Promoting Excellence and Shrinking Excellence Gaps

Jonathan A. Plucker
@JonathanPlucker
Victoria Fellows
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JOHNS HOPKINS
SCHOOL of EDUCATION

A little background

Quick Quiz!

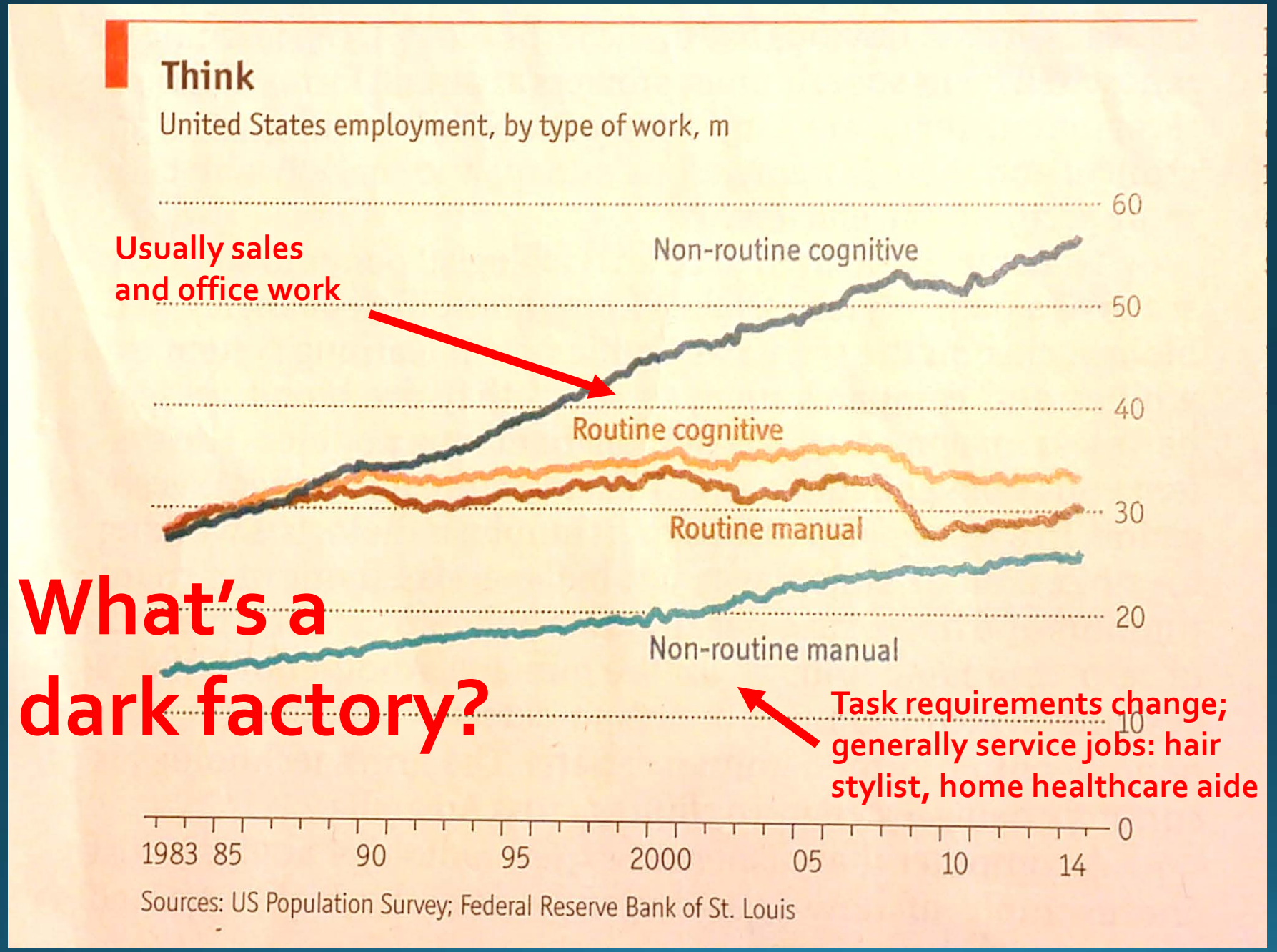
- **How many people worked as smartphone designers in 2007?**
  - Practically none, and they were all locked in Steve Jobs' basement.

Quick Quiz!

- **What percent of 85 year-olds live in nursing homes and similar facilities?**
  - 11% as of 2014, down from 24% in 1990.

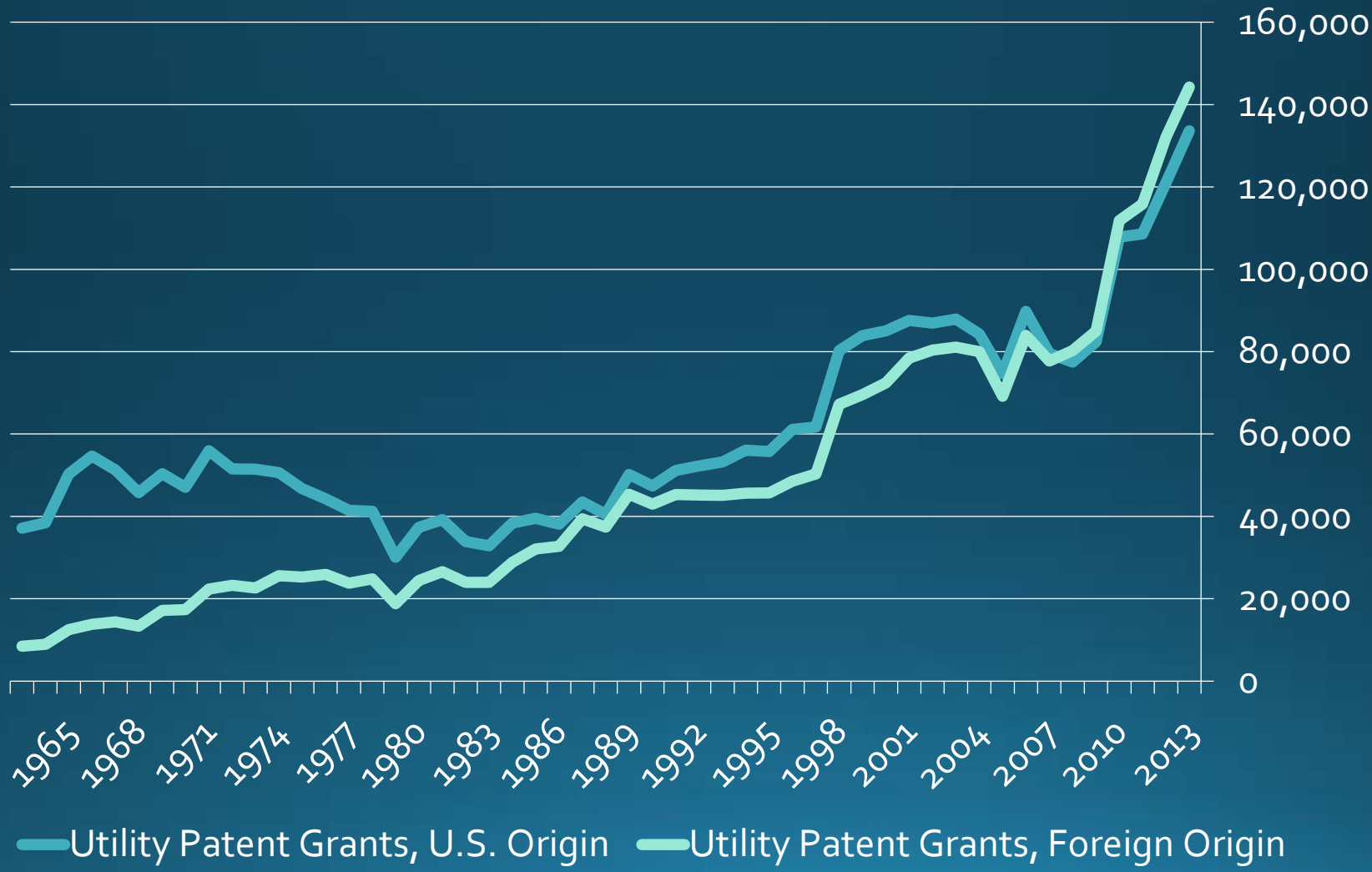
Quick Quiz!

- **What percentage of the cells in your body are human?**
  - Roughly half



What's a dark factory?

Who Gets U.S. Patents?



So other than family structure, the workforce, communication, the national and global economy, sources of innovation, and the coming robot apocalypse …

… nothing has changed.

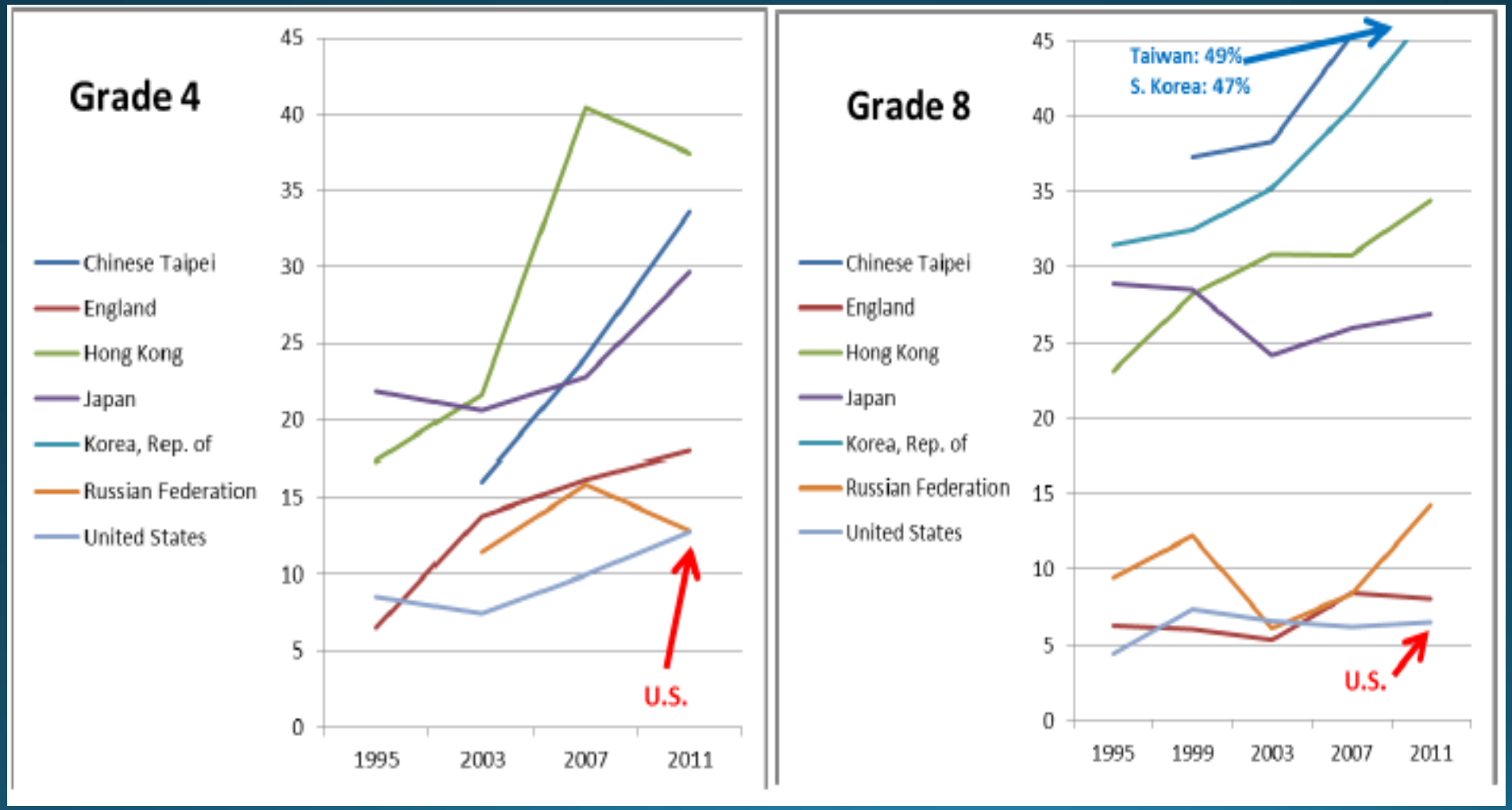
The 21st Century …

- … is clearly proving to be a brave new world where skills and talents that previously helped us achieve success need to be rethought.

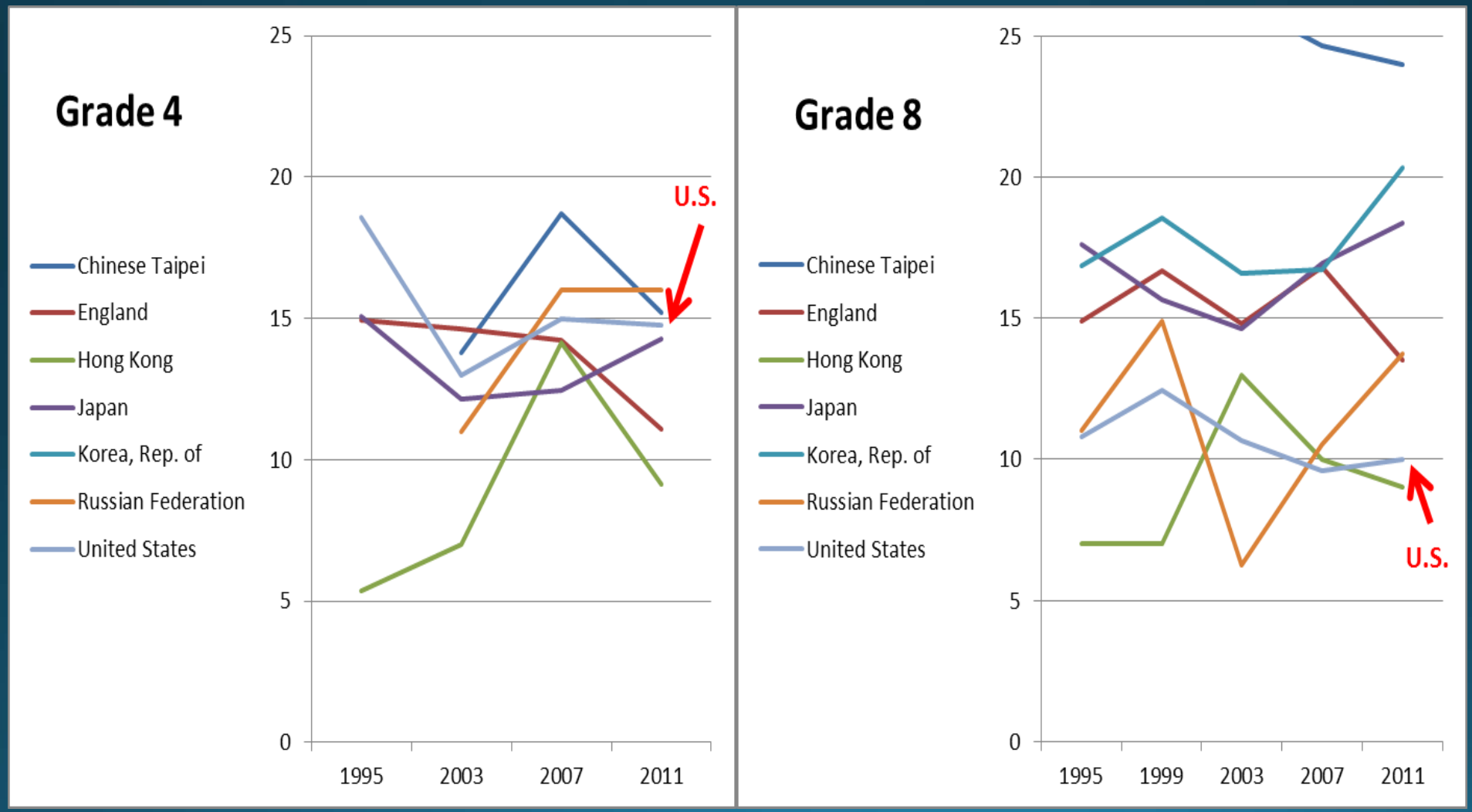
- Part of that is rethinking where talent comes from.

