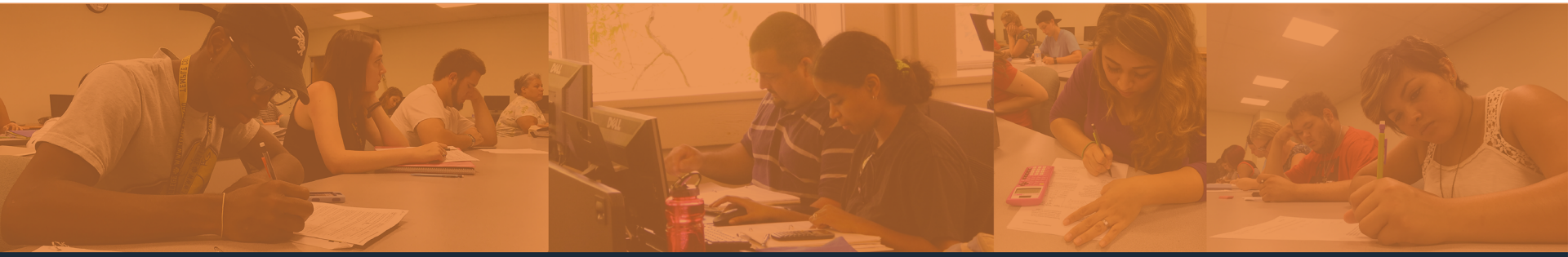
The University of Texas at Austin
Charles A. Dana Center
College of Natural Sciences

E3 ALLIANCE
EDUCATION EQUALS ECONOMICS

Central Texas Mathematics Alignment Summit

Austin Community College Eastview Campus
November 1, 2019
wifi: ACC Start Here or ACC Guest



Presenters (Opening)

Susan Dawson
President and Executive Director
E3 Alliance

Doug Sovde
K-12 Director
Dana Center

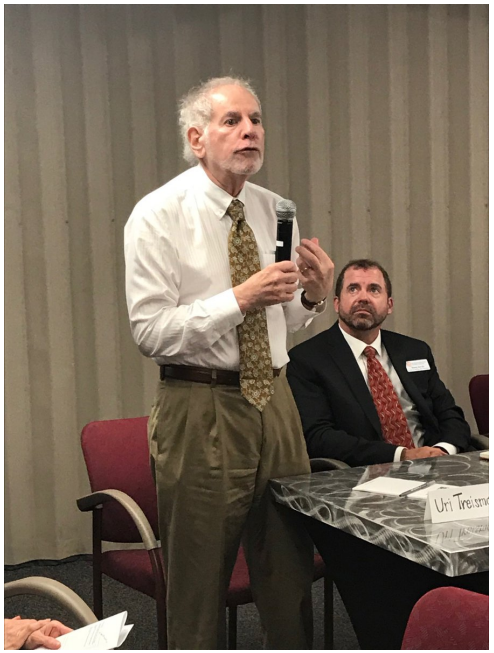
Agenda

1. Framing for the day
2. Why are we here? Where are we now?
3. CTXMAT Recommendations and Progress
4. Lunch, "Math and Me"
5. Role-Alike
6. Team Time
7. Share Commitments and Closing

Who is involved?

- Austin Community College
- Concordia University
- Huston Tillotson
- Southwestern
- St. Edwards
- Temple College
- Texas State University
- University of Texas at Austin
- Texas Association of Community Colleges
- Texas Higher Education Coordinating Board
- Austin ISD
- Bastrop ISD
- Del Valle ISD
- Eanes ISD
- Elgin ISD
- Hays CISD
- Hutto ISD
- Lake Travis ISD
- Leander ISD
- Lockhart ISD
- Manor ISD
- Pflugerville ISD
- Round Rock ISD
- San Marcos CISD
- Taylor ISD
- ESC Region 13
- Texas Education Agency
- Austin Chamber of Commerce
- Charles A. Dana Center
- Educate Texas
- E3 Alliance
- Greater Texas Foundation
- Michael & Susan Dell Foundation
- RYHT
- Teach Plus
- Trellis Foundation
- Workforce Solutions

CTXMAT Launch – May 2018



Central Texas Math Alignment Taskforce

- **Joint effort led by E3 Alliance and Dana Center**
- **Based on "charge" by 5 college presidents, 8 superintendents in April, 2018**

➢ **Align math courses, advising, assessment, and policy:**

  - To support multiple pathways consistent with different student career aspirations
  - To change policies and practices which create inequitable outcomes and limit student success

"With HB 5, we were told to align secondary, post-secondary, and career outcomes, with very little resources or guidance. Through the Math Alignment Taskforce, ***we've made more progress in the last four months than we have over the previous four years in aligning math pathways!"***

Derek McDaniel

Director of Curriculum and Instruction, Hays CISD

Central Texas Math Alignment Taskforce

- Recommendations adopted by 13 school districts and 8 IHE's in Central Texas - September 2018
- Michael & Susan Dell Foundation supported implementation by three workgroups:
  - Policy
  - Teaching and Learning
  - Alignment
- **Progress update at 11:00am**

Mathematics Alignment

What comes to mind when you think of mathematics alignment?

Why worry about mathematics alignment?

Mathematical Association of America's 2004 CUPM Curriculum Guide

"Unfortunately, there is often a serious mismatch between the original rationale for a college algebra requirement and the actual needs of the students who take the course."

Endorsed by all 18 national mathematics societies including:

