

# Mathematics Pathways: The Right Math for the Right Student at the Right Time

**Rebecca Hartzler**, Charles A. Dana Center

Successful Transitions to College Capstone, May 6, 2017



# About the Dana Center



The Charles A. Dana Center works with K16 education systems to prepare every student for success in postsecondary education and the changing workforce, particularly in mathematics and science.

# The Dana Center Mathematics Pathways (DCMP)

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**Dana Center Mathematics Pathways** ensures that all students in our nation have equitable access to, and the opportunity for success in, **rigorous** mathematics pathways that are aligned and relevant to their future aspirations, propelling them to upward economic and social mobility.

# The Dana Center Mathematics Pathways Vision

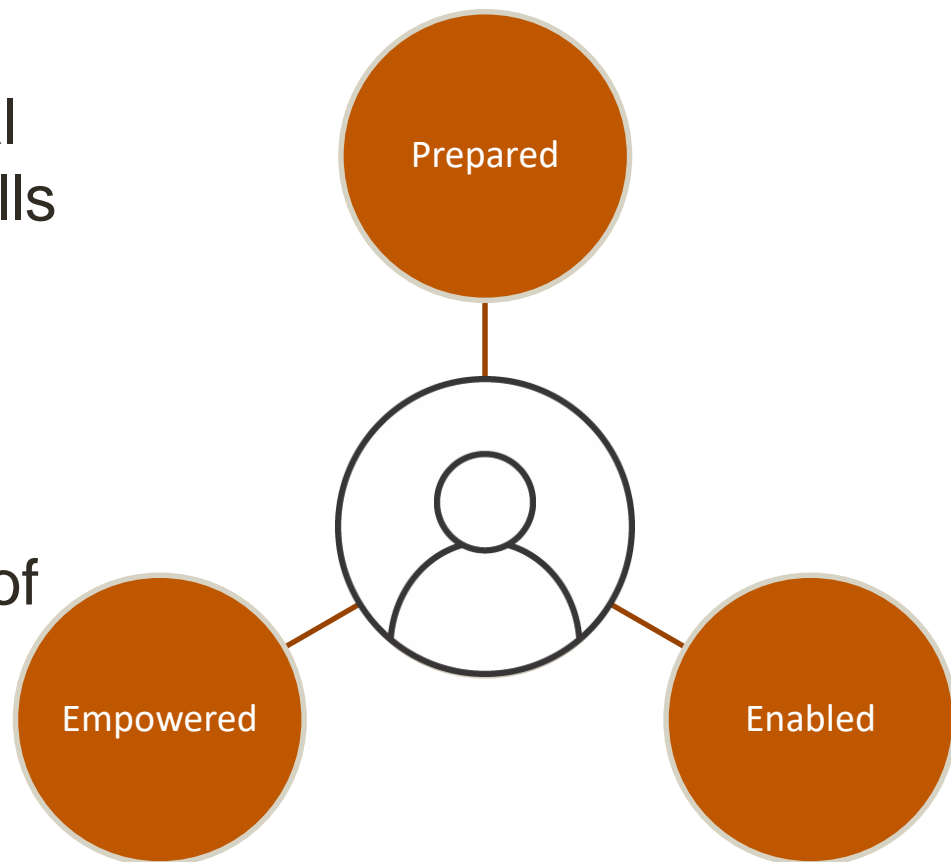
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All students are

**Prepared** to use mathematical and quantitative reasoning skills in their careers and personal lives;

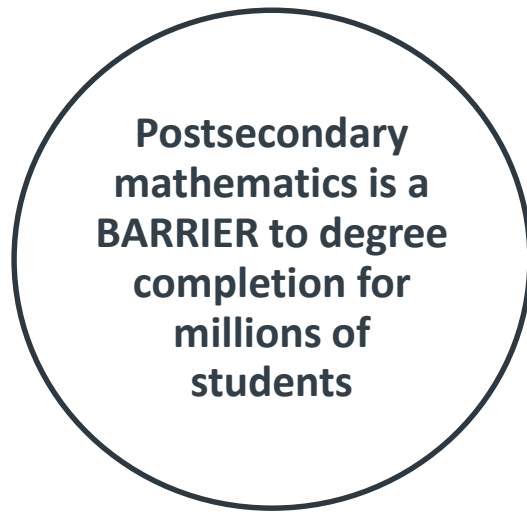
**Enabled** to make timely progress towards completion of a certificate or degree; and

**Empowered** as mathematical learners.

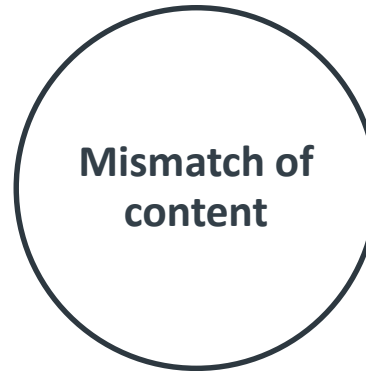


# Challenges

## PROBLEM



## DRIVERS OF THE PROBLEM



# Definition of *math pathway*

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... a mathematics course or sequence of courses that students take to meet the requirements of their program of study.

The concept of math pathways applies to *all* students.

