

Math in New Mexico

A Review of Math Achievement and Setting the State Up for Success

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Overview

1. Introduction

2. Current Status and Data Review
3. New Mexico Initiatives
4. Policy Implications



Source: NEA

An Inquiry Into Mathematics: Opening Questions



What is an early memory that you have with mathematics?

What does mathematics mean to you?



Importance and Function of Mathematics

Mathematics is the human activity of reasoning with number and shape. It is crucial not only for college, career, and civic life, but to value the cultural, linguistic, social and historical perspectives of mathematics.

The National Council of Teachers of Mathematics offers three major reasons to teach mathematics:

1. Necessary mathematics.
2. Social and personal mathematics.
3. Appreciation of mathematics as an element of culture.



The *Martinez-Yazzie* Lawsuit

- In the *Martinez* and *Yazzie* consolidated lawsuit, the 1st Judicial District Court ruled the state of New Mexico violated students' fundamental rights by failing to provide a sufficient and uniform system of education as guaranteed by the state constitution
- As evidence, the judge pointed to:
 - Low high school graduation rates
 - Low proficiency rates in reading and math
 - High rates of college remediation



Select *Martinez-Yazzie* Findings

“The evidence of both student outputs and State inputs presented at trial proves that the vast majority of New Mexico’s at-risk children finish each school year without the basic literacy and math rates needed to pursue post-secondary education or a career.”

Judge Singleton’s 2018 Decision and Order, page 37.

“The majority of New Mexican fourth, eighth, and eleventh graders are not proficient in math or reading. On average, they are three years behind grade level.”

Judge Singleton’s 2018 Decision and Order, page 37.



Martinez-Yazzie Focus Areas

The *Martinez-Yazzie* focus areas directly related to math include:

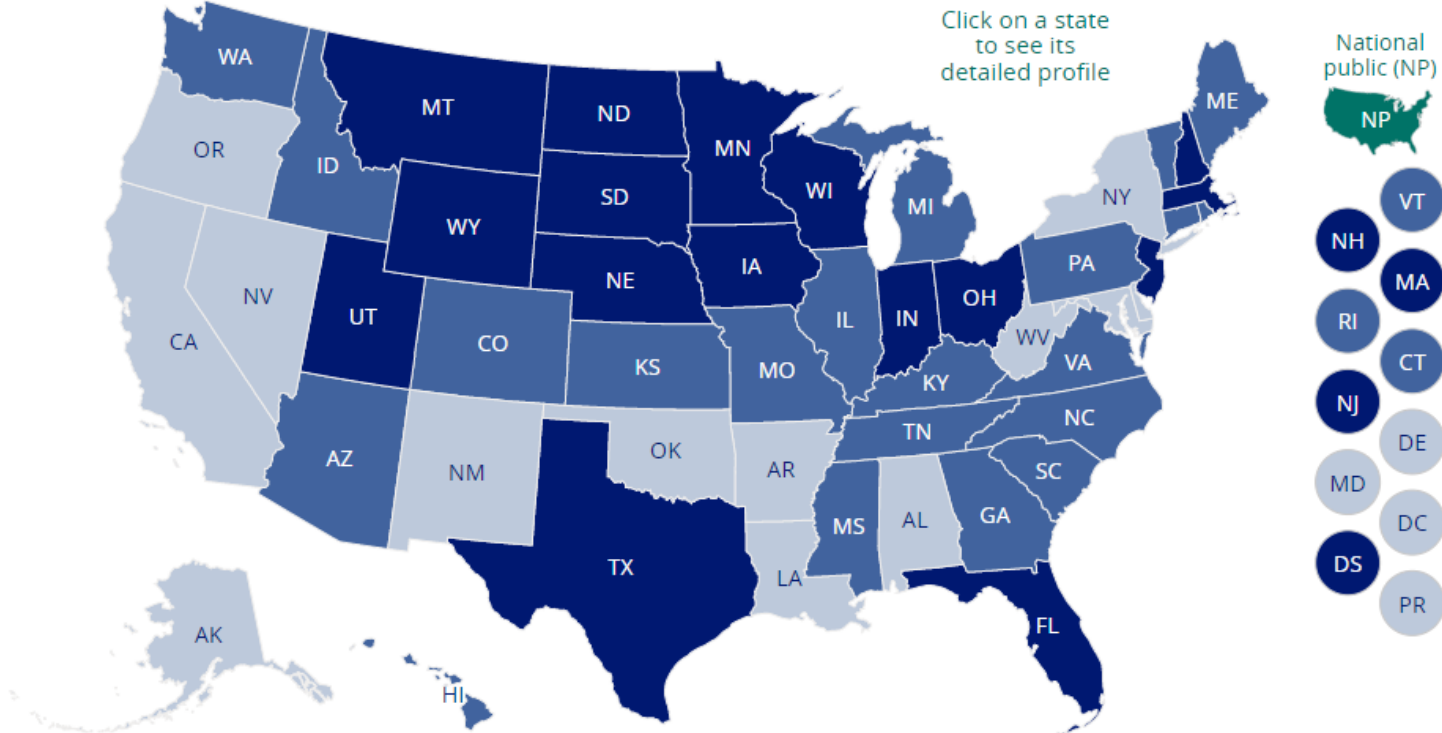
- Curriculum and instructional programs
- Culturally and linguistically responsive education
- Teachers and school staff
- Funding and accountability
- Student supports (including essential technology for at-risk students)
- Health and social services

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Mathematics, grade 4, Difference in average scale scores between jurisdictions, for all students [TOTAL] = All students, 2022



Source: NCES



NAEP Assessments: An Overview

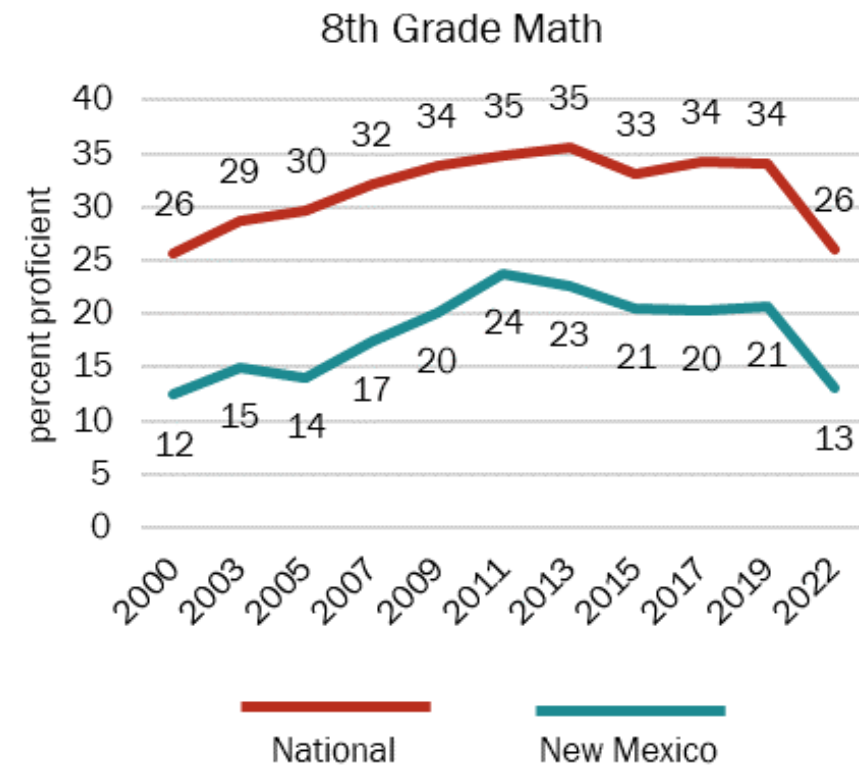
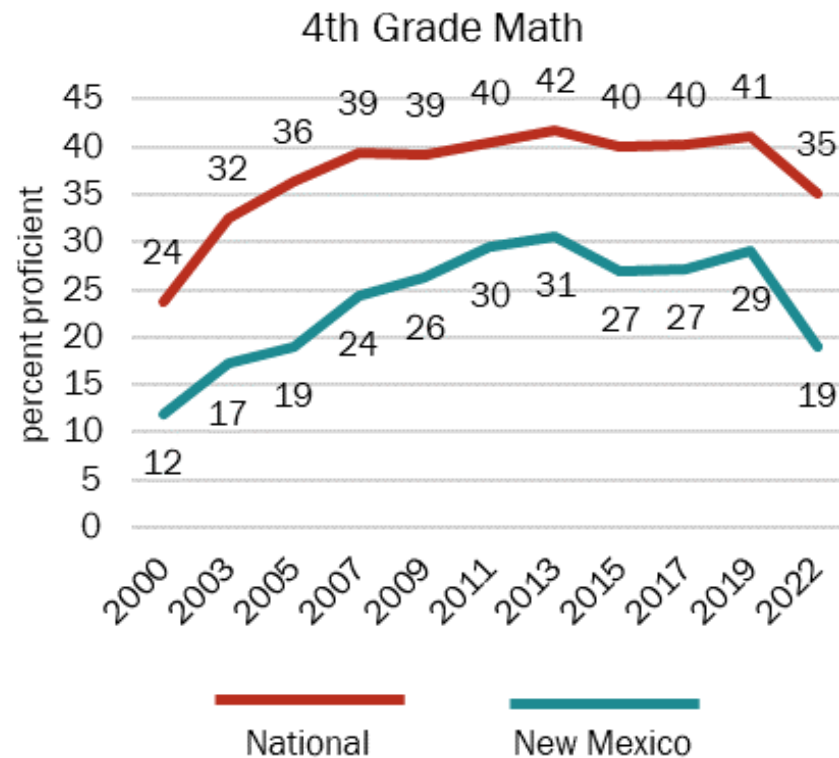
- The National Assessment of Education Progress (NAEP), also known as the Nation's Report Card, has been administered since 1969 by the National Center for Education Statistics. The assessment is mandated by Congress.
- Provides a common measure of student achievement across the country.