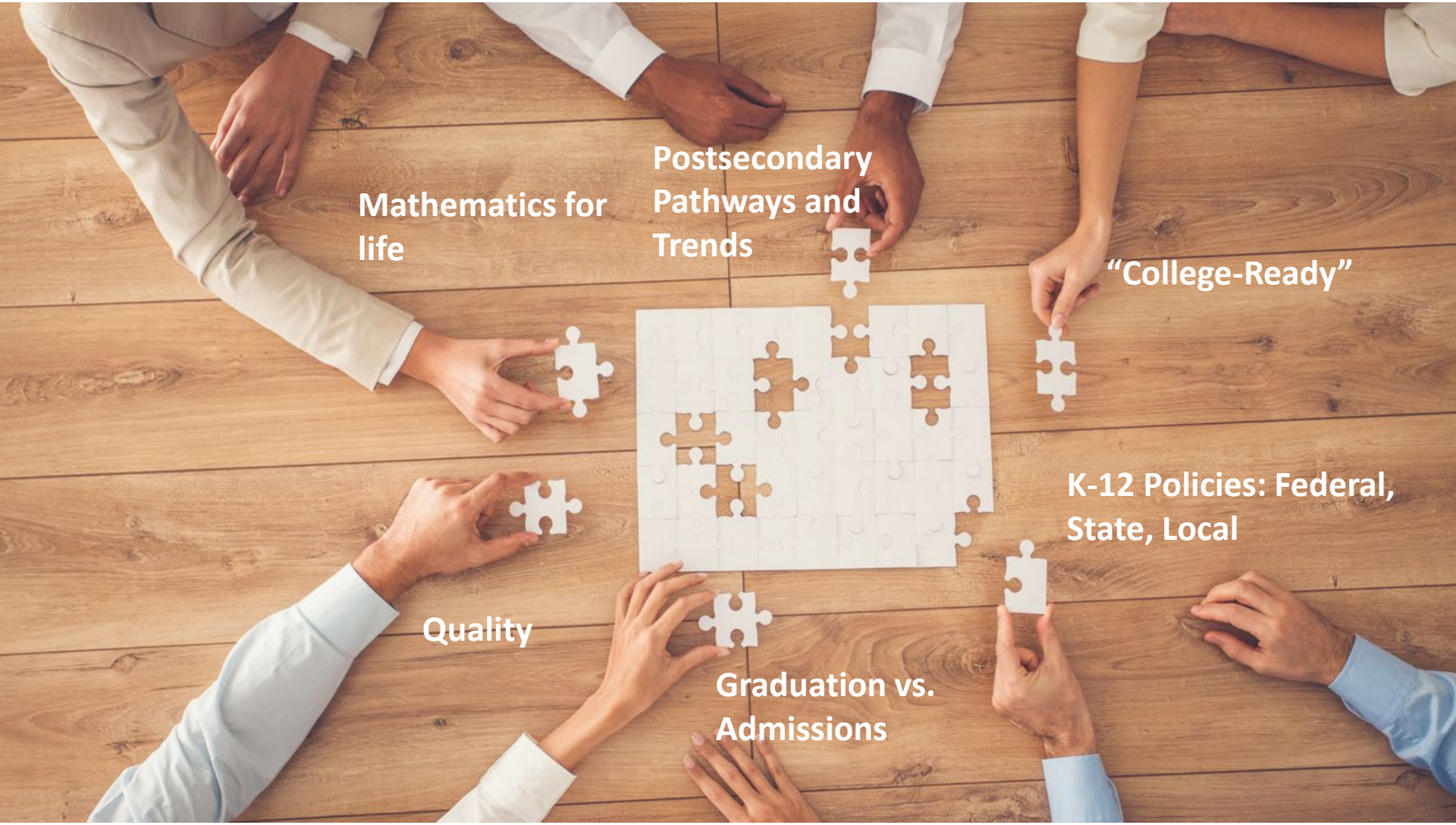
- American Mathematical Association of Two-Year Colleges
- American Statistical Association
- Society for Industrial and Applied Mathematics
- National Council of Supervisors of Mathematics
- National Council of Teachers of Mathematics

What do we mean by alignment?

Ensure that success in high school mathematics naturally and seamlessly propels students to completion of a post-secondary credential or degree of value.

This requires alignment of K-12 and higher education systems, structures (including courses), policies, and practices.

Modernize the Definition of College Readiness



CCRC COMMUNITY COLLEGE RESEARCH CENTER
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

ASSOCIATION OF PUBLIC & LAND-GRANT UNIVERSITIES

Achieve

ESG Education Strategy Group

The University of Texas at Austin
Charles A. Dana Center

E3 ALLIANCE
EDUCATION EQUALS ECONOMICS

The Launch Years Approach

Multi-Year Strategy

This multi-year strategy focuses on the ground in several states to assess the high school mathematics students can access every day in the classroom. It also seeks to bring K-12 and higher education institutions together at a regional level to ensure students have clear paths for success. From these learnings, open access resources will be developed and made available to schools and districts in all states to better support students.

STRATEGY 1: AGREEMENT
Create consensus around a common understanding of mathematics pathways that extend from high school into post-secondary education and prepare students for success.

STRATEGY 2: OUTREACH
Mobilize a wide range of constituencies to advance the new paradigm for college and career readiness in mathematics and reduce persistent equity gaps.

STRATEGY 3: TOOLS
Create new pathways for math instruction in the third and fourth years of high school and initiate the implementation of transition math courses.

Statewide Implementation

- **Inaugural States**
  - Texas
  - Georgia
  - Washington

Why are we here? Where are we now?

Caitlin Hamrock
Director of Research
E3 Alliance

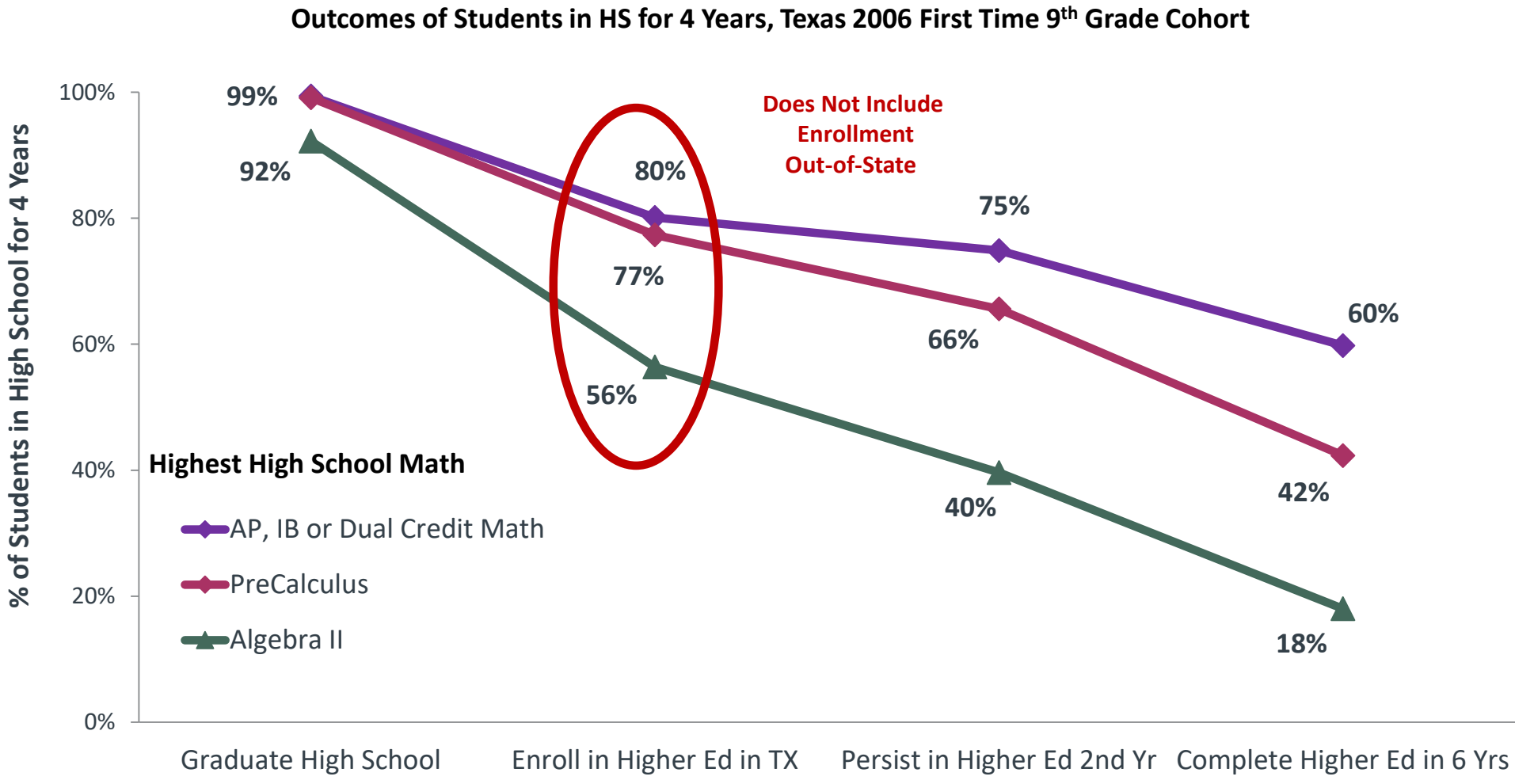
Josh Recio
Course Program Specialist
Dana Center