# The Dana Center Mathematics Pathways Model

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**Institutions implement structural and policy changes quickly and at scale.**

**Mathematics pathways are structured so that:**

*Principle 1:* All students, regardless of college readiness, enter directly into mathematics pathways **aligned to their programs of study.**

*Principle 2:* Students **complete** their first college-level mathematics requirement in their **first year of college.**

# The Dana Center Mathematics Pathways Model

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**Institutions and departments engage in a deliberate and thoughtful process of continuous improvement to ensure high-quality, effective instruction.**

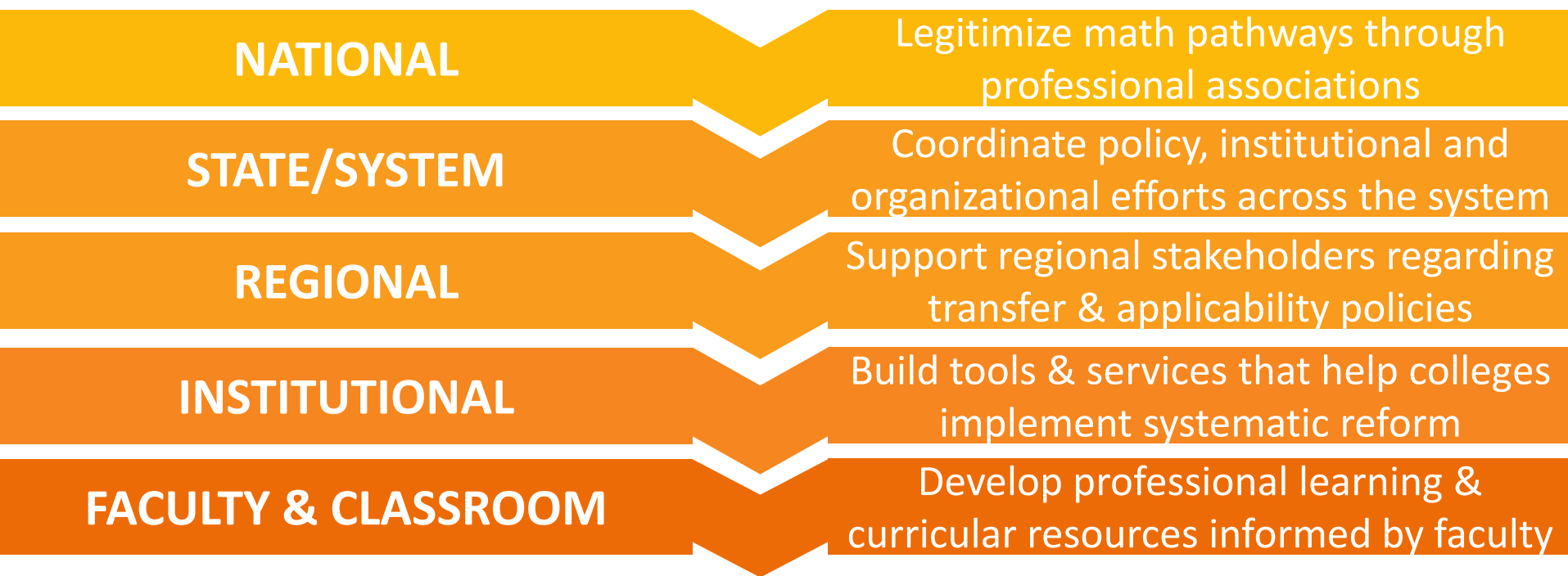
**Students engage in a high-quality learning experience in mathematics pathways that are designed so that:**

*Principle 3: Strategies to support students as learners* are integrated into courses and are aligned across the institution.

*Principle 4: Instruction* incorporates evidence-based curriculum and pedagogy.

