

THE KNOWLEDGE CAPITAL OF NATIONS: A GLOBAL VIEW OF THE AMERICAN SCHOOL

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Federal Reserve Bank of Philadelphia

Key Questions

1. Does achievement matter?

YES

2. Is the U.S. competitive?

NO

3. How is Pennsylvania doing?

NOT SO WELL

4. Are there things to be done?

YES

Commitment to Achievement Growth

- Nation at Risk (1983)
 - Stem a rising tide of mediocrity.
- George H. W. Bush and all Governors (1989)
 - Bring U. S. achievement up to top of world by 2000.
- Clinton: Goals 2000:
 - “All Americans can reach international competitive standards.”
- Bush: No Child Left Behind
 - “All students proficient by 2013”
- Obama: State of the Union 2011
 - “We know what it takes to compete for the jobs and industries of our time. We need to out-innovate, out-educate, and out-build the rest of the world.”

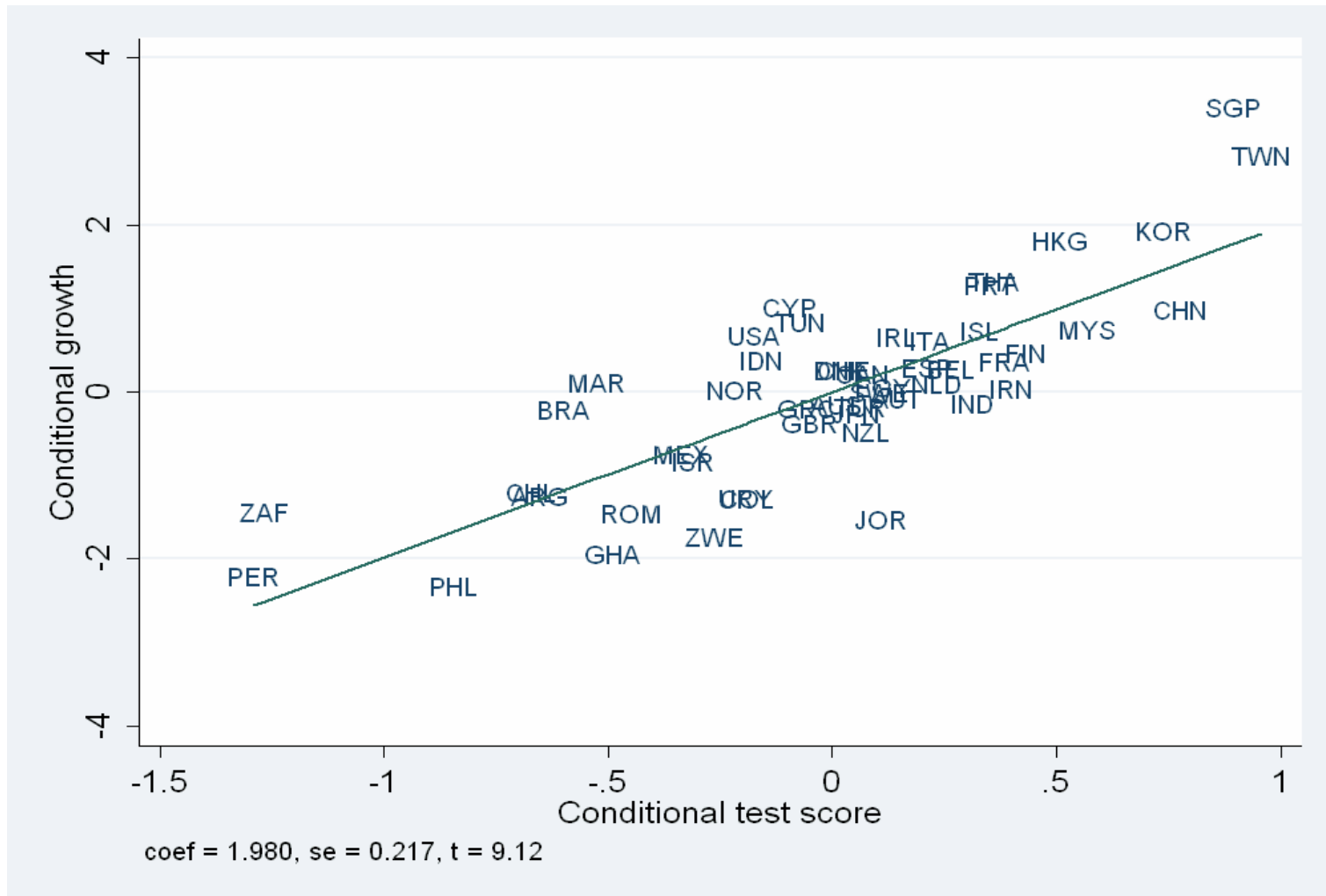
Importance to the United States



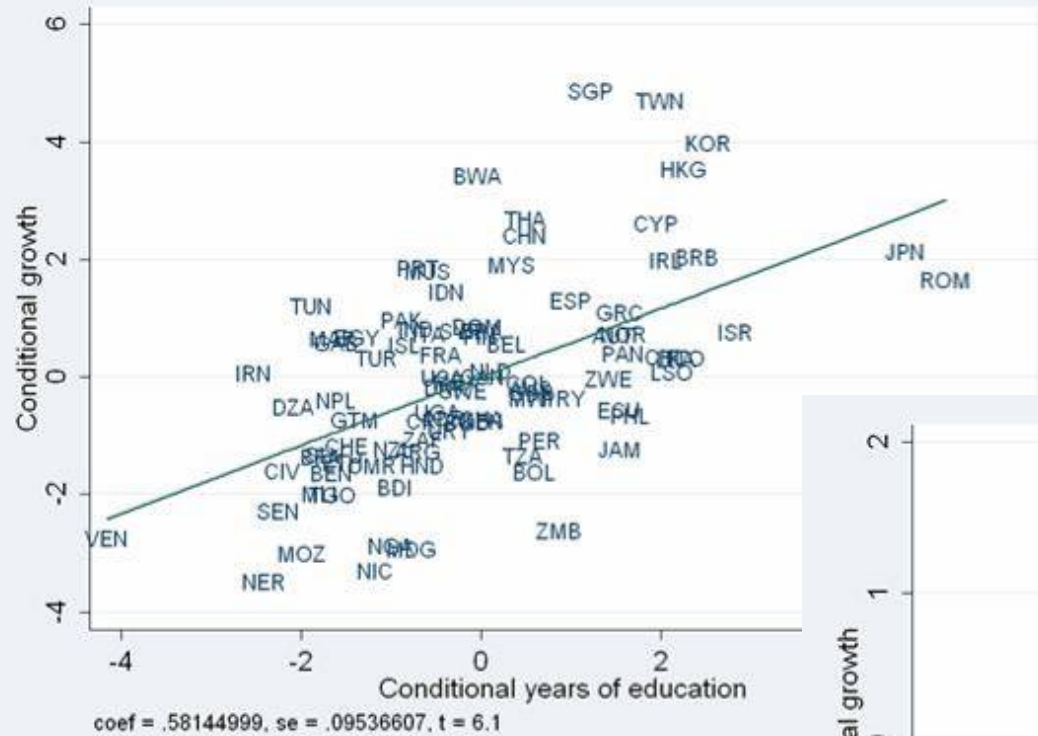
“Human capital will determine power in the current century, and the failure to produce that capital will undermine America’s security.”

