

IDENTIFYING RESEARCHABLE ELEMENTS: UTILIZING LOGIC MODELS FOR GUIDING PROGRAM EVALUATIONS

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ON BEHALF OF THE
UCSC HSI TEAM & PARTNERS

MARCH 27, 2018

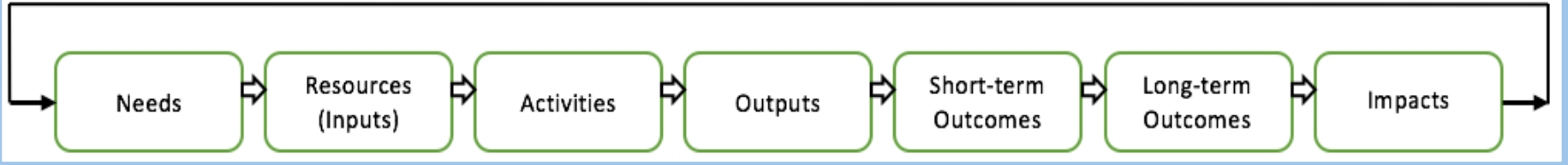


Objectives

Learning Outcomes	Examples will illustrate...
<ul style="list-style-type: none">● Build strategies for discerning the researchable elements embedded within logic models.● Use data to strengthen interventions.● Situate findings within an equity framework.	<ul style="list-style-type: none">● how research questions emerged from the logic model,● how a strategy for evaluation was developed,● how data was gathered and analyzed, how results were used to guide practice,● how decisions were made to strengthen subsequent years of the intervention.

Logic Models

- Articulate a clear vision.
- Demonstrate project sustainability.
- How will contributing resources lead to short- and long-term results.
- Diagram or chart with planned work and intended results.
- Inputs, activities, outputs, short- and long-term outcomes.
- Common language for everyone involved in the initiatives.
- Visual representation / Blueprint.



MMDLE

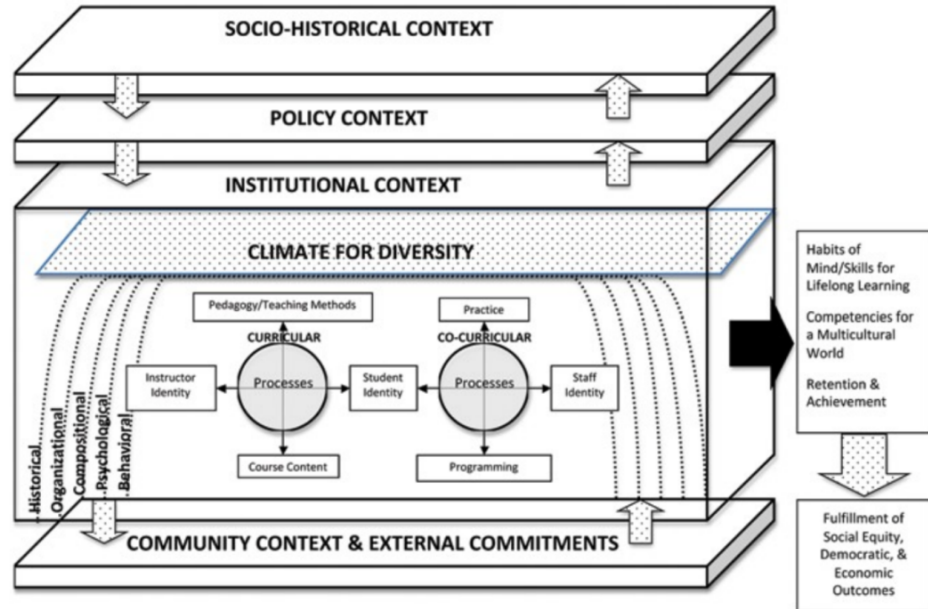
Multi-Contextual Model of Diverse Learning Environments (MMDLE; Hurtado, Alvarez et al, 2012)

Collaborative Learning Workshops (Treisman, 1992)

Scaffolding the Academic Success of Adolescent English Language Learners (2010)

- Vygotsky's Zone of Proximal Development (1978)
- Learner Autonomy (Deci & Flaste, 1995)
- Planned to improvised (Gibson, 2005)

Diverse Learning Environments (DLE) Model Hurtado (2012)



UCSC HSI Grants Overview

US Dept of Education Title III & V

	UCSC MAPA 2.6 million 2015-2020	Cultivamos Excelencia - SJCC- UCSC Cooperative 1.1 million 2015-2020	HSI STEM - SEMILLA 5.9 million 2016-2021
Math	Collaborative Math 2 College Algebra		STEM Learning Center, LSS, ACE College Math 3 Seminars
Writing	WORD Regional Institutes (SF, Oakland, Los Angeles)	Research Writing Course @ SJCC	Writing support for internship applications
Sense of Belonging	Regional Family Conferences El Centro Internships & Student Focus Groups	SJCC Student UCSC Campus Visits, Family Day	STEM Learning Center, ACE, MEP, STEM Diversity
Advising	Math 2 & Writing Advising CFL/iMAP, Multicultural Competence Adviser Training	Transfer/Retention Counselor, Grad Student Mentoring, Financial Literacy	Holistic STEM Counselors STEM Academy Career Development
Transfer		Research Opportunities Articulation - SJCC	STEM Transfer Academies & Articulation Review
Faculty Prof Development	Writing & Math faculty PD	PD for Faculty at both campuses	Equity Analysis & Reporting STEM Faculty PD, TA Training

Logic Model (Example)

Needs	Resources	Activities	Outputs	Short-term Outcomes	Long-term Outcomes	Impacts
Rising % of Latino and Low-income students take, fail and repeat Gateway Math Courses.	Program staff, faculty, graduate students, teaching assistants, undergraduate peer tutors/mentors/advisors.	Redesign Math Course. More contact with students. Smaller sections More instructional time. Small collaborative learning.	# Students taking gateway math course. # Students retaking gateway math course. Students attendance in gateway math course sections. Math 2 grades.	Increase success rates. Decrease repeat rates. Focus on formative feedback for improving gateway math course.	Increase rates of progression in college-level math. Increase rates of progression into major. Improve effectiveness in introductory math sequence.	Increase graduation rates. Reduce time to degree completion. Reduce ethnic racial and income gaps in math-required majors.