A little data

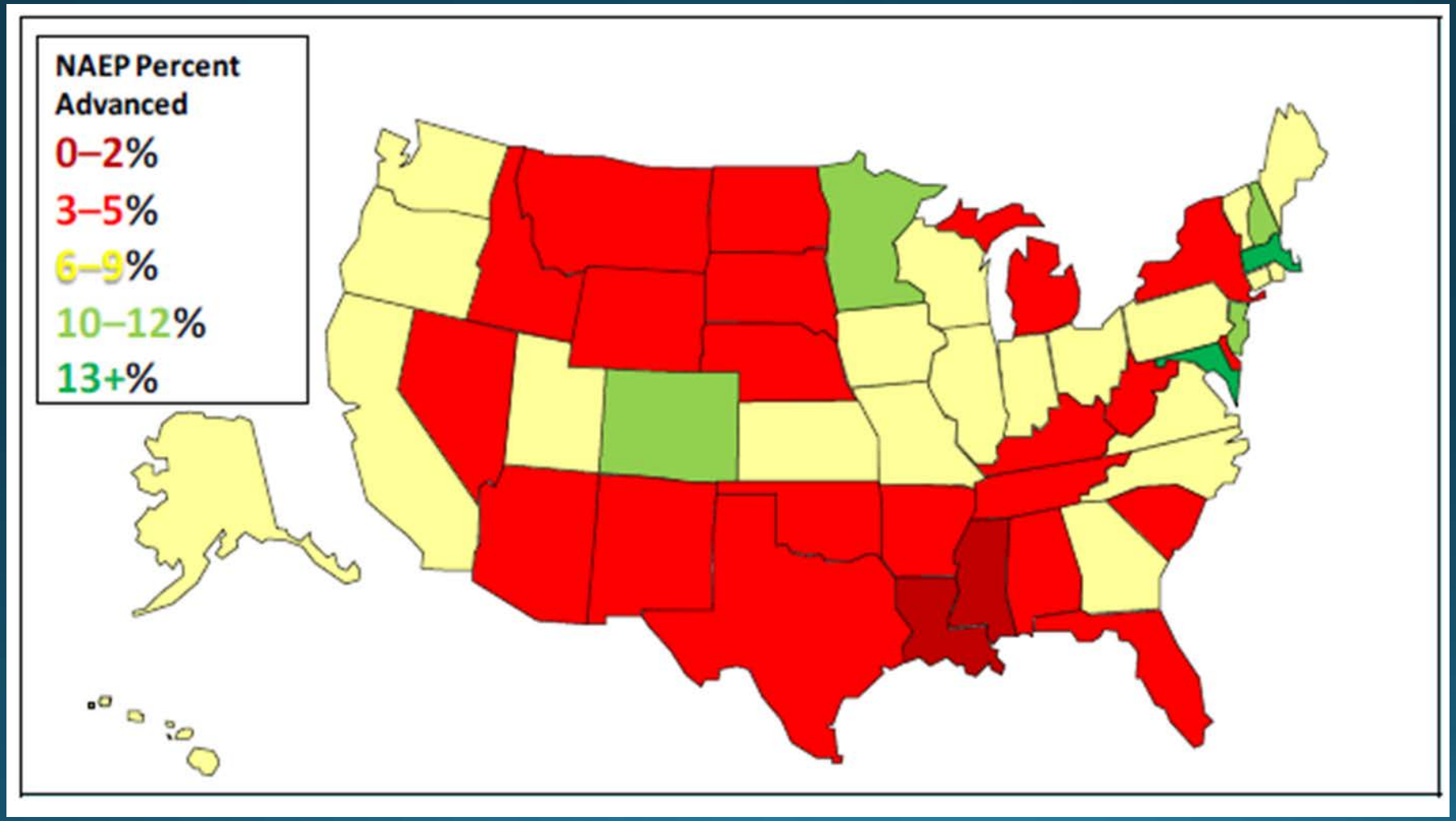
Percent of Advanced Scores (625+) on TIMSS Math Assessments



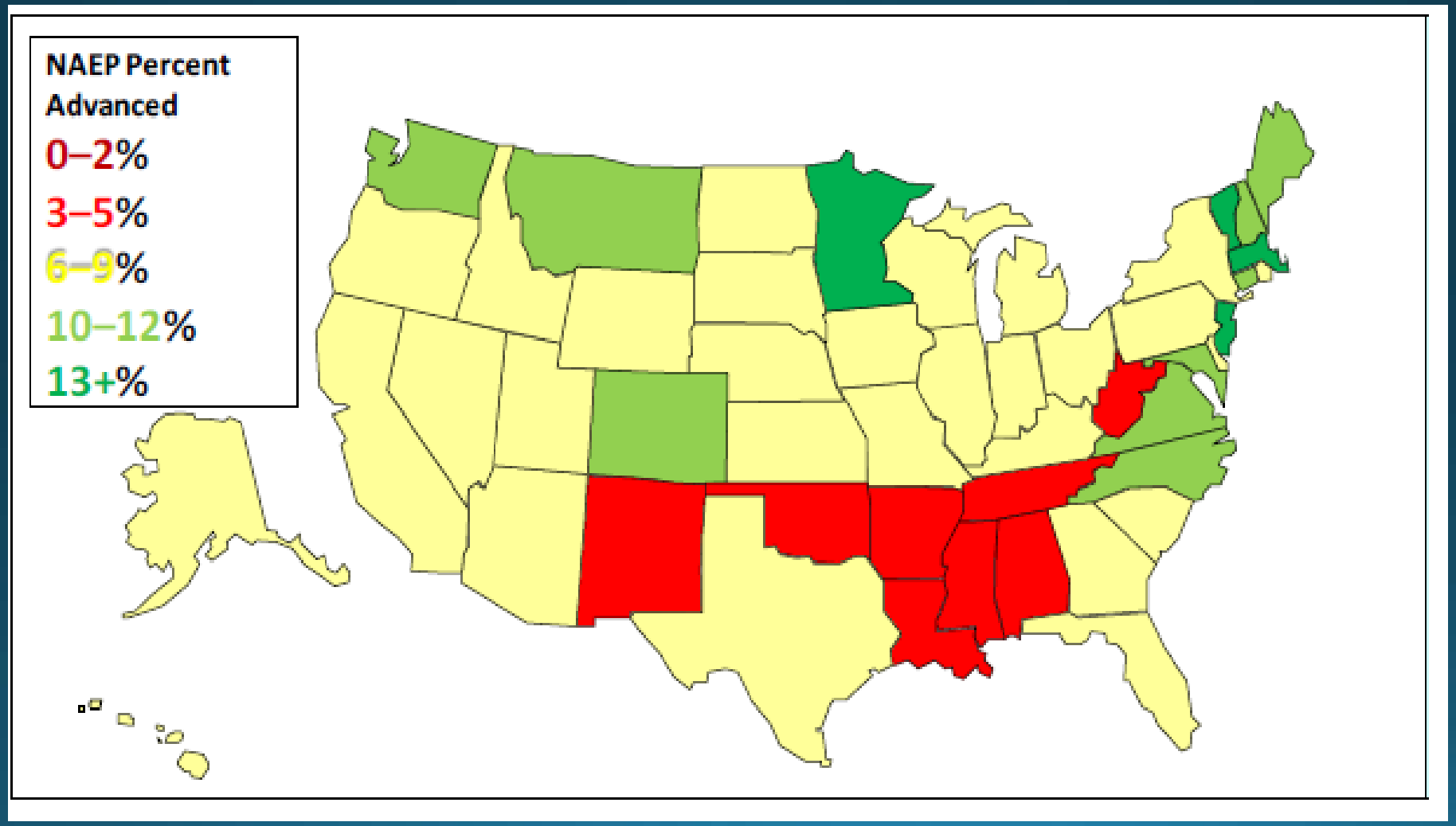
Percent of Advanced Scores (625+) on TIMSS Science Assessments



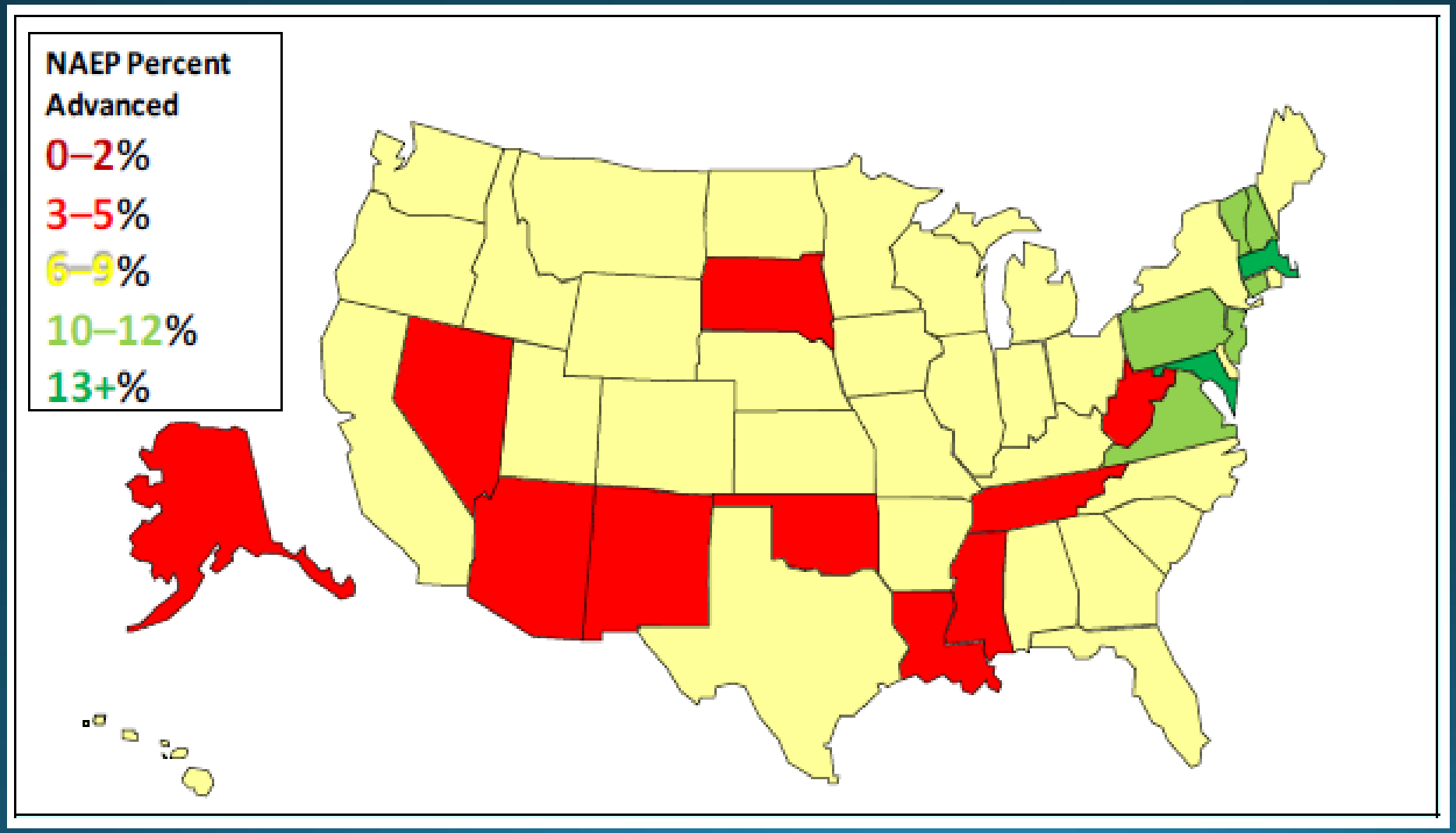
Percent of Students Scoring Advanced on NAEP Grade 4 Math



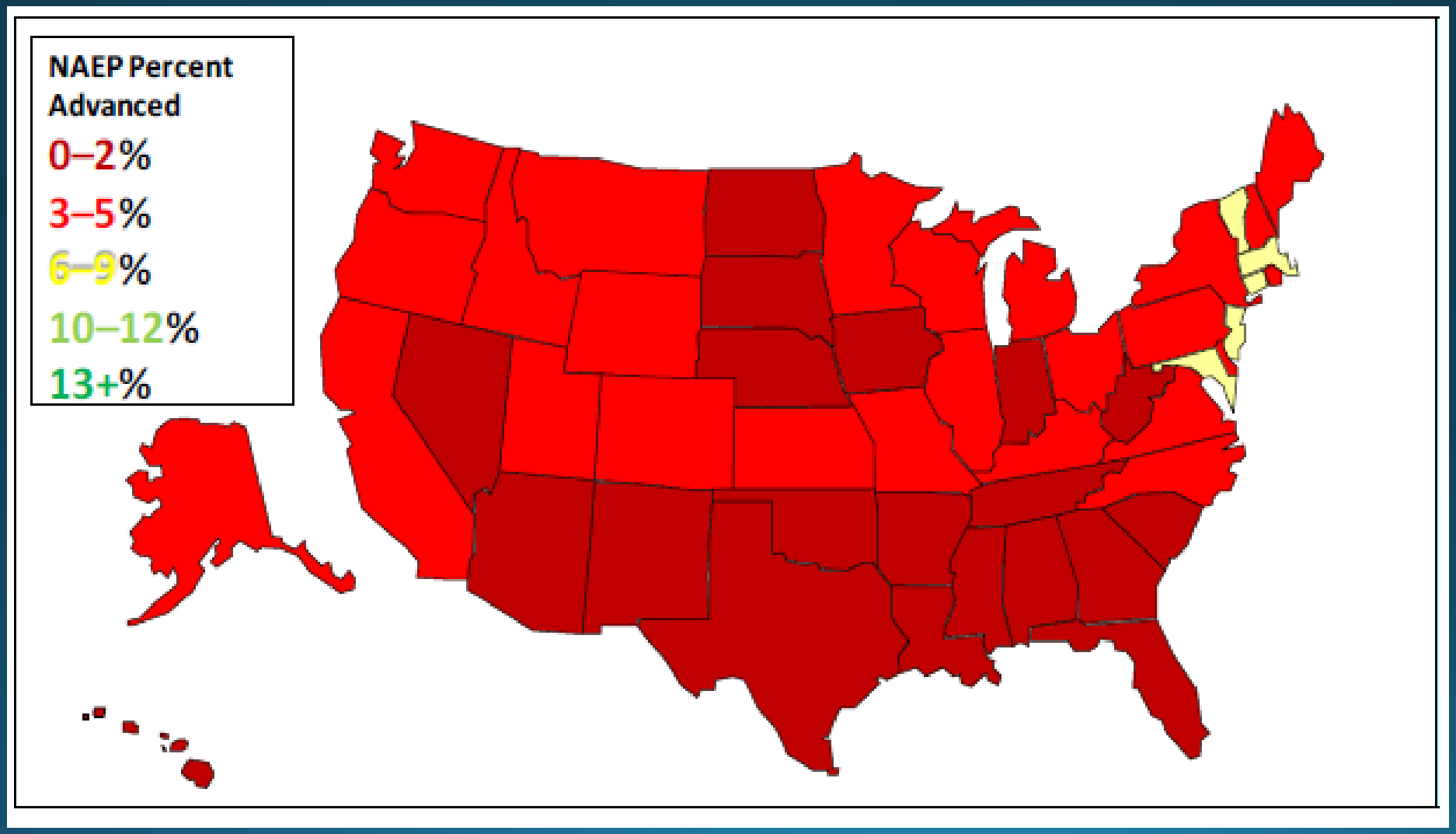
Percent of Students Scoring Advanced on NAEP Grade 8 Math