**— *Independent Task Force Report,
Condoleezza Rice, co-chair,
Council on Foreign Relations***

Cognitive Skills and Economic Growth

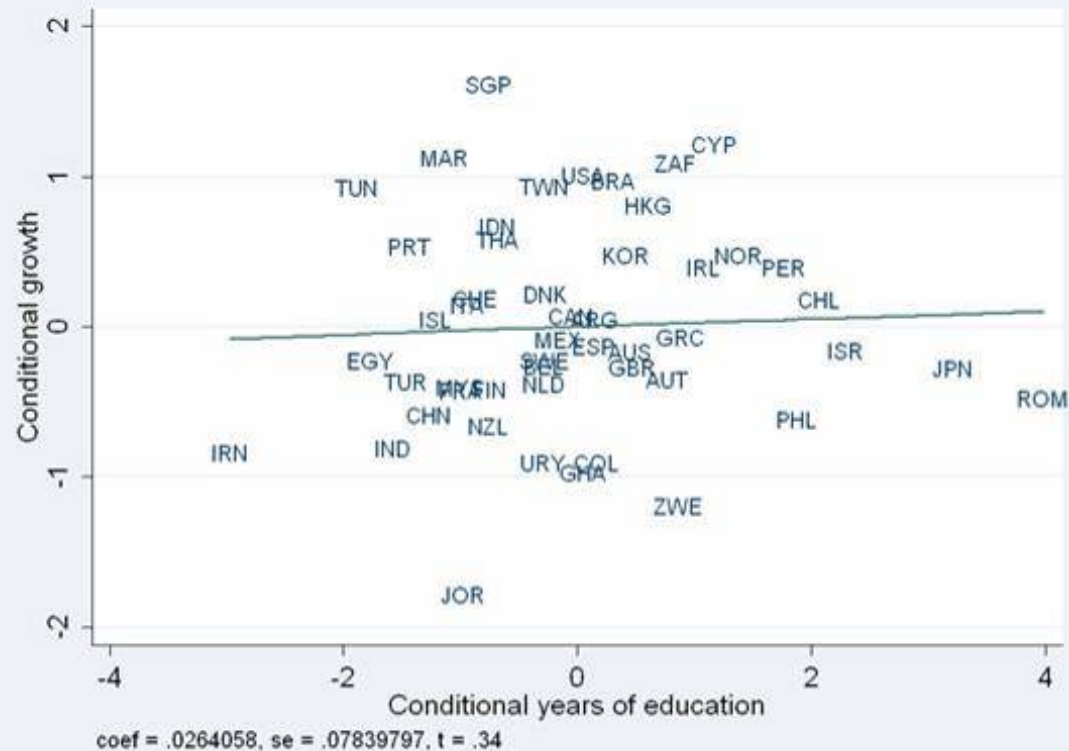


Years of Schooling and Economic Growth

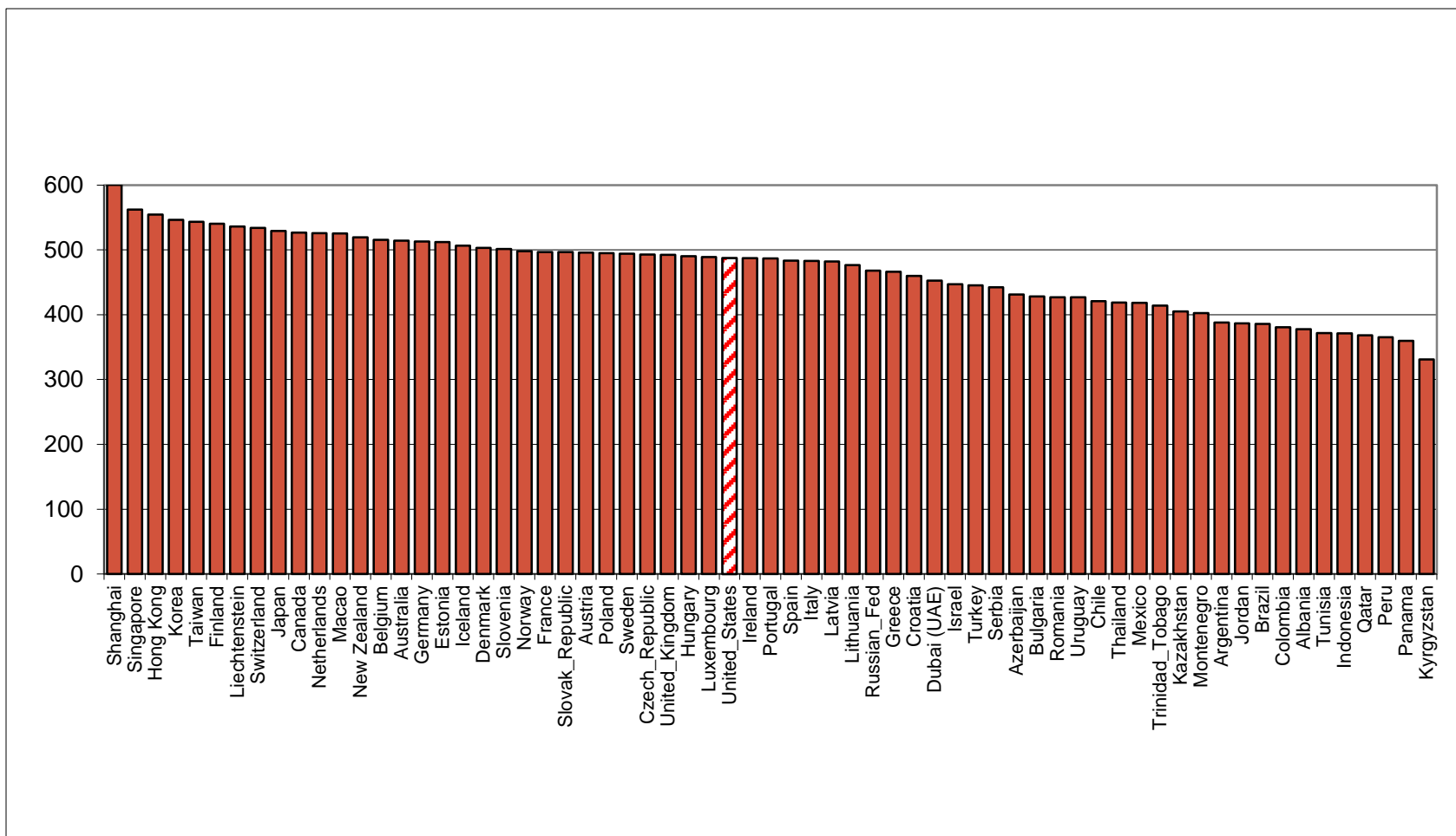


Without quality control

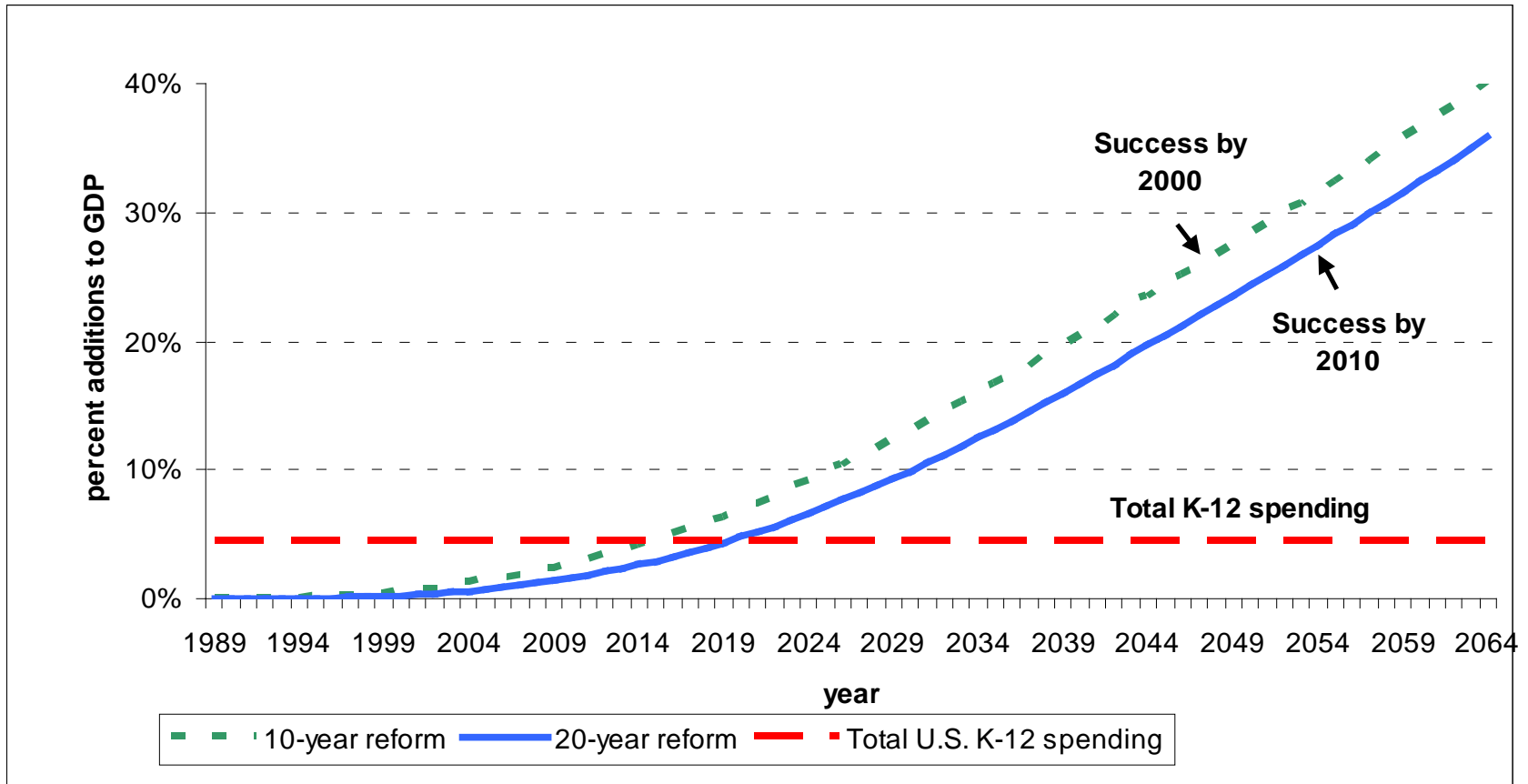
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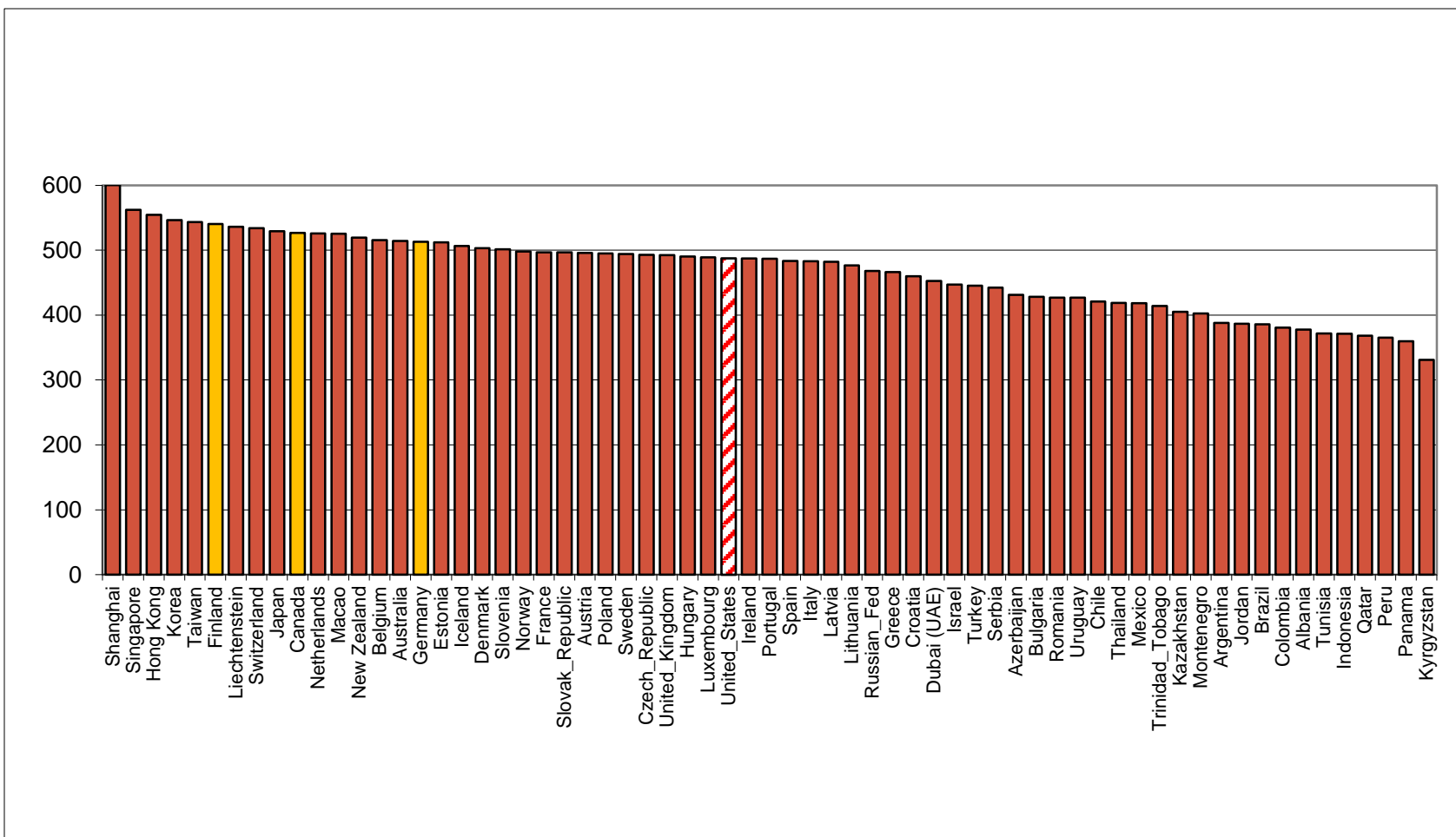
PISA Mathematics, 2009



“First in the World by 2000”



PISA Mathematics, 2009



Importance to United States

- Value of higher skills
 - Germany, Canada, Finland
 - No Child Left Behind

Economic Value of Improvement

	Being Germany
Present value (\$ trillion)	43.8
% future GDP	6.2

Economic Value of Improvement

	Being Germany	Being Canada
Present value (\$ trillion)	43.8	82.2
% future GDP	6.2	11.4

