
Innovations in NAEP Analyses and Visualizations Using 2017 Mathematics and Reading Results

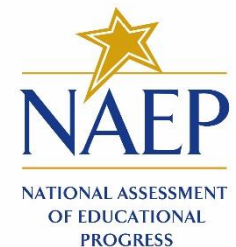
Brian Cramer

Optimal Solutions Group

Ebony Walton and Grady Wilburn

National Center for Education Statistics

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Overview

- Abstract of the session
- Introduction to NAEP
- Examination of 3 major findings from 2017 NAEP Mathematics and Reading

Abstract

Building on innovations from The Nation's Report Card, this presentation will highlight additional innovative analyses and visualizations from the 2017 mathematics and reading results.

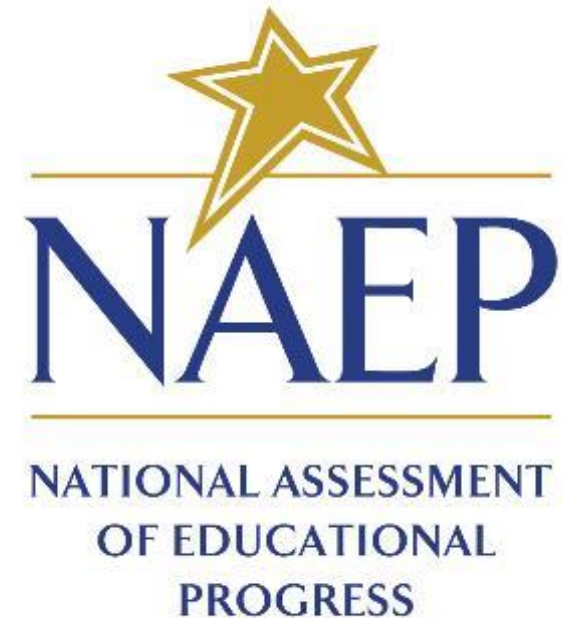
The focus will be on highlighting

- **student attitudes,**
- **school spending,**
- **teacher practices,**
- **student and school educational resources,** and
- **equity measures**

at the state and district levels as well as relationships between these contextual variable and NAEP performance.

National Assessment of Educational Progress

- NAEP is a congressionally mandated project administered by the National Center for Education Statistics (NCES)
- NCES collects, analyzes, and makes available data related to education in the US and other nations
- NAEP provides a common measure of student achievement across the country in a variety of subject areas since 1969



National Assessment of Educational Progress (NAEP)

Assessed at the national, state, and district level at grades 4, 8, and 12



Overview of 2017 NAEP

- **Administered mathematics and reading assessments January – March 2017**
 - **National samples:**
 - 298,200 fourth-graders
 - 286,800 eighth-graders
 - **Results available for:**
 - Nation
 - 50 states, the District of Columbia, the Department of Defense school system, and Puerto Rico (in mathematics only)
 - 27 school districts participating in the Trial Urban District Assessment (TUDA)
 - Large cities with populations of 250,000 or more
 - **Performance reported as:**
 - Average scale scores (0–500 scale)
 - Achievement levels (*Basic, Proficient, Advanced*)
-