Percent of Students Scoring Advanced NAEP Grade 4 Reading

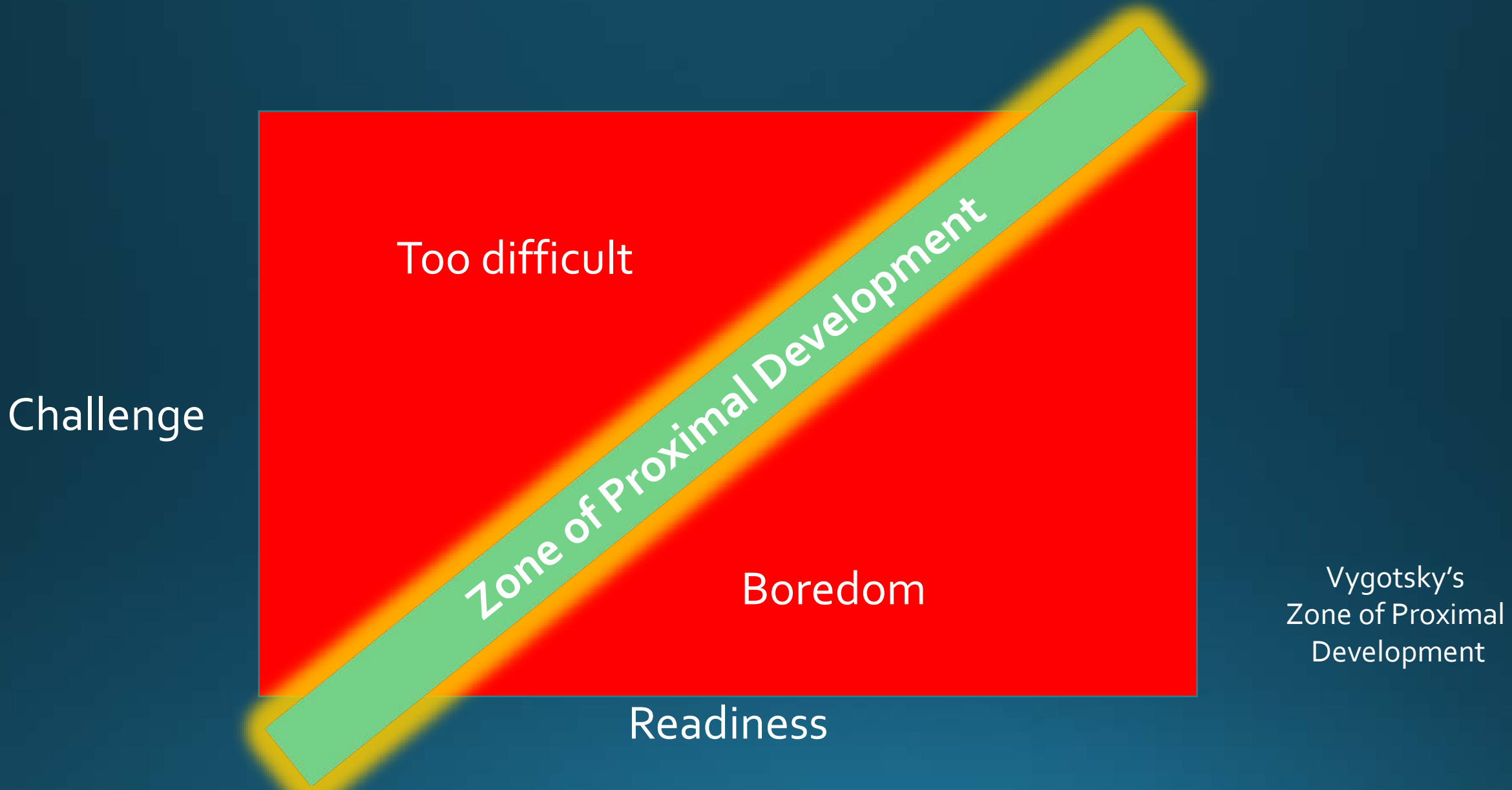


Percent of Students Scoring Advanced NAEP Grade 8 Reading



How Many Students Are Performing Above Grade-Level?

From research by Matt Makel, Michael Matthews, Scott Peters, Karen Rambo-Hernandez, and Jonathan Plucker



Vygotsky's
Zone of Proximal
Development

Green = Development

Red = Limited to No Development

TABLE 4

Mastery Rates and Proficiency Probability Scores for Analytic Sample and Corresponding Descriptive Statistics for Teacher-Reported Content Measures

	Fall kindergarten					
		Proficiency probability scores			Teacher reported days/month on content measures	
Student math proficiency levels	Students who have mastered level by fall kindergarten	Mean	*SD*	Content measures	Mean	*SD*
Proficiency level 1	95%	0.94	0.15	Basic counting and shapes		
Proficiency level 2	62%	0.58	0.34	Patterns and measurement		
Proficiency level 3	25%	0.23	0.31	Place value and currency		
Proficiency level 4	7%	0.04	0.13	Addition and subtraction		

Note. Student $n = 11{,}517$; teacher $n = 2{,}176$.

Engel, Claessens, & Finch, 2013. Teaching Students what they already know? The (mis)alignment between mathematics instructional content and student knowledge in kindergarten. *Educational Evaluation and Policy Analysis, 35*, 157-178.

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		Mean	*SD*		Mean	*SD*
Proficiency level 1	95%	0.94	0.15	Basic counting and shapes	12.70	4.11
Proficiency level 2	62%	0.58	0.34	Patterns and measurement	7.68	4.44
Proficiency level 3	25%	0.23	0.31	Place value and currency	8.61	5.12
Proficiency level 4	7%	0.04	0.13	Addition and subtraction	4.38	4.07

Note. Student $n = 11{,}517$; teacher $n = 2{,}176$.

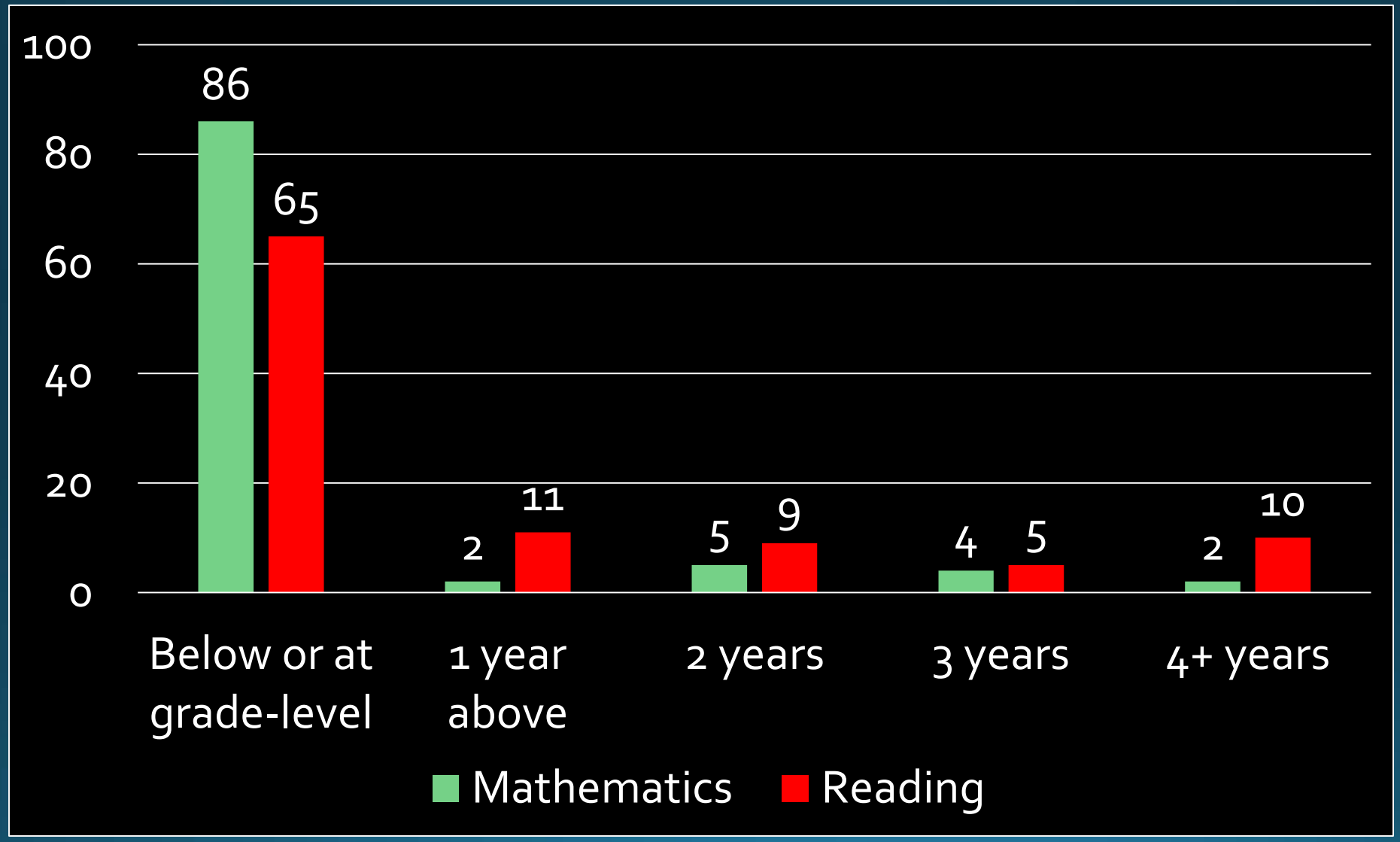
Teachers spend 12.7 days per month on material that 95% of K students already have mastered by Fall of Kindergarten.

Engel, Claessens, & Finch, 2013. Teaching Students what they already know? The (mis)alignment between mathematics instructional content and student knowledge in kindergarten. *Educational Evaluation and Policy Analysis, 35*, 157-178.

Percent of Students Scoring Above Grade Level

	ELA			Math		
Grade	WI	CA	TX	WI	CA	TX
3	34%	23%	20%	26%	19%	16%
4	39%	29%	25%	26%	18%	29%
5	44%	34%	30%	31%	22%	34%
6	49%	34%	24%	36%	27%	32%
7	47%	38%	30%	37%	28%	33%

MAP Test Results



"…students performing above grade-level are not rare and likely exist in every classroom in every school"

16% of the variance falls between schools – almost all of the diversity comes from the classroom level!

Results Summary

1. Very large percentages of students are performing above grade level.
2. Large percentages of students are performing *well* above grade level.
3. These percentages represent staggeringly large numbers of students.

More than 300,000 4th grade students demonstrate above grade-level performance in only these three states.

Results Summary

1. Very large percentages of students are performing above grade level.
2. Large percentages of students are performing *well* above grade level.
3. These percentages represent staggeringly large numbers of students.

If only 20%-25% of students were scoring above grade level, that would represent 10-12 million students in the US.

Professor Andrew Ho, Harvard University expert on student measurement described our findings as:

"Obviousness"

http://www.npr.org/sections/ed/2016/09/12/491092575/getting-restless-at-the-head-of-the-class

"…students performing above grade-level are not rare and likely exist in every classroom in every school, and furthermore in numbers large enough to permit an accelerated classroom of these learners in every school"

Two Takeaways:

- Classrooms where large percentages of students already are above grade-level, but nearly all of the teacher's focus is on learners working at or below grade-level, are not going to facilitate growth or further development for advanced learners

- There is little support for the current age-based classroom structure as the optimal organizational structure for fostering student development

Table 2. Range of Grade Level Equivalent (GLE) Comprehension Scores on the ITBS for All Students Across Schools

	Grade 3				Grade 4				Grade 5			
School	*N*	Lowest GLE score	Highest GLE score	Range of GLE scores	*N*	Lowest GLE score	Highest GLE score	Range of GLE scores	*N*	Lowest GLE score	Highest GLE score	Range of GLE scores
Sun Coast Elementary	117	0.6	8.3	7.7	59	3.9	10.0	6.1	35	5.0	9.8	4.8
North Lake Magnet	117	2.1	9.8	7.7	105	2.6	12.6	10.0	114	2.1	13.0	10.9
Frontier Elementary	75	0.9	7.5	6.6	68	1.6	11.1	9.5	74	1.9	13.0	11.1
Eastern River Elementary	70	1.3	8.3	7.0	74	1.7	11.1	9.4	83	1.4	9.8	8.4
Park Ridge Elementary	44	1.1	4.9	3.8	70	1.3	5.8	4.5	44	1.4	6.8	5.4
All	423	0.6	9.8	9.2	376	1.3	12.6	11.3	350	1.4	13.0	11.6

Reading Comprehension and Fluency Levels Ranges Across Diverse Classrooms : The Need for Differentiated Reading Instruction and Content

Janine M. Firmender, Sally M. Reis and Sheelah M. Sweeny

Gifted Child Quarterly 2013 57: 3 originally published online 1 October 2012
DOI: 10.1177/0016986212460084

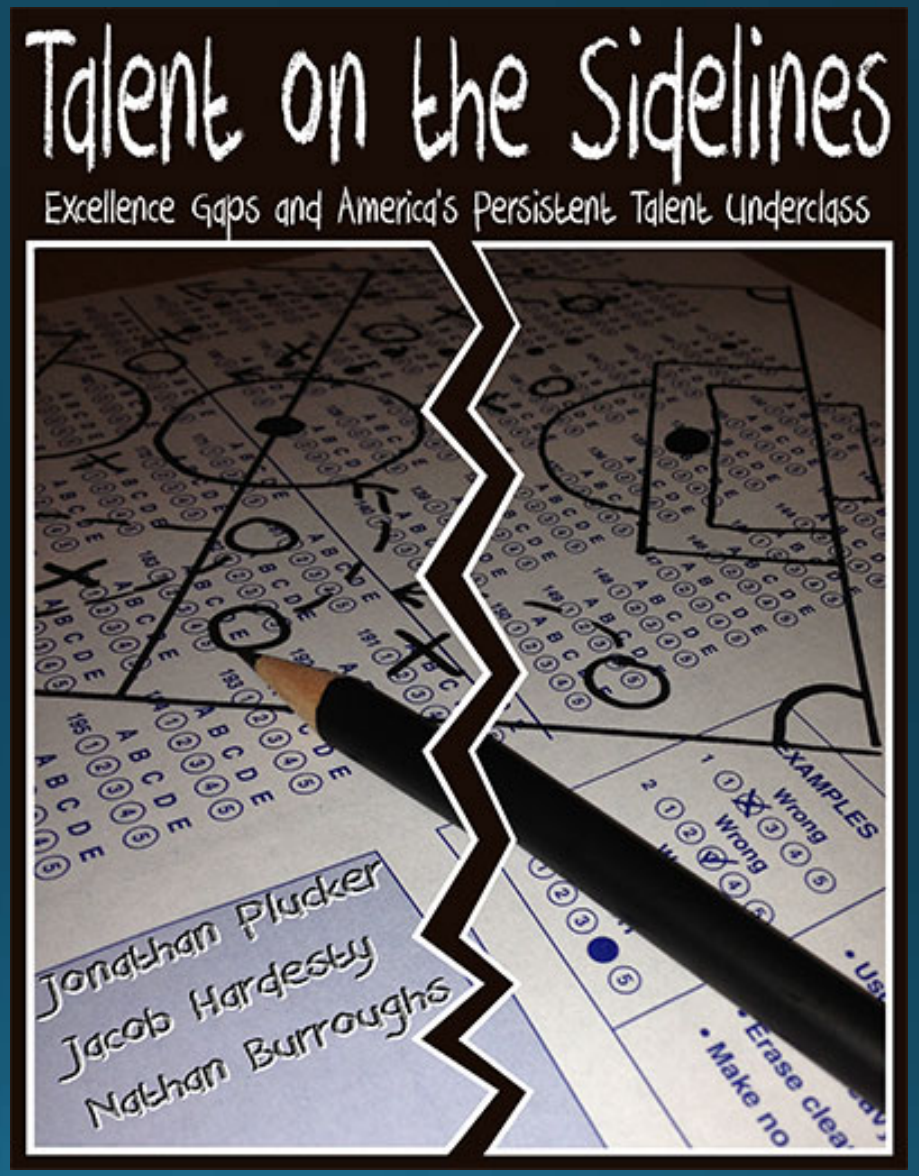
What level of academic diversity do you see in your schools and classrooms?

… well, they aren't.