Economic Value of Improvement

	Being Germany	Being Canada	Being Finland
Present value (\$ trillion)	43.8	82.2	111.9
% future GDP	6.2	11.4	15.8

Economic Value of Improvement

	Being Germany	Being Canada	Being Finland	Achieving NCLB
Present value (\$ trillion)	43.8	82.2	111.9	86.2
% future GDP	6.2	11.4	15.8	12.1

Pennsylvania in U.S. Perspective

- High variation in **GDP per capita growth** across states
 - US average annual GDP per capita growth rate 1970-2007: 2.18%
 - Pennsylvania grew by 2%
 - 14th slowest growth 1970-2007

What Can Be Done?

1. Improve teacher quality
2. Improve teacher quality
3. Improve teacher quality

Teacher Quality: The Big Picture

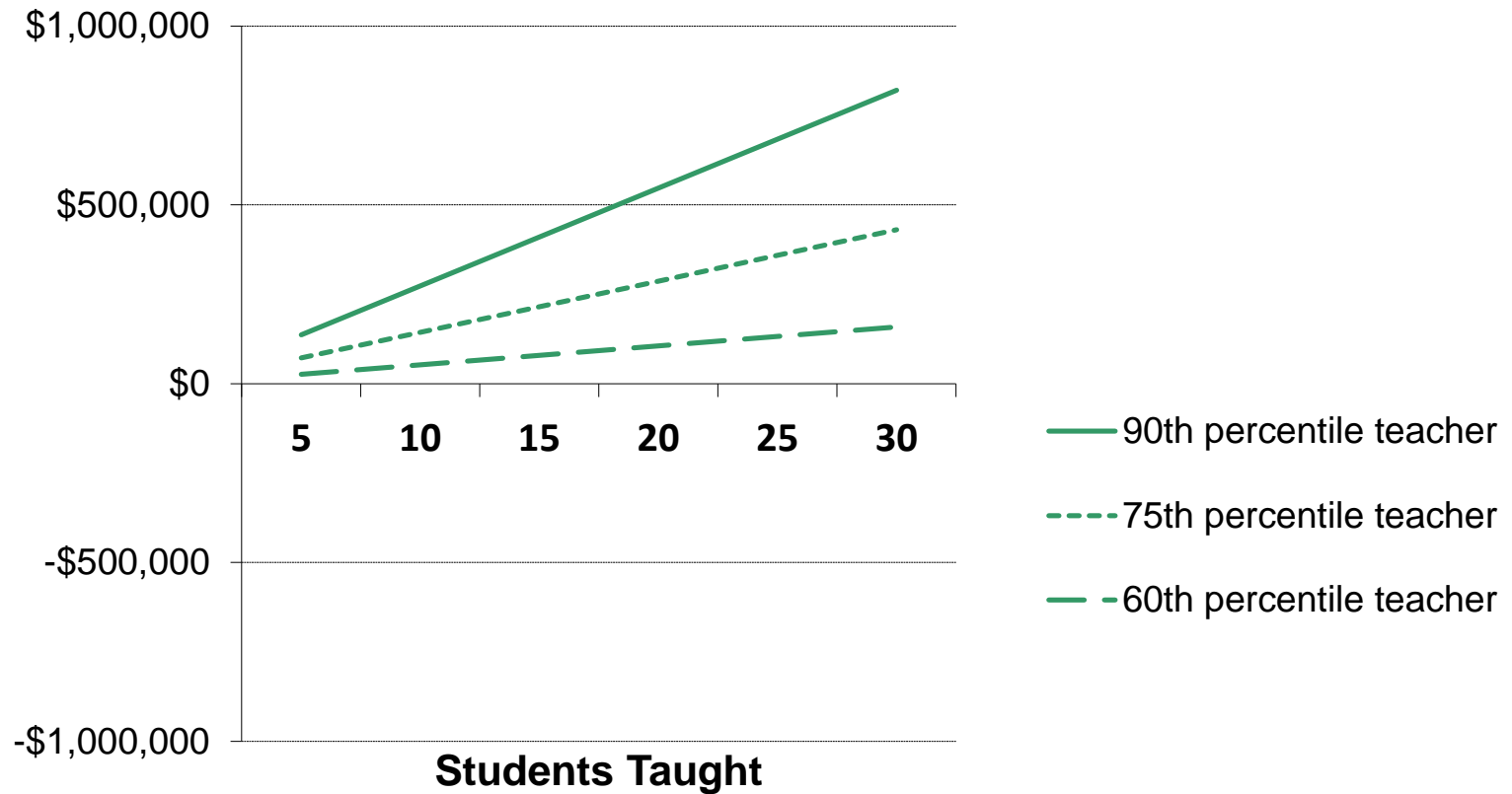
- Good teachers are essential to improved schools
- BUT
- Too hard to change so we will stay with current policies