Activities

- Pedagogical interventions
- Collaborative Math 2 lecture framework
- Active learning during lecture
- Collaborative learning based section
- Incorporating advising

Identifying Researchable Elements: Developing Research Questions

Needs	Question(s)
<p>Rising % of Latino and Low-income students take, fail and repeat Gateway Math Courses.</p>	<p>Q: How can we decrease the % of Latino and low-income students who take, fail and repeat Gateway Math Courses?</p>

Identifying Researchable Elements: Developing Research Questions

Resources	Question(s)
<p>Program staff, faculty, graduate students, teaching assistants, undergraduate peer tutors/mentors/advisors.</p>	<p>Q: What role do program staff, faculty, graduate students, teaching assistants, undergraduate peer tutors/mentors/advisors play in decreasing the % of Latino and low-income students who underperform and repeat Gateway Math Courses?</p>

Identifying Researchable Elements: Developing Research Questions

Activities	Question(s)
<p>Redesign Math Course. More contact with students. Smaller sections More instructional time. Small collaborative learning.</p>	<p>Q: Does more contact with students correlate to higher math achievement? Q: Do smaller sections improve instruction and correlate to higher math achievement? Q: Does more instructional time correlate to higher math achievement? Q: Do collaborative learning practices correlate to higher math achievement?</p>

Identifying Researchable Elements: Developing Research Questions

Outputs	Question(s)
<p># Students taking gateway math course.</p> <p># Students retaking gateway math course.</p> <p>Students attendance in gateway math course sections.</p> <p>Math 2 grades.</p>	<p>Q: What was the # of students taking gateway math courses during “x” year? How does this number compare to our baseline year?</p> <p>Q: What was the number of students retaking gateway math courses during “x” year? How does this number compare to our baseline year?</p> <p>Q: What was the attendance of students in gateway math courses during “x” year? How does this number compare to our baseline year?</p> <p>Q: What was the attendance of students in gateway math courses during “x” year? How does this number compare to our baseline year?</p>

Identifying Researchable Elements: Developing Research Questions

Short-term Outcomes	Question(s)
<p>Increase success rates. Decrease repeat rates. Focus on formative feedback for improving gateway math course.</p>	<p>Q: Did the intervention help increase the success rate of students taking Math?</p> <p>Q: Did the intervention help decrease the number of students who repeat Math?</p>

Identifying Researchable Elements: Developing Research Questions

Long-term Outcomes	Question(s)
<p>Increase rates of progression in college-level math.</p> <p>Increase rates of progression into major.</p> <p>Improve effectiveness in introductory math sequence.</p>	<p>Q: Did the intervention help increase rates of progression in college-level math?</p> <p>Q: Did the intervention help increase rates of progression into a major?</p>

Identifying Researchable Elements: Developing Research Questions

Impacts	Question(s)
<p>Increase graduation rates. Reduce time to degree completion. Reduce ethnic racial and income gaps in math-required majors.</p>	<p>Q: Have graduation rates improved since the implementation of the intervention?</p> <p>Q: Has the time to degree completion changed since the implementation of the intervention?</p> <p>Q: Have ethnic racial and income gaps in math-required majors decreased?</p>

Round Table Discussion

Activity:

Introduce yourself.

Define the equity issue at your institution.

Who are your students?

What would success look like for these students?

What student data would help you gauge the level of success?



Leveraging from the Logic Model

Define the equity issue at your institution. Rising % of Latino and Low-income students take, fail and repeat Gateway Math Courses.
(Needs)

Who are your students? Latino and Low-income student

What would success look like for these students?

Increase success rates. Decrease repeat rates. Focus on formative feedback for improving gateway math course. Increase rates of progression in college-level math. Increase rates of progression into major. Improve effectiveness in introductory math sequence. Increase graduation rates. Reduce time to degree completion. Reduce ethnic racial and income gaps in math-required majors.
(Outcomes & Impact).