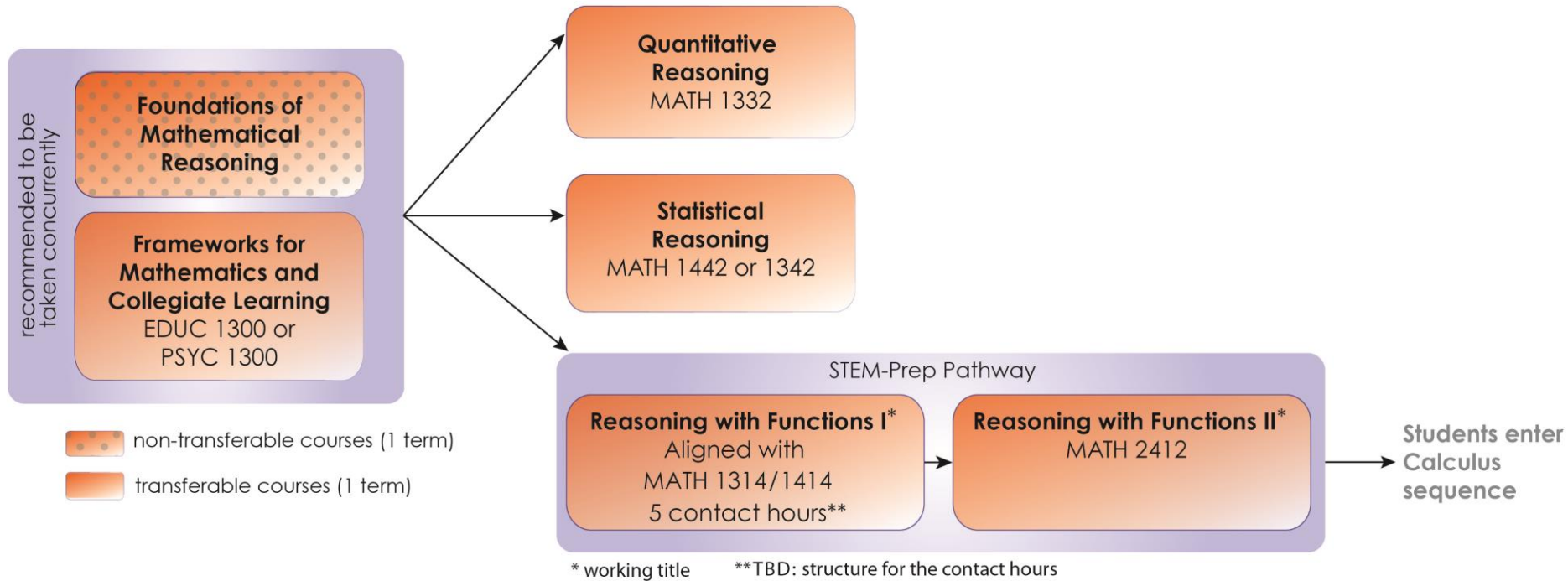


# The Dana Center works at multiple levels of the system to support institutions in operationalizing the DCMP model.

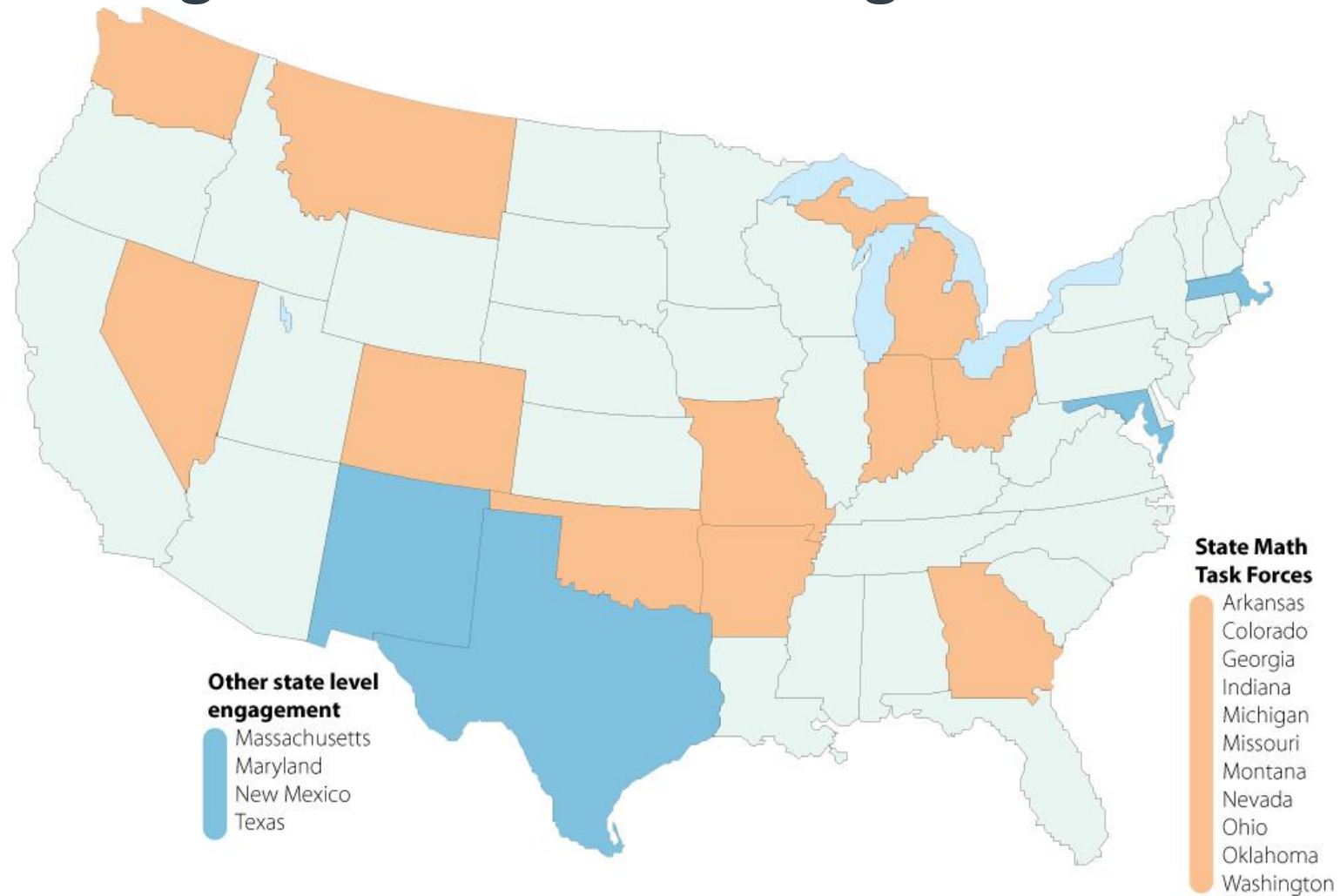


All students are prepared, enabled, and empowered.