Very different economic futures based on today's actions

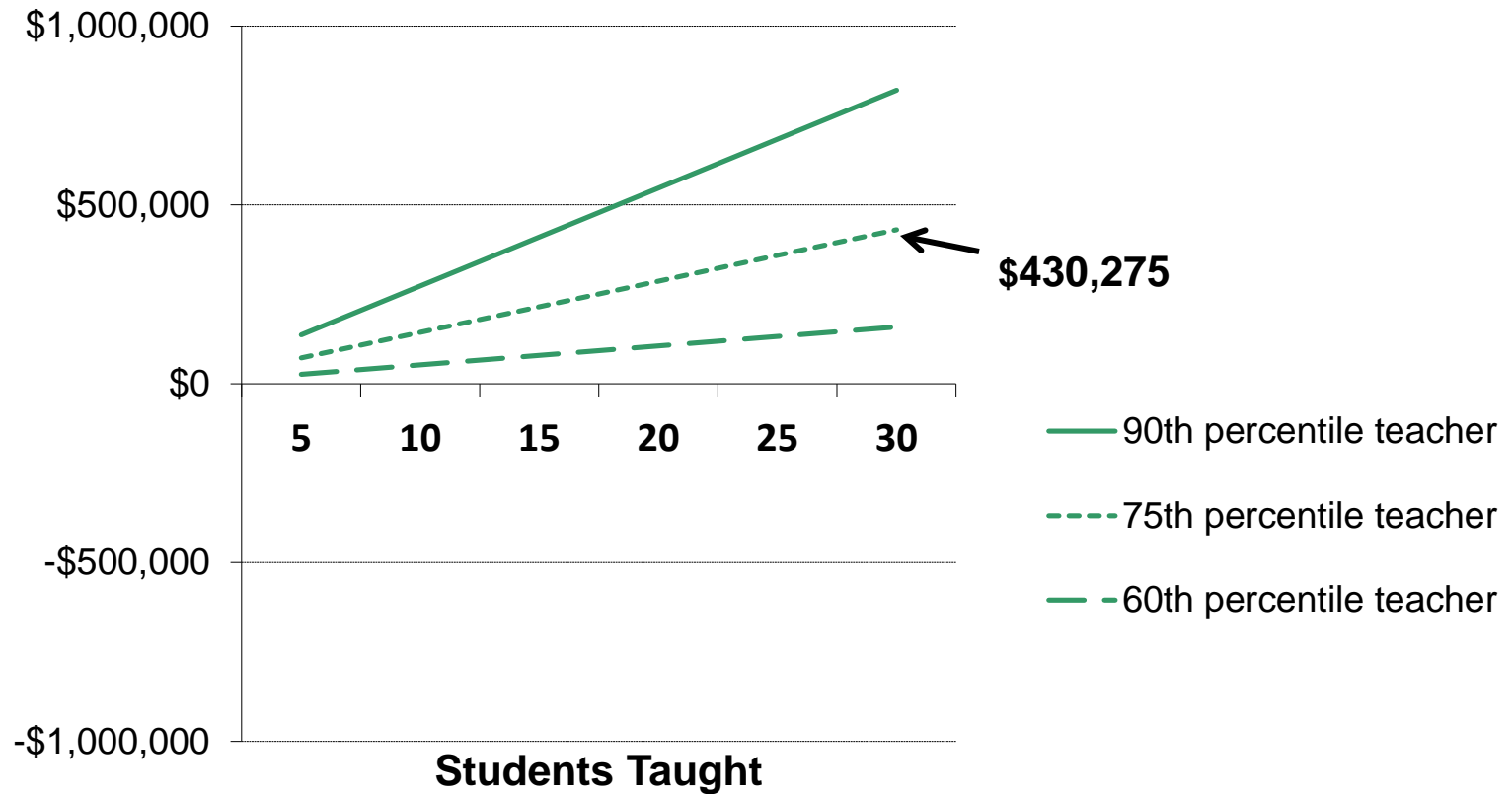
- Total focus on current problems
- Ignoring long run means constant future problems

Teacher Impact through Individual Earnings

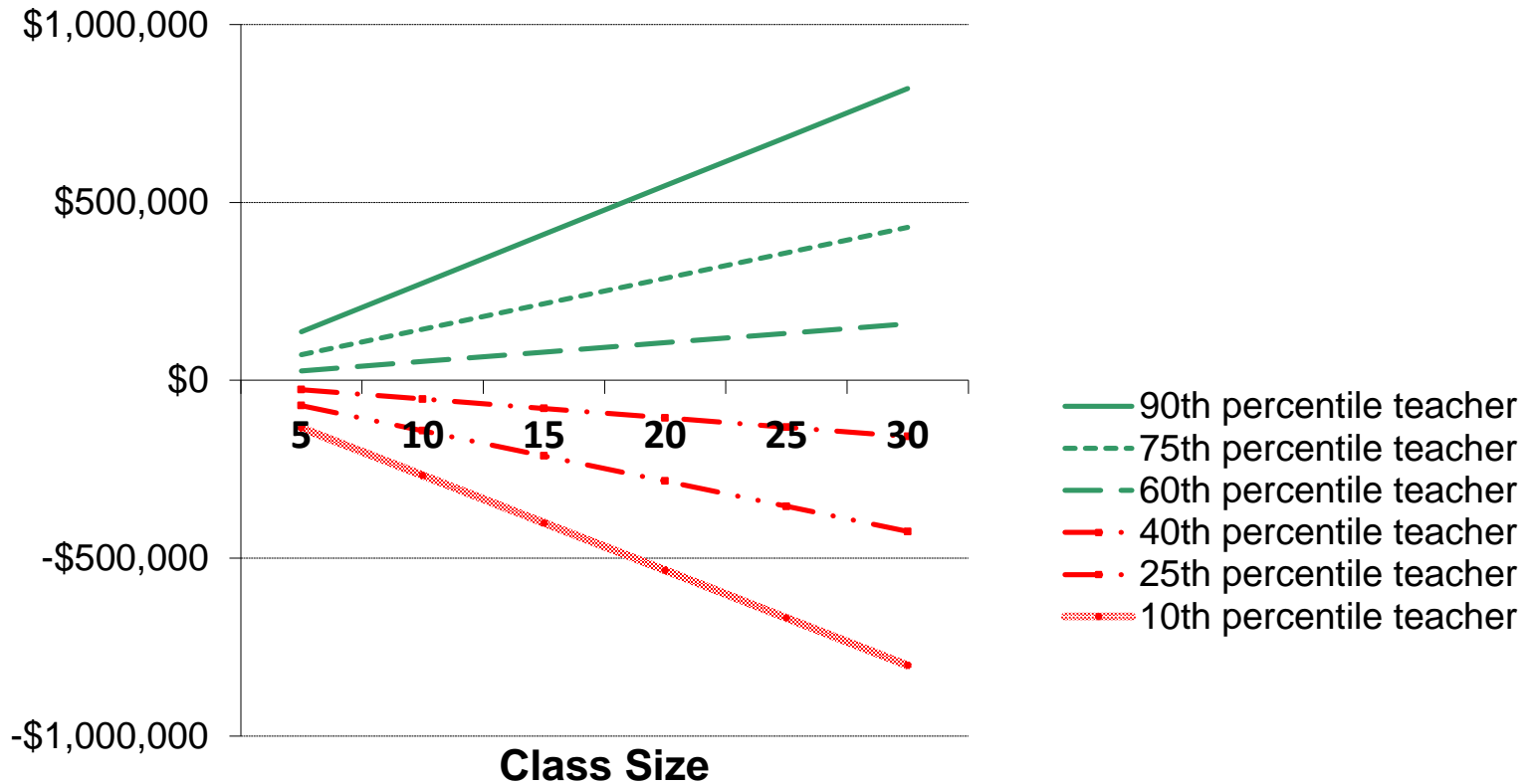
Impact on Student Lifetime Incomes by Class Size (compared to average teacher)