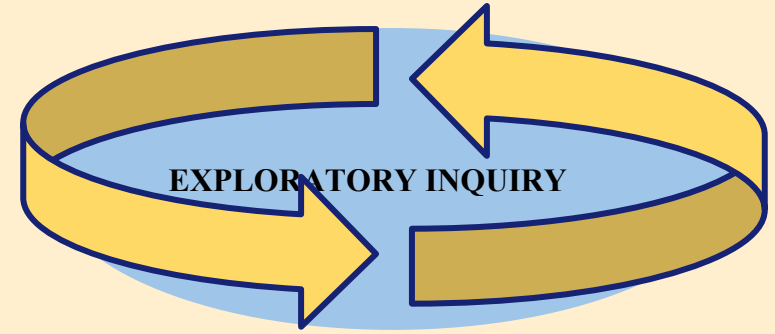
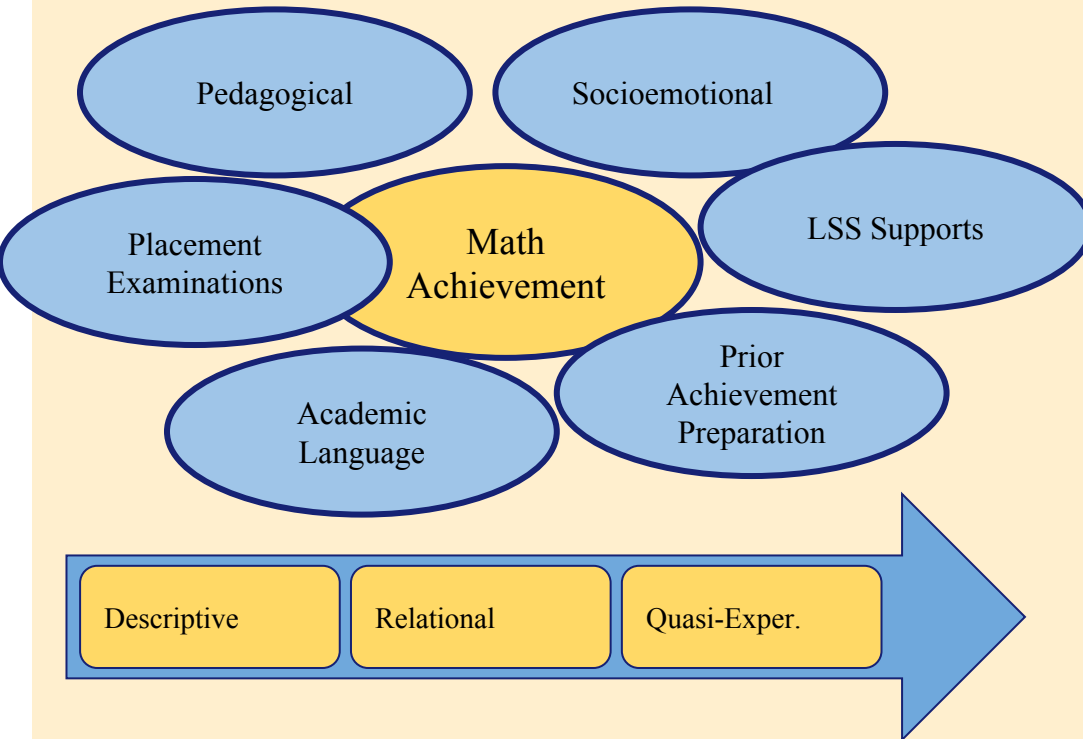
What student data would help you gauge the level of success? # Students taking gateway math course. # Students retaking gateway math course. Students attendance in gateway math course sections. Math 2 grades.



Did the Intervention Work?



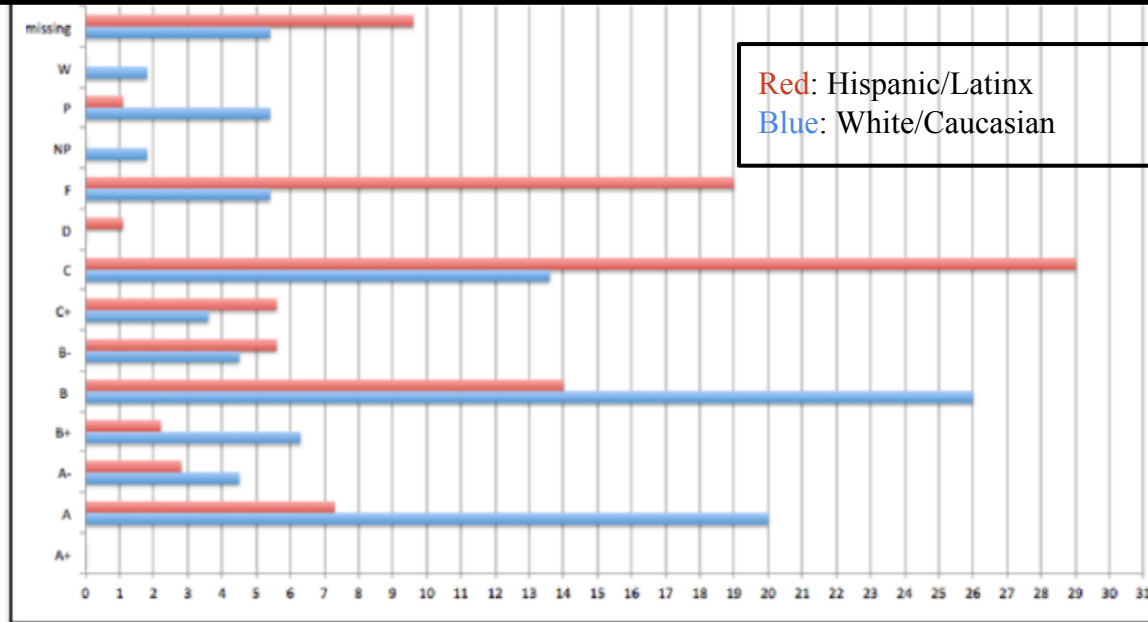
Engaging in Inquiry



Data for Program Evaluations

Performance Patterns

Grade Distribution for Math 2 by Percentage Academic Year 2011-12
Comparing White and Latinx Students.