So when people say, "These kids will take care of themselves" …

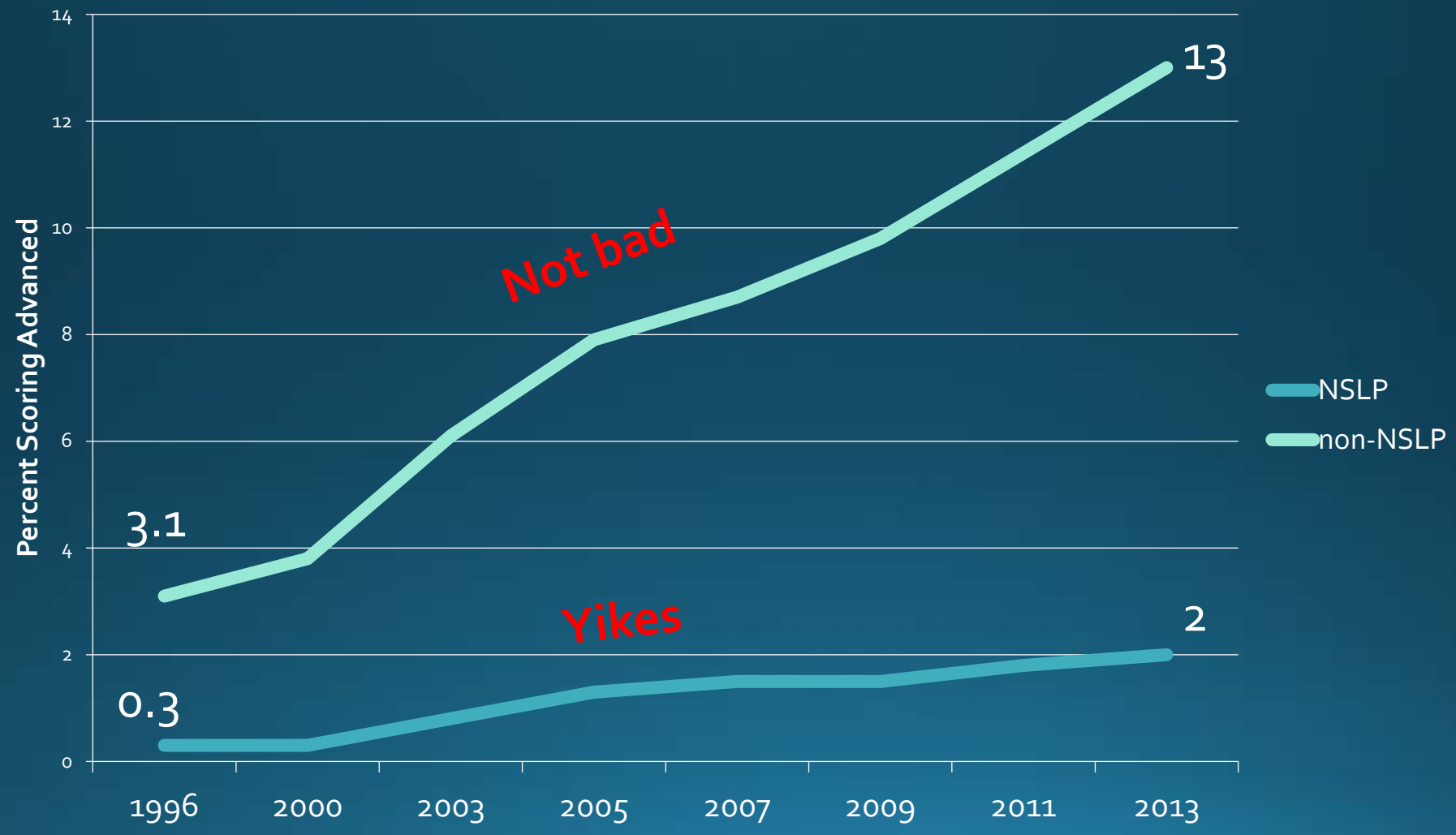
Excellence Gaps

Talent on the Sidelines Results



http://cepa.uconn.edu/mindthegap

NAEP % Advanced Math Grade 4



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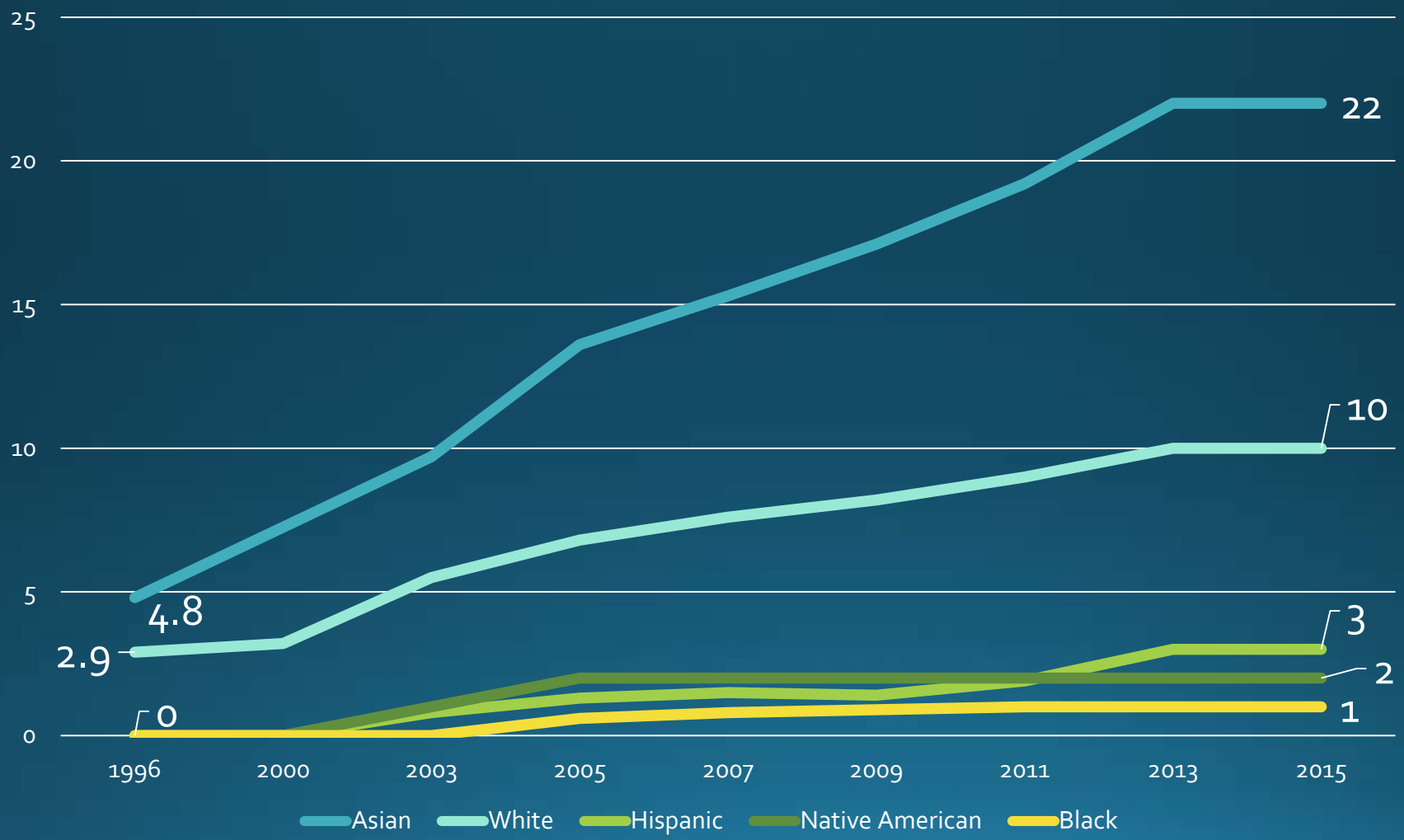


… because math and reading look *better*.

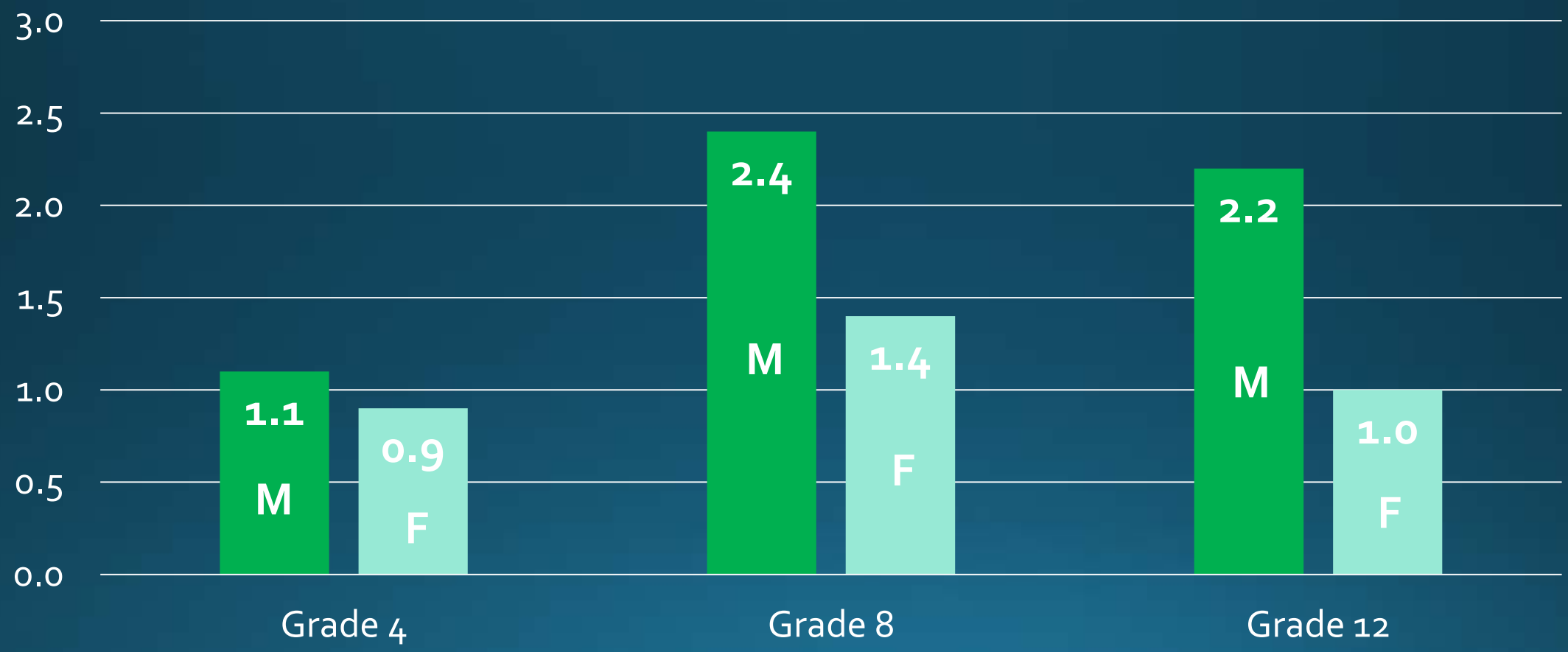
But why not other subjects?

What's "Advanced" in G4 Science?

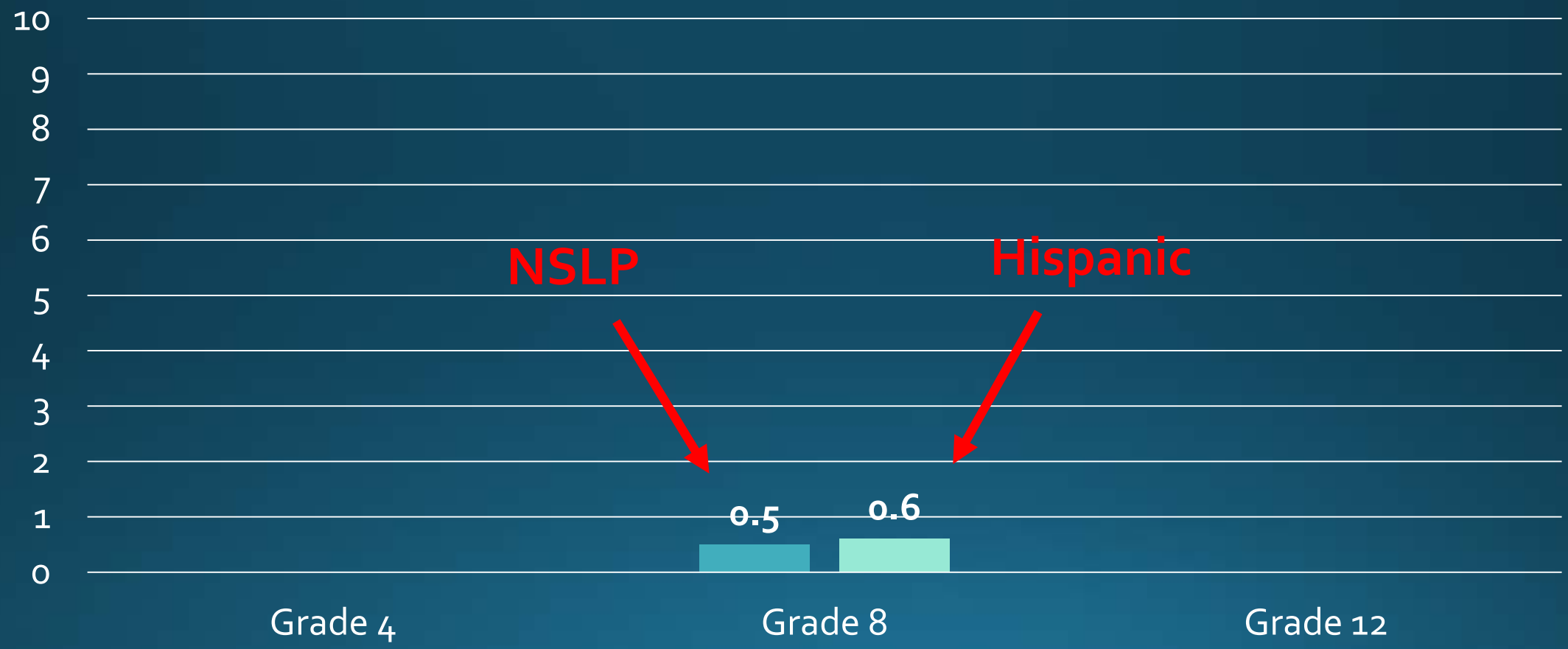
- **262** Draw a conclusion about the relationship between volume and temperature based on data
- **262** Anticipate effects of a design decision based on the interdependence of organisms
- **229** Use evidence to critique a conclusion about the mass of a material
- **227** Explain how to produce sounds
- **225** Recognize the cycle of Moon phases
- **224 ADVANCED** ----------
- **218** Describe the different stages of the life cycle of an organism
- **217** Recognize fair test for determining how temperature affects a liquid
- **214** Predict the path of the Sun in the sky

