



### Students' sense of belonging in a mathematical environment





# RELEVANT CONTENT

## Interest Rates and Interest Charges

<b>Annual Percentage Rate (APR) for Purchases</b>	<b>0.00%</b> introductory APR for 6 months from the date of account opening. After that, your APR will be <b>10.99%</b> to <b>23.99%</b> based on your creditworthiness. This APR will vary with the market based on the Prime Rate.
<b>APR for Balance Transfers</b>	<b>0.00%</b> introductory APR for 24 months after the first transaction posts to your account under this offer. After that, your APR will be <b>10.99%</b> to <b>23.99%</b> based on your creditworthiness. This APR will vary with the market based on the Prime Rate.
<b>APR for Cash Advances</b>	<b>28.99%</b> . This APR will vary with the market based on the Prime Rate.
<b>Penalty APRs and When It Applies</b>	Between up to <b>16.99%</b> and up to <b>26.99%</b> based on your creditworthiness and other factors. This APR will vary with the market based on the Prime Rate. This APR may be applied to new purchases and balance transfers on your account if you make a late payment. How long will the penalty APR apply?: If your APRs for new purchases and balance transfers are increased for a late payment, the Penalty APR will apply indefinitely.
<b>How to Avoid Paying Interest on Purchases</b>	Your due date is at least 25 days after the close of each billing period (at least 23 days for billing periods that begin in February). We will not charge you any interest on purchases if you pay your entire balance by the due date each month.
<b>Minimum Interest Charge</b>	If you are charged interest, the charge will be no less than \$0.50.

# HOW TO MAKE IT HAPPEN

Leading the change

Margo Keys

Vice President Student Services



# CHIPPEWA VALLEY TECHNICAL COLLEGE

- › 2-year community and technical college
- › 4,100 full-time equivalent students (FTEs)
- › Steady decline in FTEs 2010-2013
- › Performance-based funding
- › Strategic initiative to increase access and **graduation**
- › Business and industry demand for more graduates



# ANALYSIS REVEALED

- › Some students took the COMPASS placement test but did not enroll
- › Students in remediation path were 10 to 15 percent less likely to enroll
- › Some students started the remediation path but did not progress through the term or persist to the next term
- › Student loan debt increases without a credential (no certification or diploma)

**Math  
Challenge**



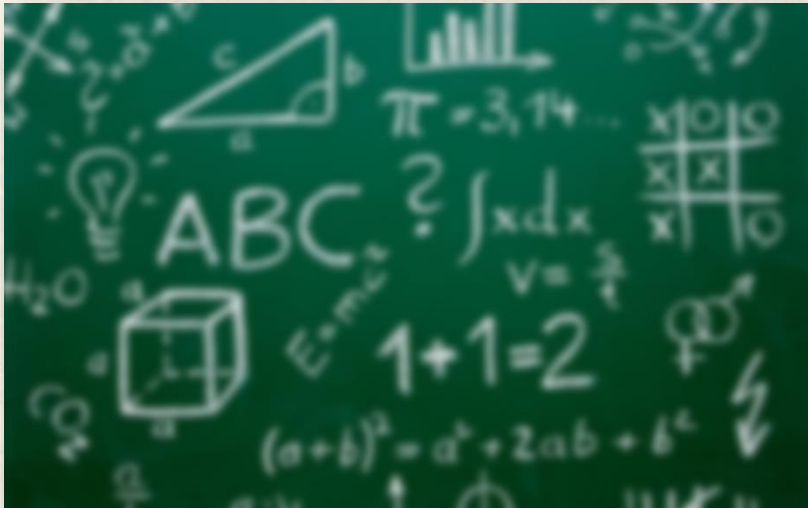
**Writing  
Challenge**



**Access  
Challenge**



# ANALYSIS REVEALED



- › National models emerged with strong results
- › State legislatures mandating reform for developmental education
- › Complete College America reports on research supported the premise that change is possible



# WHY CARNEGIE MATH PATHWAYS?

- › Standardized curriculum
  - Statway
  - Quantway (QW)
- › Recognized as national leader in math redesign
- › Evidence-based student success
- › Networked Improvement Community