Audrey Selden
Equity Instructor
NAPE

Maria Arabbo
Community Solutions Coordinator
E3 Alliance

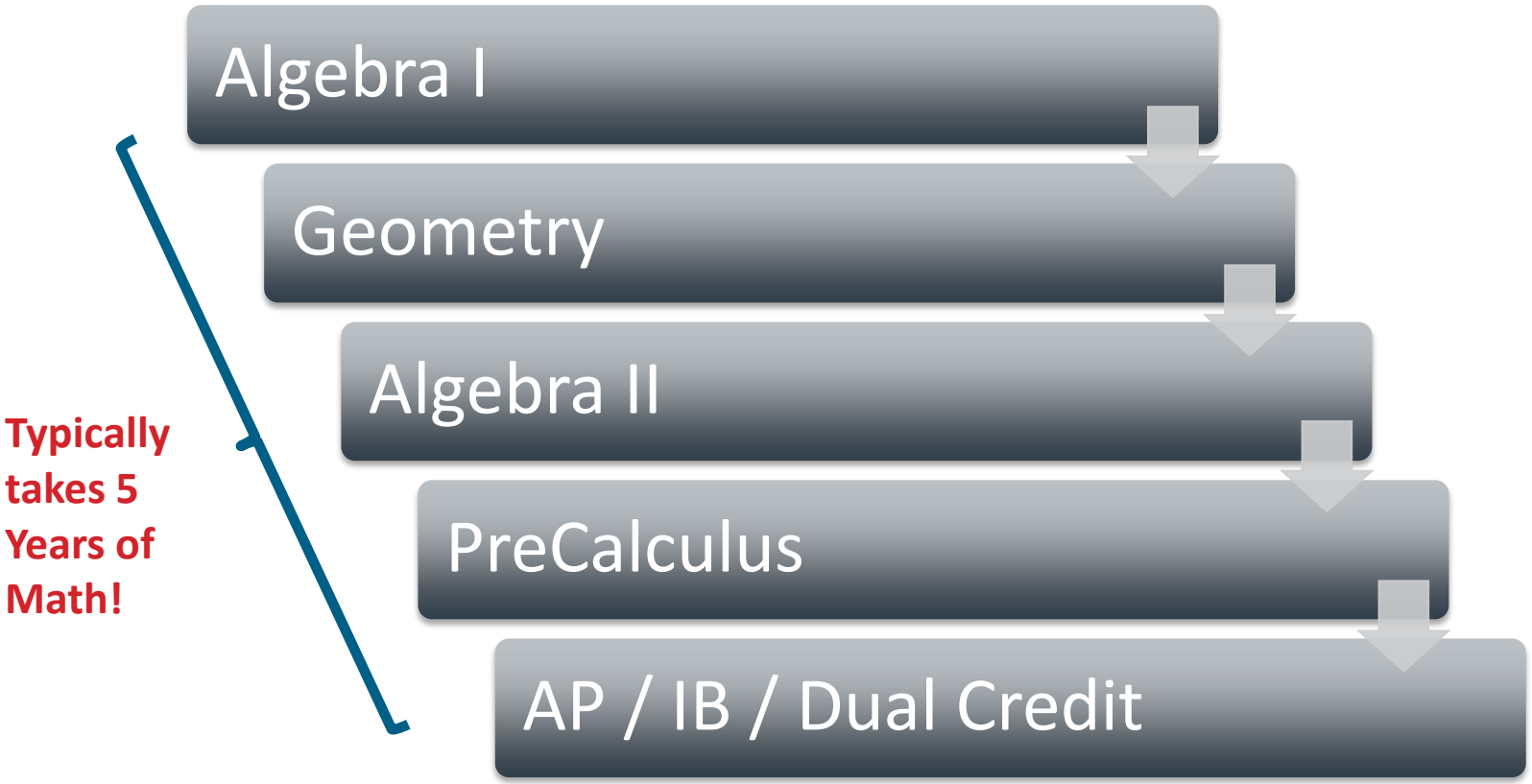
Lindsay Fitzpatrick
Cross-Team Lead,
Transition Initiatives
Charles A. Dana Center