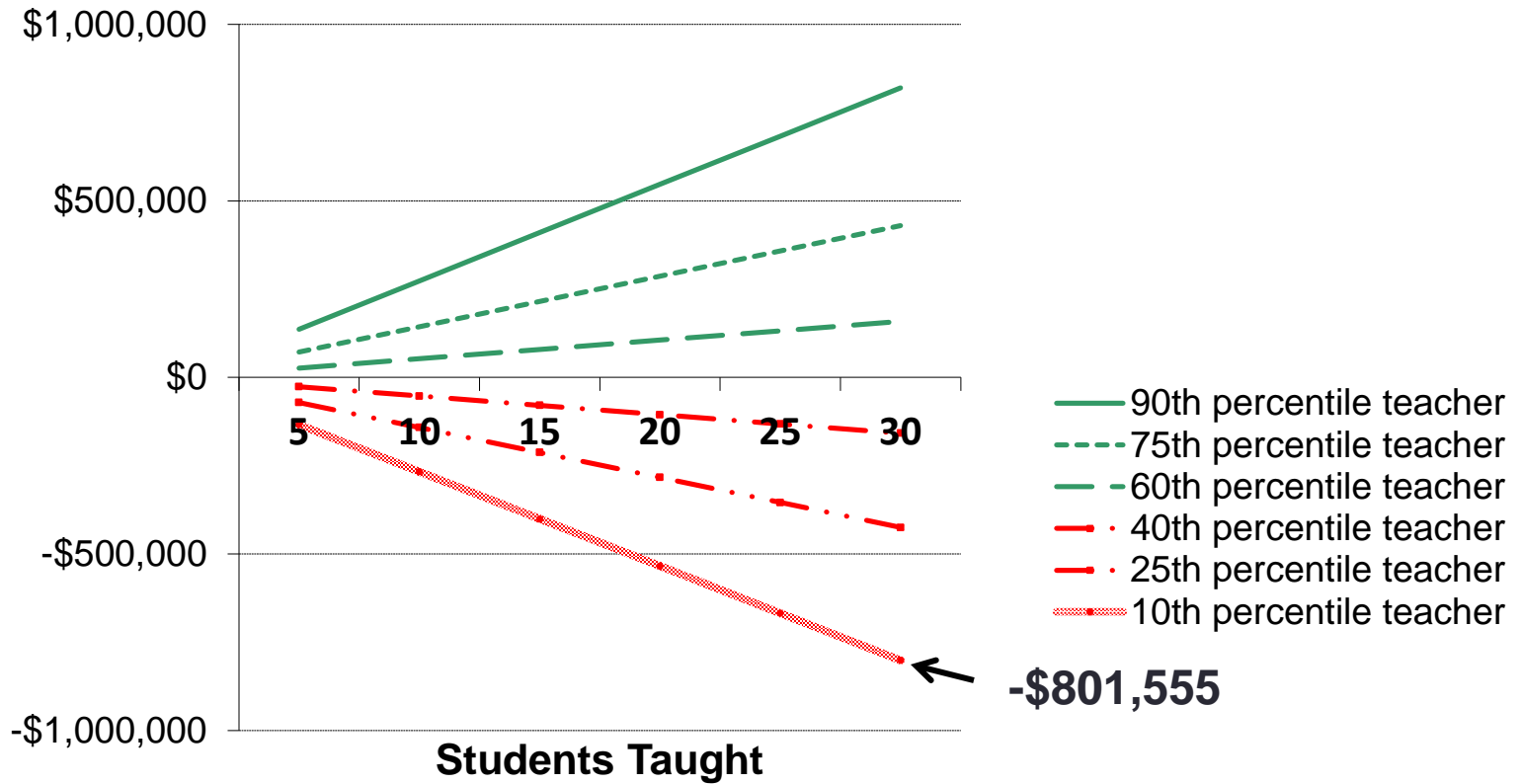
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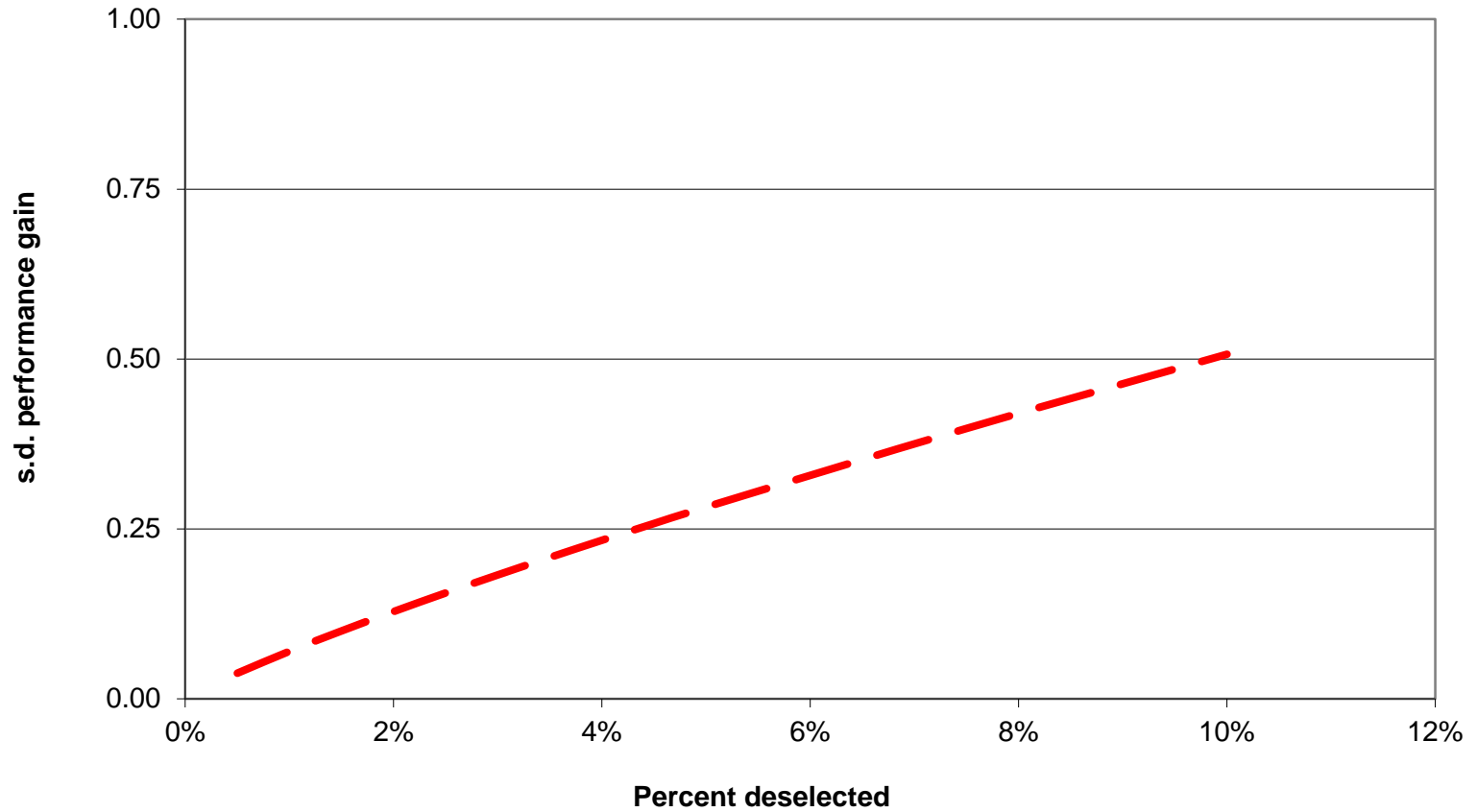
Teacher Quality

- No identifiable characteristics
 - Master's degrees
 - Experience*
 - Certification
 - Preparation
 - Professional development
- Observable through both student performance *and* supervisor ratings
- Cannot regulate and pay on characteristics