Grade 8 reading scores increase nationally and for 10 states



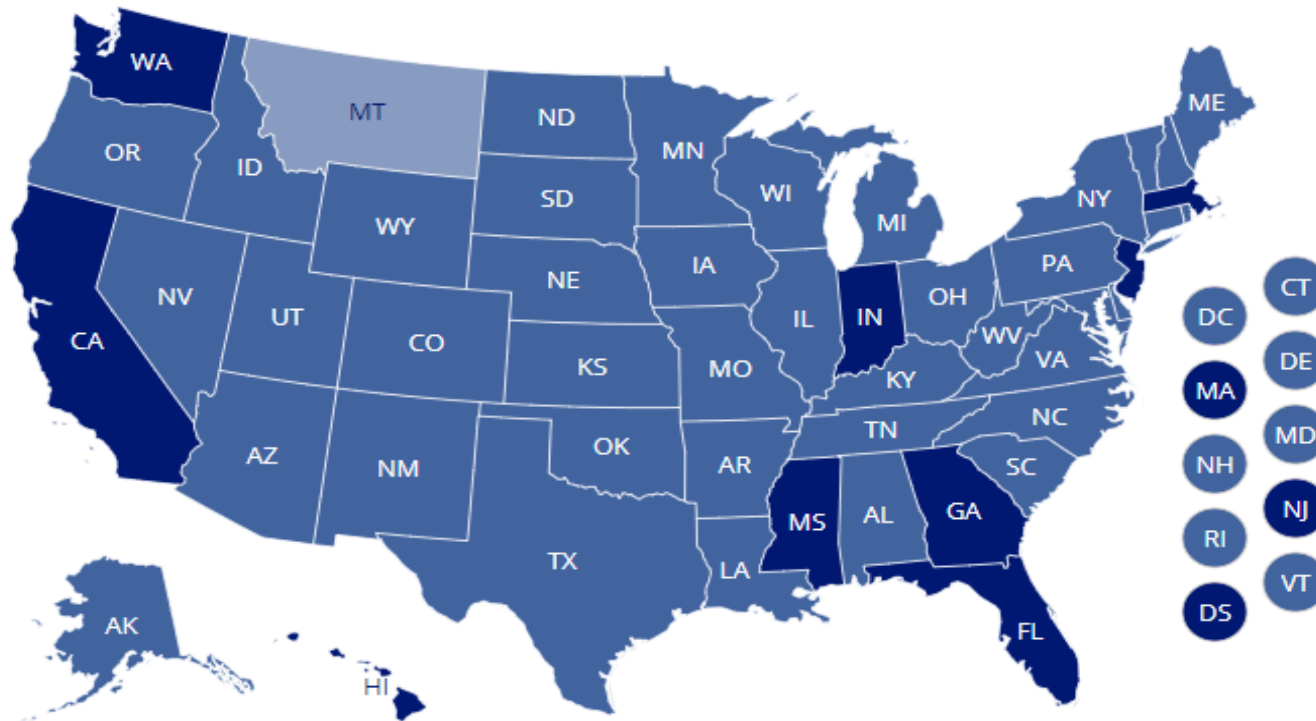
Reading 8, National Score Changes –

Nationsreportcard.gov

Reading 8, National Percentile Score Changes

Nationsreportcard.gov

Scores increase for the nation and 10 states in Reading 8: 2015-2017



NOTE: DS = Department of Defense Education Activity (DoDEA), a federally-operated nonpublic school system responsible for educating children of military families. See more about [DoDEA](#).

Reading 8, State Percentile Score Changes –

Jurisdiction	10th	25th	50th	75th	90th
<i>National public (265)</i>			↑1	↑2	↑2
<i>California (263)</i>					↑6
<i>Florida (267)</i>			↑4		↑4
<i>Georgia (266)</i>			↑4	↑5	
<i>Hawaii (261)</i>			↑5	↑4	
<i>Indiana (272)</i>	↑5				
<i>Maine (269)</i>	↓7				↑7
<i>Massachusetts (278)</i>				↑4	
<i>Mississippi (256)</i>			↑4	↑5	↑5
<i>New Jersey (275)</i>			↑5	↑6	↑6
<i>New Mexico (256)</i>				↑4	↑6

Washington (272)

↑5

Arrows indicate significant score increases or decreases from 2015 to 2017. Jurisdictions in italics had significant overall score increases.

Reading grade 8 percentile score changes for all states: 2015-2017

<https://public.tableau.com/profile/keval.bhanushali#!/vizhome/ChangeinPercentileScoreby10th25th75thand90thPercentile/Breakdownofstatescoresbypercentile?publish=yes>

<https://public.tableau.com/profile/keval.bhanushali#!/vizhome/ChangeinPercentileScorefrom2015to2017foreachstate/ReadingGrade8PercentileScore?publish=yes>

Profiles of states with reading grade 8 score changes: 2015–2017

<https://public.tableau.com/profile/nana.dompreh#!/vizhome/ProfilesforStateswith2015-2017Reading8ScoreChanges/Dashboard1?publish=yes>