2015 NAEP Science Overall Percent Advanced

2015 NAEP Science Overall Percent Advanced



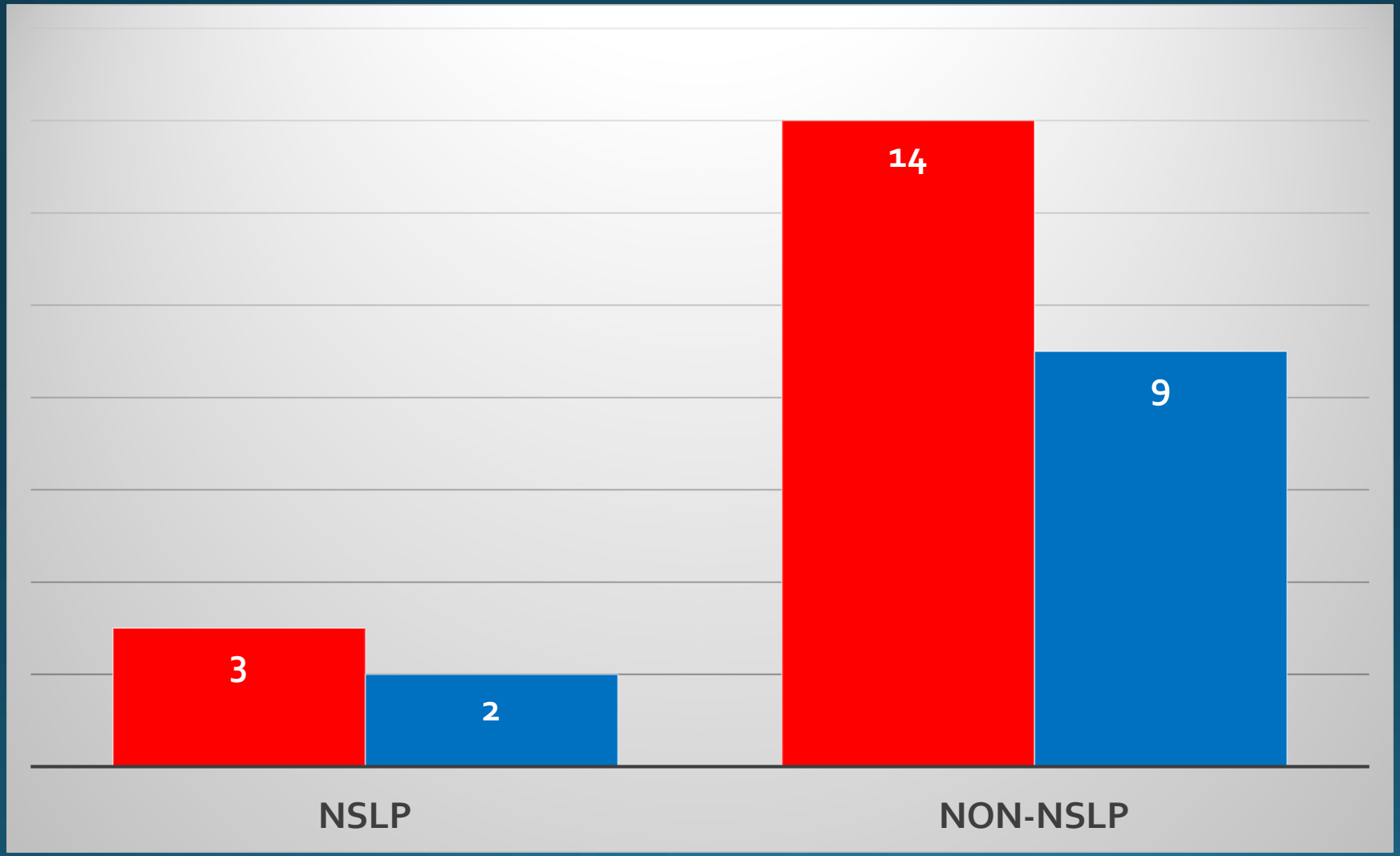
NAEP Science - Percent Scoring Advanced: NSLP, Black, Hispanic, American Indian, ELL



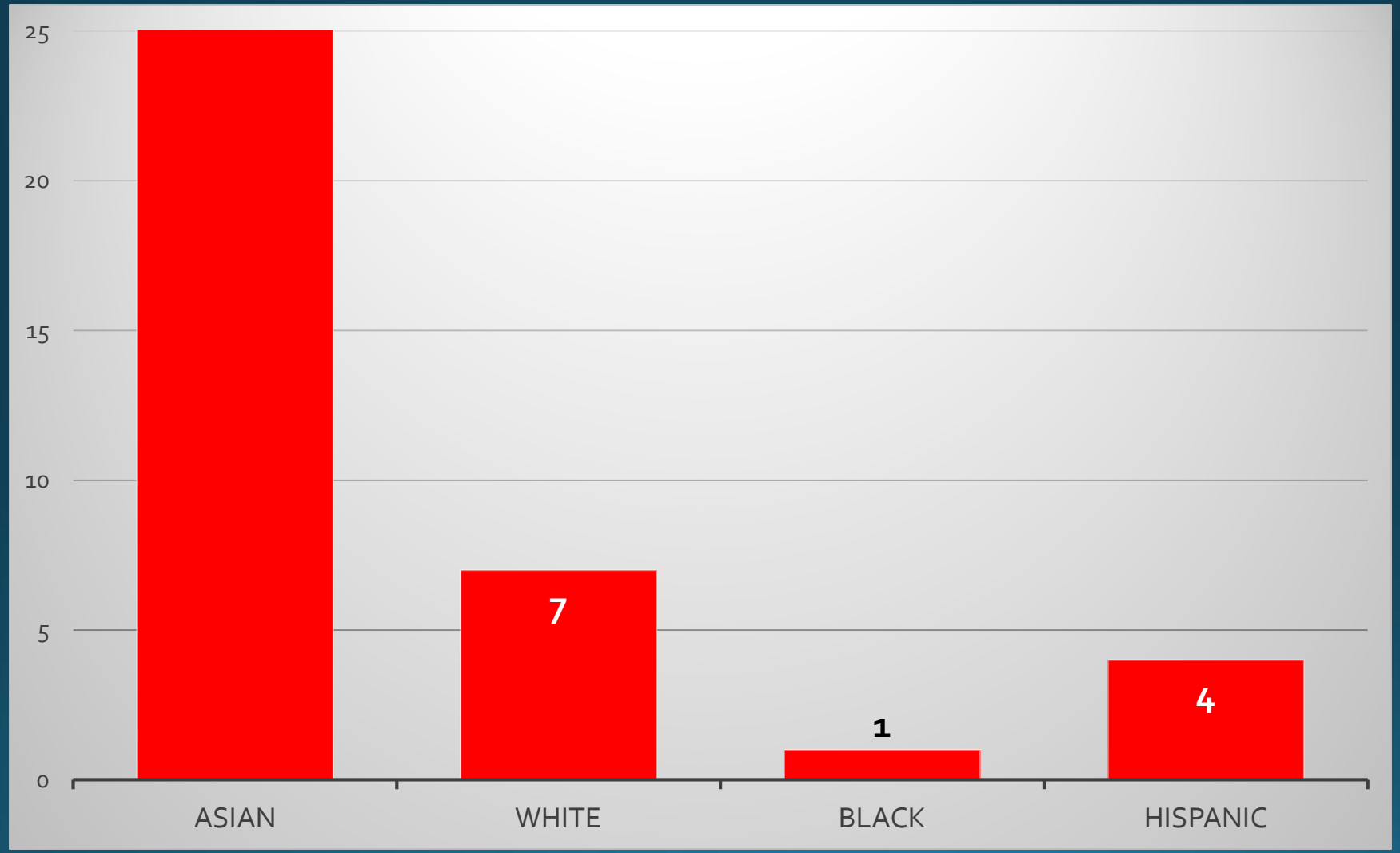
2015 NAEP Science Percent Advanced

But What About Kentucky?