Align Pay and Performance

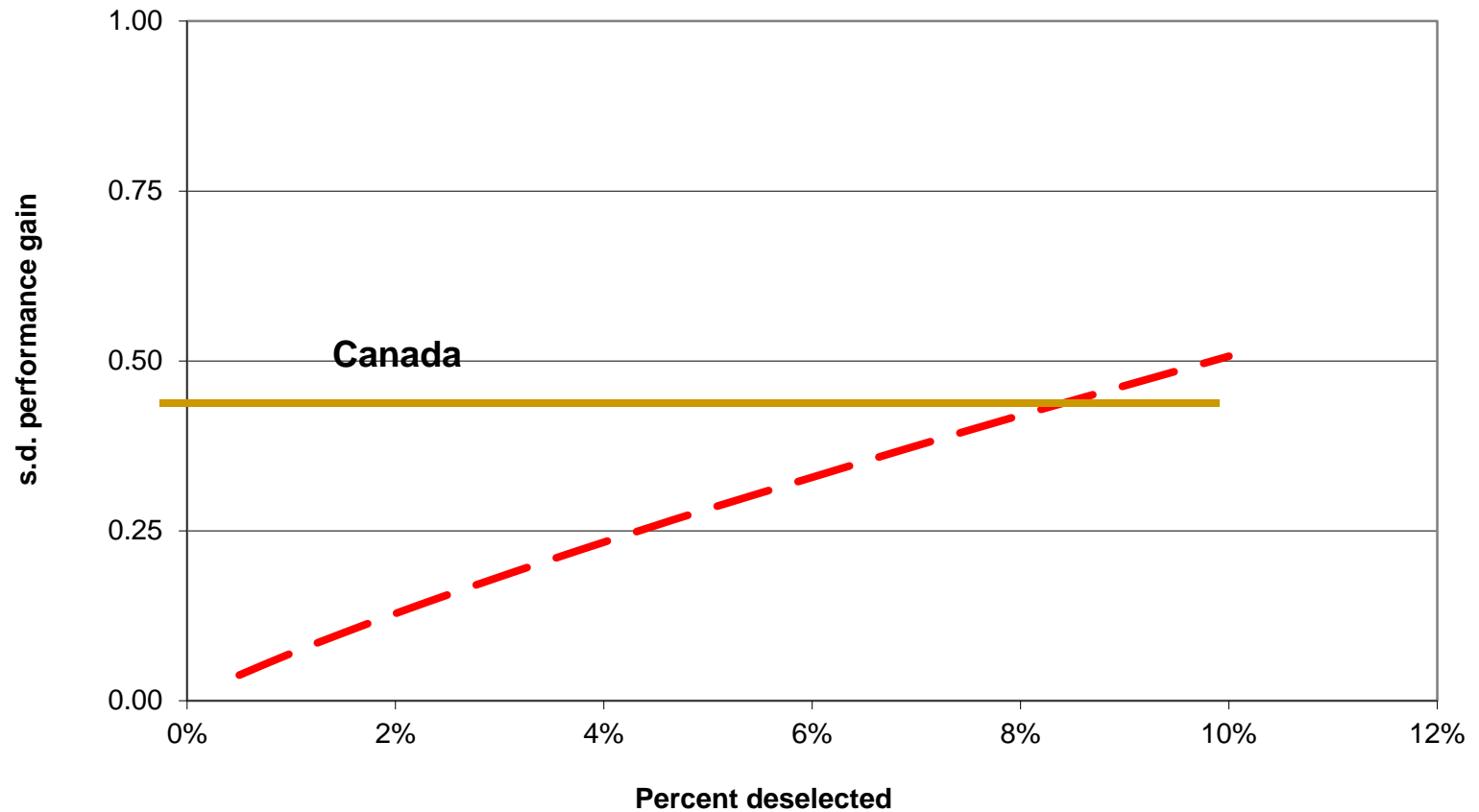
- Evaluation
- Reward success
- Zero option

Estimates of Least Effective Teachers on Student Achievement



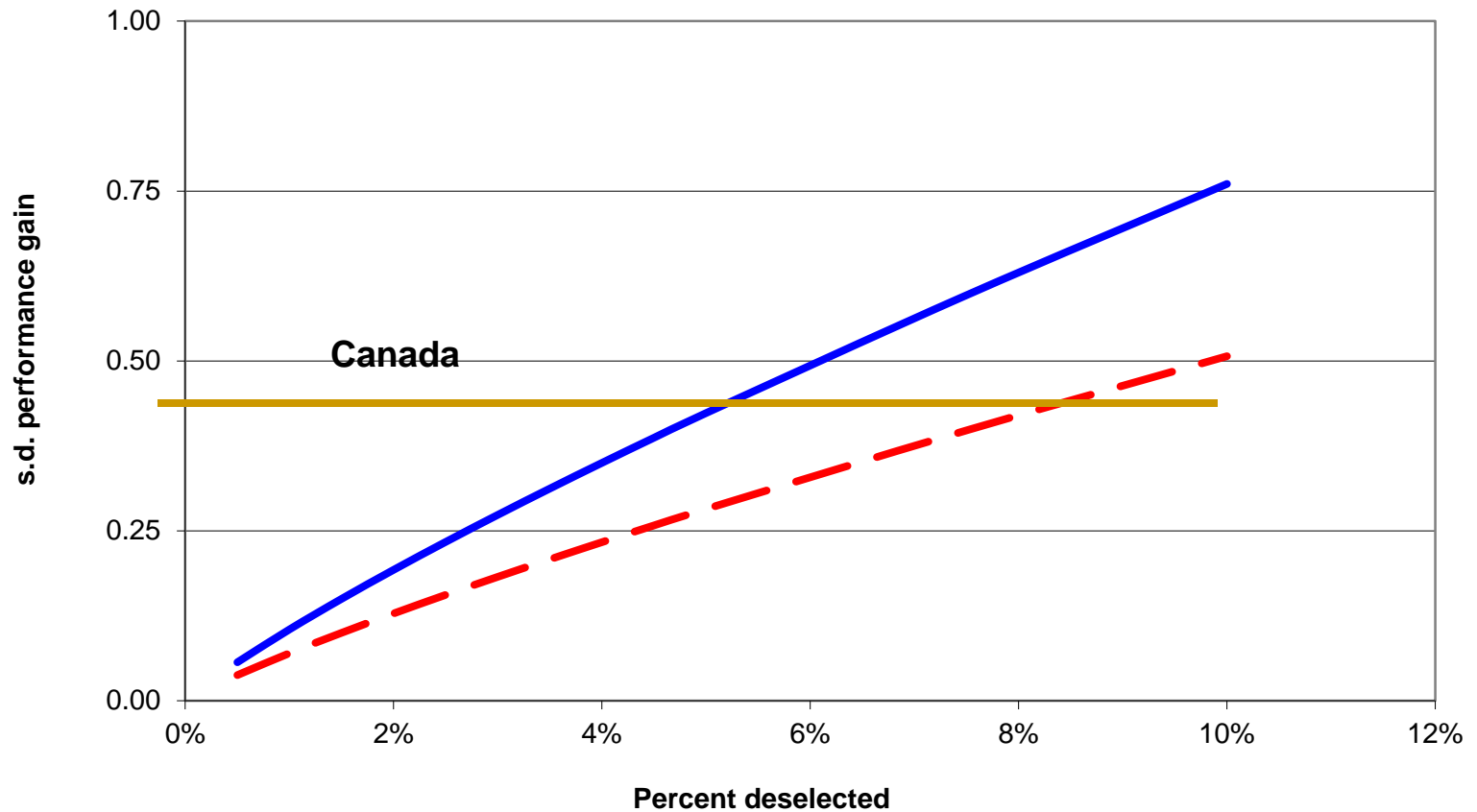
— low estimate of teacher effectiveness

Estimates of Least Effective Teachers on Student Achievement



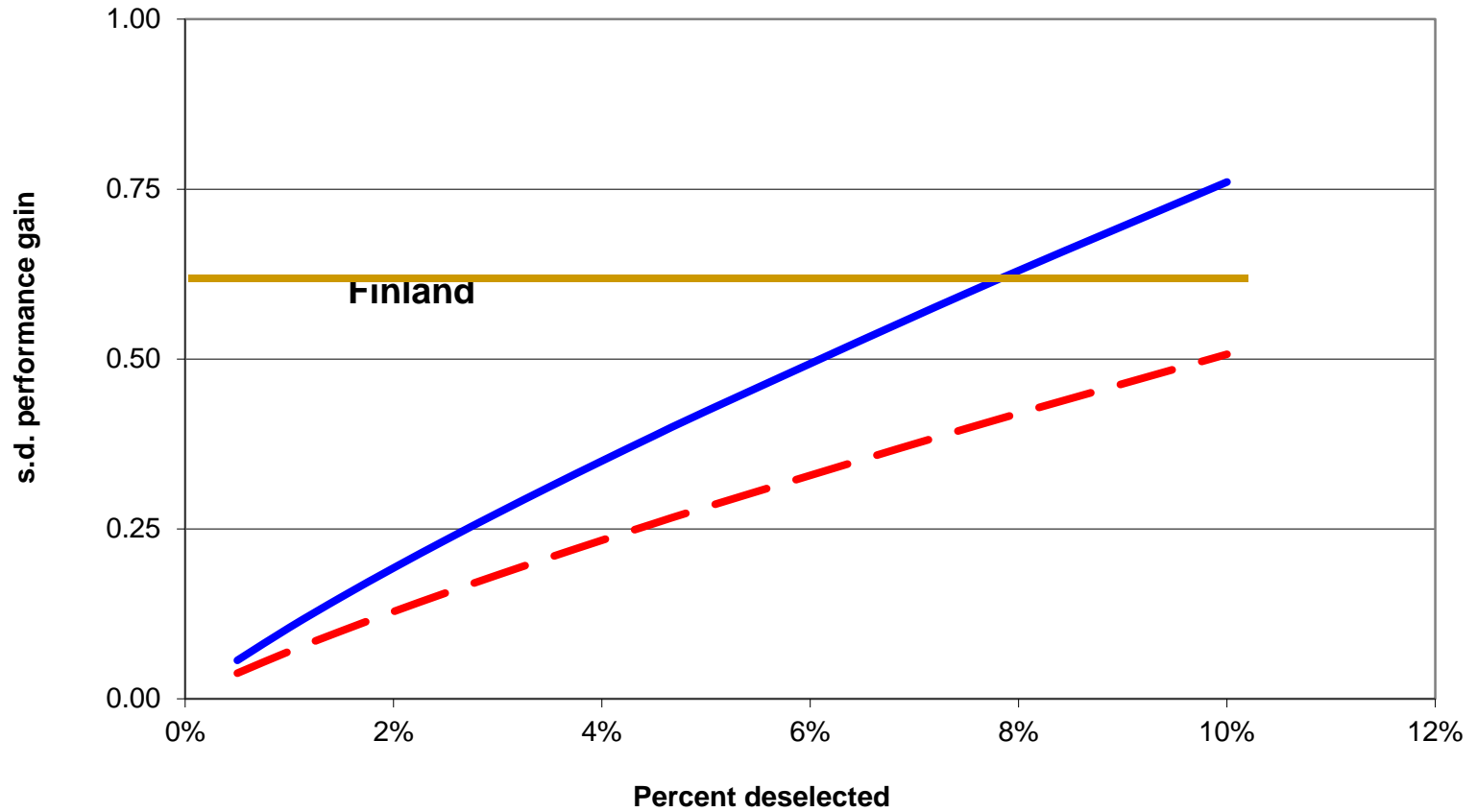
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Estimates of Least Effective Teachers on Student Achievement