Gaps in Higher Education Outcome Rates by Highest Math

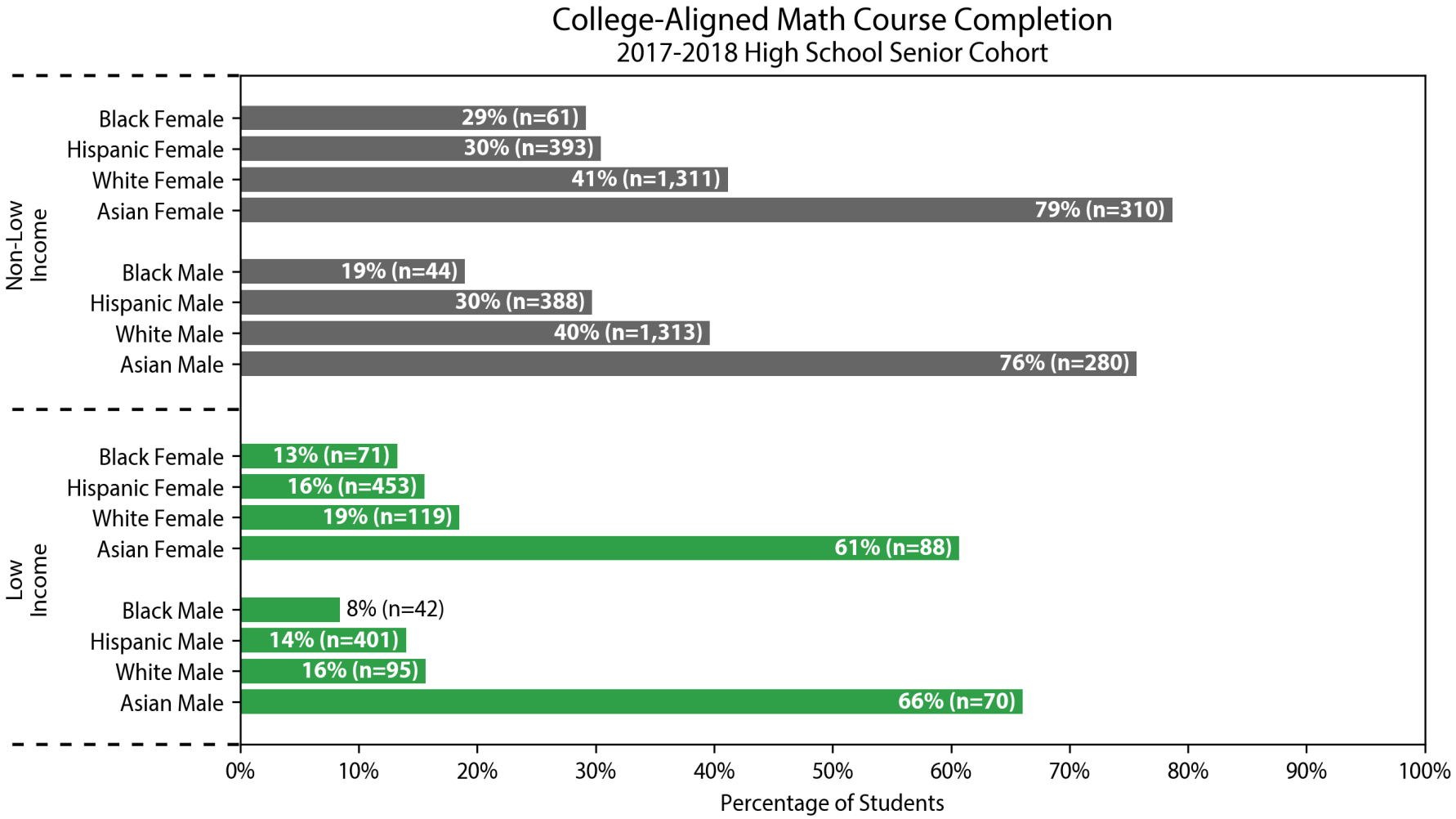


Source: E3 Alliance analysis of PEIMS data at the UT Austin Education Research Center

Definition of Historical Highest Math in High School

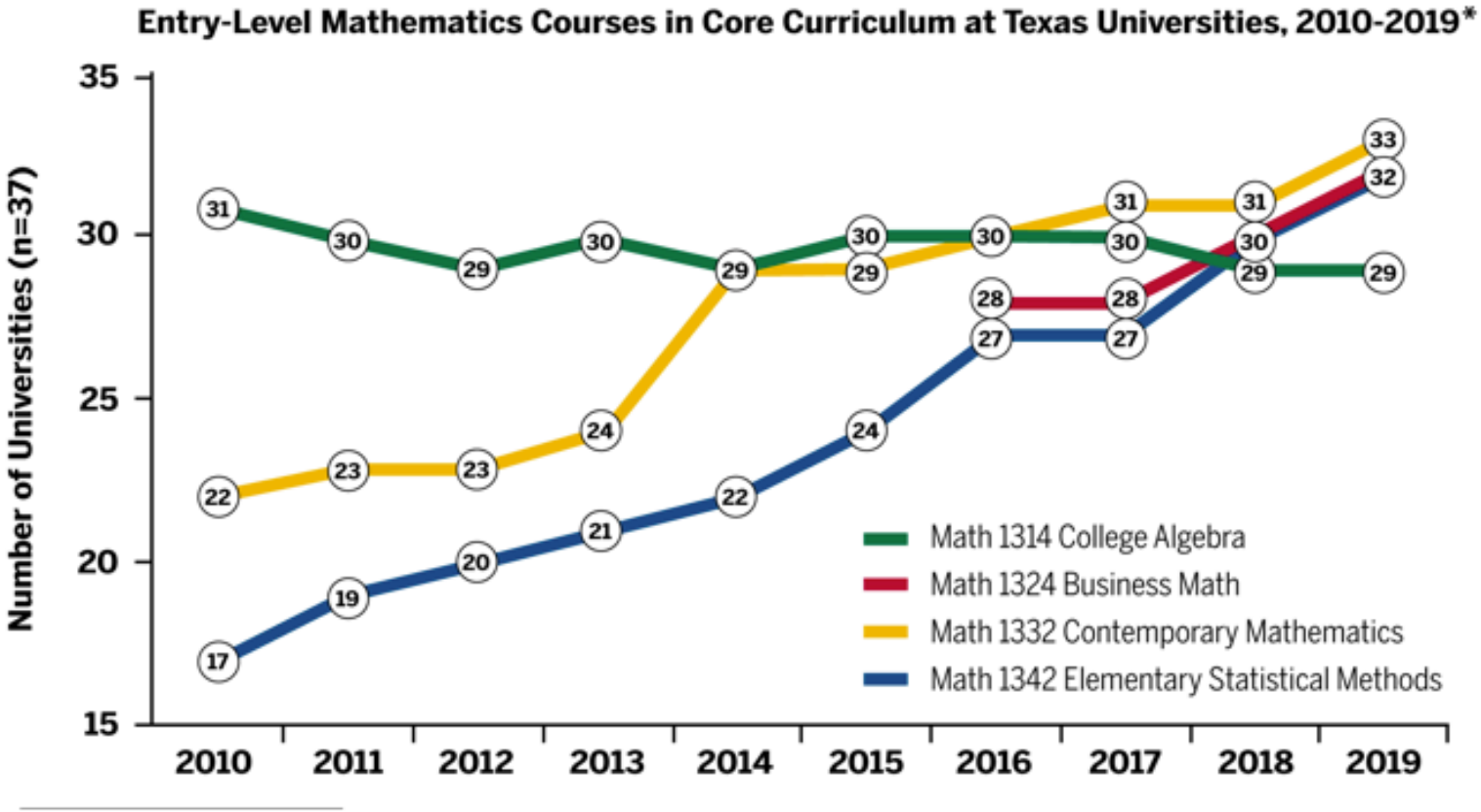


College Aligned Math Course Completion Rates Vary Greatly by Race, Income, and Gender