# The “NMP” Pathways



# State-level mobilization is key to building and sustaining momentum for change



**Mobilize** – To prepare and organize for action

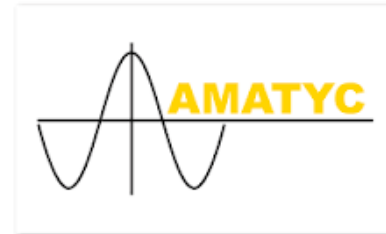
# National Policy and Content Organizations Supporting Mathematics Pathways



Core Principles  
for  
**Transforming**  
**REMEDICATION**  
*within a Comprehensive Student Success Strategy*  
A JOINT STATEMENT



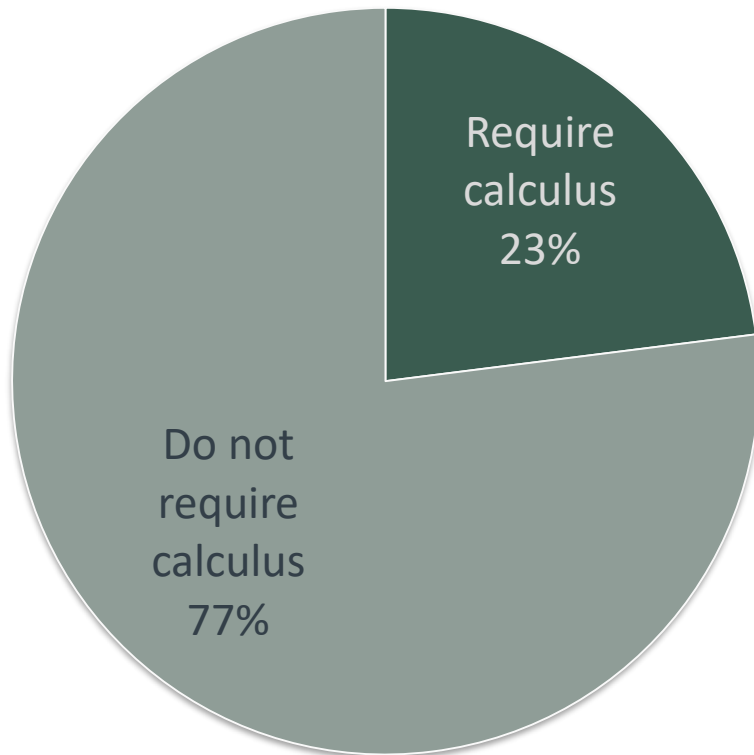
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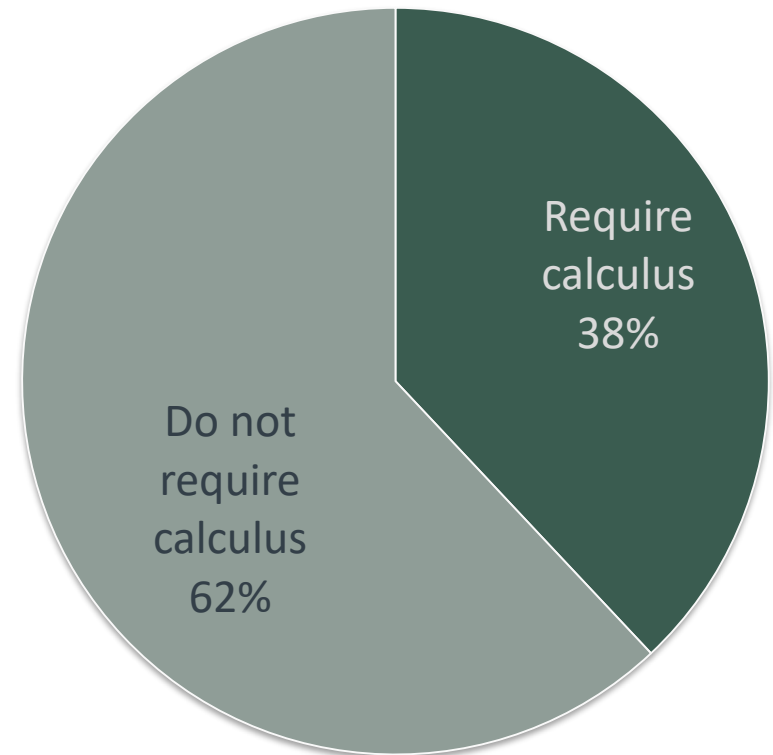
# What is the “Right Math”?

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## Associate's Degrees Awarded