NAEP Does...	NAEP Does not...
<ul style="list-style-type: none">• Test a representative sample of each state's schools• Monitor educational progress for states and the U.S. over time• Disaggregate results by student subgroups	<ul style="list-style-type: none">• Test every school in the country• Provide results for individual schools or students• Track "grade-level proficiency" or acquisition of state content standards



NAEP: New Mexico vs. National Average

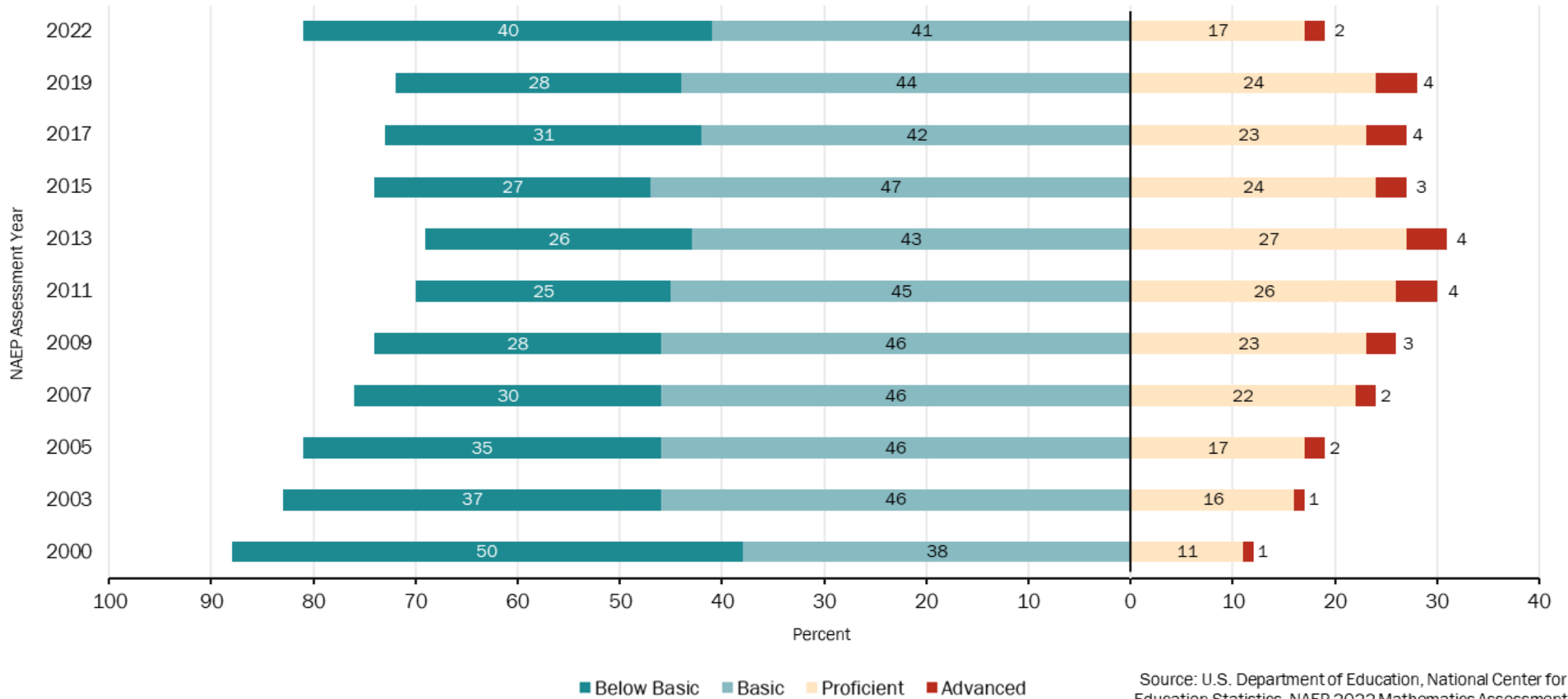
Percent At or Above Proficient



Source: NCES

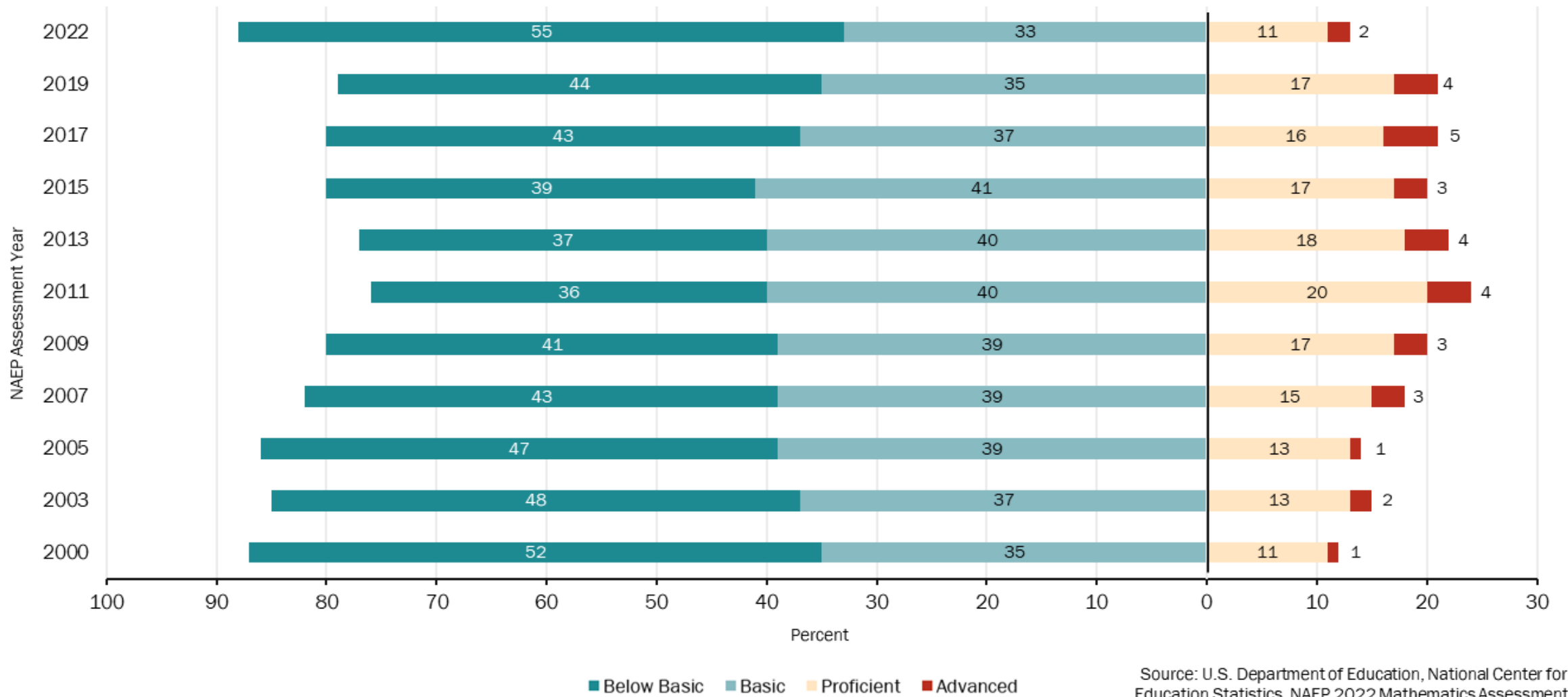
NAEP Proficiency Levels: Grade 4 Mathematics

2000 to 2022



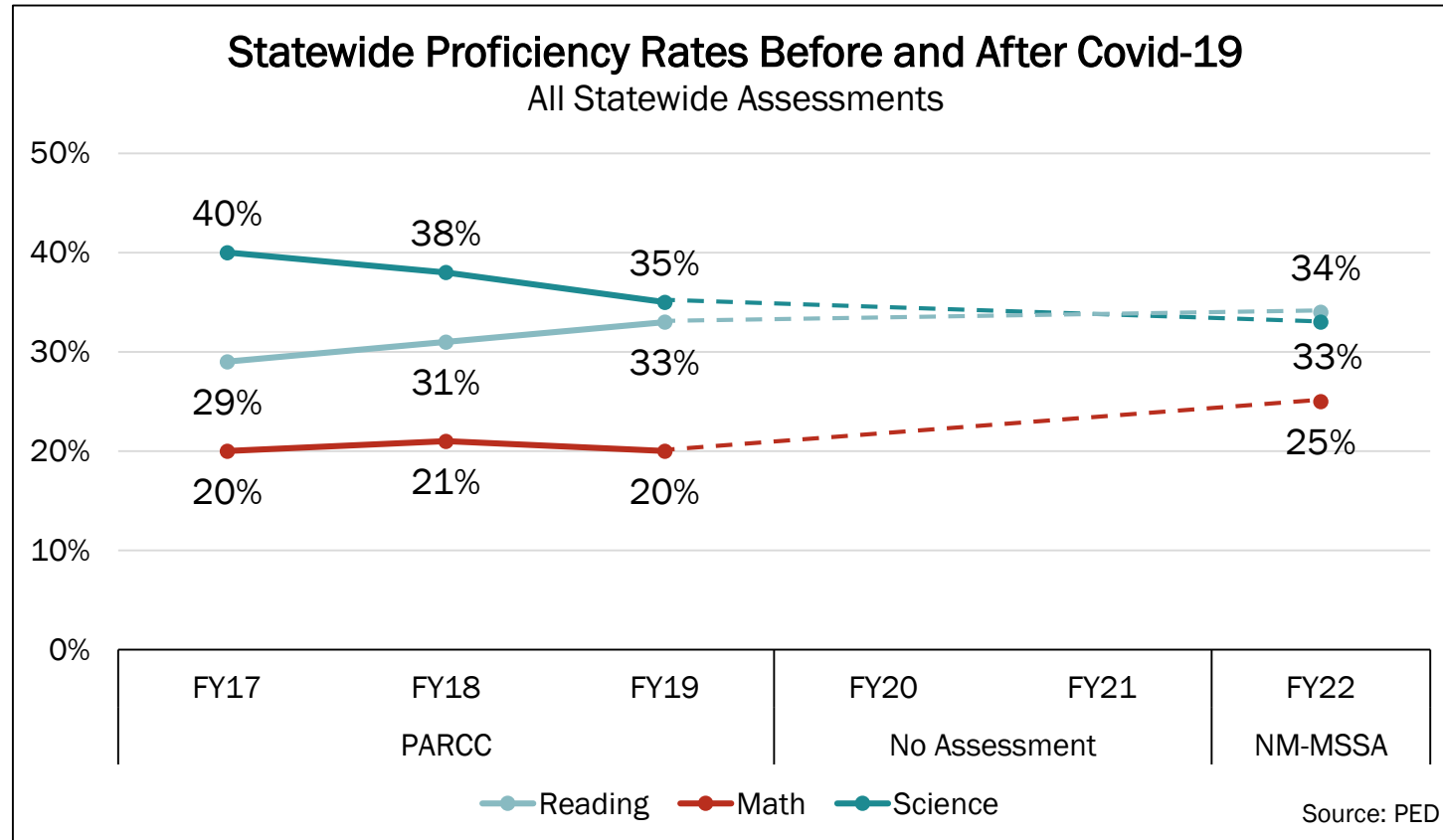
NAEP Proficiency Levels: Grade 8 Mathematics

2000 to 2022





Math Achievement Over Time



Math proficiency rates in New Mexico have always been low.