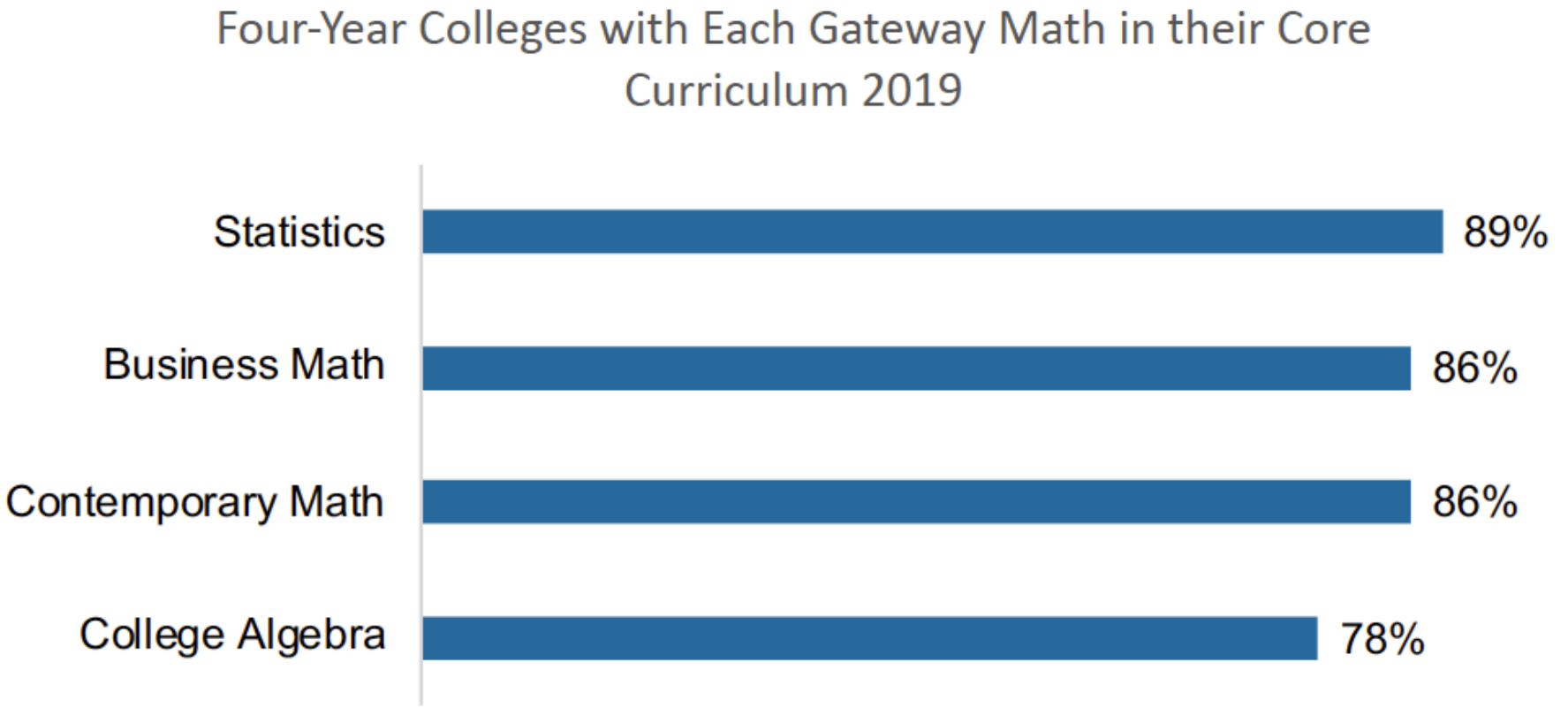
Source: E[3] Alliance analysis of PEIMS data at the UT Austin Education Research Center

Trends Across Texas – 4-years

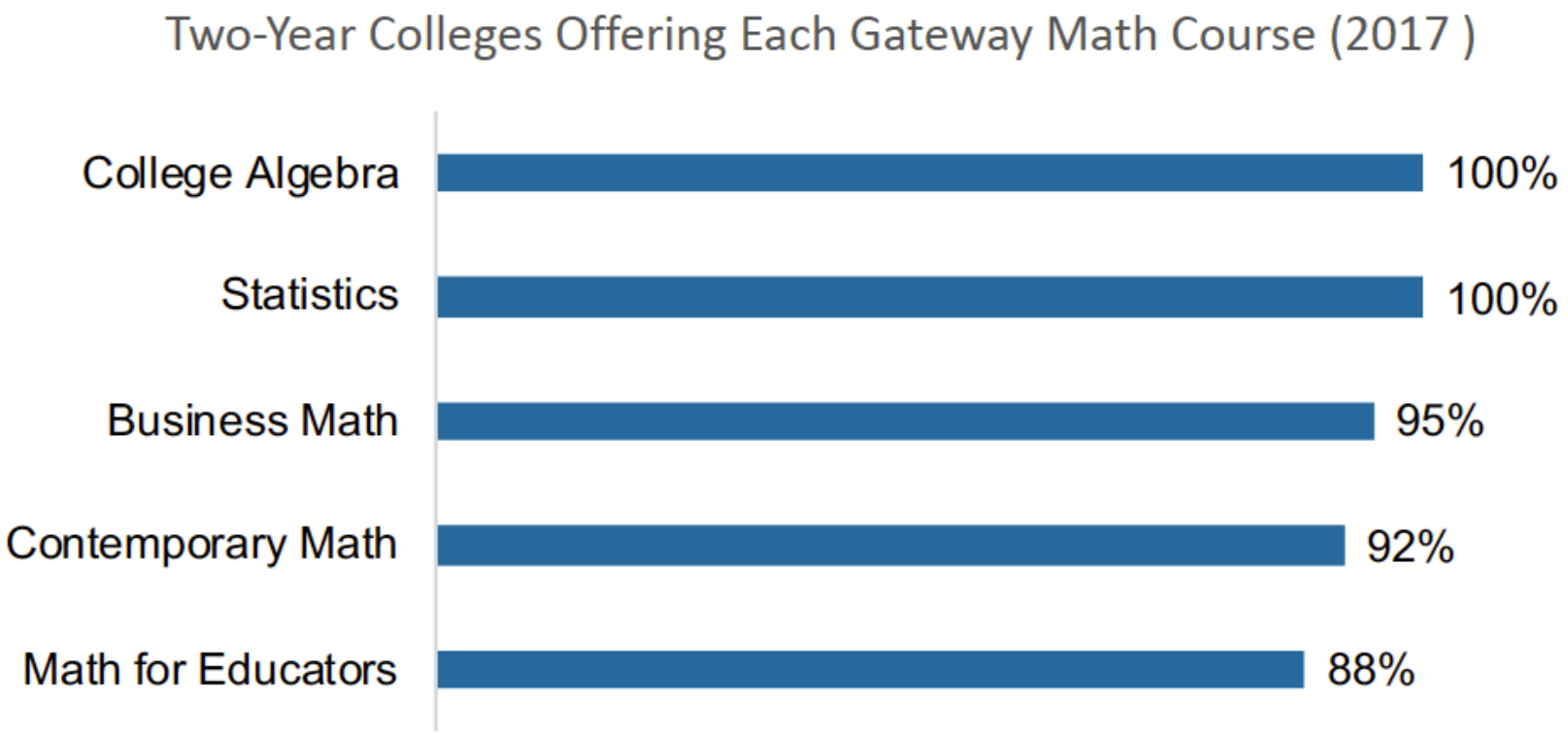


* - a) Trend lines do not include data for UT–Permian Basin for years 2010–2012.
b) In 2015, UT–Pan American and UT–Brownsville merged to create one university, UT–Rio Grande Valley, resulting in a decrease of 1 for the total number of public universities in Texas.
c) In 2016, Texas A&M University–Galveston was added to the dataset.
d) Data for Math 1324 Business Math have only been collected since 2016.