# STRATEGY AND STEPS COMPLETED

- › Cross functional **taskforce**: VPs, Deans, Student Services, Faculty
- › Scoped project. Set goals, measures of success. Action plan
- › **Competency** of math courses evaluated. (Existing and CMF)

› Desi

Quantway	Statway	STEMway	Techway
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# STRATEGY AND STEPS COMPLETED

- › Math competency table - **Program/Degree advisory groups** (Industry representatives involved)
- › **Department Chair/PD selected math pathway**
- › Updated program/degree requirement master plans
- › Communication to faculty, advisors, leaders, college board
- › **Monitor change.** Steering committee monitors metrics each term



## Math Pathway List

Quantway	Statway	STEMway	Techway	Student Choice Quantway or Statway
<ul style="list-style-type: none"> <li>• Early Childhood Education</li> <li>• Air Conditioning, Heating and Refrigeration Technician (T.D.)</li> <li>• Diagnostic Medical Sonography</li> <li>• Criminal Justice</li> <li>• Renewable Energy (T.D.)</li> <li>• Landscape Plant Turf Management</li> <li>• Animal Science Management</li> <li>• Agronomy Management</li> <li>• Industrial Mechanical Technician</li> <li>• Health Info Management and Technology</li> <li>• Library and Information Services</li> <li>• Radiography</li> <li>• Industrial Mechanic (T.D.)</li> <li>• Residential Construction (T.D.)</li> </ul>	<ul style="list-style-type: none"> <li>• Paralegal</li> <li>• Manufacturing Quality (T.D.)</li> <li>• Manufacturing Engineering Technologist</li> <li>• Mechanical Design Technology</li> </ul>	<ul style="list-style-type: none"> <li>• Air Conditioning, Heating, and Refrigeration Technology (and Quantway)</li> <li>• Automation Engineering Technology</li> <li>• Architectural Structural Design</li> <li>• Manufacturing Quality (T.D.)</li> <li>• Manufacturing Engineering Technologist</li> <li>• Mechanical Design Technology</li> </ul>	<ul style="list-style-type: none"> <li>• Automotive Maintenance Technician (T.D.)</li> <li>• Automotive Technician(T.D.)</li> <li>• Auto Collision Repair and Refinish Technician(T.D.)</li> <li>• Diesel/Heavy Equipment Technician(T.D.)</li> <li>• Electrical Power Distribution(T.D.)</li> <li>• Motorcycle, Marine and Outdoor Power Products Technician (T.D.)</li> <li>• Welding Fabrication (T.D.)</li> <li>• Machine Tooling (T.D.)</li> </ul>	<ul style="list-style-type: none"> <li>• Accounting</li> <li>• Accounting Assistant (T.D.)</li> <li>• Business Management</li> <li>• Culinary Management</li> <li>• Sales Management</li> <li>• Marketing</li> <li>• Digital Marketing</li> <li>• Human Resources</li> <li>• Organizational Leadership</li> <li>• Executive Assistant</li> <li>• Liberal Arts Associate of Science (STEMway or Statway)</li> <li>• Radiography</li> <li>• Professional Communications</li> <li>• Foundations of Teacher Education*</li> </ul>
<p>*Course Options Mathematical Reasoning- 3 cr Quantitative Reasoning- 4 cr</p>	<p>*Course Options Statistics I - 3 cr Statistics II - 4 cr</p>	<p>*Course Options College Tech Math - 5 cr College Algebra - 4 cr</p>	<p>*Course options Math for Tech Trades - 2 cr Paired with Math success hour</p>	<p>*Can take Quantway, Statway, or Principles of Biology</p>

T.D.- Technical Diploma

\*Course Options; The Dean and Department Chair determine the course included in the degree requirements.

Math Reasoning replaced Beginning Algebra and Intermediate Algebra at CVTC.



# RESULTS

- › Early results were positive
- › FTEs rose four percent for two consecutive years
- › When testing barrier was removed, math pathway course success rates remained consistent or increased



# COLLABORATION STRATEGIES

- › Gather all stakeholders. Strategic change
- › Build rationale for the change. Tell the story over and over
- › Show impact on students
- › Develop project plan. Scope, timeline, measure of success
- › Develop vision for project. Listen. Be firm but flexible
- › Reward and recognize champions
- › Use project management 101



# Questions and answers