Before the pandemic, science proficiency rates had been on a steady downward trend.

New Mexico switched assessments during the pandemic. It is impossible to compare results from the pre-pandemic PARCC assessment to the post-pandemic NM-MSSA assessment.

PED is characterizing 2022 assessment results as “a new baseline.”



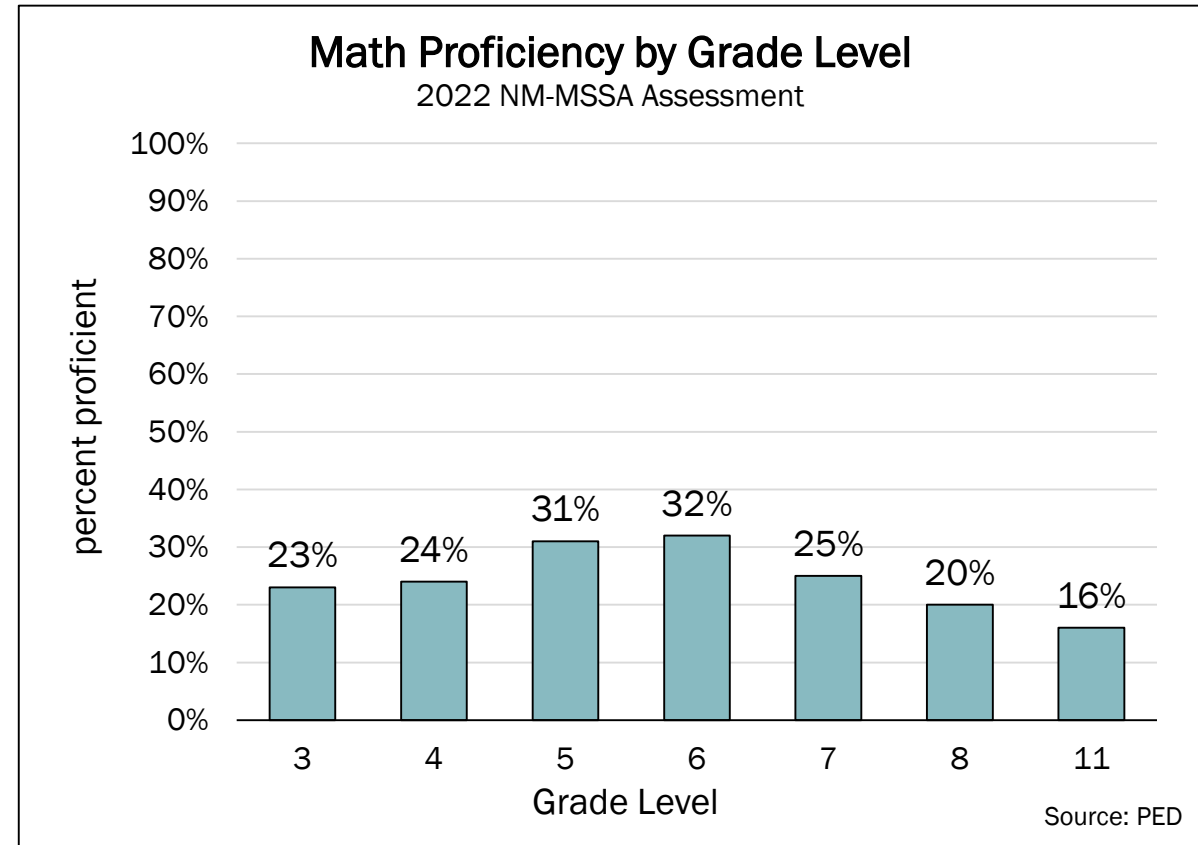
Math Achievement by Grade

In 2022,

25 percent of students

were proficient on the statewide summative math assessment (NM-MSSA).

Some grades performed better than others. Proficiency rates peaked in 5th and 6th grade, but fell in grades 7, 8, and 11.

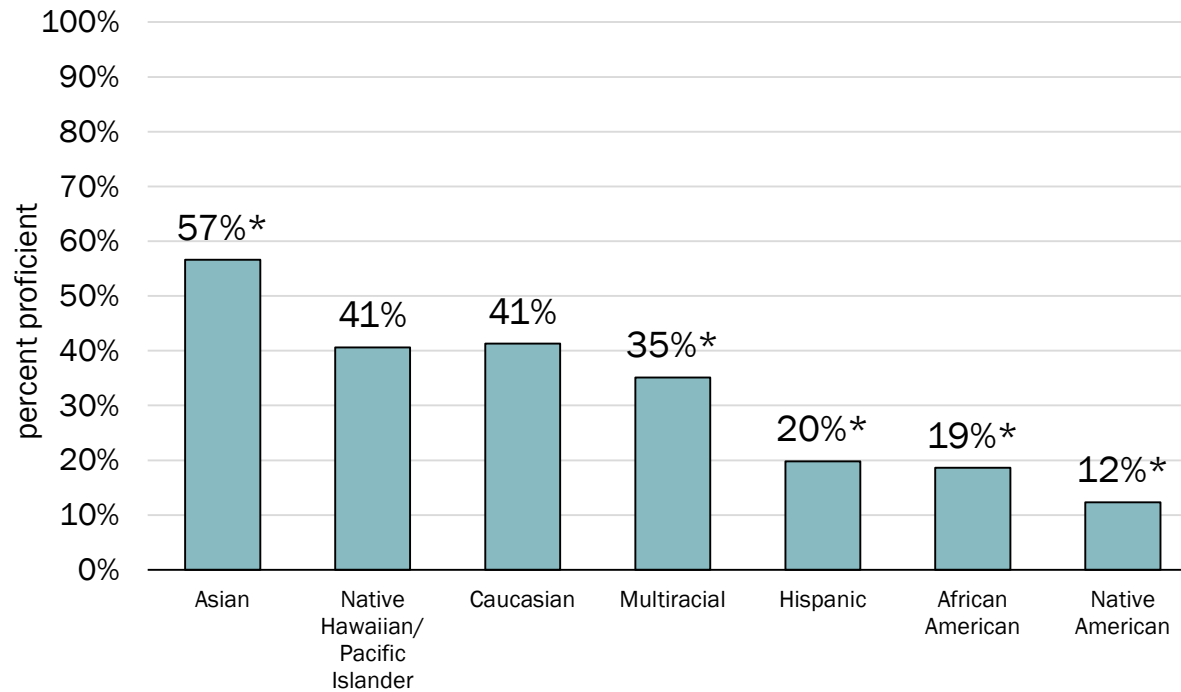




Math Achievement by Subgroup

Math Proficiency by Race/Ethnicity

2022 NM-MSSA Assessment

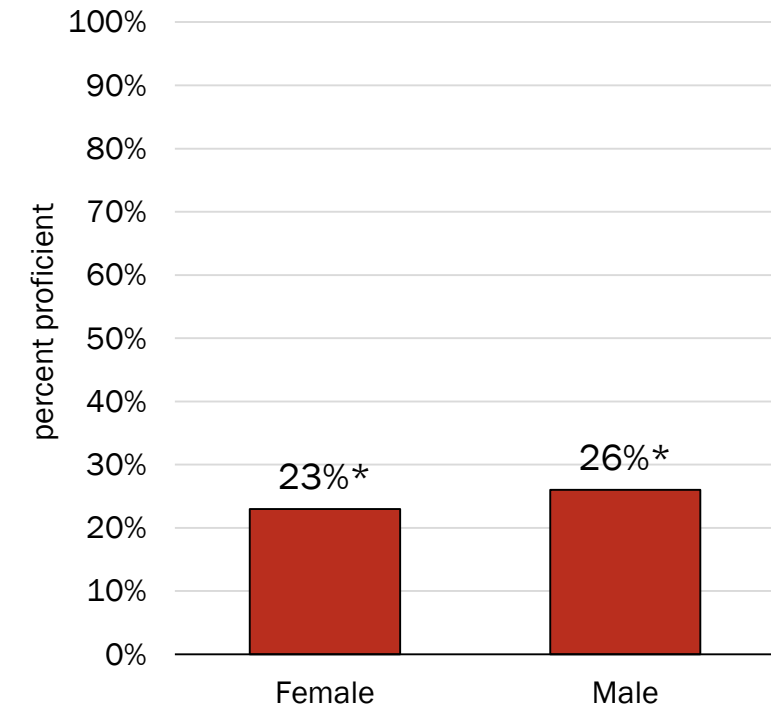


*Indicates result is significantly different from scores for Caucasian students, $p < 0.01$