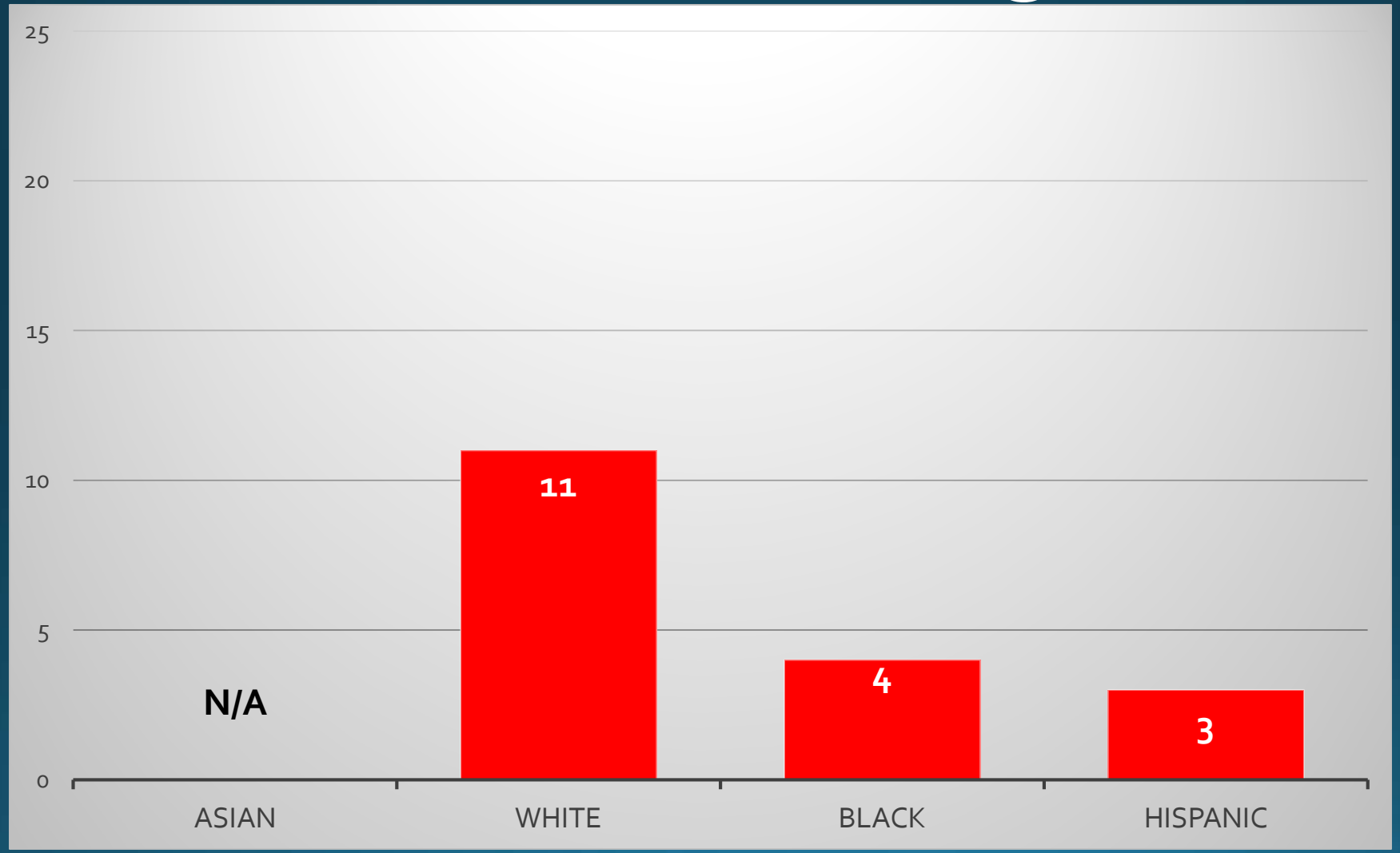
Kentucky 2015 NAEP Math



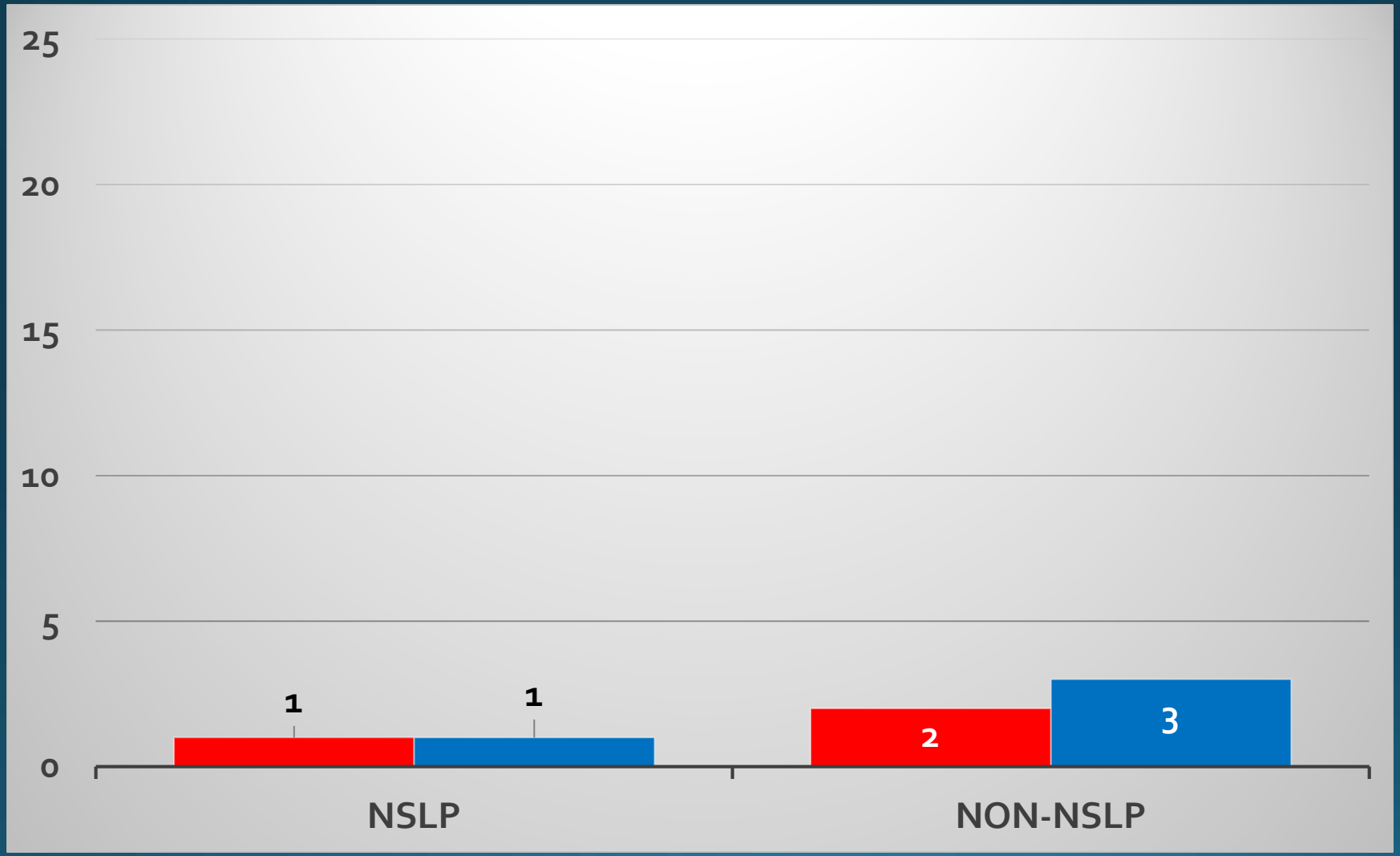
Kentucky 2015 NAEP Grade 4 Math



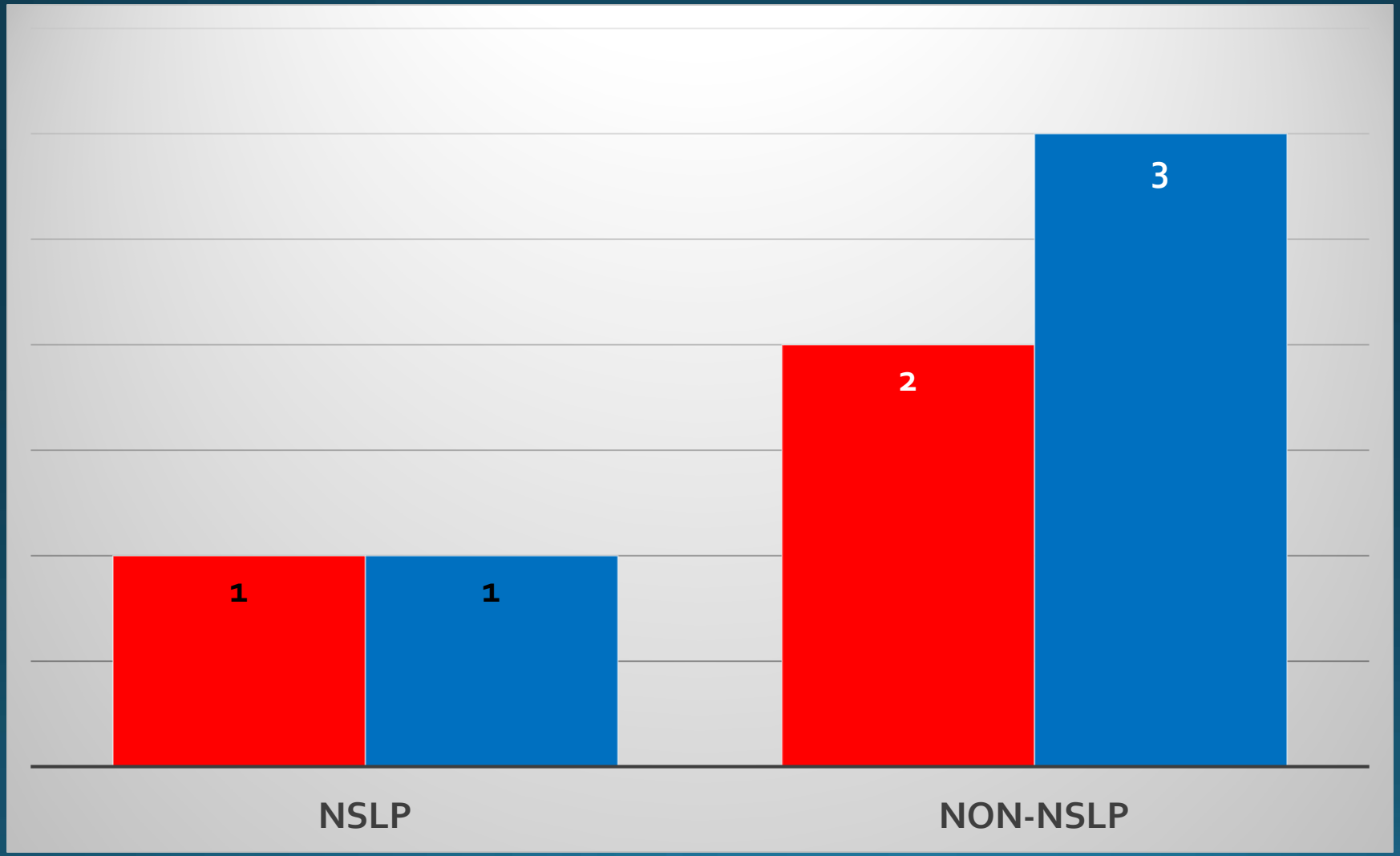
Kentucky 2015 NAEP Grade 4 Reading



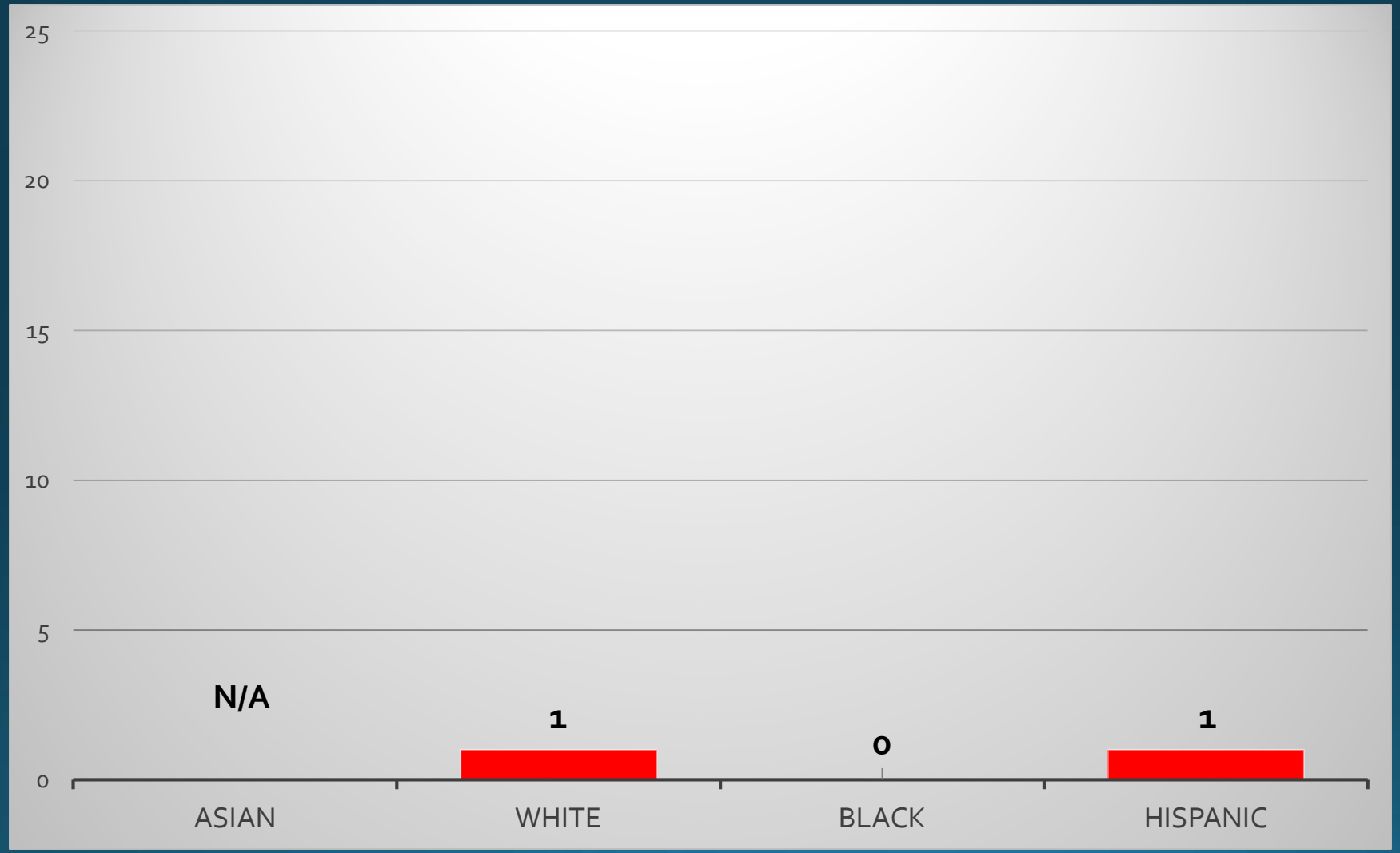
Kentucky 2015 NAEP Science



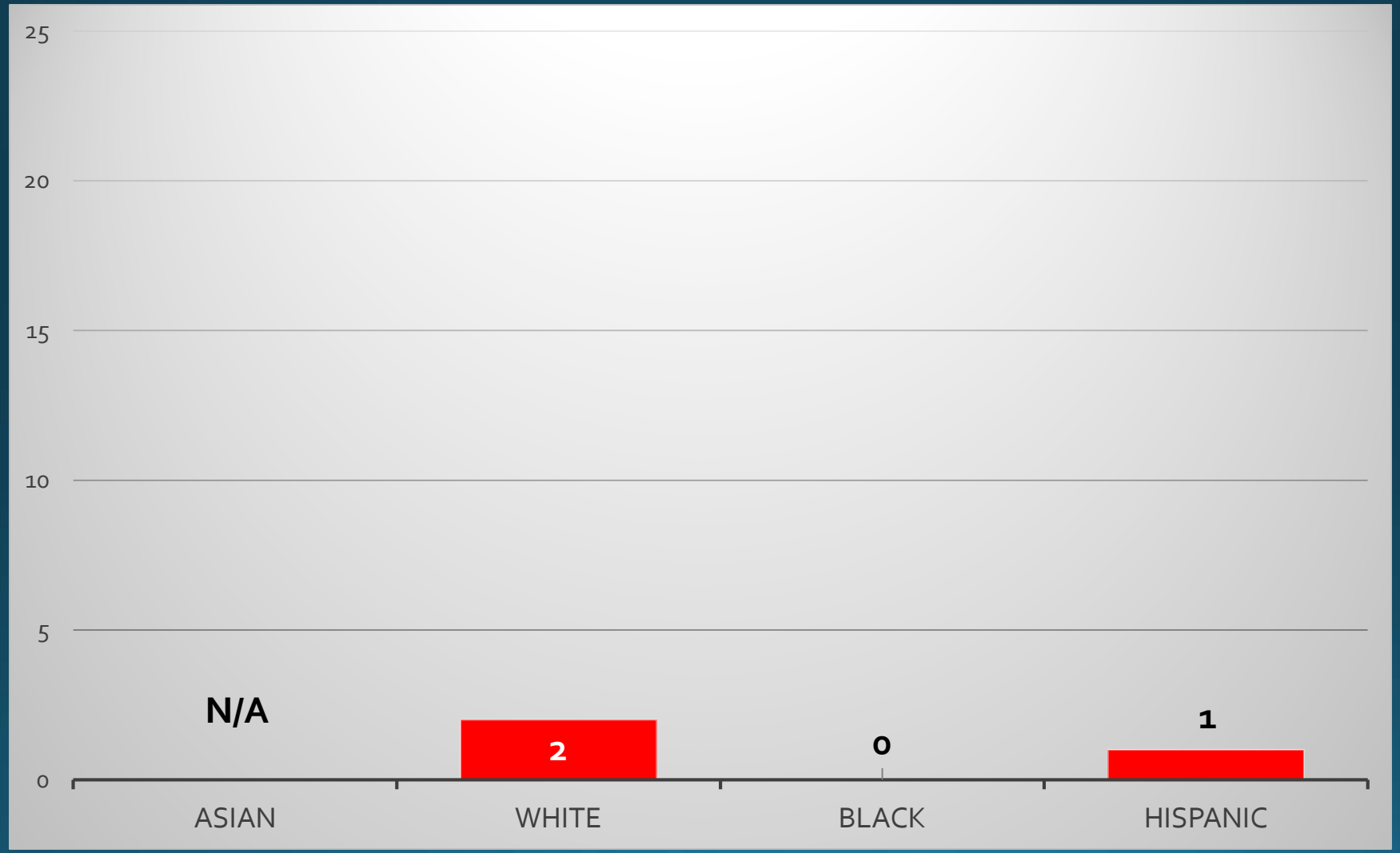
Kentucky 2015 NAEP Science



Kentucky 2015 NAEP Grade 4 Science



Kentucky 2015 NAEP Grade 8 Science



What evidence do you see of excellence gaps in your schools?

HOW DO EXCELLENCE GAPS CHANGE AS KIDS MOVE THROUGH SCHOOL?

Karen E. Rambo-Hernandez
West Virginia University
Scott J. Peters
University of Wisconsin- Whitewater
Jonathan A. Plucker
Johns Hopkins University

Manuscript under review, presented at NAGC 2017, Charlotte, NC

WEST VIRGINIA UNIVERSITY
Learning Sciences & Human Development
College of Education and Human Services

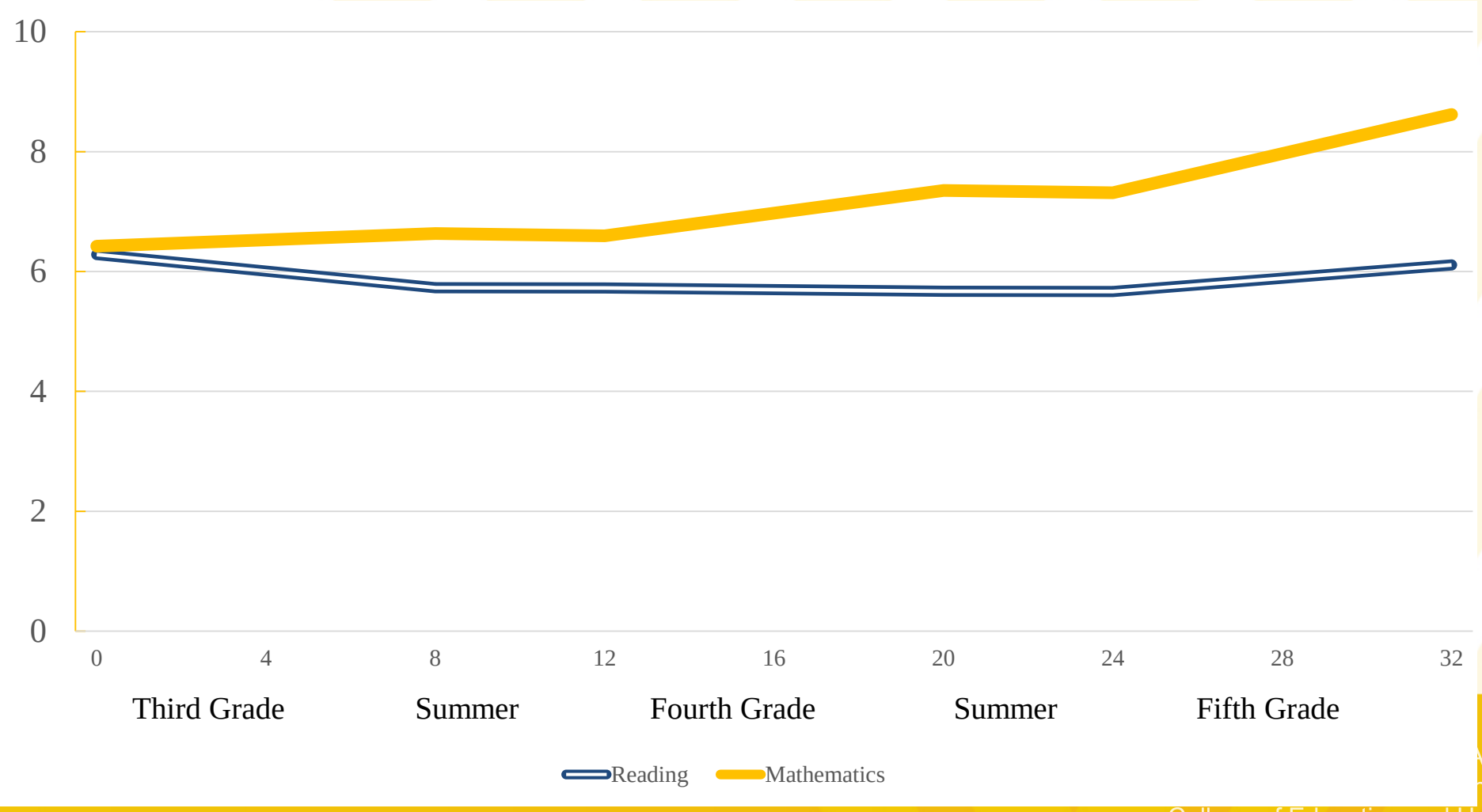
THE RESEARCH QUESTIONS

- What trends in excellence gaps exist in math and reading over the academic school year and over the summer?
- What school level variables explain initial differences and changes in the excellence gaps in mathematics during the school year and over the summer?