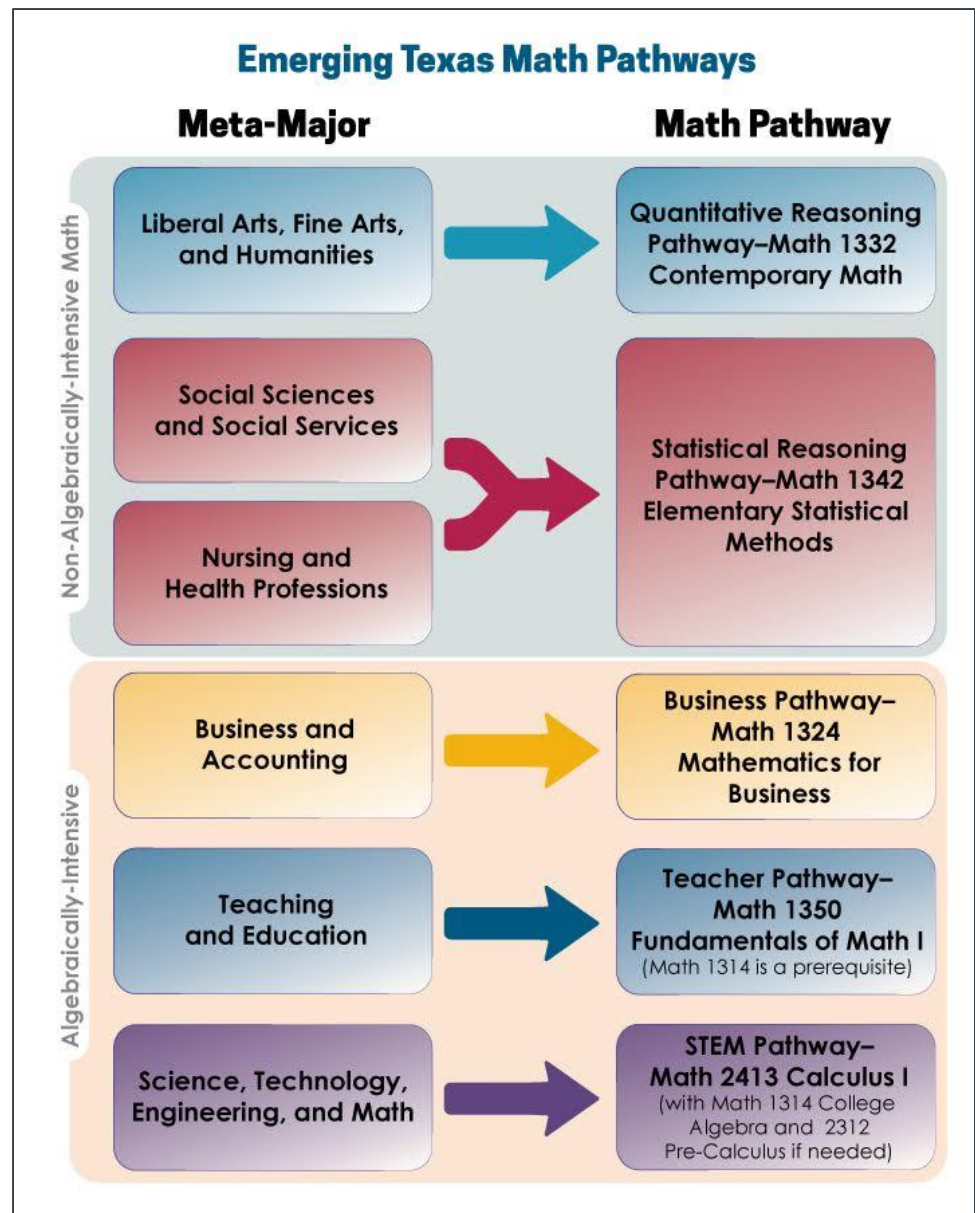
## Bachelor's Degrees Awarded



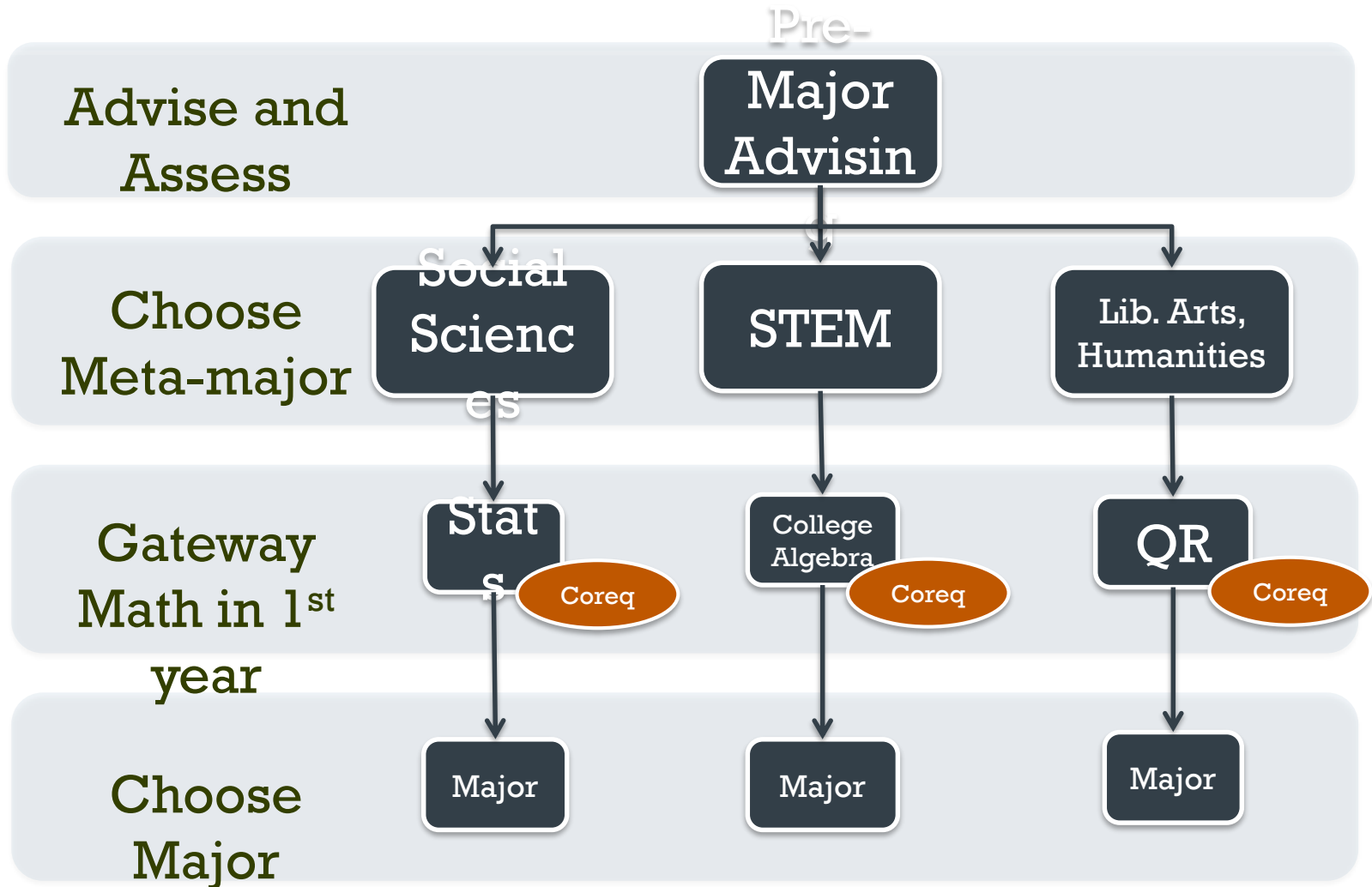
Author's calculations based on data from the Texas Higher Education Coordinating Board, 2013: Degrees Earned by CIP code