Outing an equity issue by revealing patterns using:

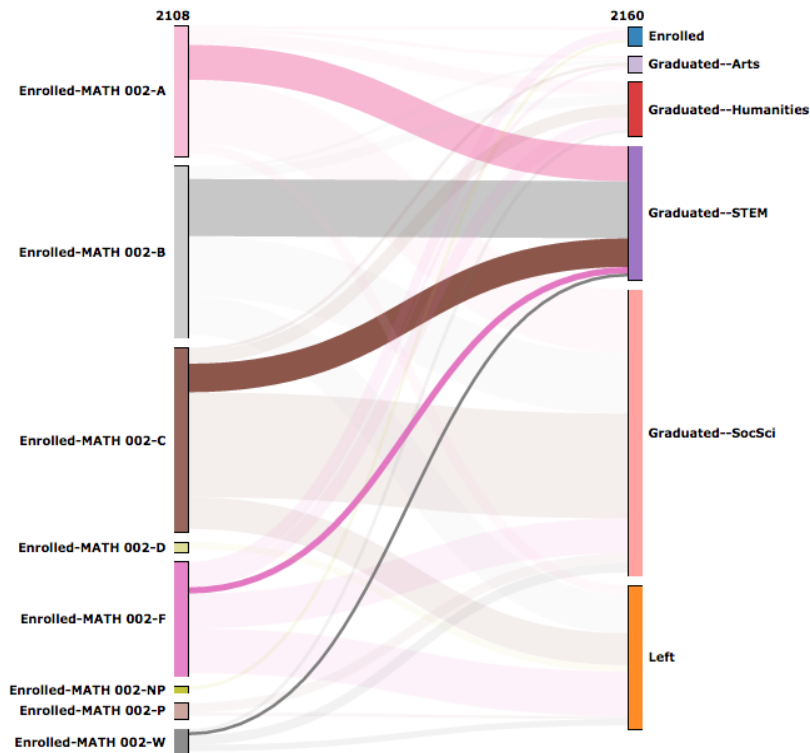
- Charts
- Histograms
- Plotting distributions
- Descriptive data
- Disaggregating by race

Ameliorating the equity issue by:

- Sharing information
- Collaborating with campus partners
- Speculating the cause
- Developing interventions

Data for Program Evaluations

Longitudinal Patterns



Ribbon Diagram: Math 2 Fall 2010 Graduation by Winter 2016



Looking at prior trends

Discovering pathways

Dispelling myths:

Myth #1: Math 2 students are not retained at UCSC.

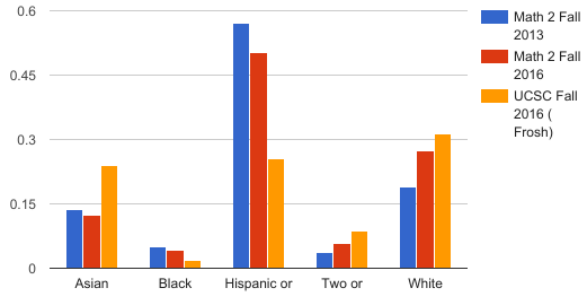
Myth #2: Math 2 students do not graduate in STEM Majors.

Myth #3: Math 2 content is remedial.

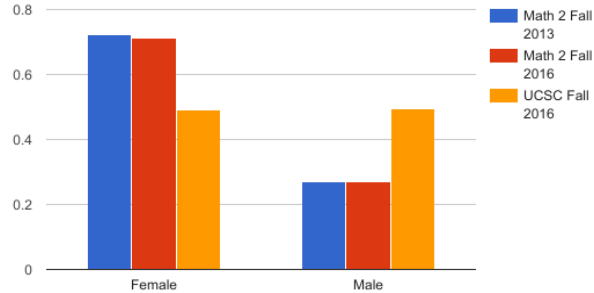
Data for Program Evaluations

Who are your students?

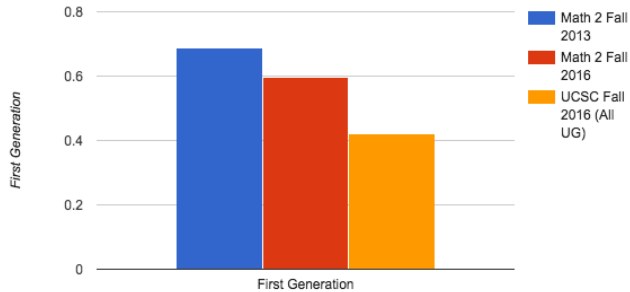
Math 2 Fall 2013, Math 2 Fall 2016 and UCSC Fall 2016 (Frosh)