**Score for students
eligible for the
National School
Lunch Program
(NSLP) decline in
grade 4
mathematics**



Mathematics grade 4 NSLP eligible score decline for nation

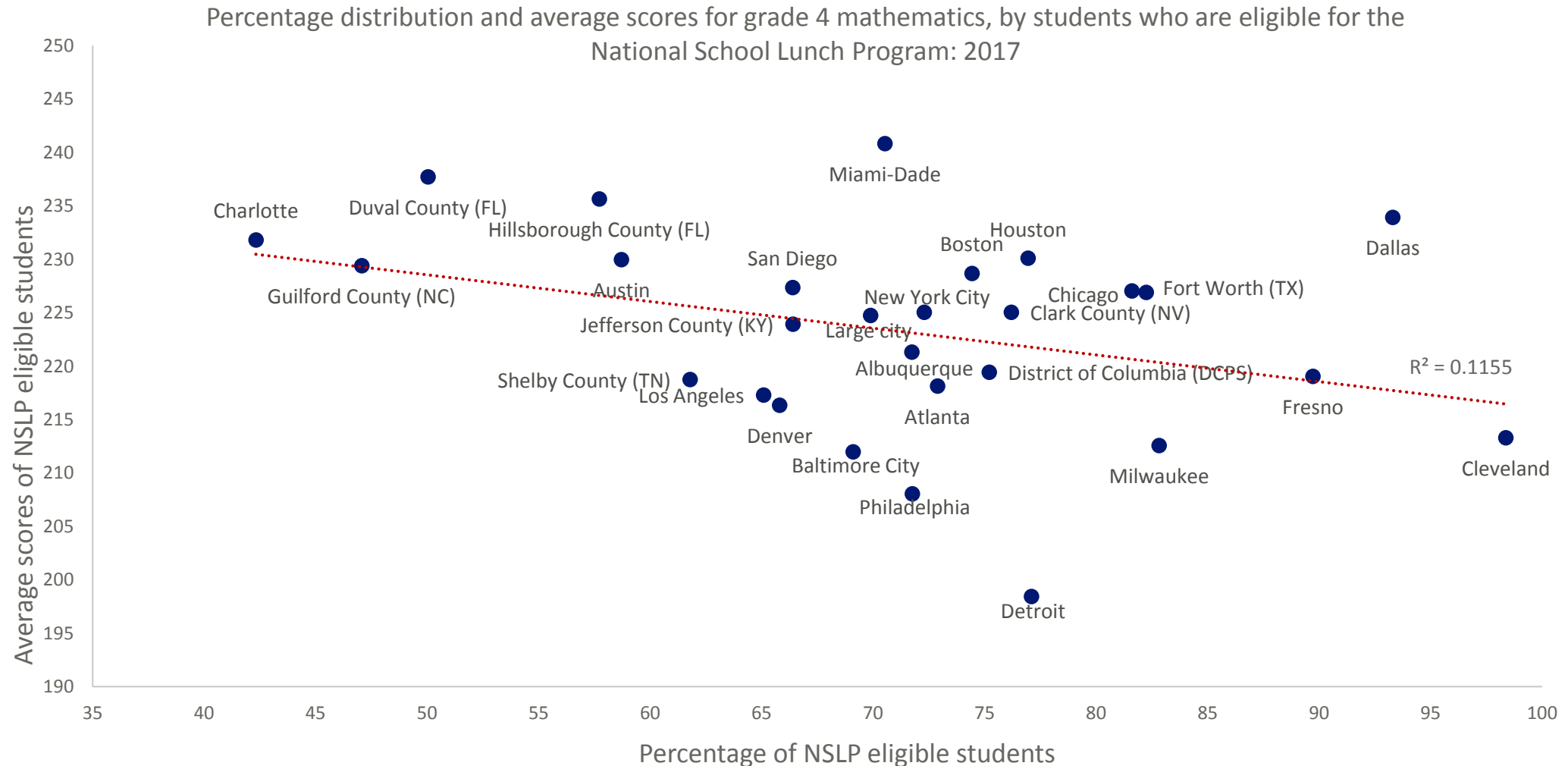
- Nationsreportcard.gov

Mathematics grade 4 NSLP eligible significant score changes by district: 2015-2017

Jurisdiction	NSLP Eligible Significant Score Change, 2015-2017
National public	↓1
Large City	↓3
Boston	↓7
Charlotte	↓6
Cleveland	↓6
Fresno	↑4
Jefferson County	↓5
Miami-Dade	↑3
New York City	↓4
Philadelphia	↓6
San Diego	↑5

NOTE: Up arrows indicate significant score increase. Down arrows indicate significant score decrease. Districts in blue = overall significant score increase. Districts in red = overall significant score decline.

Mathematic grade 4 NSLP eligible percentages and scores for districts: 2017

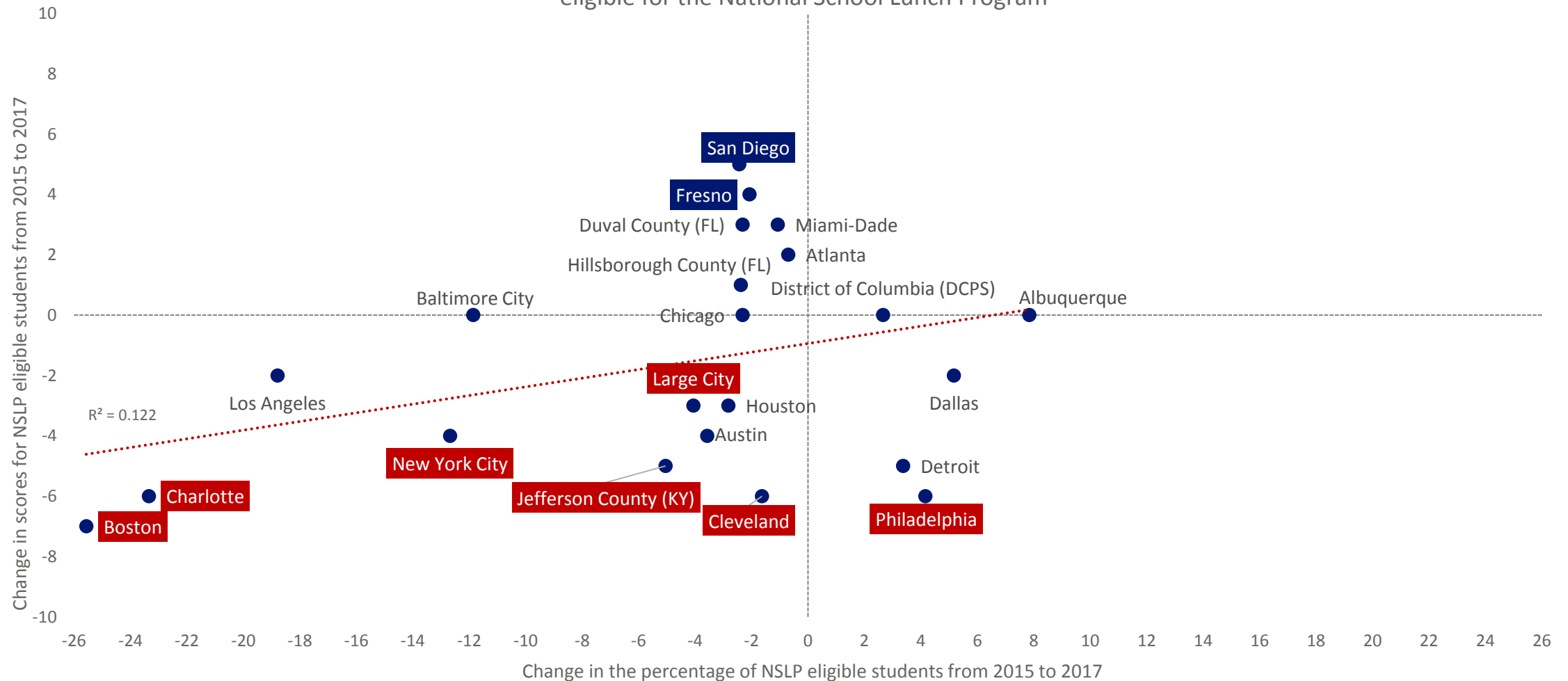


Trends in mathematics grade 4 NSLP eligible scores and percentages for districts

https://public.tableau.com/profile/nana.dompkeh#!/vizhome/NSLPscoresandpercentagesbydistrictvariousyears_1/Dashboard1?publish=yes