Source: PED

Math Proficiency by Gender

2022 NM-MSSA Assessment

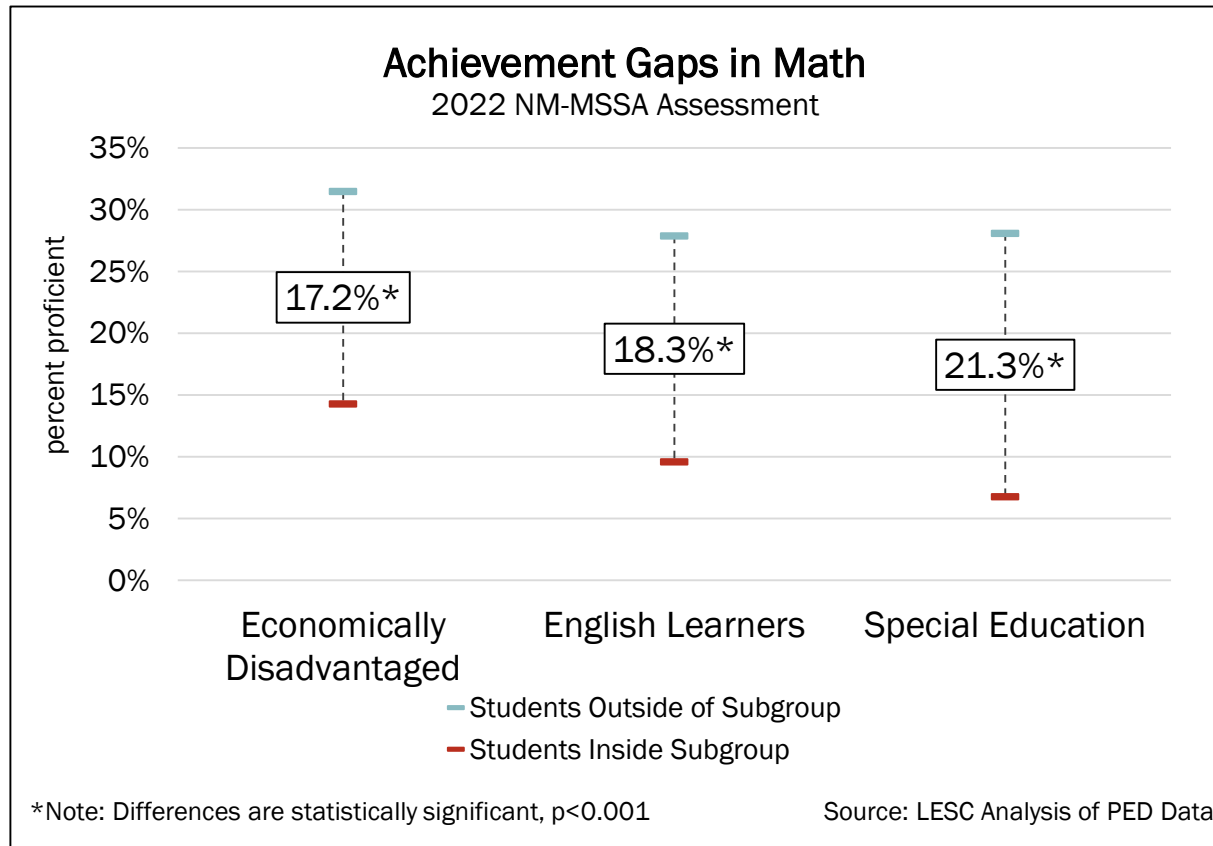


*Difference is statistically significant, $p < 0.01$

Source: PED



Math Achievement Gaps



The achievement gaps identified in the *Martinez-Yazzie* lawsuit persist in the wake of the Covid-19 pandemic.

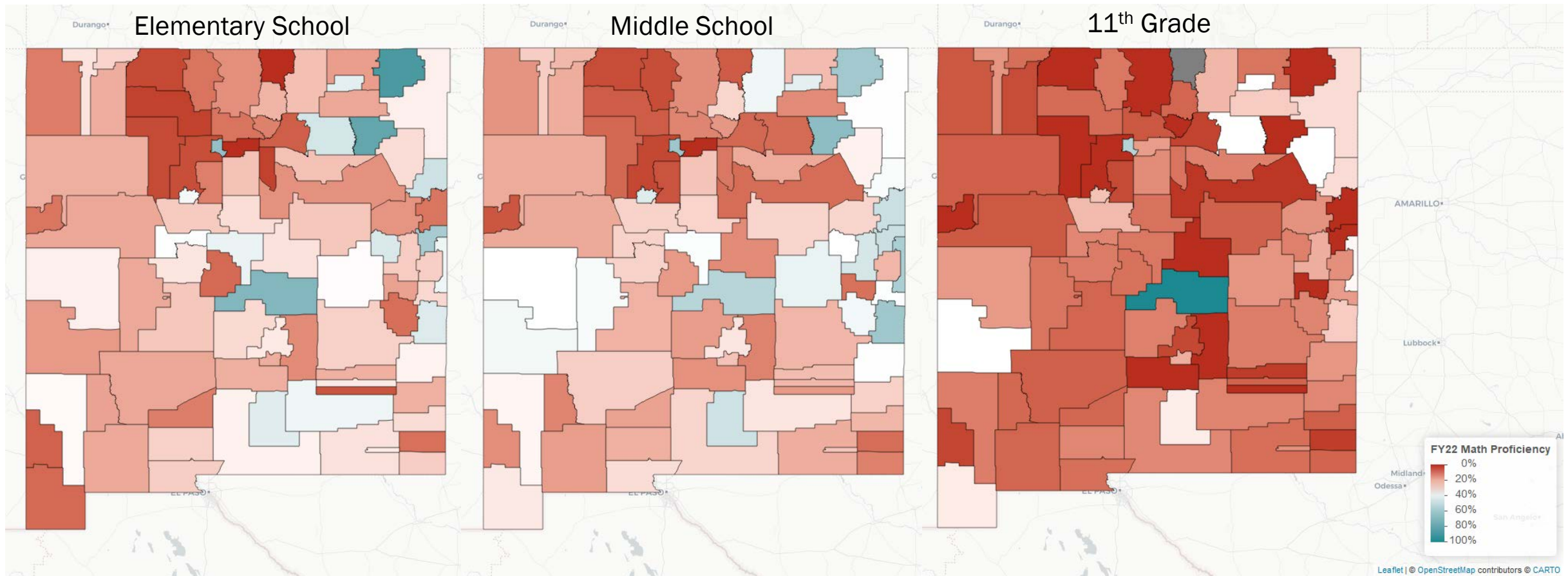
Only 15 percent of economically disadvantaged students are proficient in math, compared with 32 percent of non-disadvantaged students.

Only 10 percent of English learners are proficient in math, compared with 28 percent of native English speakers.

Only 7 percent of special education students are proficient in math, compared with 28 percent of non-special education students.