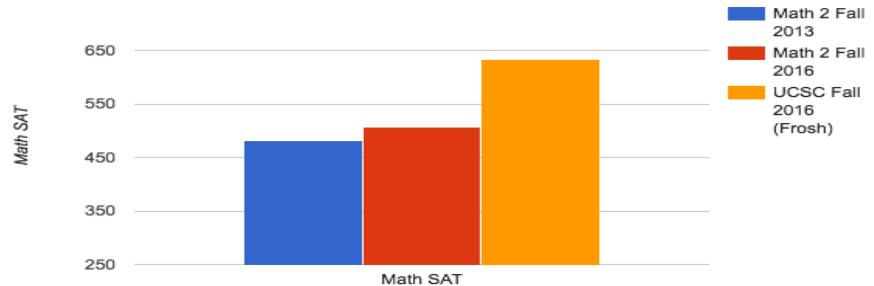
Female and Male



First Generation

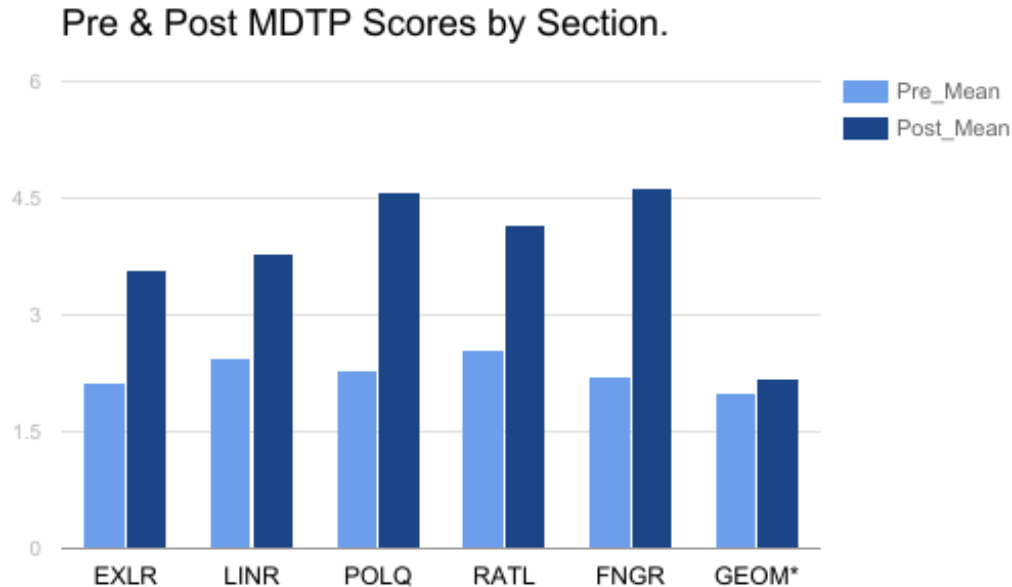


Math SAT



Data for Program Evaluations

Pre Post Comparisons



Assess students performance before and after intervention.

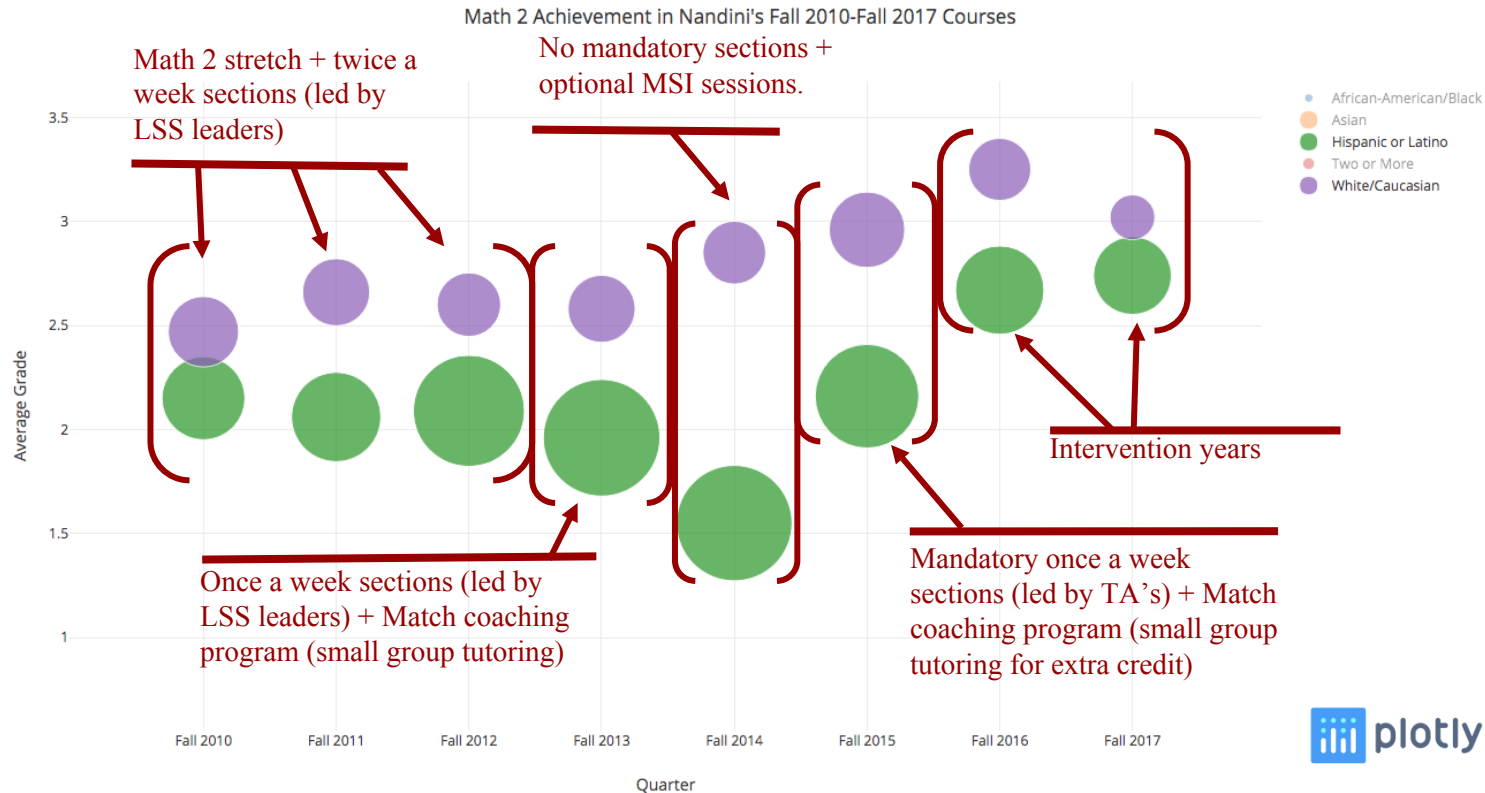
Use objective assessments.

Quantifying achievement.

Make pedagogical modifications.