Mathematics grade 4 changes in NSLP eligible scores and percentages: 2015-2017

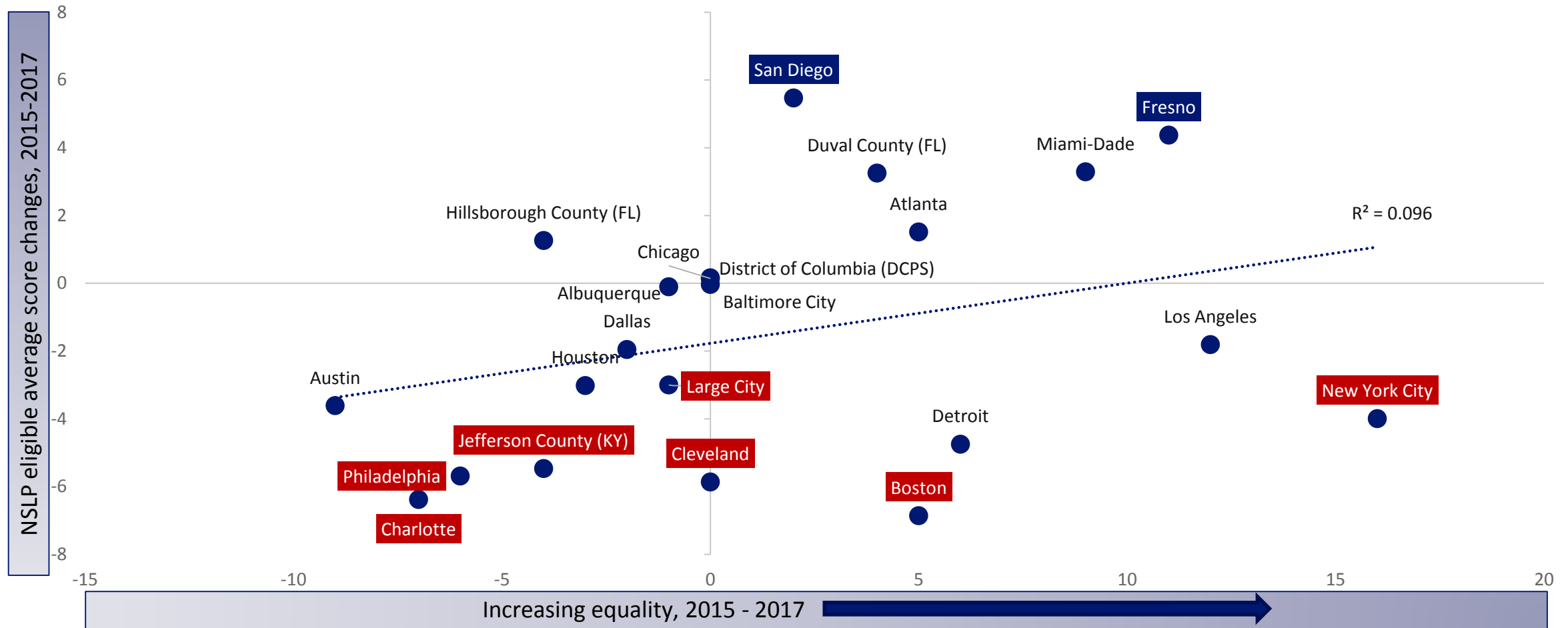
2015 to 2017 change in average scores and percentage distribution for grade 4 mathematics, by students who are eligible for the National School Lunch Program



Clark County, Denver, Fort Worth (TX), Guilford County (NC), Milwaukee, and Shelby County not tested in 2015. Blue = NSLP eligible score increase. Red = NSLP eligible score decrease.

Mathematics grade 4 NSLP eligible score changes for districts, by changes in inequality (1): 2015-2017