# 4x4 to HB5

- Historically, the 4x4 guided students toward the College Algebra and Calculus pathway
- Students can now choose the mathematics course that best fits their endorsement and career aspirations

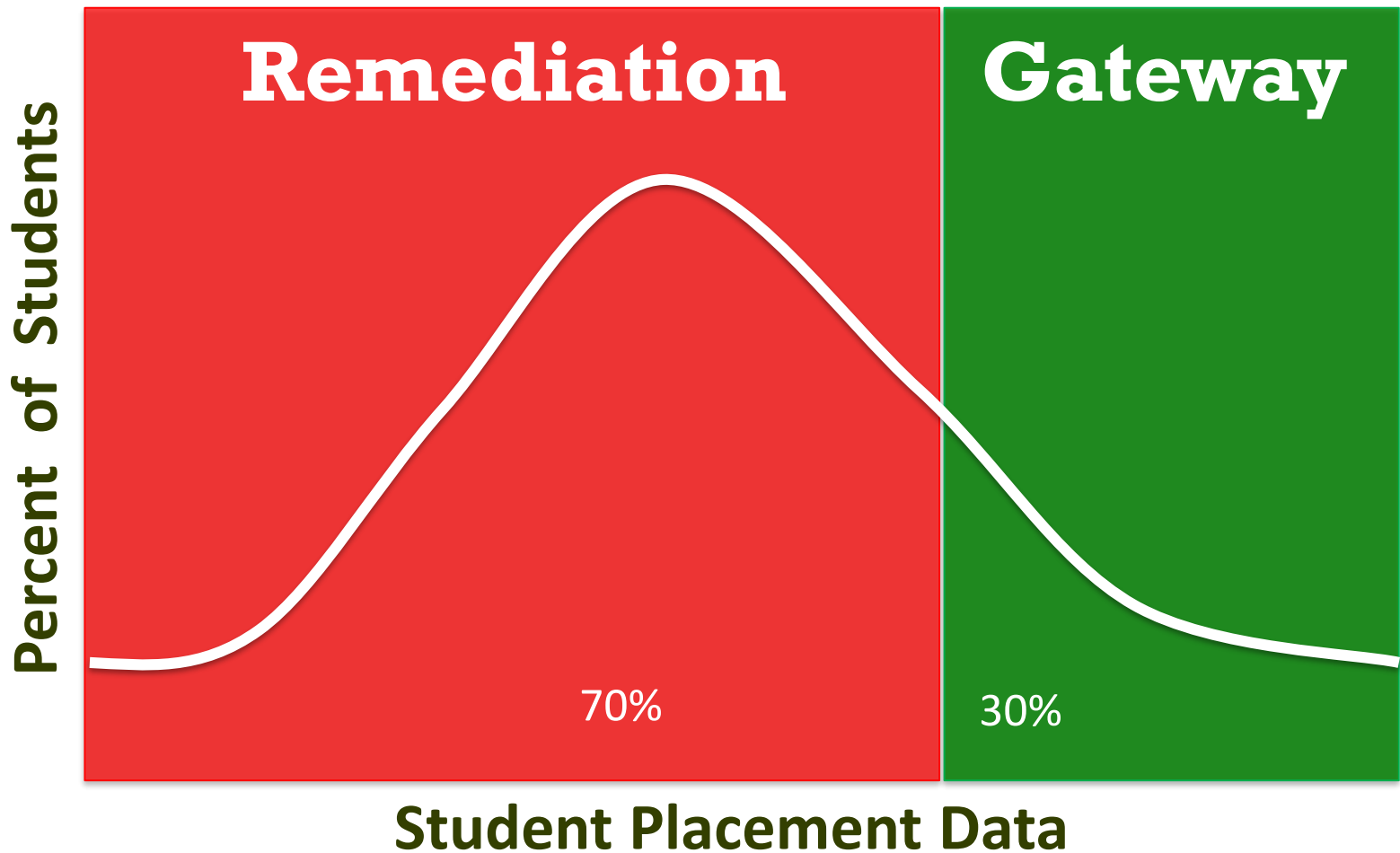


# A Model Pathway



Adapted from Complete College America

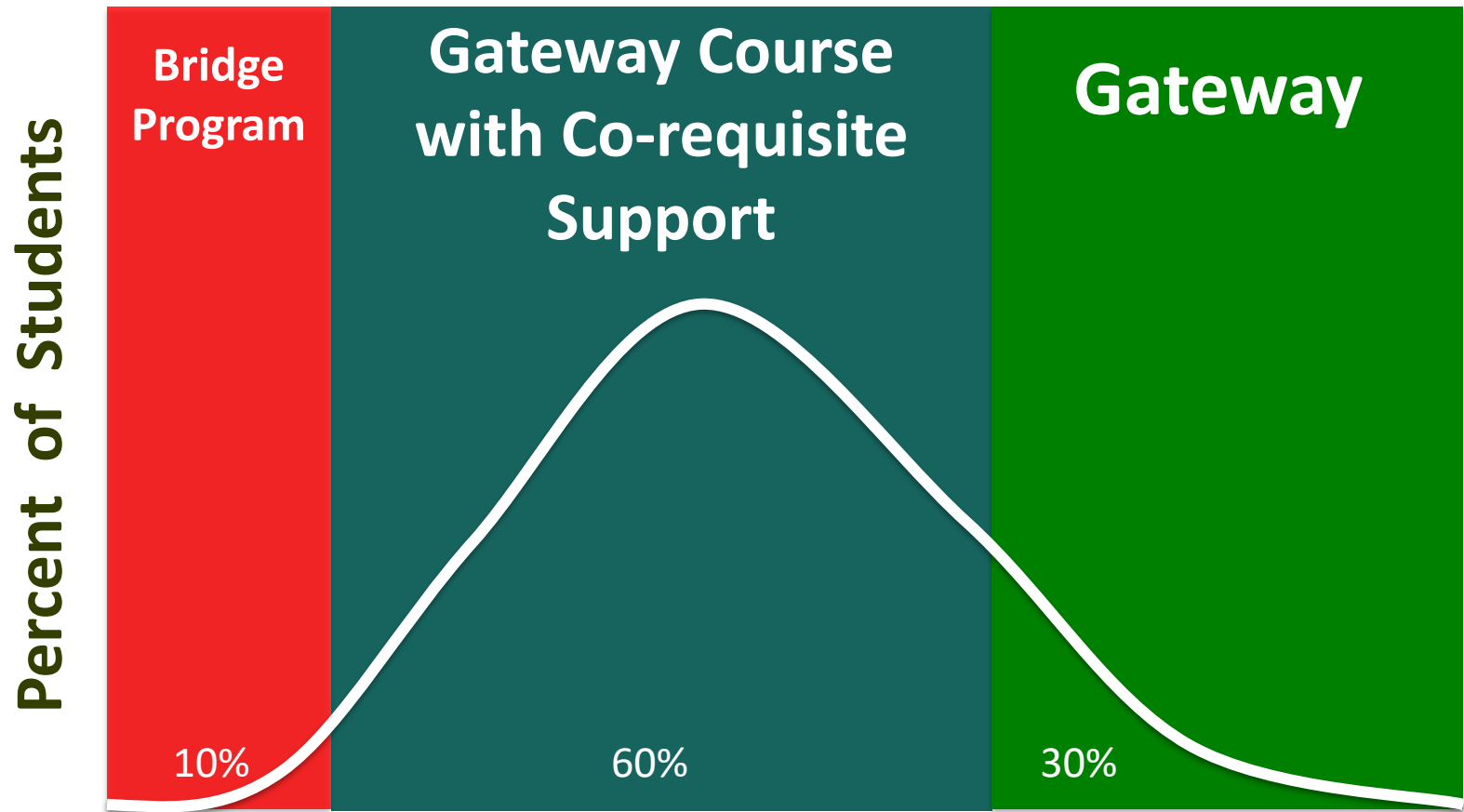
# End Use of Traditional Placement



- Complete College America 2014



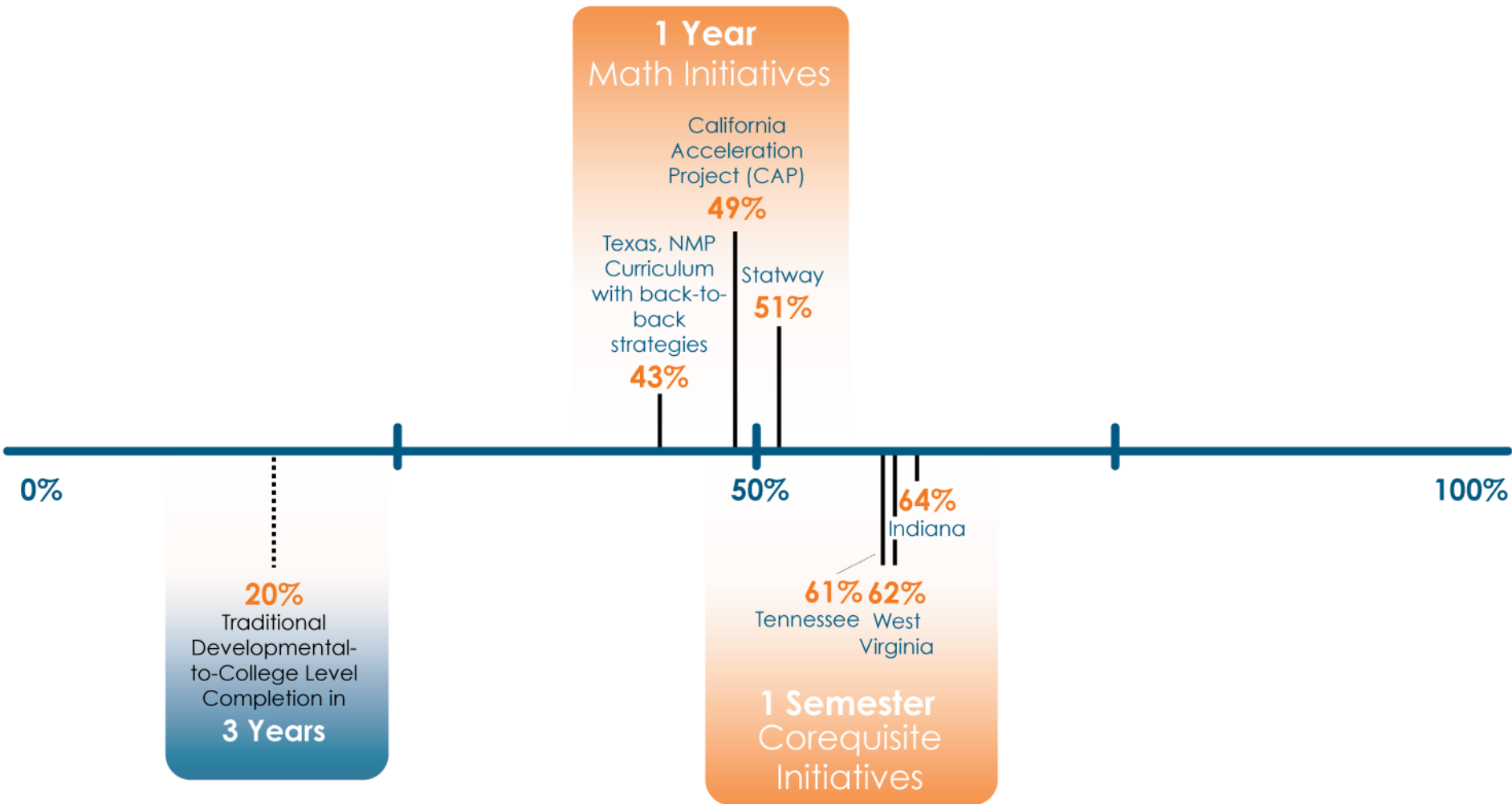
# With Co-requisite, Most in College-Level



**Student Placement Data**

**- Complete College America 2014**

# Evidence of Math Pathways Success



# Resources

Dana Center Mathematics Pathways Resource Site:

<http://www.dcmathpathways.org/>

Dana Center  
**Mathematics**  
PATHWAYS

The DCMP    Learn About    Take Action    Where We Work    Resources

## The Right Math for the Right Student at the Right Time

The Dana Center Mathematics Pathways seeks to ensure that ALL students in higher education will be:

- **Prepared** to use mathematical and quantitative reasoning skills in their careers and personal lives;
- **Enabled** to make timely progress towards completion of a certificate or degree; and