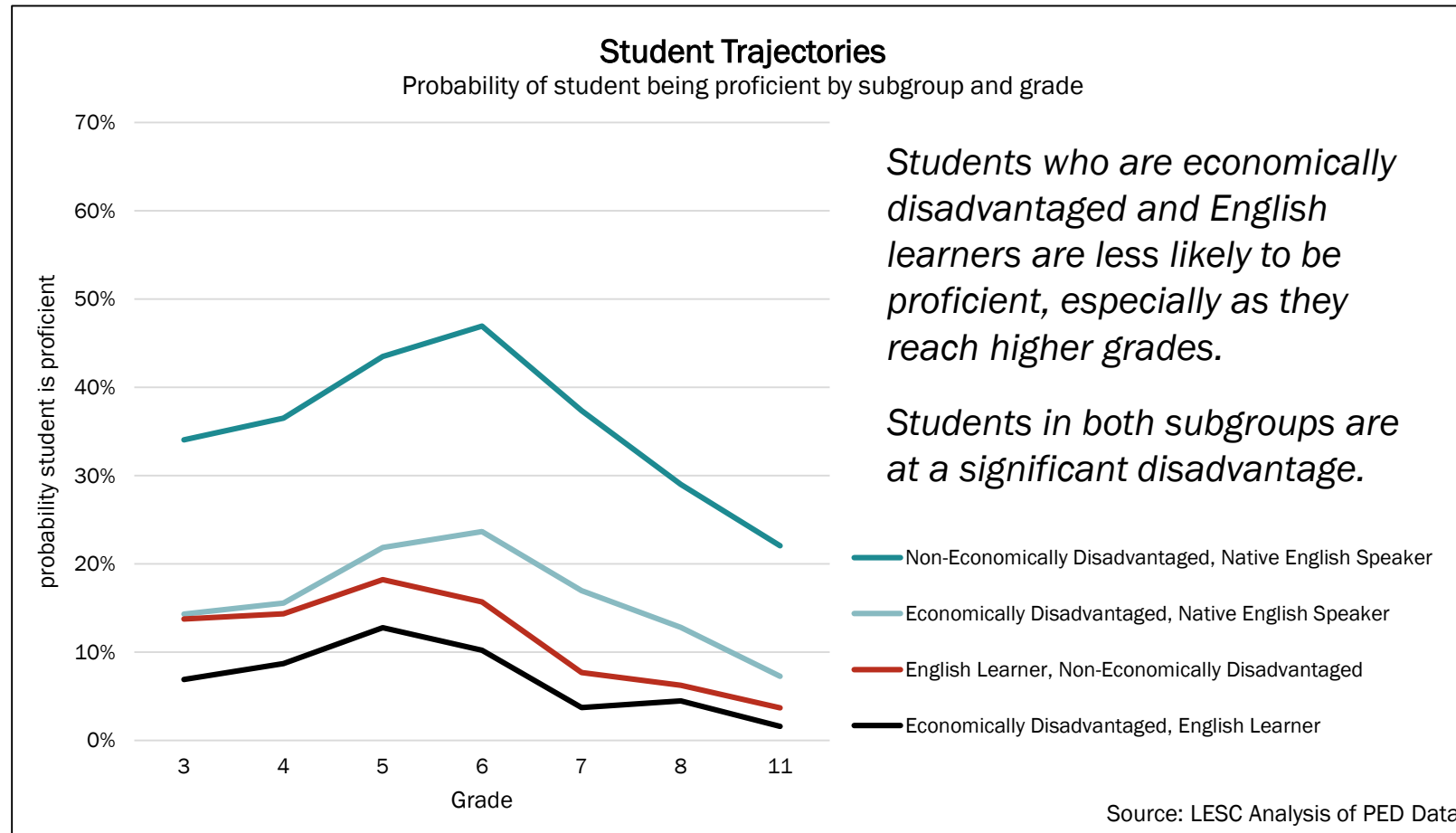


Geographic Differences in Math Achievement



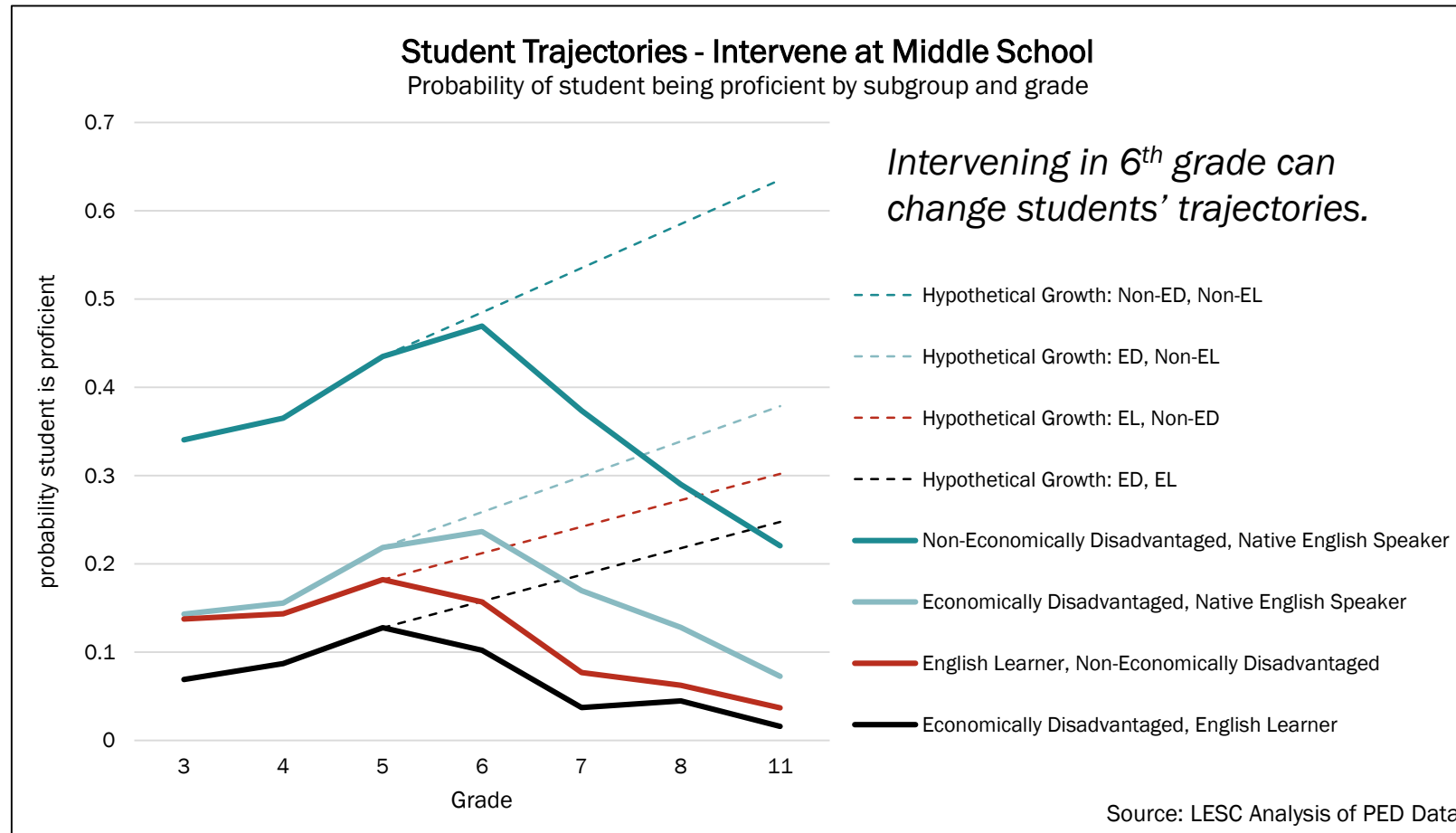


Math Trajectory – “Opportunity to Learn”



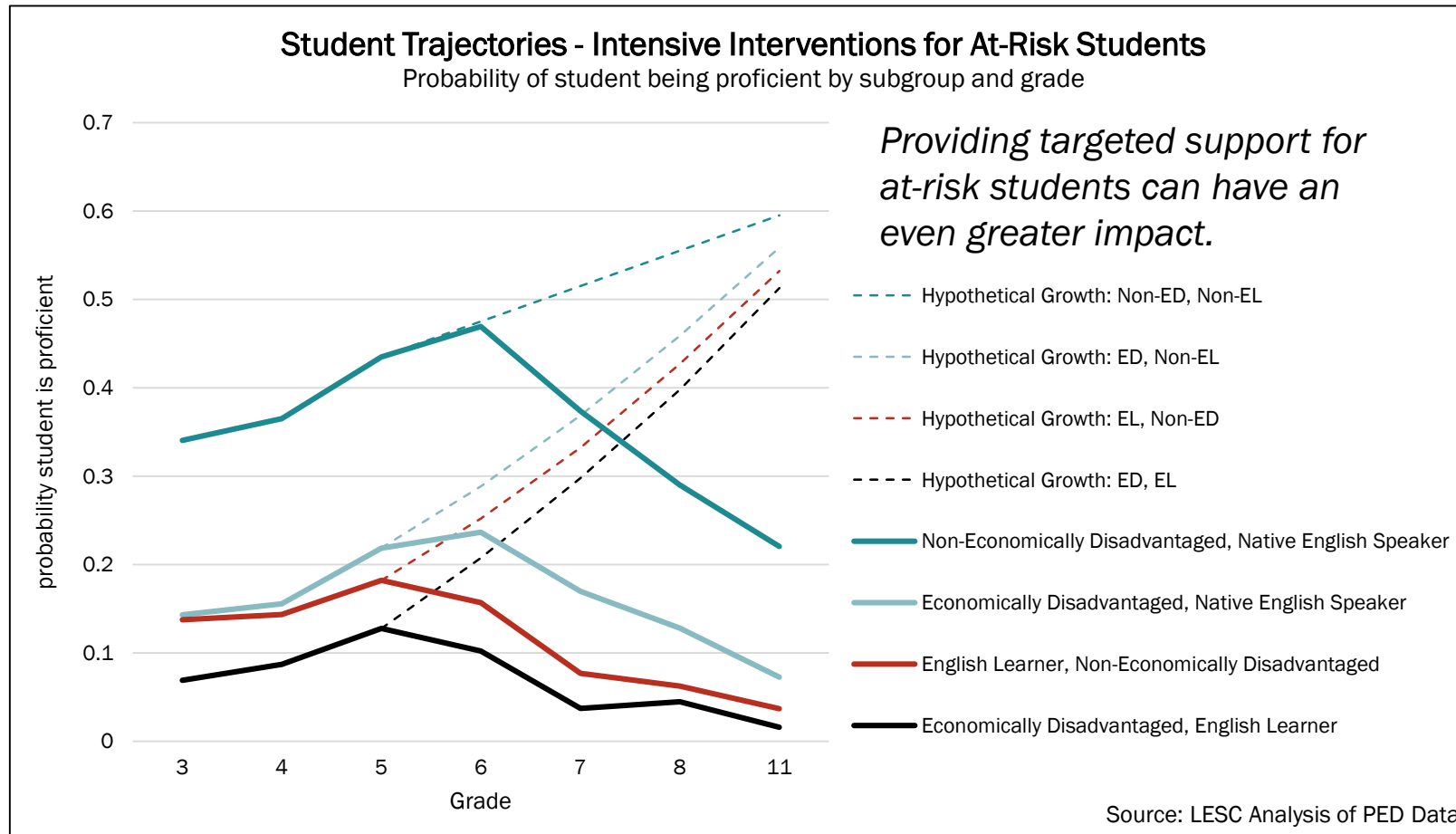


Math Trajectory – Middle School Interventions



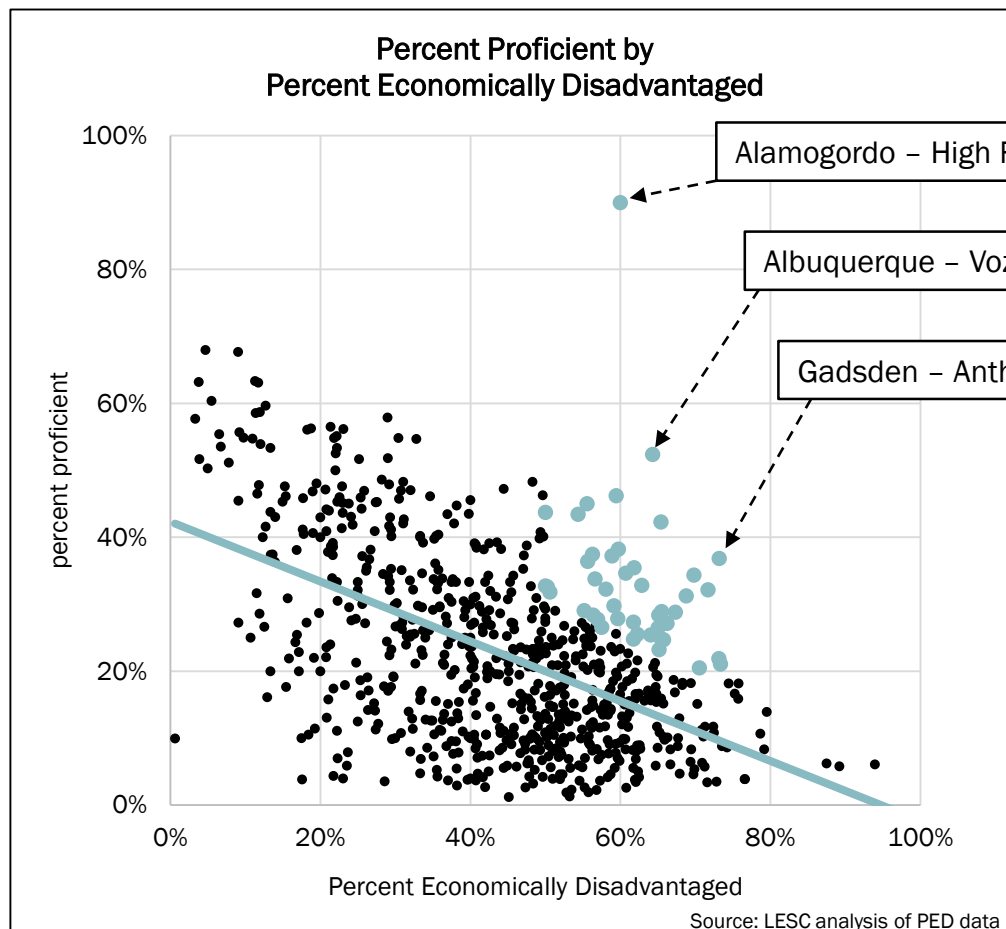


Math Trajectory – Intensive At-Risk Supports





“Beating the Odds” – Econ. Disadv.