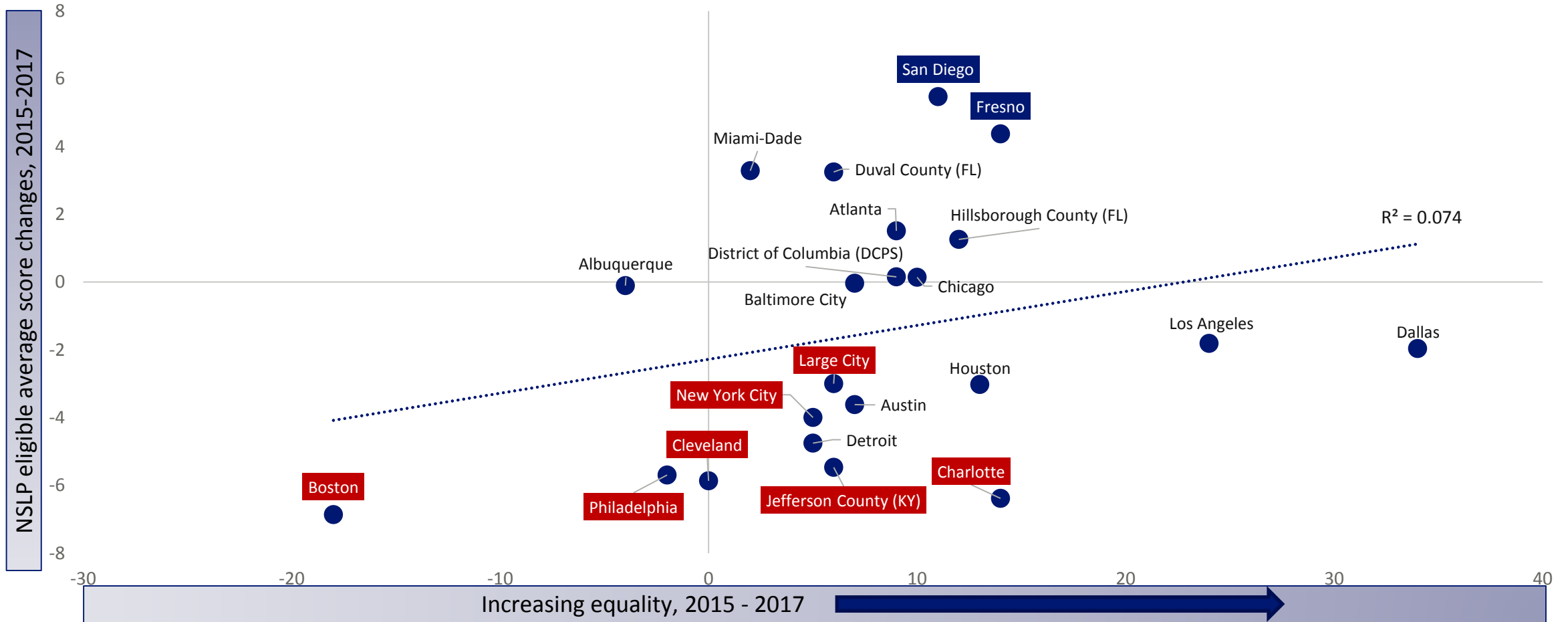
2015 to 2017 grade 4 mathematics change in NSLP average scores and percentage of schools with 76-100% of students eligible for NSLP



NOTE: Clark County, Denver, Fort Worth (TX), Guilford County (NC), Milwaukee, and Shelby County not tested in 2015. Blue = NSLP eligible score increases. Red = NSLP eligible score decreases. Inequality score calculated by subtracting the percentage of schools with 76%-100% in 2015 from 76%-100% in 2017.

Mathematics grade 4 NSLP eligible score changes for districts, by changes in inequality (2): 2015-2017

2015 to 2017 grade 4 mathematics change in NSLP average scores and percentage of NSLP and Not NSLP eligible students with 26 or more books at home



NOTE: Clark County, Denver, Fort Worth (TX), Guilford County (NC), Milwaukee, and Shelby County not tested in 2015. Blue = NSLP eligible score increases. Red = NSLP eligible score decreases. Inequality score calculated by subtracting the percentage of NSLP eligible students with 26 or more books in home by schools from those of not NSLP eligible students in 2015, doing the same thing for 2017, and then subtracting the 2015 percentage from the 2017 percentage.

Mathematics grade 4 resources and teacher practices for NSLP eligible and not NSLP eligible students: 2017

<https://public.tableau.com/profile/keval.bhanushali#!/vizhome/NDEPtest1/NSLPEligibleNotEligibleStudentPercentges>