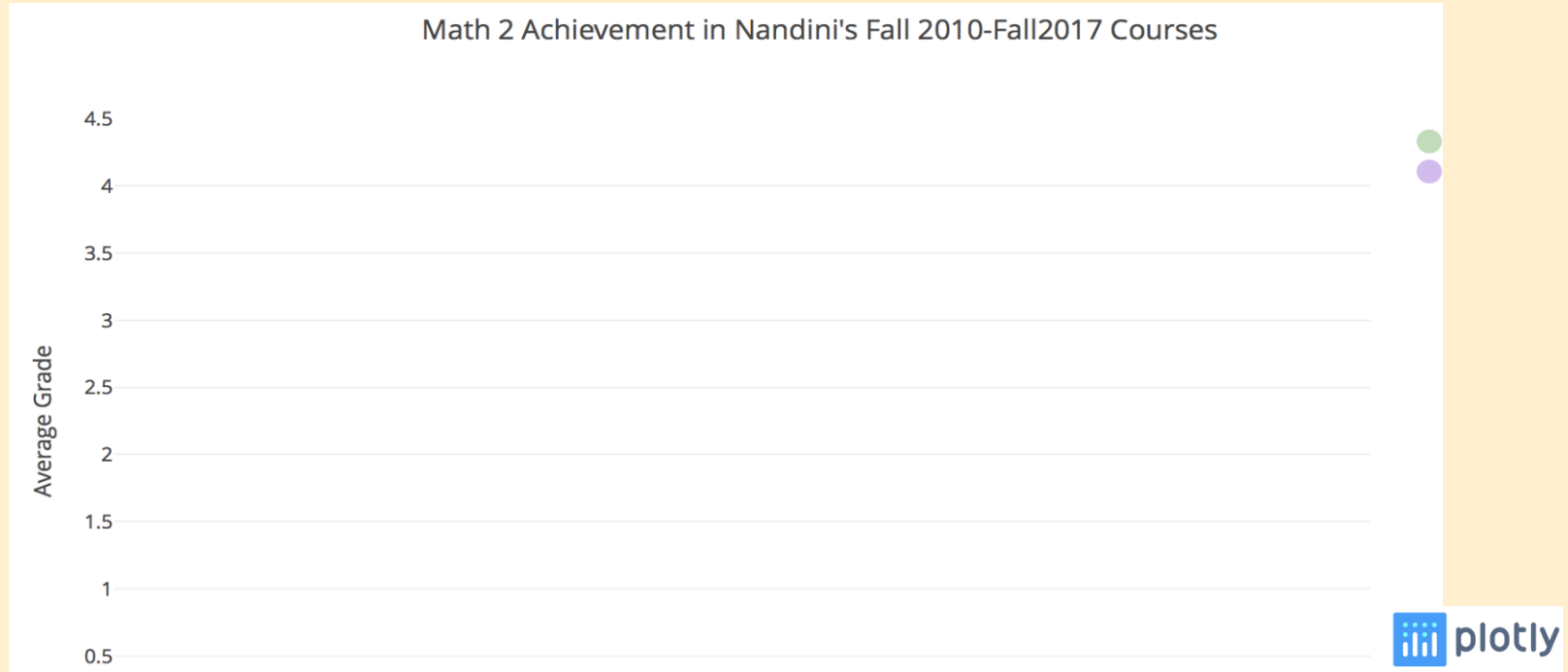
Data for Program Evaluations

Assessing Program Effectiveness



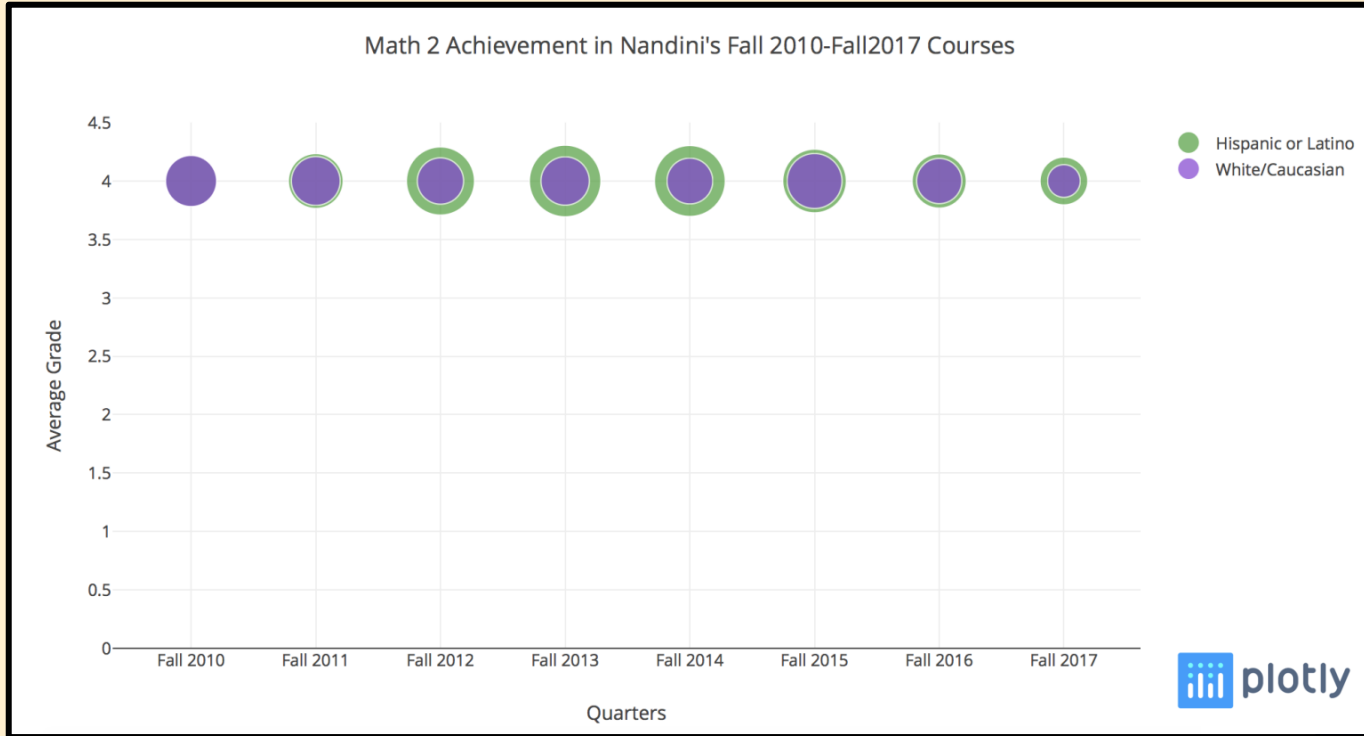
Data for Program Evaluations

Imagining the Ideal