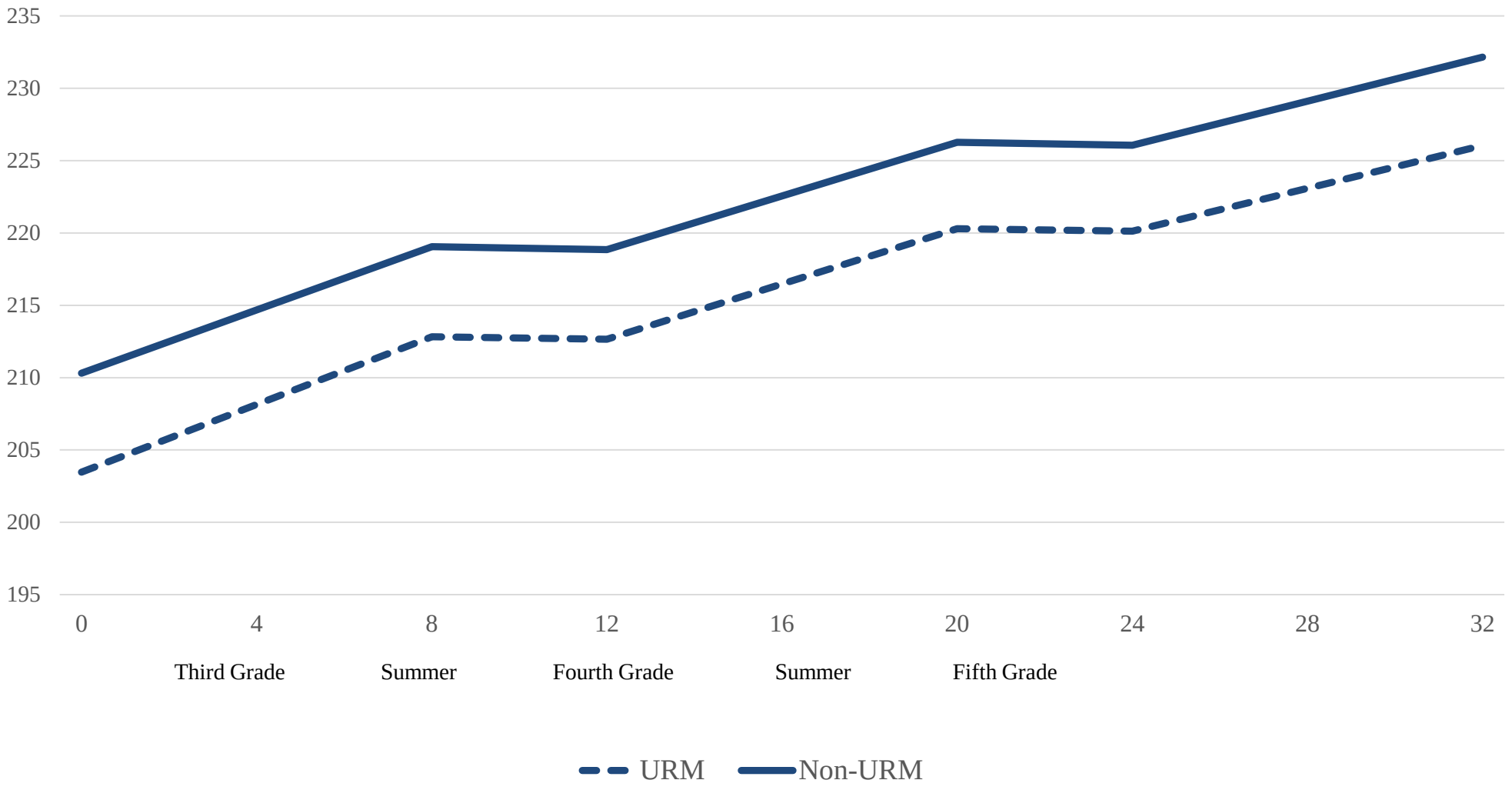
THE DEPENDENT VARIABLE

- The difference between the 90^{th} percentile mean scores of non-underrepresented (White and Asian) and underrepresented minority students (Black and Hispanic)
  - ❖ Difference= Score Non-URM_{ti_90th} - Score URM_{ti_90th}

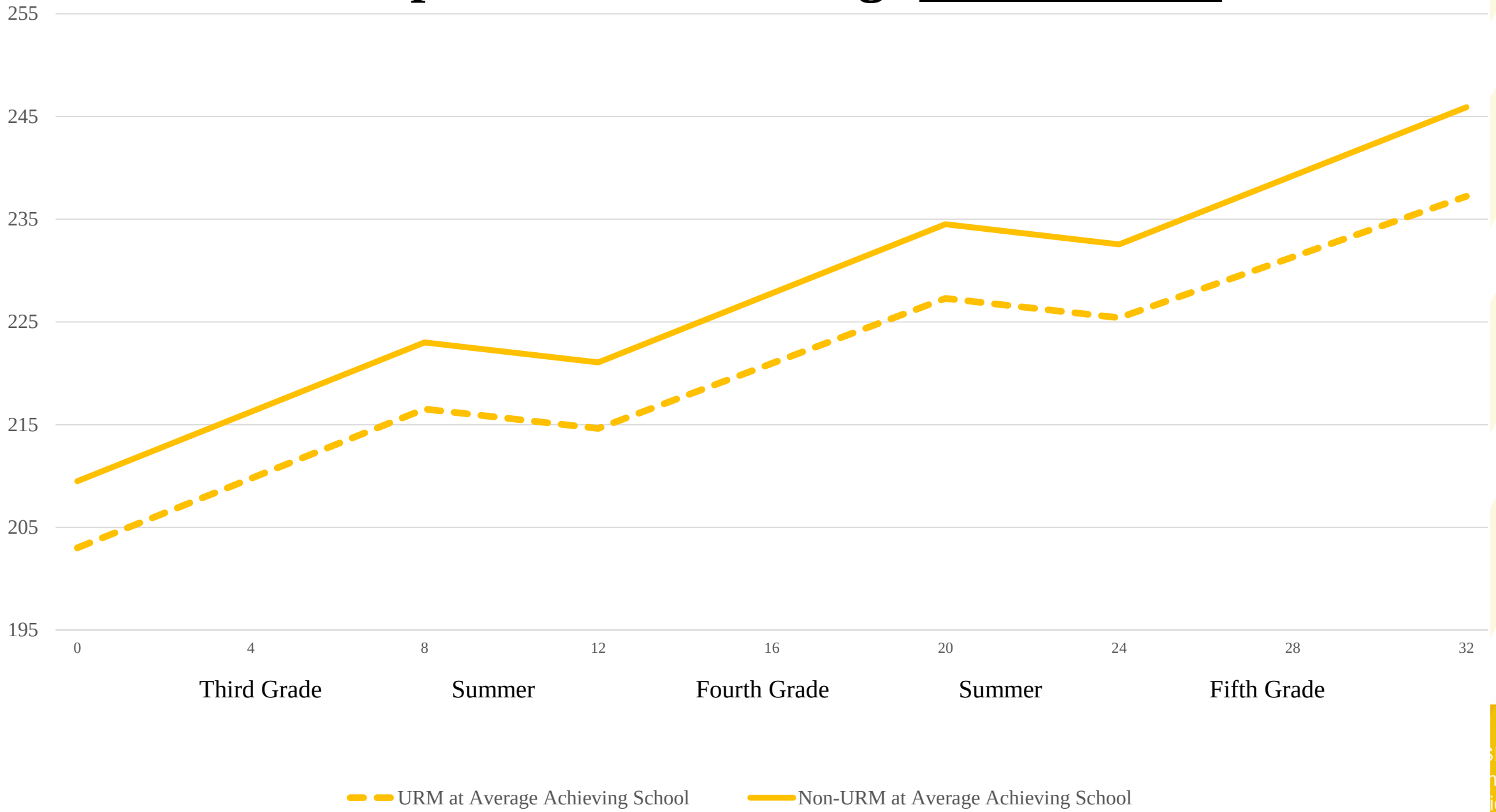
RESULTS: GAPS IN READING AND MATHEMATICS



RESULTS: ACHIEVEMENT IN READING OVER TIME



Results: Group and School Average Achievement - Math



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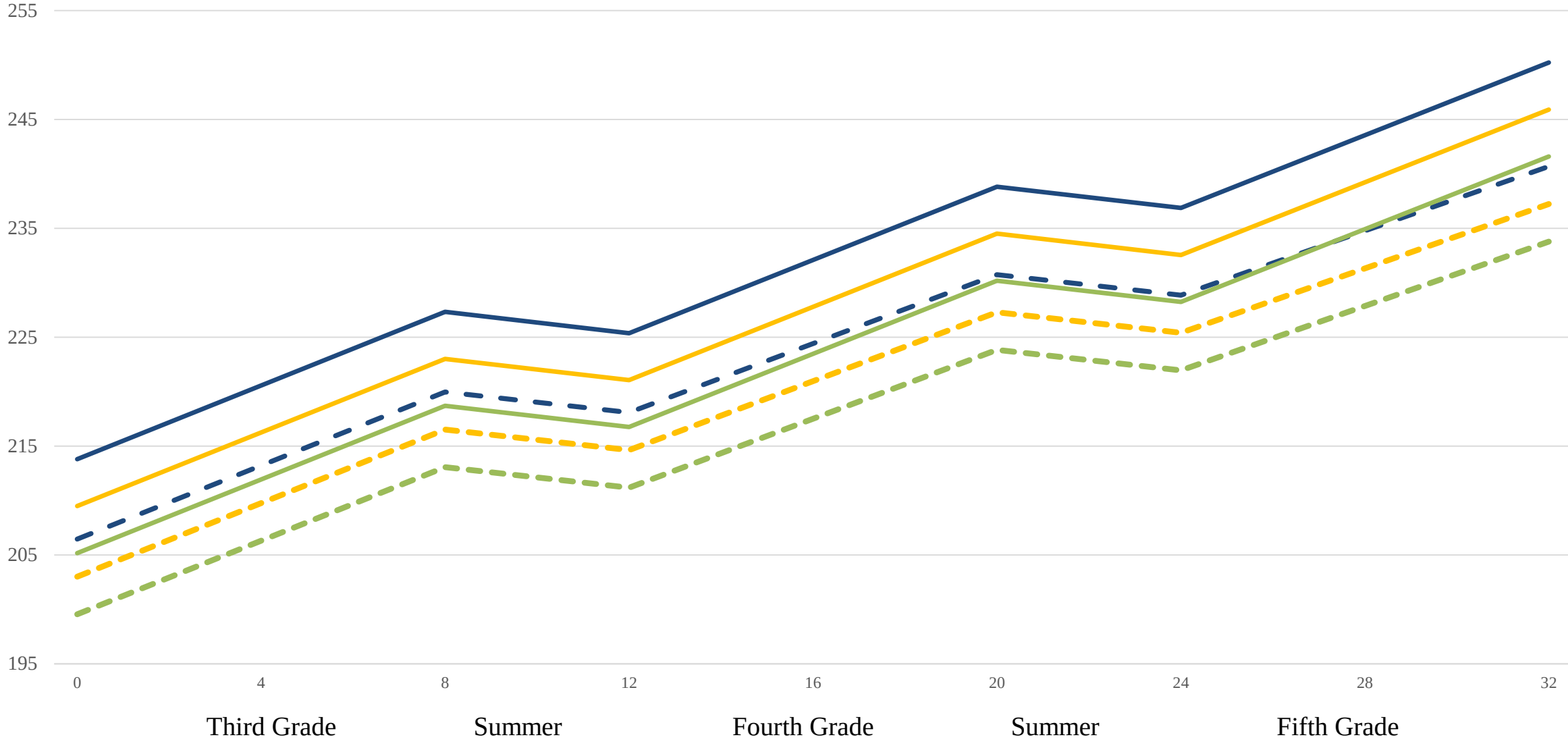


CONCLUSIONS

- Reading gaps are relatively stable over the elementary grades
  - Pick up again in grade 5. Trend?
- Math gaps grow as kids move through school, specifically during the school year

IMPLICATIONS

- In reading, schools don’t appear to be causing the national trend in widening excellence gaps
  - Time in school, school-level poverty, demographics, etc. aren’t predictive of change in slope
  - The lack of change in gaps is inconsistent with prior research
- In mathematics, the widening of gaps was evident as students moved through elementary school
  - Consistent with prior research

IMPLICATIONS

Other possible explanations for discrepant results from our study and previous research in reading:

1. Other studies did not follow cohorts but looked at specific grades across time
2. Differences in initial intercept have been growing over time
3. Gaps only grow later in school (>5th grade)
   - Unlikely given prior findings by Plucker and colleagues (2010; 2013)

How do you think your schools impact excellence gaps?

Big Implication

We can predict with high accuracy that a talented student who is poor and/or Hispanic, Black, or Native American will not perform at advanced levels in K-12 education.

Hence “persistent talent underclass.”

What If We …

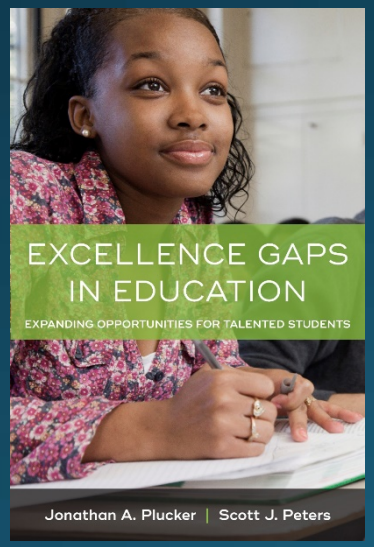
… shrunk the low-income excellence gap in math from 13% to 6% in each grade?

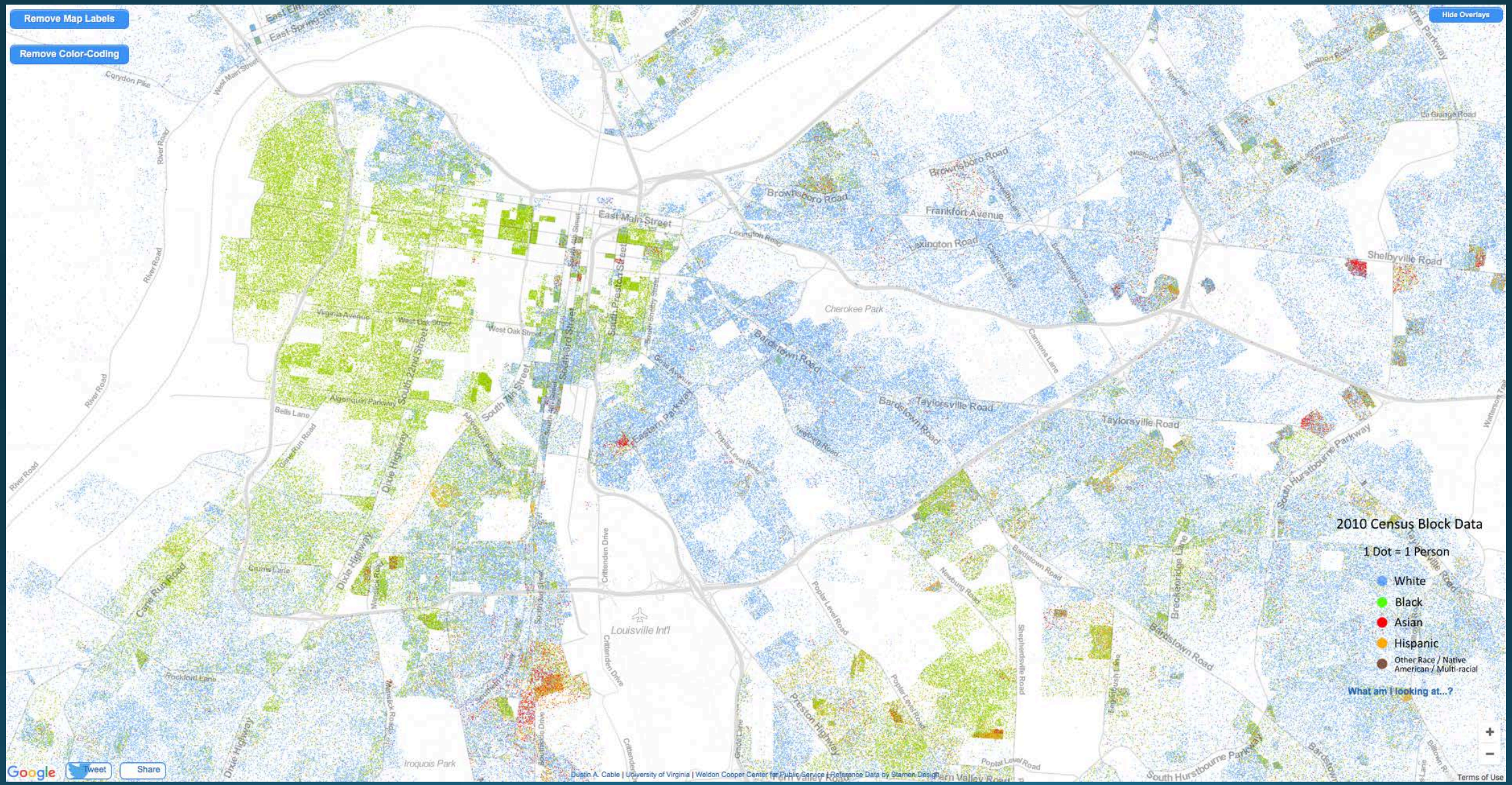
EACH YEAR we would have 750,000 more students exhibiting academic excellence.