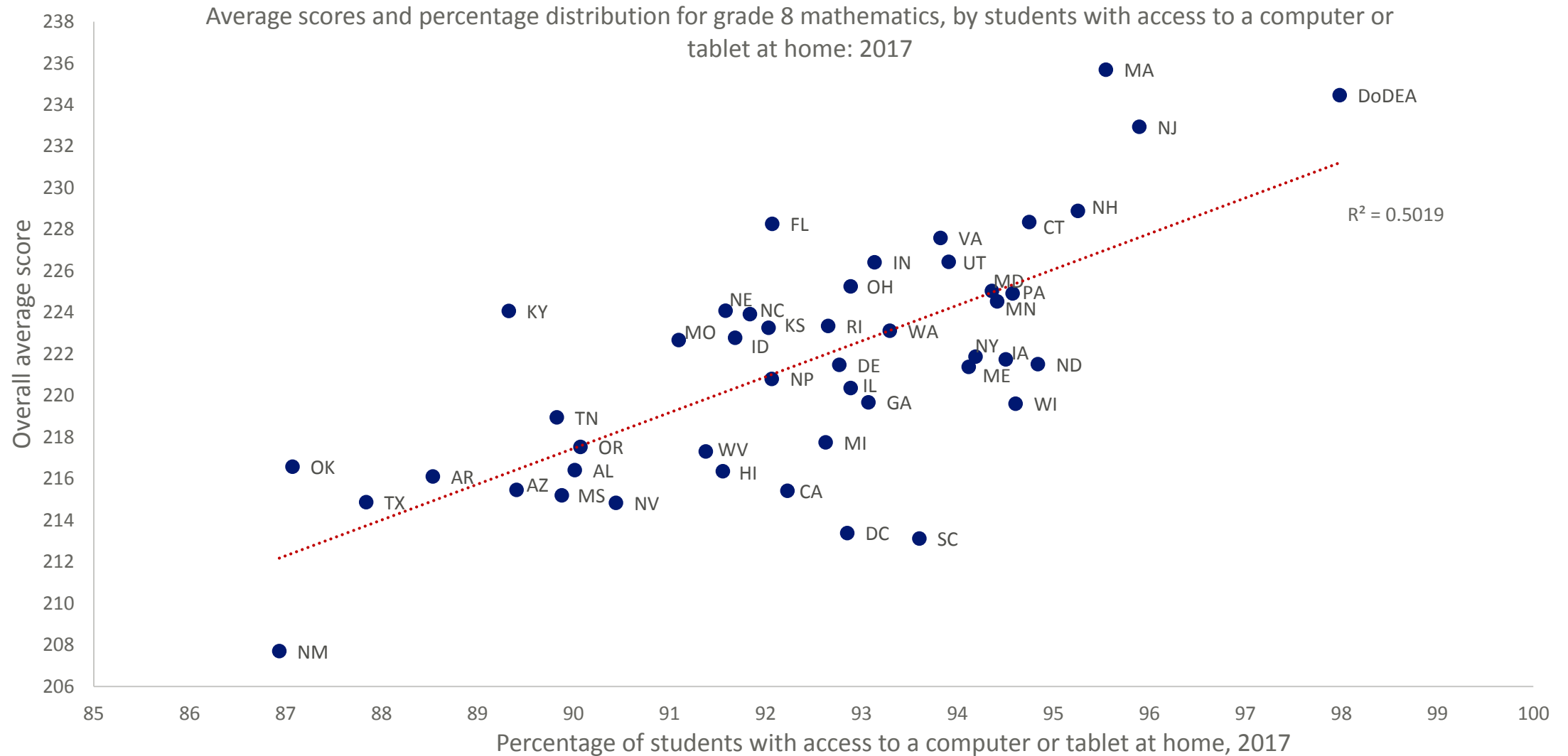
Examining NAEP results with equity indicators