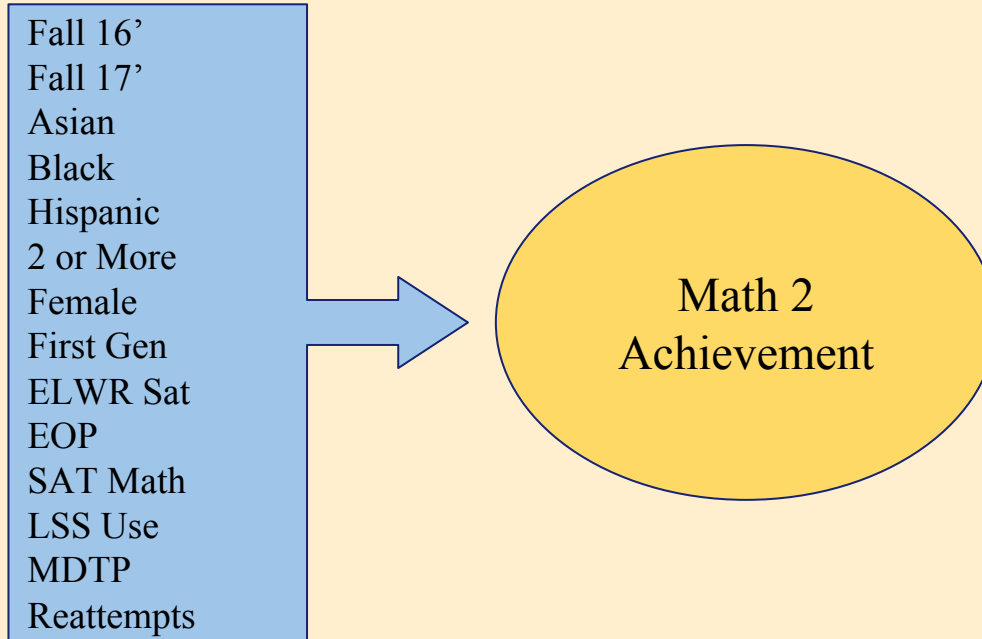


Data for Program Evaluations

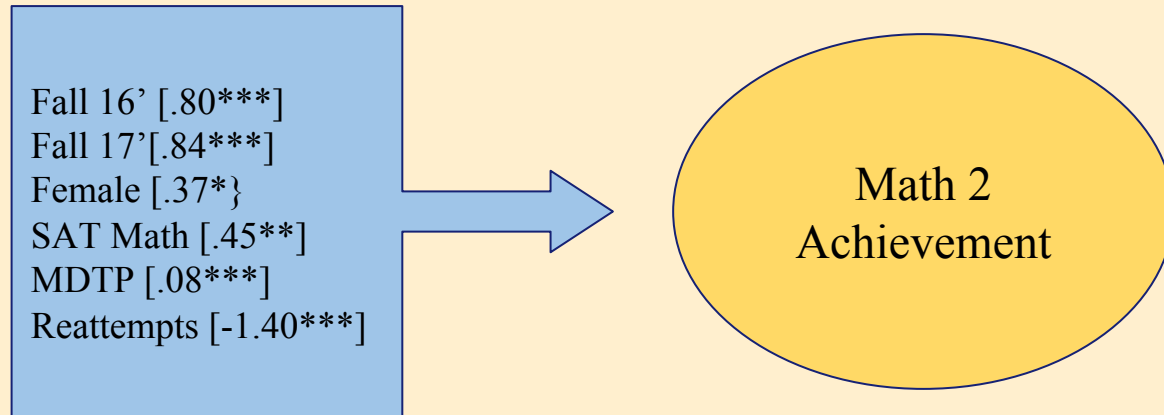
Imagining the Ideal



Regression



Regression



Tools, Software & Methods

T.E.A (Tools for Evidence-based Action)