— high estimate of teacher effectiveness - - - low estimate of teacher effectiveness

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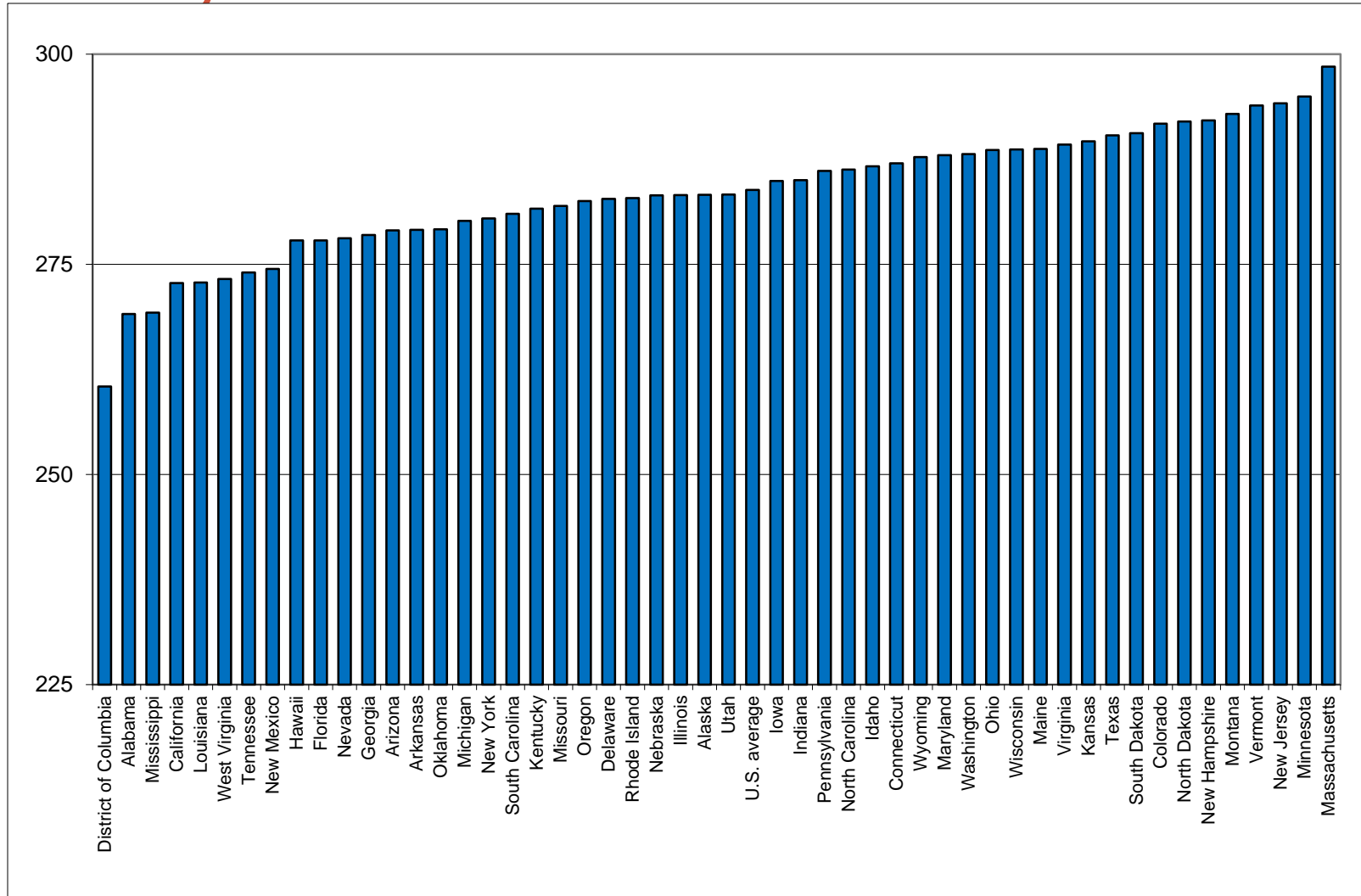
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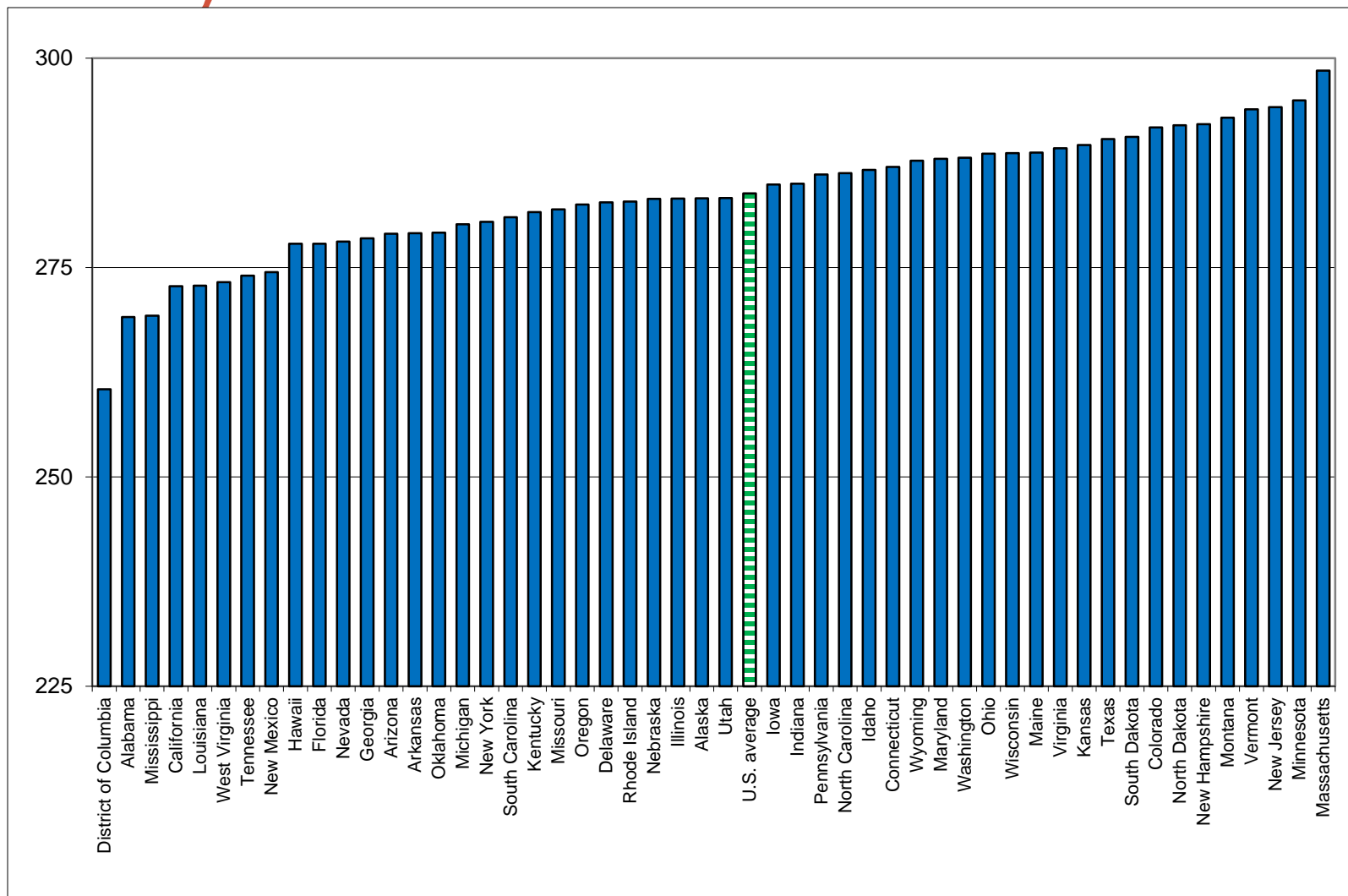
YES