Trends Across Texas – 4-years

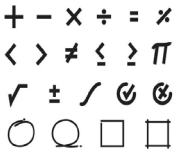


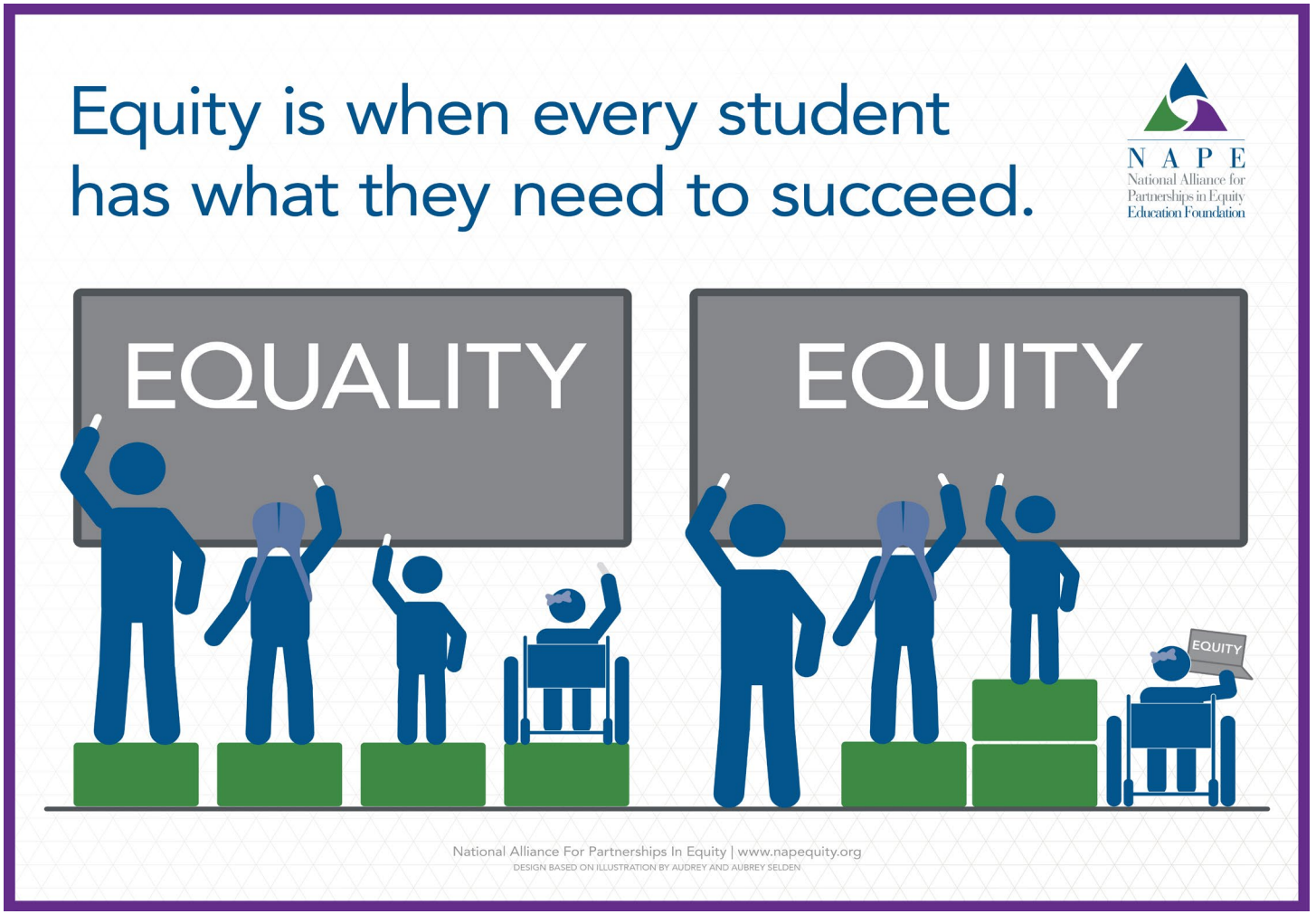
Trends Across Texas – 2-years



Why are we here? Where are we now?

ACTIVITY





What barriers do you see to students succeeding – and succeeding equitably – in math?

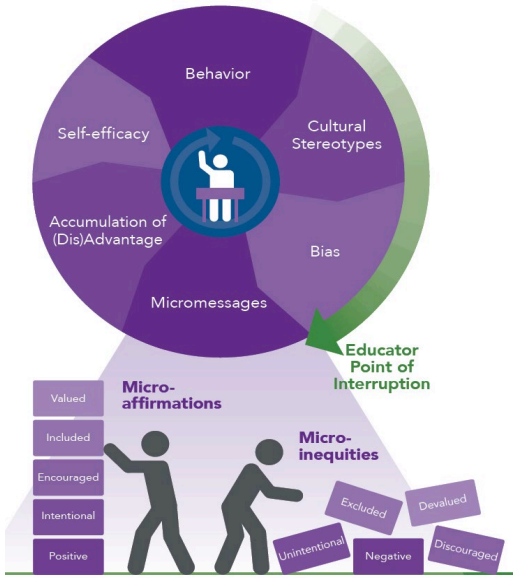
Coaching for Educational Equity

Metrics for Student Success

Each campus will measure key indicators of student success with goal of **increasing** the percentage of **students** by subpopulation and gender

- increased enrollment of exiting 5th graders in accelerated math in 6th grade (elementary)
- enrolling in Algebra I by 8th grade (middle school)
- meeting the "masters" standard on EOC (middle and high school)
- enrolling in Algebra II (high school)
- enrolling in college level math and science before graduation (high school)
- taking and passing STEM-related AP tests (high school)

Program Improvement Process for Equity



Micromessaging Academy

- Professional Learning
- Peer Observations
- Professional Learning Community
- Action Research for Equity Projects