- **Empowered** as mathematical learners.

It takes coordinated action across all...

- Levels of the system (national, state, institution, classroom)
- Sectors of education (universities, colleges, K-12)
- Roles (policy, administrators, faculty, student services)

In order to...

- Redesign course and institutional structures that deter success;
- Modernize mathematics content and instruction;
- Eliminate policy barriers in placement, transfer, and applicability.

# Contact information

- General information about the Dana Center:  
[www.utdanacenter.org](http://www.utdanacenter.org)
- Dana Center Mathematics Pathways Resource Site:  
[www.dcmathpathways.org](http://www.dcmathpathways.org)
- To receive monthly updates about the DCMMP, contact us at:  
[dcmathpathways@austin.utexas.edu](mailto:dcmathpathways@austin.utexas.edu)
- Amy Getz (implementation, state-level work):  
[getz\\_a@austin.utexas.edu](mailto:getz_a@austin.utexas.edu)

# About the Dana Center

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The **Charles A. Dana Center** at The University of Texas at Austin works with our nation's education systems to ensure that every student leaves school prepared for success in postsecondary education and the contemporary workplace.

Our work, based on research and two decades of experience, focuses on K–16 mathematics and science education with an emphasis on strategies for improving student engagement, motivation, persistence, and achievement.

We develop innovative curricula, tools, protocols, and instructional supports and deliver powerful instructional and leadership development.



The University of Texas at Austin  
Charles A. Dana Center

2016

# Washington Math Pathways to Completion

- Liberal Arts
- Statistics
- Business
- Elementary Education
- STEM

# Washington Math Pathways to Completion

- Liberal Arts
  - Statewide agreement reached previously
- Business
  - Math requirements vary among BIs/  
gateway courses are different

# Washington Math Pathways to Completion

- Math for Elementary School Teachers
  - Discussions among BIs planned
- Statistics
  - Work underway to determine possible common content in a gateway course/
  - How do courses transfer



# A Model Pathway