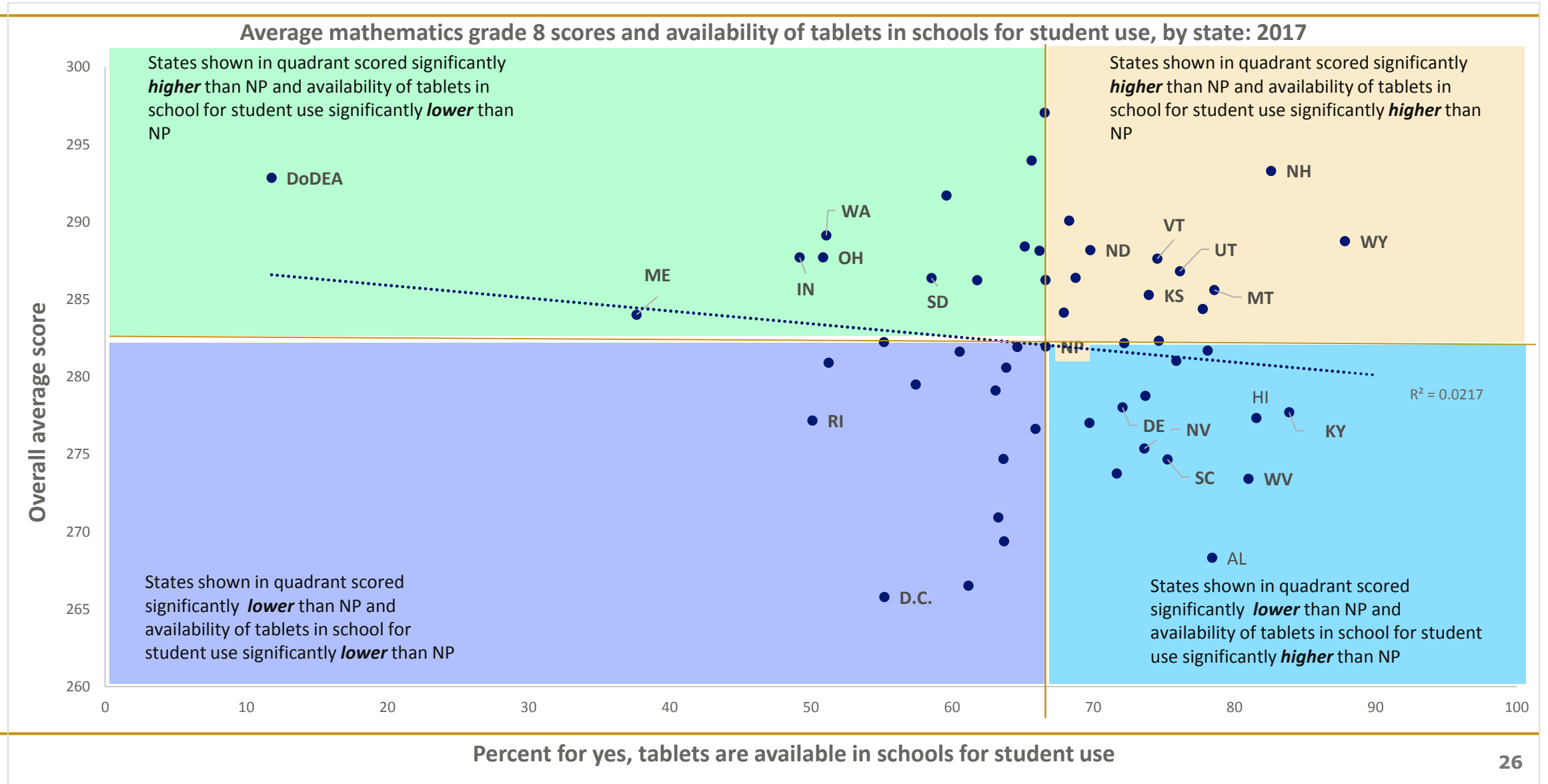
Mathematics grade 8 tablet use

Nationsreportcard.gov

Mathematics grade 8 scores and students with access to a computer/tablet at home: 2017

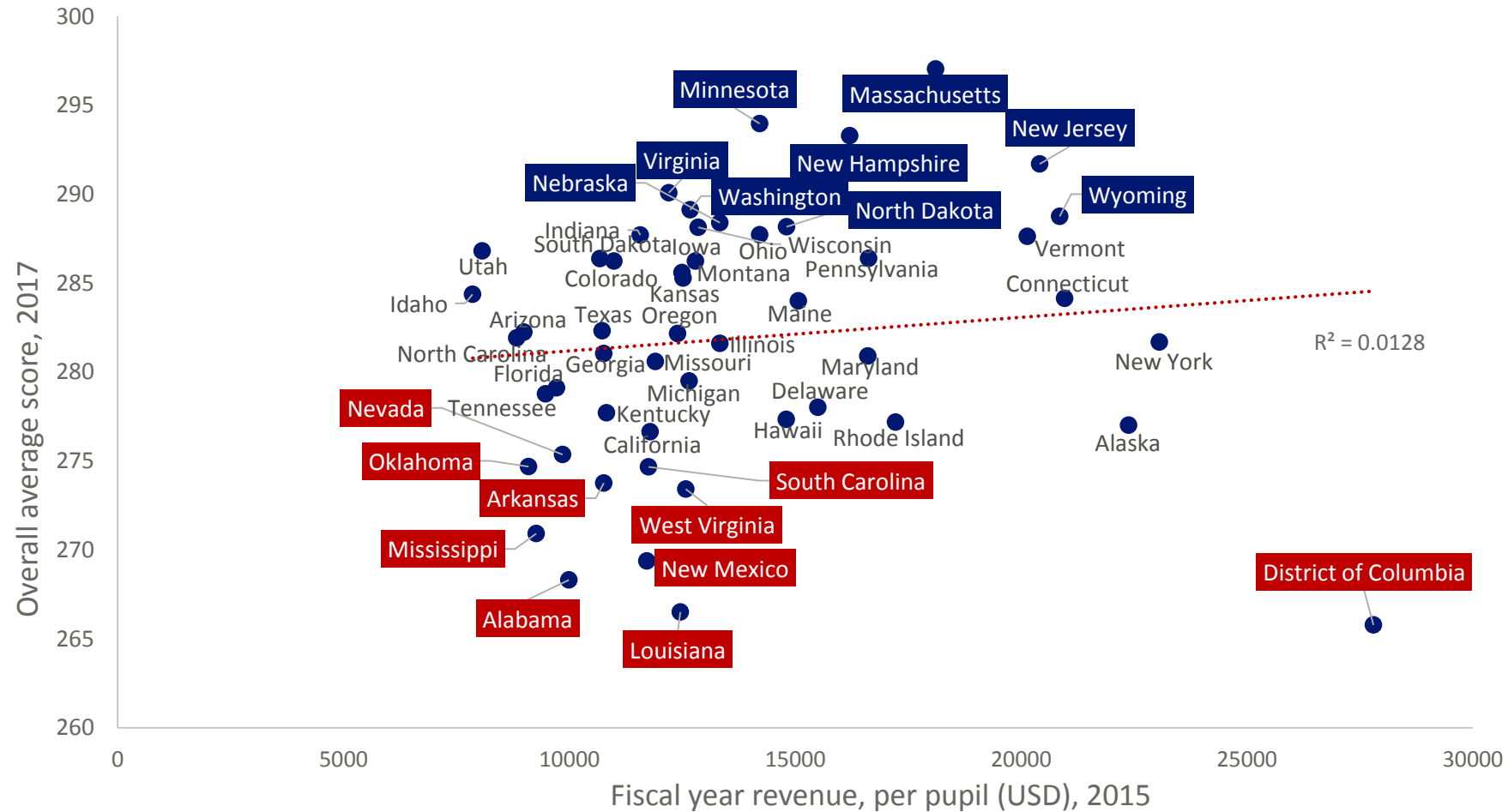


Mathematics grade 8 scores and students with access to tablets in school for student use: 2017