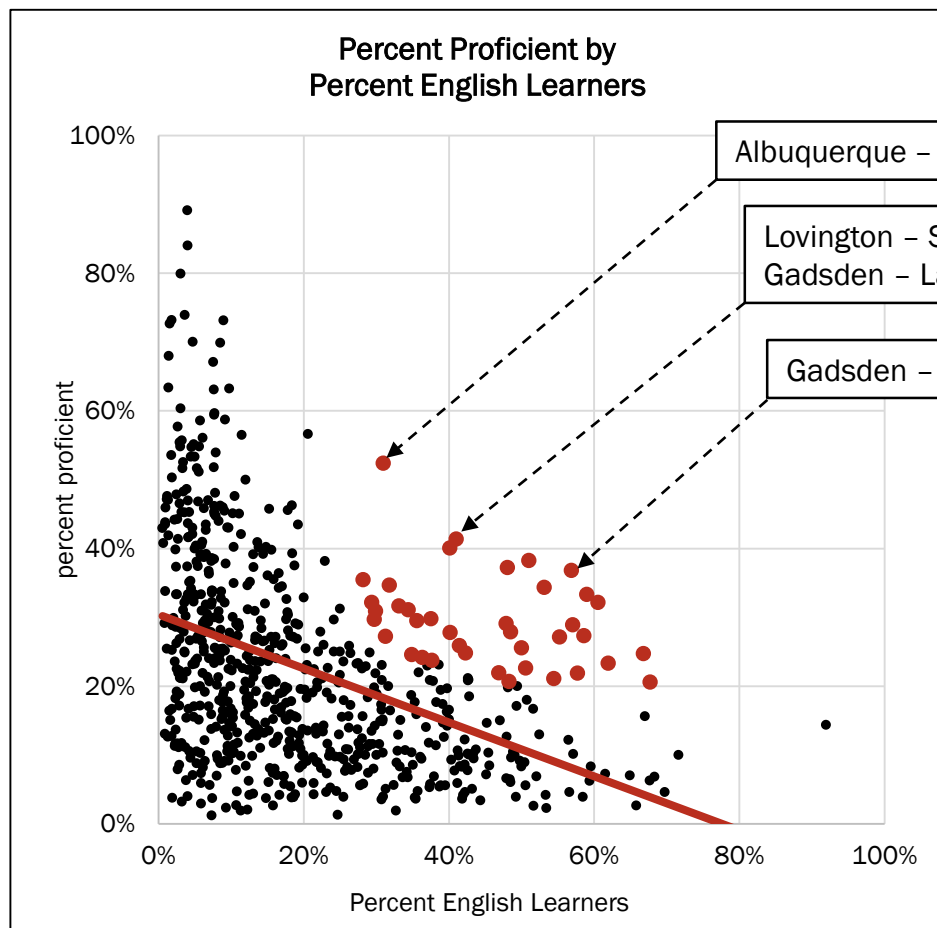
Schools highlighted in blue are the top 5 percent of performers with...

- More than 20 percent proficient
- More than 50 percent economically disadvantaged students

School District	Schools in Top 5%
GADSDEN	13
BELEN	3
GALLUP	3
LAS CRUCES	3
DEMING	2
HOBBS	2
LOS LUNAS	2
SILVER CITY	2
ALAMOGORDO	1
ALBUQUERQUE	1
ARTESIA	1
BLOOMFIELD	1
COBRE	1
FT SUMNER	1
GRANTS	1
HOUSE	1
ROSWELL	1
SANTA ROSA	1
TAOS	1
TUCUMCARI	1
VAUGHN	1
WAGON MOUND	1



“Beating the Odds” – English Learners



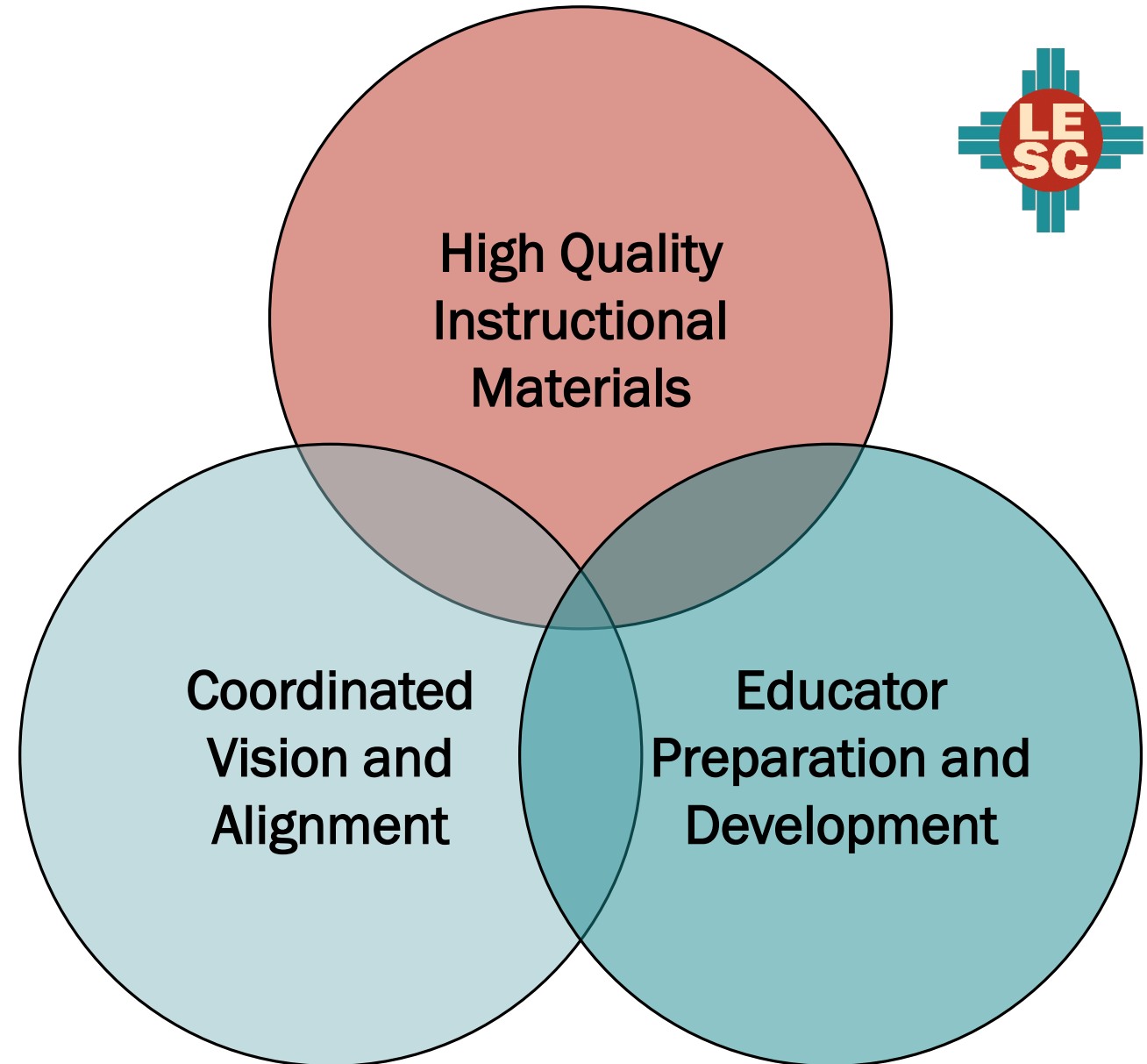
Schools highlighted in red are the top 5 percent of performers with...

- More than 20 percent proficient
- More than 25 percent English learners

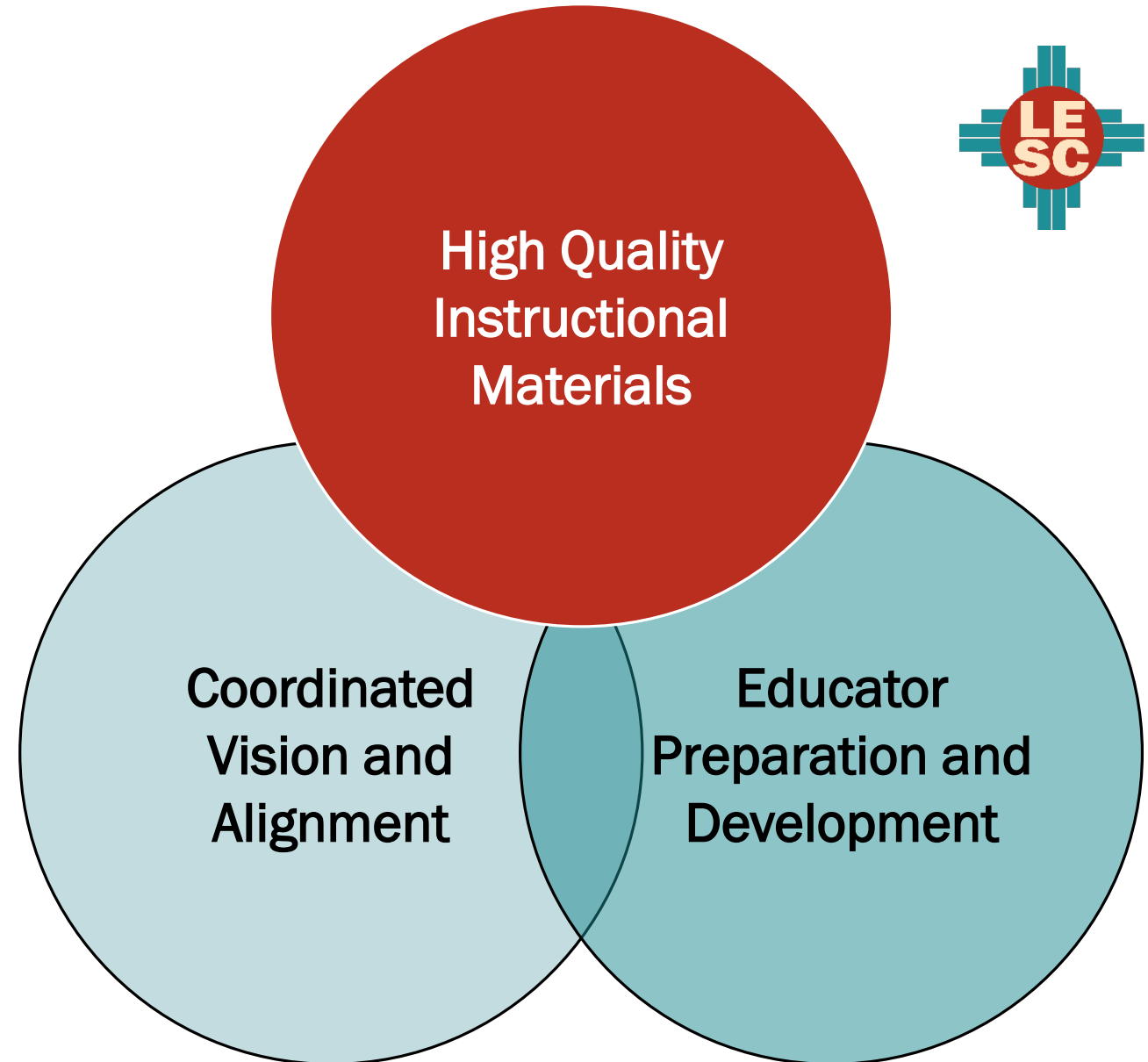
School District	Schools in Top 5%
GADSDEN	18
GALLUP	4
ALBUQUERQUE	3
DEMING	2
LOS LUNAS	2
MISSION ACHIEVEMENT AND SUCCESS	2
ALBUQUERQUE BILINGUAL ACADEMY	1
ARTESIA	1
CENTRAL CONSOLIDATED	1
HAGERMAN	1
LAS CRUCES	1
LOVINGTON	1
SANTA FE	1
TRUTH OR CONS.	1

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High Quality Instructional Materials





High-Quality Instructional Materials

High-quality instructional materials (HQIM) are...