- Ribbon tool

Plotly

- Bubble Charts

Statistical Package for the Social Sciences

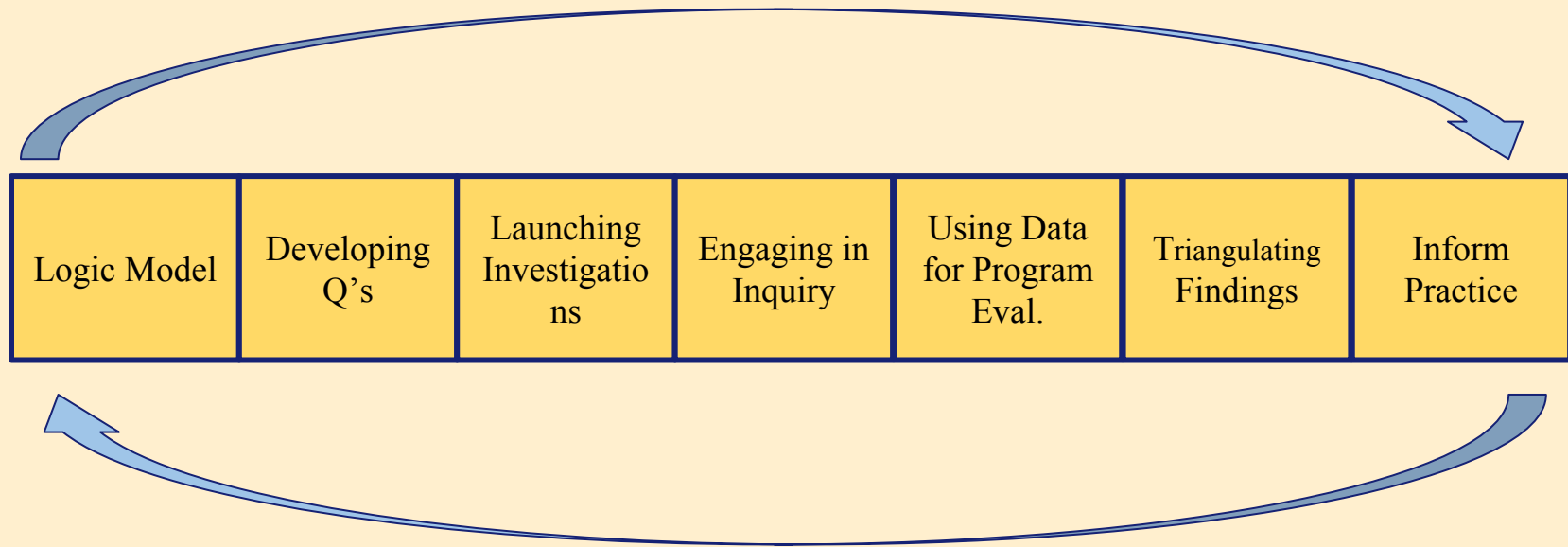
- Descriptive Data
- Regression Analyses



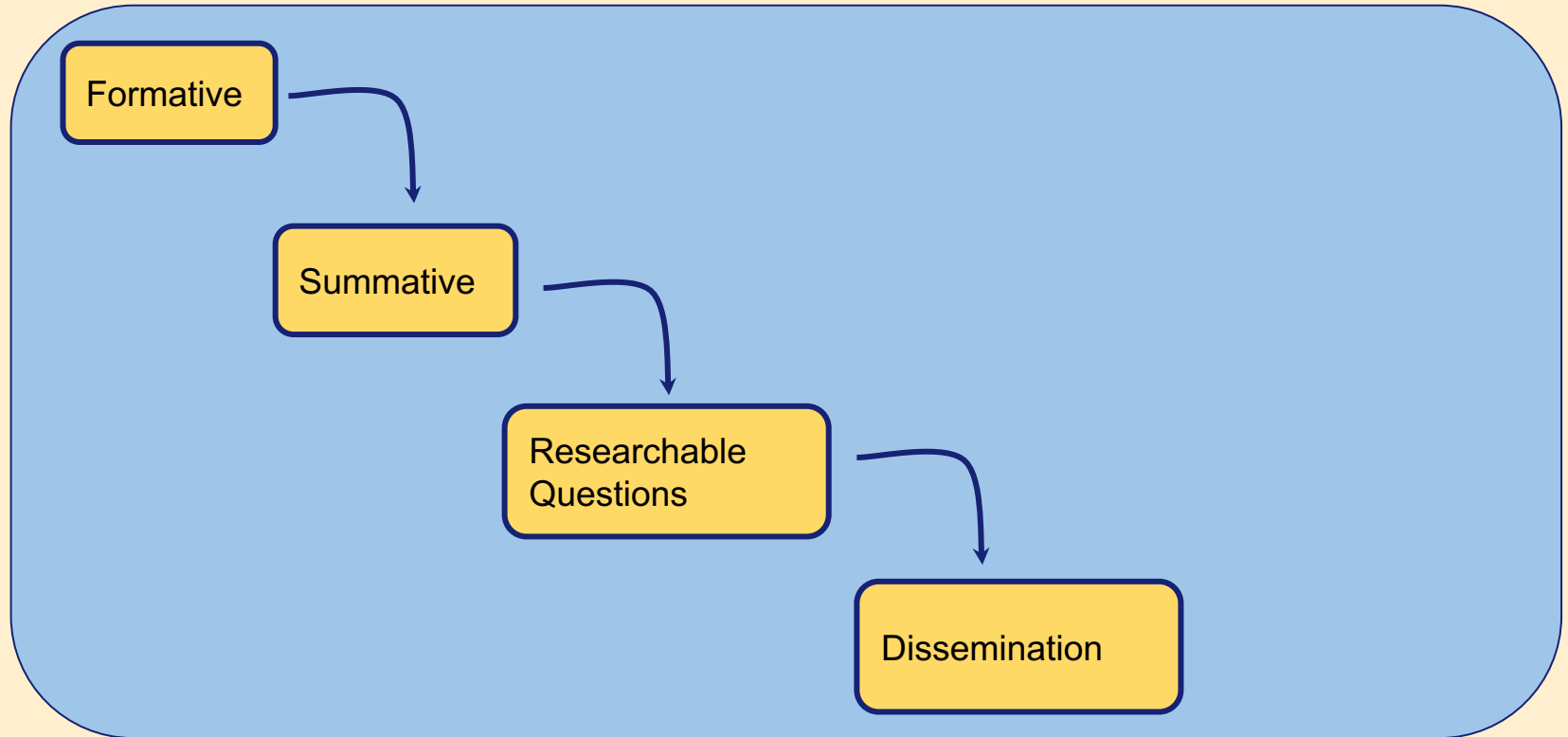
UNIVERSITY OF CALIFORNIA
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DATA MANAGEMENT

Formative Evaluation



Scholarships in HSI



Thank You



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