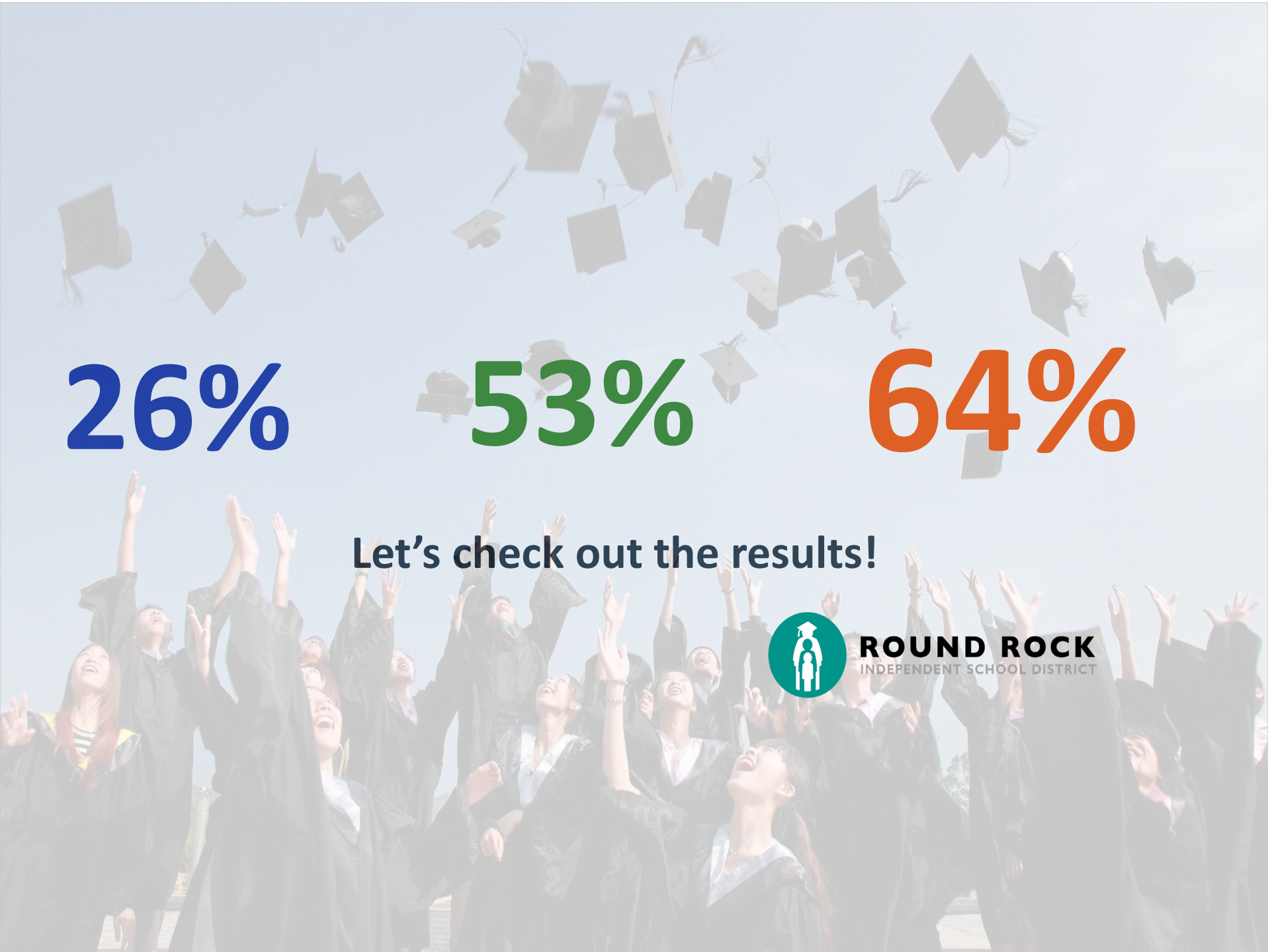
NAPE
National Alliance for Partnerships in Equity
Education Foundation

ROUND ROCK
INDEPENDENT SCHOOL DISTRICT

Goal: Increase % of students in advanced math at 6th grade level

Strategies:

- Deep data dive/Root cause analysis
  - NAPE Program Improvement Process for Equity
- Student surveys – math interest
- Systems review – changed policies and practices – opt-out
- Parental information campaign
- Educator equity training – NAPE Micromessaging Academy


26%
53%
64%
Let's check out the results!
ROUND ROCK
INDEPENDENT SCHOOL DISTRICT

"Our PIPE Project took us from 26% of students in an advanced 6th-grade math class to 53%! --and all of this within a year with no extra allocation of funds or teachers. This school year, 64% of our 6th grade cohort class are in advanced math.

We've eliminated the gatekeepers to advanced classes--teacher recommendations, minimum STAAR/EOC scores, minimum class averages--and instead replaced it with procedures that make this accessible to all."

Natalie Nichols, Area Superintendent,
Stony Point Learning Center

ROUND ROCK
INDEPENDENT SCHOOL DISTRICT

Changing What We Do: Pathways of Promise

PoP 1.0 (2014 to 2016)

- Statewide research & implementation of CTE and Math Pathways
- Impact on low income students, EL students, Hispanic & Black students

Outcomes:

- Aligned CTE Pathways effective for students
- State policy on math course-taking misleading
- Steering Committee formed
- Mo' Math, Mo' Money video

PoP 2.0 (2016 to 2018)

- Math pathways analysis in Middle & Elementary Schools
- Dual Credit/Post Secondary Course Analysis
- Dissemination of PoP Research in five Texas regions

Outcomes:

- Inequitable math decisions made as early as 5th grade
- Middle School Math Project w/ UT STEM to improve MS math teaching
- ES, MS, HS Leader Recommendations
- CTXMAT Convened in May 2018

PoP 3.0 (2018 to 2020)

- Expand research to longitudinal equity & outcomes, including results from HB 5

Outcomes:

- NAPE Partnership to address inequities in schools
- CTXMAT recommendations underway
- Policy Implementation Map for districts

Middle School Policy Implementation Map

white = no plans pink= commenced planning yellow= implementing green= Institutionalized in policy dark green= Policy fully implemented, sustainable	PATHWAYS OF PROMISE STEERING COMMITTEE POLICY MAP							
Recommendations	**MS1**	**MS2**	**MS3**	**MS4**	**MS5**	**MS6**	**MS7**	**MS8**
MIDDLE SCHOOL	**Coordinate with elementary school faculty to advise families on the benefits of acceleration and advanced mathematics**	**Ensure placement of every 5th grade student in top 2 quintiles on state math assessment into accelerated math pathway in 6th grade with option to "opt out" (Target is 40%)**	**Create multiple entry points to accelerated math coursework beyond 6th grade, including open enrollment policy**	**8th grade Personal Graduation Plan advising should promote 4 years of high school math in high school, with students taking the most advanced math, as appropriate**	**Craft professional development to build expertise in scaffolding and differentiation for all students, including those enrolled in accelerated math pathways.**	**Professional learning communities should focus on building deeper understanding of math pedagogy.**	**Professional learning communities should utilize a data-driven and student-centered approach for improving practice.**	**Annual review of district and campus data to identify students with potential to accelerate**
Austin								
Bastrop								
Del Valle								
Eanes ISD								
Elgin								
Hays								
Hutto								
Lake Travis								
Leander								
Lockhart								
Manor								
Pflugerville								
Round Rock								
San Marcos								
Taylor								

Changing District Policies & Practices

Policy Implementation Map

Recommendations Include:

- Implement "Opt Out" policy for top performing 5th graders
- Develop support structures for accelerating math in middle school
- Default to 4 years of math in High School

State Policies Supporting Improved Math Alignment

- HB5 Endorsements / Guided Pathways
- College Prep Math Course
- SB 1324 15 hours dual credit, declare degree plan
- HB3 CCMR incentives and tests
  - District incentives for CCMR
  - State reimburses for college readiness preparation assessment (TSIA, SAT, ACT)
- HB 2223 Co-requisite

Data Breakout Sessions: Take Action

What actions can you take to improve student math outcomes and close equity gaps?

- **PK-12:** Main Room
- **Higher Ed:** Room 8123
- **10:30** Break, Gallery Walk
- **10:45** Brief your leader

Data Breakout Sessions: Take Action

- **10:30** **Break, Gallery Walk**
  - *Post data posters on the wall in the main room*
  - *Gallery walk to review district and higher education data from breakout sessions*

- **10:45** **Brief your leader**

CTXMAT Recommendations and Progress

Susan Dawson
President and Executive Director
E3 Alliance

Carolynn Reed
Math Department Chair
Austin Community College

Michael Hirsch
Dean, College of Arts and Sciences
Huston-Tillotson University

Derek McDaniel
Director of Curriculum and Instruction
Hays CISD

Prudence York-Hammons
Professor of Mathematics
Temple College

Why CTXMAT (CTX Math Alignment Taskforce)?