- Content-rich
 - Fully accessible
 - Culturally and linguistically relevant
 - Free from bias
 - Research-based
 - Aligned to NM state standards
 - Aligned with research in brain development and the learning sciences
- [Research](#) shows HQIM:
 - Boost student achievement and reduce variability in the quality of instruction
 - Are low-cost, high-return educational investments
 - Culturally responsive HQIM that are both rigorous and relevant is [crucial to addressing equity in education](#)
 - The *Martinez-Yazzie* decision and order identifies the need for culturally relevant instructional materials for Native American students



Instructional Materials Review and Adoption

- PED's Instructional Materials Bureau vets instructional materials through a rigorous review process called the "Summer Review Institute"
- At the institute, New Mexico educators review content for alignment with state standards and assess materials' rigor
- Reviews are conducted by subject area every six years; K-12 math reviews were last conducted in 2019 and the next math review is scheduled for 2025
- School districts and charter schools are not required to follow the state adoption cycle; some design their own cycles
- Instructional materials funding allocated through the SEG does not have to be spent on items on the adoption list

Instructional Material Review Cycle

2018	• K-12 Science
2019	• K-12 Math
2020	• 9-12 Reading
2021	• K-8 Reading
2022	• K-12 Social Studies
2023	• K-12 CTE, PE, Health
2024	• K-12 Science
2025	• K-12 Math



Math Is Me

- The Public Education Department (PED) launched the “Math Is Me” initiative for the 2022-2023 school year.
- Math Is Me intends to build appreciation for math at every grade level, but supports focus on secondary students:
 - Math Tutoring Corps for Algebra I students
 - Fostering Positive Math Identities for sixth through 12th grade educators
 - Math Foundations for fourth grade and fifth grade educators
 - Focus on Algebra for sixth through ninth grade educators
 - Pathway2Careers toolkit and curricula focus on middle and high school students





New Mexico Instructional Scope

- The New Mexico Instructional Scope (NMIS) for [math](#) was created to support district-wide horizontal and vertical curricular alignment, as well as provide guidance on the sequencing of standards at the local level.
 - Grade level documents support educators with lesson planning
 - Can and should be used side-by-side with HQIM

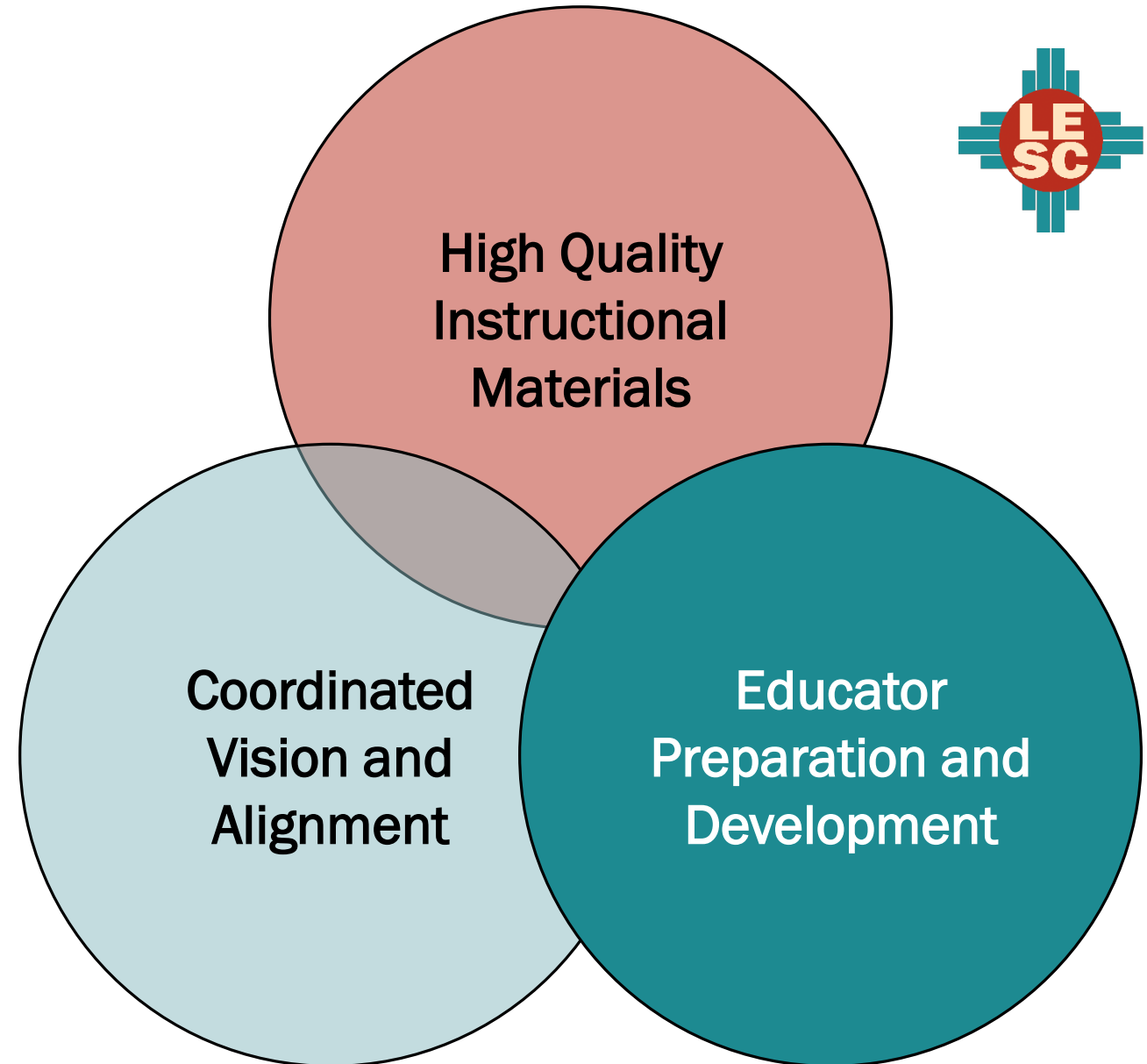




Canvas Curriculum

- Canvas, the statewide learning management system provided by PED to all educators, houses math curriculum and supports:
 - PED-endorsed core and supplemental materials
 - ✓ [UnboundEd \(EngageNY\)](#) Prek-8, Algebra I, Geometry, Algebra II, Precalculus and Advanced Topics
 - ✓ [Illustrative Mathematics](#) 6-8, Algebra I, Geometry, Algebra II
 - Creative Commons
 - ✓ About 20,000 resources for math educators
 - ✓ Purple checkmark indicates resource has been vetted by PED or national organization such as EdReports and indicates high quality
 - Professional learning
 - ✓ Both synchronous and asynchronous
 - ✓ 718 educators have engaged with the math professional learning supports on Canvas so far in the 2022-2023 school year

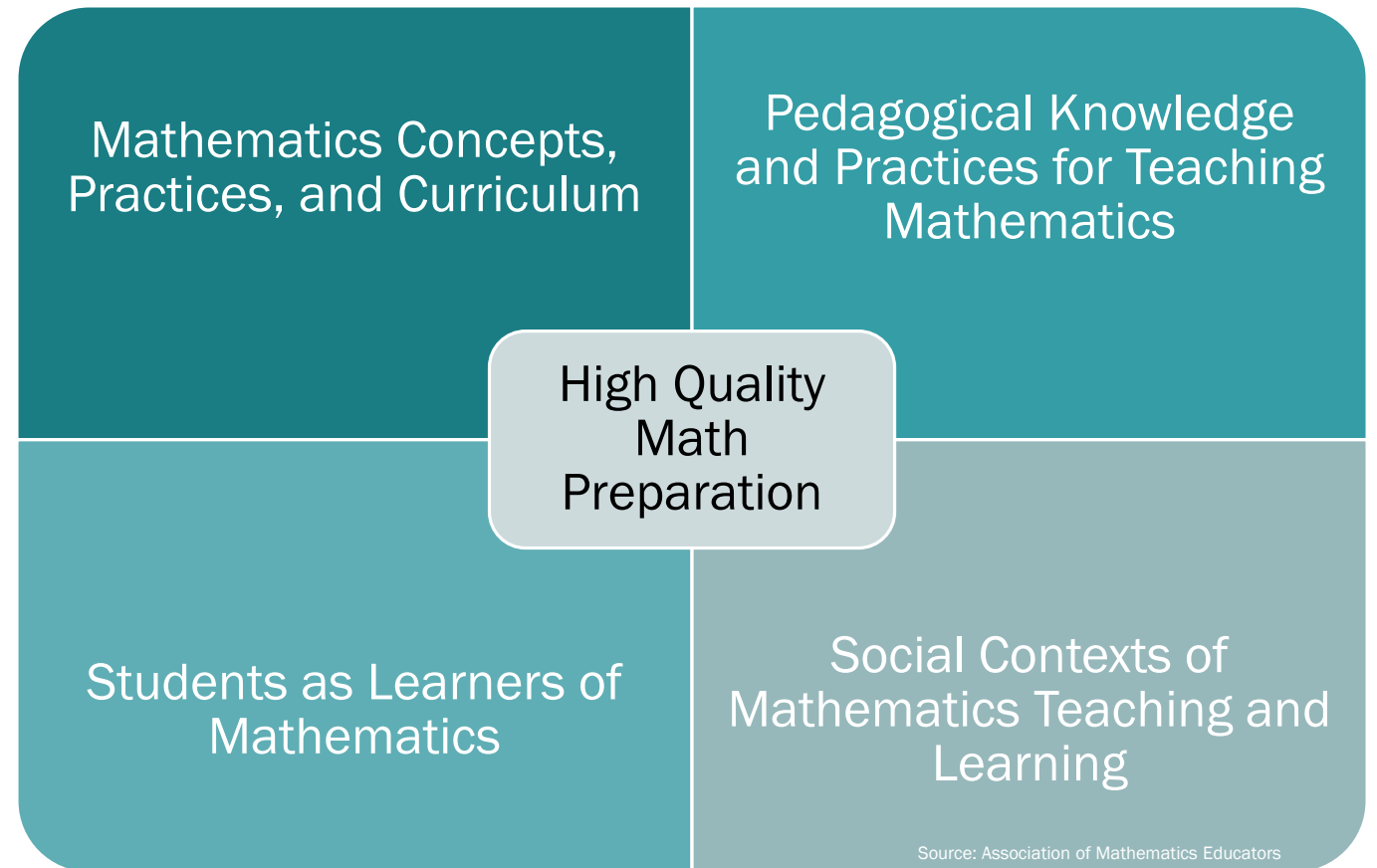
Educator Preparation and Development





Preparing High Quality Math Teachers

- National Council on Quality Teacher recommends focusing on math course requirements and strong mentorship.
- Some educator preparation programs in New Mexico offer specialized training in mathematics education.
- Teachers have the opportunity to become endorsed as 'mathematics specialists' through a series of course requirements.