2017 mathematics grade 8 performance and 2015 FY revenue, per pupil

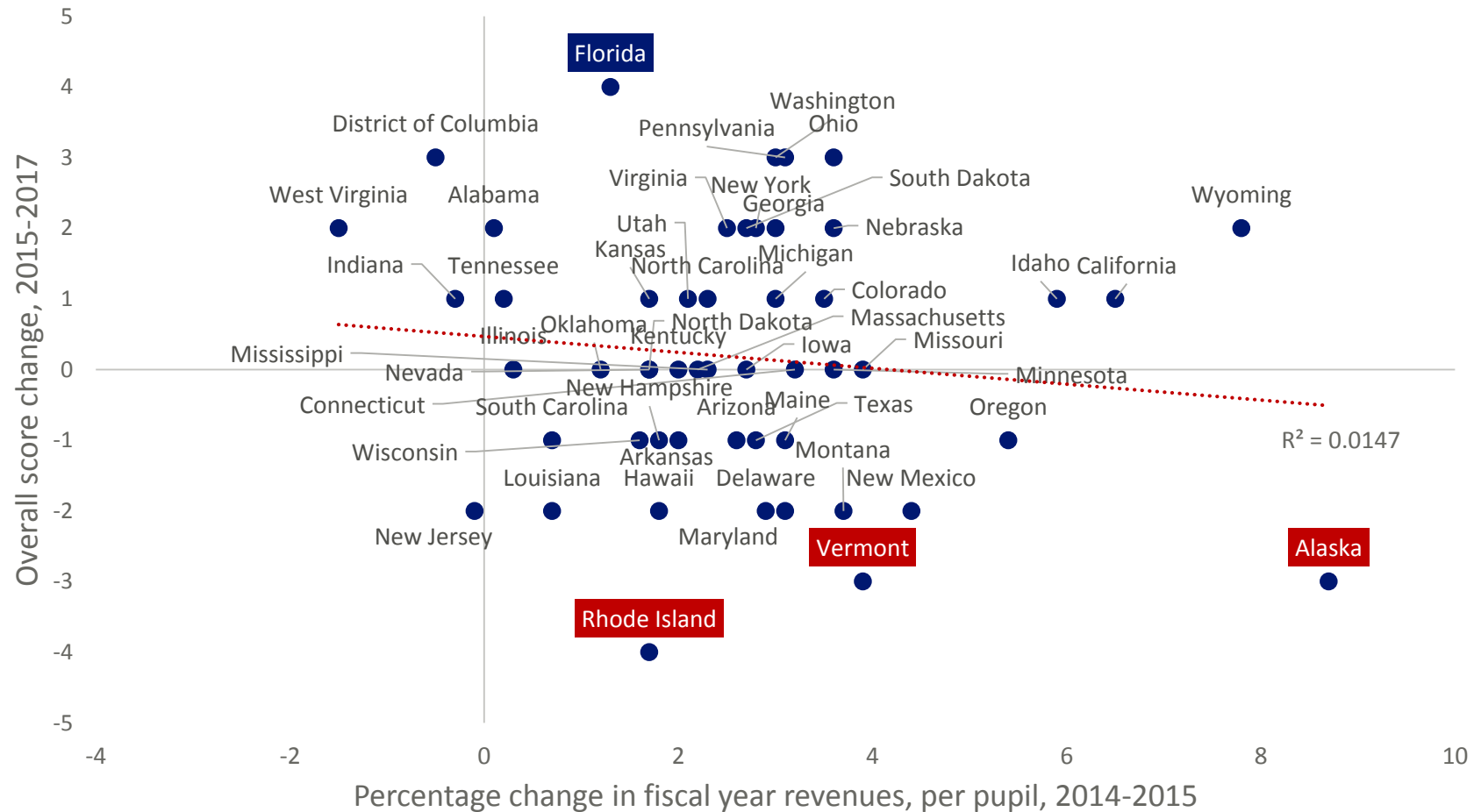
2017 NAEP grade 8 mathematics average scores and fiscal year 2015 revenue, per pupil (USD)



Blue highlights = 10 numerically highest performing states. Red highlights = 10 numerically lowest performing states.

2015-2107 change in mathematics grade 8 performance and 2014-2015 change in FY revenue, per pupil

NAEP mathematics grade 8 score change (2017-2015) and percentage change in fiscal year revenues, per pupil (2014-2015)



Blue highlights = state with significant 2015-2017 score increase. Red highlights = states with significant 2015-2017 score decrease.

Numerically highest and lowest performing states in mathematics grade 8: 2017

10 States with numerically *Highest* NAEP Mathematics Grade 8 2017 Average Scores

Jurisdiction
Massachusetts (297)
Minnesota (294)
New Hampshire (293)
DoDEA (293)
New Jersey (292)
Virginia (290)
Washington (289)
Wyoming (289)
Nebraska (288)
North Dakota (288)

10 States with numerically *Lowest* NAEP Mathematics Grade 8 2017 Average Scores

Jurisdiction
District of Columbia (266)
Louisiana (277)
Alabama (268)
New Mexico (269)
Mississippi (271)
West Virginia (273)
Arkansas (274)
South Carolina (275)
Oklahoma (275)
Nevada (275)

Profiles of 10 highest and lowest numerically ranked states in mathematics grade 8: 2017

https://public.tableau.com/profile/nana.dompkeh#!/?publish=yes&vizhome=ProfilesofTop10NumericallyRankedStates2017MathematicsGrade8_0/Dashboard1

<https://public.tableau.com/profile/keval.bhanushali#!/?publish=yes&vizhome=ProfilesofTop10NumericallyRankedStates2017MathematicsGrade8/BottomRankedStateDashboard>