Some potential solutions

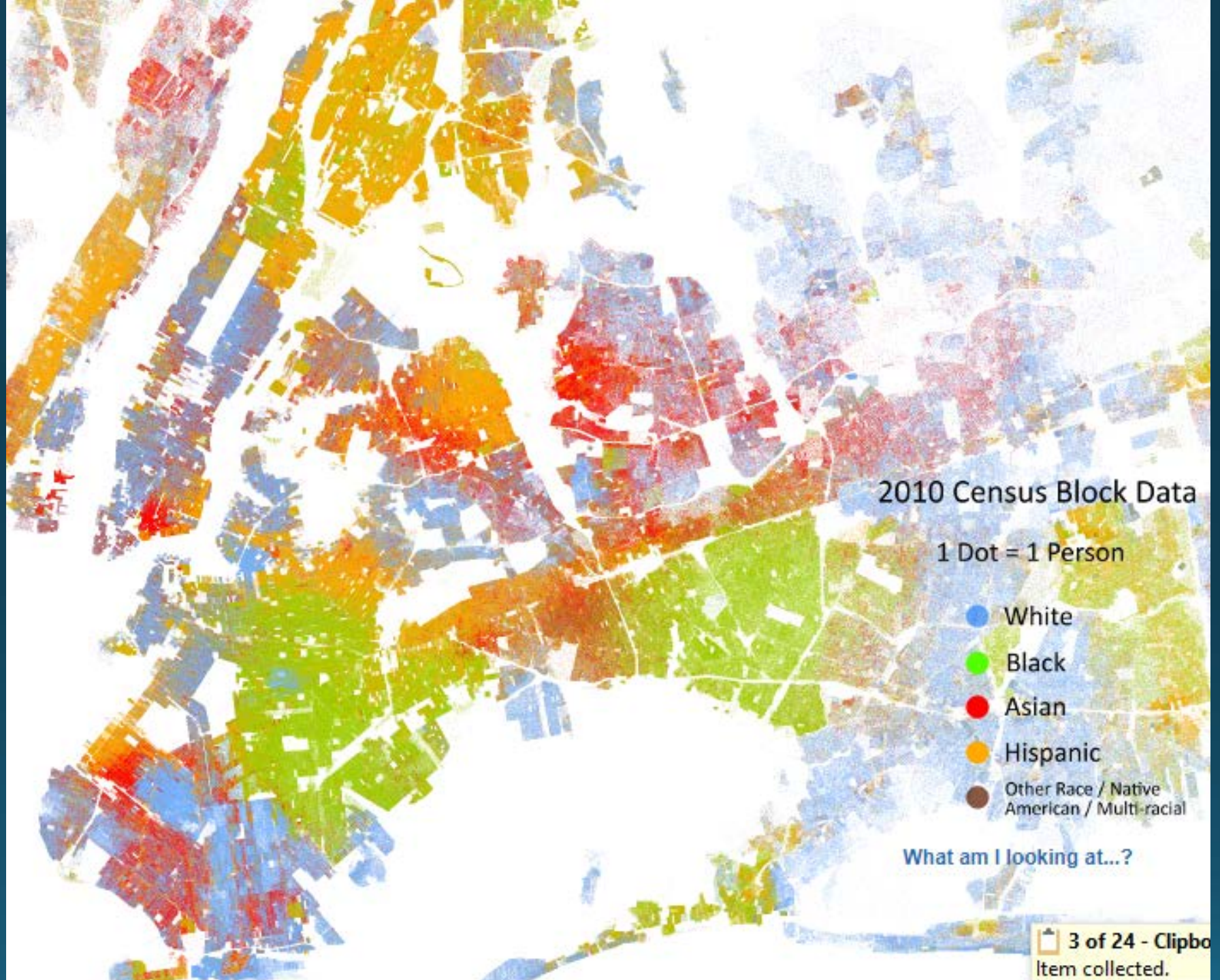
From book with Scott Peters:

Published recently by Harvard Education Press





Source: UVA Weldon Cooper Center for Public Service, https://demographics.virginia.edu/DotMap/index.html


2010 Census Block Data
1 Dot = 1 Person
White
Black
Asian
Hispanic
Other Race / Native American / Multi-racial
What am I looking at...?
3 of 24 - Clipbo
Item collected.

Learn from the Mistakes of Chinese Marathon Runners

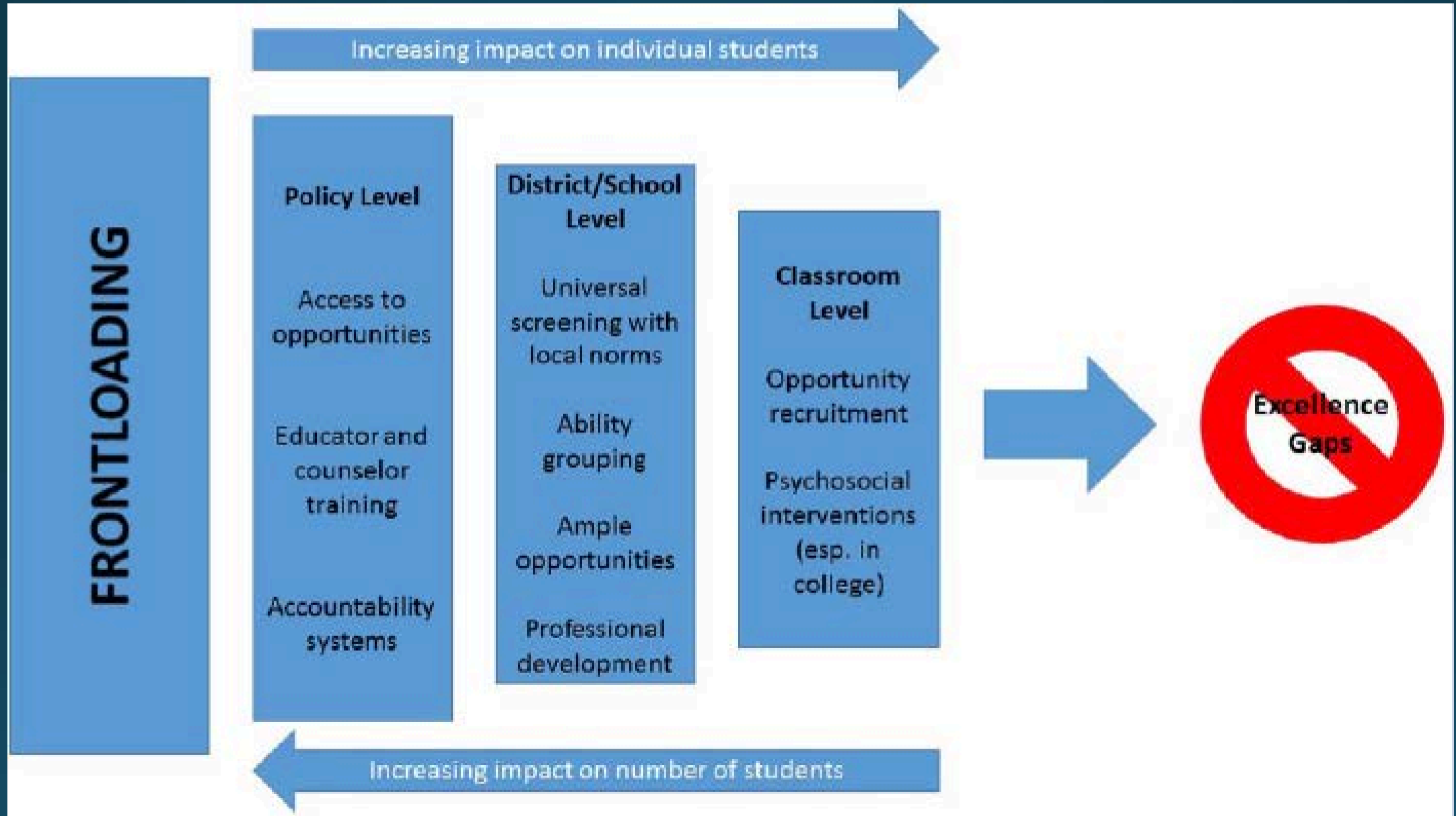
THE WALL STREET JOURNAL.

http://blogs.wsj.com/chinarealtime/2016/03/25/thousands-of-injuries-mishaps-at-chinese-marathon-prompt-alarm/

CHINA REAL TIME REPORT

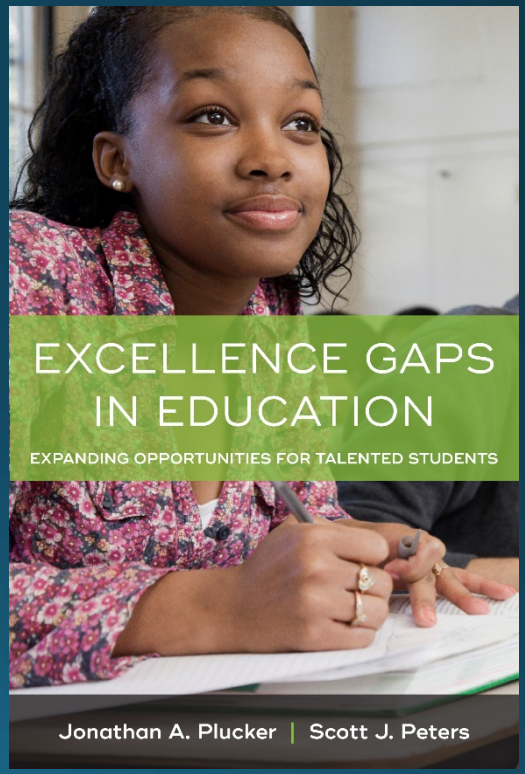
Thousands of Injuries, Mishaps at Chinese Marathon Prompt Alarm

Frontloading Matters!


Increasing impact on individual students
FRONTLOADING
Policy Level
Access to opportunities
Educator and counselor training
Accountability systems
District/School Level
Universal screening with local norms
Ability grouping
Ample opportunities
Professional development
Classroom Level
Opportunity recruitment
Psychosocial interventions (esp. in college)
Excellence Gaps
Increasing impact on number of students

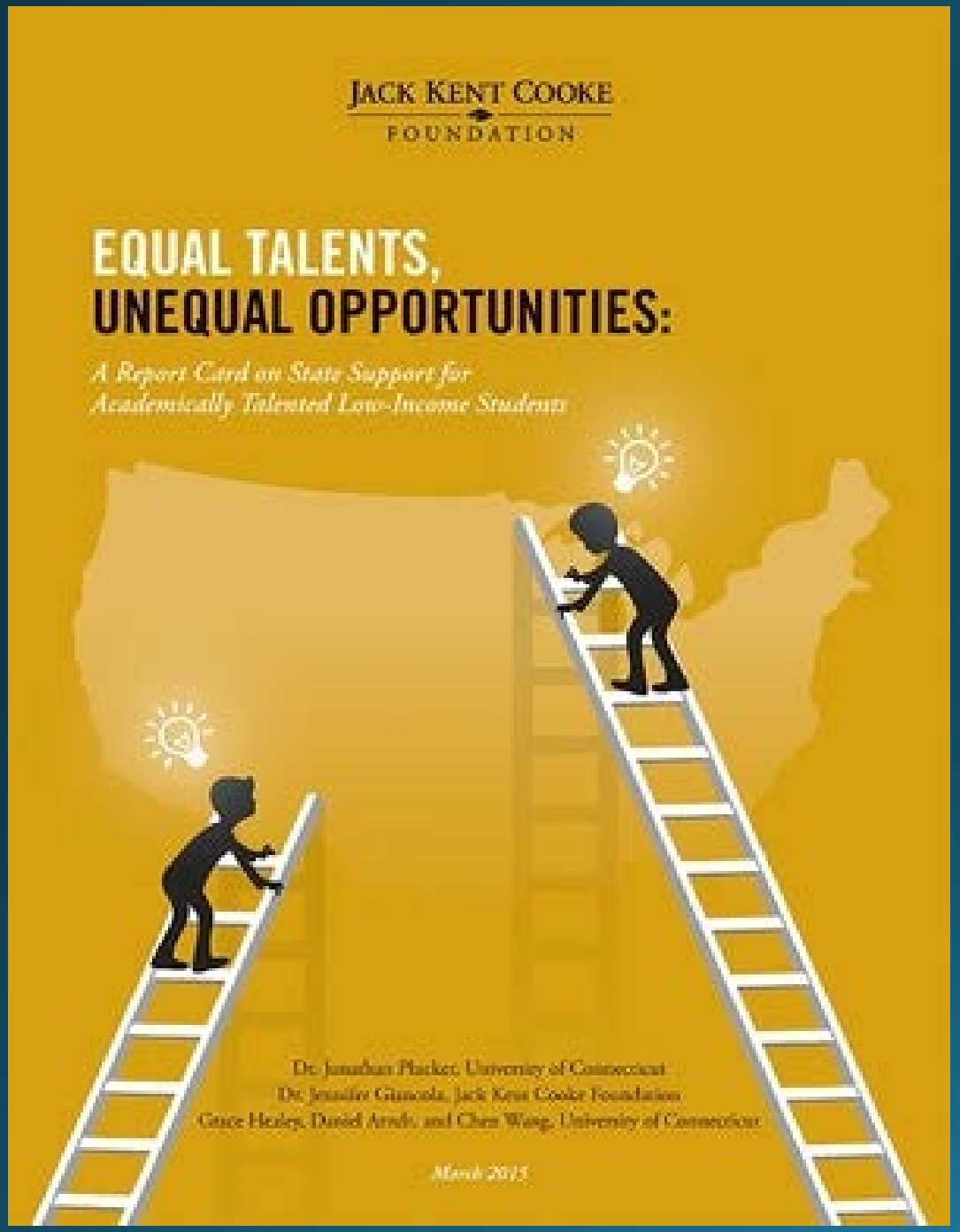
- *Gifted Child Today* article on intervention model for excellence gaps available at:

go.uww.edu/peterss



Are you currently using any of these interventions? How well are they working?

What's Your District's Talent Development Plan?



2015 Report Card Study

Funded by the Jack Kent Cooke Foundation

Identified key excellence and excellence gap policies and outcomes

Determined how each state ranked on those policies and outcomes

New edition to be published in January

Kentucky Ratings

- Policies
  - Excellence: A-
  - Excellence Gaps: D
- Participation
  - Excellence: A
  - Excellence Gaps: C-
- Outcomes
  - Excellence: C+
  - Excellence Gaps: C
- Among the best 4-5 performing states in the U.S.

Strengths and Not-Strengths

STRENGTHS

- SEA reporting/monitoring
- Mandate
- Early K entrance
- State acceleration policy
- MS/HS concurrent enrollment
- Early college/dual enrollment
- Free ACT

NOT STRENGTHS

- Growth in accountability system
- Universal screening
- Gifted coursework in educator preparation programs
- Mixed funding for dual enrollment

Strengths and Not-Strengths

STRENGTHS

- % students taking AP tests
- % students identified for services

NOT STRENGTHS

- % low-income students taking AP tests
- State doesn't report % identified students who are low-income

Big Take-Away of New Report:

- States and districts have a range of important excellence policies … but they're NOT connected.
- Key questions:
  - How does a talented young child move through your schools from K-12?
  - How would you describe the process/services to a parent of a talented child?
  - Do you include ALL of your excellence programs in your TD plan?
    - Gifted, honors, AP, acceleration, grouping, academic counseling, dual credit, aid for economically vulnerable families, etc.
  - Does your TD plan address transitions among grade levels? (Biggest parent concern)

JHU Gifted Education Programs

- Certification Program
  - Satisfied MD, PA, DE requirements
  - 6 courses
  - Do-able in 1 or 2 years
  - Can be combined with another JHU certificate to become a master's degree.
- Master's Degree Program
  - Includes certification courses
  - 11 courses
  - Do-able in 2 or 3 years
- Both programs will be blended by fall 2017, certification program online-only in 2018.

THANK YOU!

Jonathan Plucker
Julian C. Stanley Endowed Professor
Johns Hopkins University

@JonathanPlucker
jplucker@jhu.edu
https://www.linkedin.com/in/JonathanPlucker
http://jplucker.com