Professional Learning for Math Educators

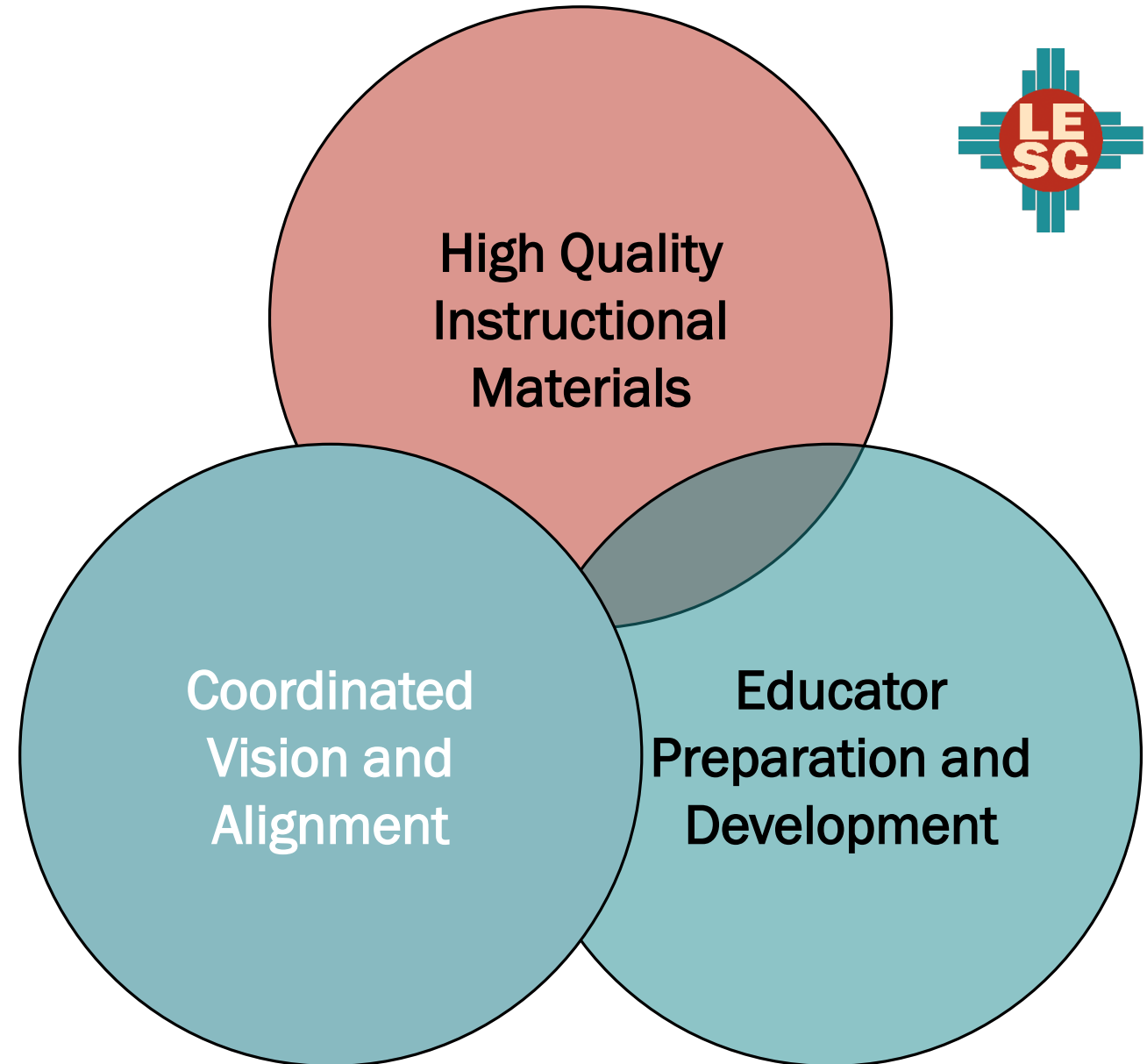




Professional Learning Opportunities

- PED is offering math teachers a series of professional development opportunities aligned with their “Math is Me” initiative. Since June 2022, over 200 math teachers, instructional coaches, and administrators have participated.
 - Math Foundations: Supports fourth through fifth grade teachers to develop the skills necessary to support students with early numeracy, base 10, and algebraic thinking.
 - Focus on Algebra: Supports sixth through ninth grade teachers to develop the skills necessary to support student learning about ratios, proportions, and expressions
- In addition to PED professional learning opportunities, there are district and university supported learning opportunities across the state.

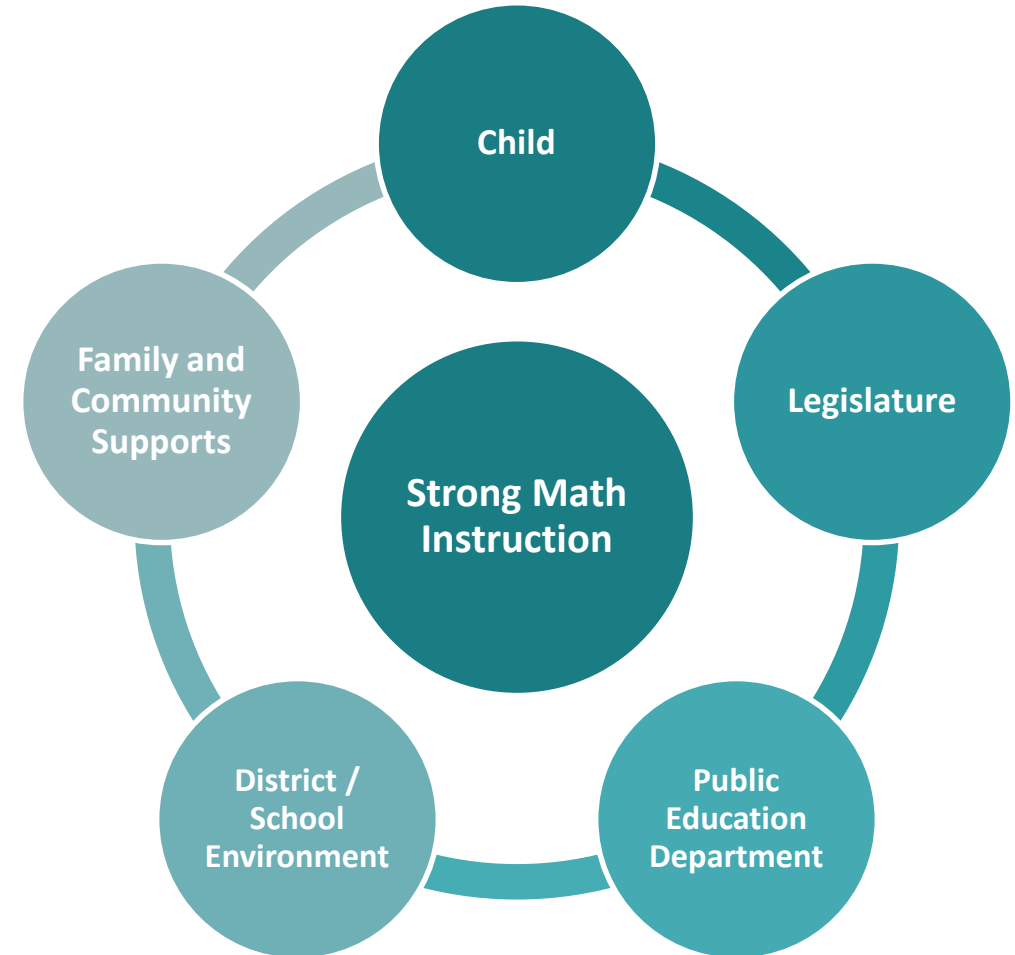
Coordinated Vision and Alignment





Coordinated Vision and Alignment

Fostering strong math instruction requires **coordination**, **alignment**, and a **shared vision** for math instruction.



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Recap: Unfinished Learning in Mathematics

- Unfinished learning in the wake of the Covid-19 pandemic is most pronounced in mathematics.
- Students lost more ground in mathematics than in reading.
- Math requires sequential learning.
- Time is of the essence in intervening and addressing unfinished learning in mathematics.



Short-Term Policy Considerations

To improve math outcomes in the short term, the Legislature should...

- Address disrupted learning now.
- Ensure access to high-quality math instructional materials to support acceleration to on-grade level instruction.
- Provide resources for and prioritize professional development.
- High dosage tutoring for students who need help

The LESC Budget Recommendation includes...

Learning Time

- \$202 million to increase instructional hours to 1,140 for all students
- \$33 million for “K-12 Plus”
- \$13 million for tribal and rural extended learning.

Instructional Materials

- Maintain current SEG funding for instructional materials at \$43 million
- \$15 million to the instructional material fund to prioritize HQIM

Professional Development

- \$15 million for a teacher residency pilot program
- \$8 million for teacher and school leader professional development
- \$6 million for PED’s STEAM initiative
- \$3 million for “Teach Up” professional development

Interventions

- \$53.2 million to increase the at-risk index to 0.35
- \$25 million for out-of-school time, summer enrichment, and tutoring
- \$15 million to the family income index (and removing “one-third” FII spending provisions)



Long-Term Policy Considerations

- Develop shared leadership and ownership among the Legislature, PED, the Math and Science Advisory Council (MSAC), school districts, schools, and families of essential math content and standards to establish and maintain a long-term vision for growth.
- Use data to set real, achievable goals addressing student achievement gaps and move all students forward.
- Make better use of state assessments to ensure educators have tools to individualize instruction, including the use of screeners for early numeracy skills for young students.
- Improve accountability systems to provide more clarity on student learning growth across student grade levels and provide support to struggling schools.
- Ensure instructional material procurement and adoption policies emphasize high-quality instructional materials while still allowing for innovation and relevance in instruction.

Thank you!

Q & A



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