- Too few students take the math they need to succeed in a higher education credential
- A student who takes four years of math in high school – and the most advanced math they are able – is far more likely to succeed
- But our data – and our industry partners – tell us ~1/3 of students need the traditional Algebra-Calculus path
- Alternate pathways exist - but are not yet aligned or consistent with expectations and practices

CTXMAT Primary Recommendations

1. Change state college readiness **policy** to support to reflect the math students need to complete their fields of study and career aspirations.

2. **Align** secondary and postsecondary math pathways, including course offerings and advising.

3. Enhance math **teaching and learning** and assessment, including non-cognitive skills in math.

Policy Recommendation

Align college readiness, assessment, admissions and advising policies to reflect the mathematical preparation students need to complete the degree or credentials associated with their career aspirations.

1. Change policies that can be changed locally, locally
2. Change state TSI Assessment to support equitable college readiness in appropriate pathways

Policy Recommendation Justification

- College & Career Readiness Standard is broad and balanced
- Different student pathways require different math
- Yet almost all of the TSI assessment questions and score are based on just Algebraic Reasoning
- Having multiple ways to demonstrate readiness **could allow many thousands more students to access and succeed in college**

TSI-A Recommended Policy Changes

- TSI is only sanctioned through 2018-19; new version for fall 2020 through THECB process (not legislation)

1. Broaden TSI to better align with CCRS
   - THECB committed to for 2020 version
2. Allow multiple measures to demonstrate college readiness
   - THECB investigating, e.g., GPA, 4 years HS math
3. Provide two rigorous cut scores – one for Algebraic-intensive Reasoning, one non-Algebraic-intensive Reasoning
   - Possible depending on findings of validity study

Alignment Recommendations

Align secondary and postsecondary math pathways, including course offerings and advising.

- **Strategies:**
  - Uncover and resolve misalignment of math requirements at postsecondary institutions in Central Texas.
  - Review and revise K-12 mathematics requirements and align advising practices with these requirements.

Alignment Recommendations

Align secondary and postsecondary math pathways, including course offerings and advising.

- **Highest enrollment majors with misaligned math requirements**
  - Psychology
  - Social Work
  - Criminal Justice
  - Nursing
  - Liberal Arts (English, History)

Statistics

Quantitative Reasoning,
with some specializations needing Statistics

- **Partner discipline faculty surveys**
- **Course catalogue changes for Fall 2020**

Alignment of Math Requirements for Highest Enrollment Programs of Study

Entry-level Mathematics Requirements at Central Texas Institutions of Higher Education

According to Course Catalogs and Online Resources Accessible to Students

Stats = Statistics, QR = Quantitative Reasoning, Contemporary Mathematics, Mathematics for Liberal Arts, CA= College Algebra, Business = Mathematics for Business

Institution	Nursing	Criminal Justice	Psychology	Social Work	English	History
Austin Community College	Stats	QR	Stats, QR, or CA	Stats	Any math	Stats, QR, or CA, or Business
Concordia University	Stats	Any math	Any math	Not offered	Any math	Any math
Huston-Tillotson	Not offered	CA	CA	Not offered	QR or CA	CA
Southwestern University (CA not accepted for math credit)	Not offered	Not offered	Optional, any math except CA	Not offered	Optional, any math except CA	Optional, any math except CA
St. Edward's University	Not offered	QR	QR and Stats	QR	QR or CA, and Stats	QR
Temple College	Stats	Stats or CA	CA	Not offered	Stats or CA	Stats or CA
Texas A&M University Central Texas	Stats	Math core	Stats or CA	Math core	Math core	Math core
Texas State University	CA or Business	CA and Stats	CA	Not offered	Any math	Any math
University of Texas at Austin (CA not accepted for math credit)	Stats	Not offered	Stats	Any math except CA	Any math except CA	Any math except CA

Teaching and Learning Recommendations

1. Secondary and postsecondary mathematics instructors work together to implement instructional processes and tools that develop *conceptual understanding* of mathematics.

2. Incorporate *non-cognitive and student success skills* into the secondary and postsecondary curriculum to ensure all students have the tools to excel in college mathematics.

Develop Conceptual Understanding

Expose students to open response, rubric graded performance tasks and formative assessments in the following mathematics courses:

- Algebra I
- Algebra II
- Geometry
- Statistics
- Advanced Quantitative Reasoning

Provide teachers the instructional tools and professional development necessary to successfully implement

Incorporate Non-cognitive and Student Success Skills

Identify and explicitly teach students the "soft skills" necessary to learn advanced mathematics, including:

- Student discourse and collaboration
- Persistence in problem solving
- Metacognitive strategies

Provide students and teachers with research based metacognitive tools, including problem solving and self reflection, that focus on behaviors and strategies, not just outcomes

Secondary and Postsecondary Together

House Bill 5, 83rd Texas Legislature, was the requirement for local school districts and higher education to come together… but, E3 Alliance and the UT Dana Center forming CTXMAT has been the catalyst

- Dr. Prudie York-Hammons, Temple Junior College
- Dr. Michael Hirsch, Huston-Tillotson University

Teaching and Learning – Next Steps

For mathematics instructors, coaches, and related staff to receive instructional resources and training:

- Today, 12:45 – Role-Alike session
- November 19 – Webinar

Continue working with E3 Alliance Pathways of Promise Steering Committee to embed these practices into mathematics pedagogy across Central Texas region

Lunch

11:45 – 12:05 **Lunch**

12:05 – 12:45 **Lunch Speakers, “Math and Me”**

“Math and Me”

Clay Johnston
Dean, Dell Medical School
University of Texas at Austin

Ali Khataw
CEO
Encotech Engineering

Debbie Hiott
General Manager
KUT & KUTX

Uri Treisman
Executive Director
Charles A. Dana Center

Role-Alike Sessions

Counselors and Advisors, Room: 8106 Dot: Blue

- Glenda Barron, former President, Temple College

Administrators, Room: 8123 Dot: Red

- Uri Treisman, Executive Director, Charles A. Dana Center
- Doug Sovde, K-12 Director, Charles A. Dana Center

Math Faculty, Room: Main Room Dot: Green

- Daryl Taylor, STEM Math Coach, Austin ISD
- Paul Norris, Math Curriculum Coordinator, Round Rock ISD
- Melissa Dobronel, Secondary Math Coordinator, Pflugerville ISD

1:45 Transition Back to Main Room

Team Time

Complete 30-60-90 Day Math Alignment Plans & Public Commitment in Google docs

Share Out and Closing

Share Out and Closing

- Survey Link: tinyurl.com/CTXMAT-2019

- November 19
  Math Alignment Teaching and Learning Webinar

  invitation forthcoming via email