NAEP 8th Grade Mathematics, 2011

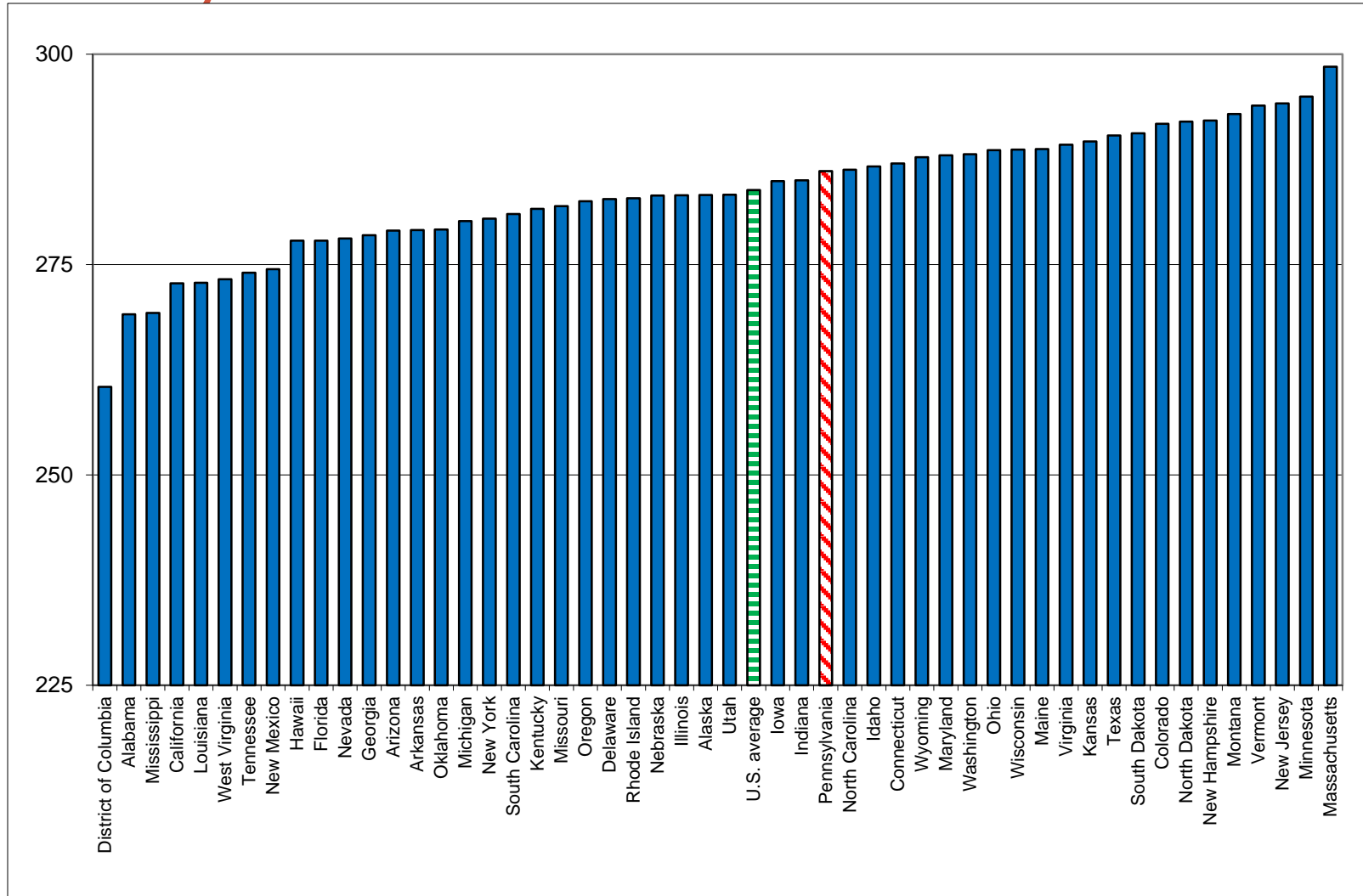
Pennsylvania and the Nation



NAEP 8th Grade Mathematics, 2011 Pennsylvania and the Nation

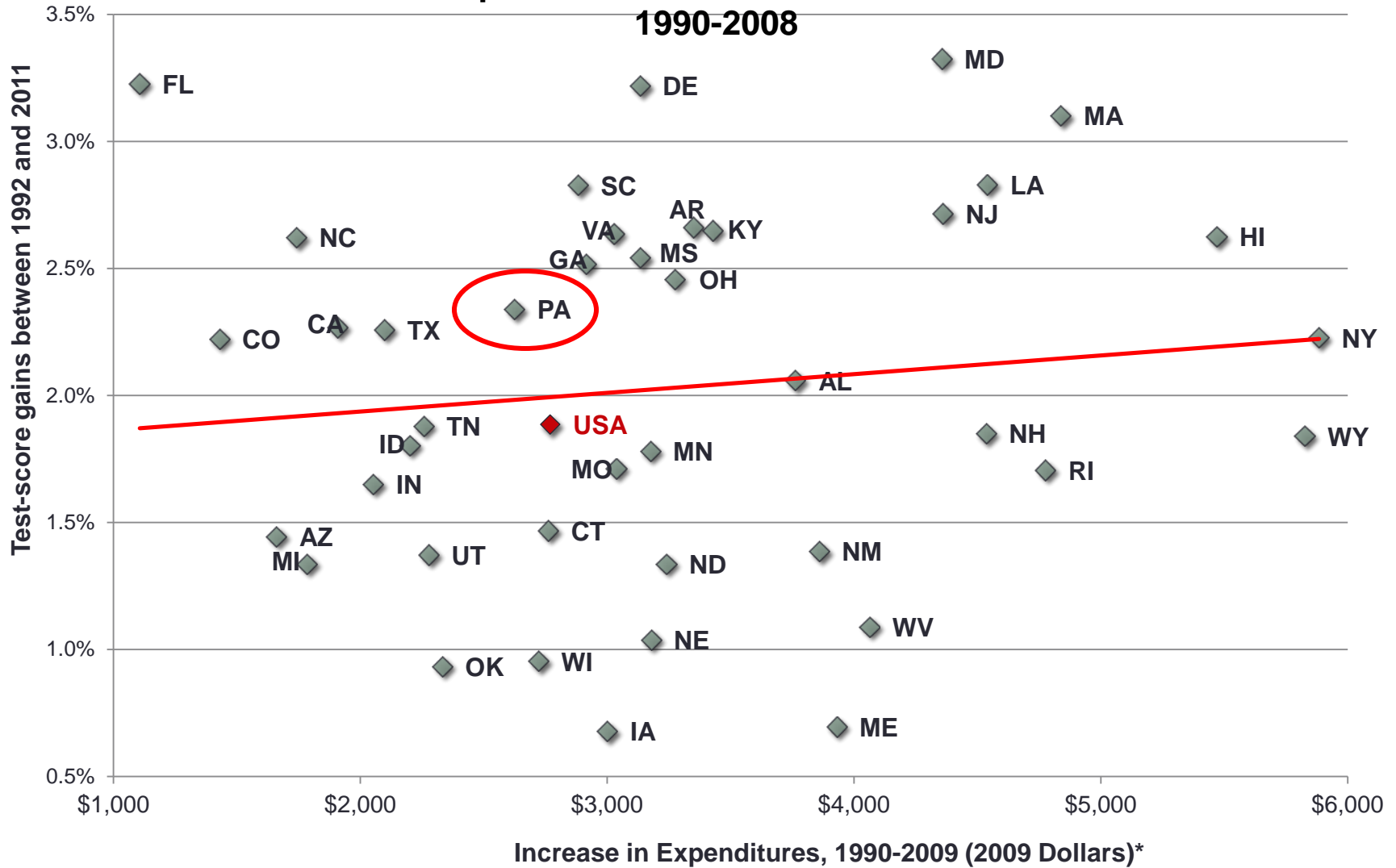


NAEP 8th Grade Mathematics, 2011 Pennsylvania and the Nation



Increments in Expenditures and Gains in Student Achievement

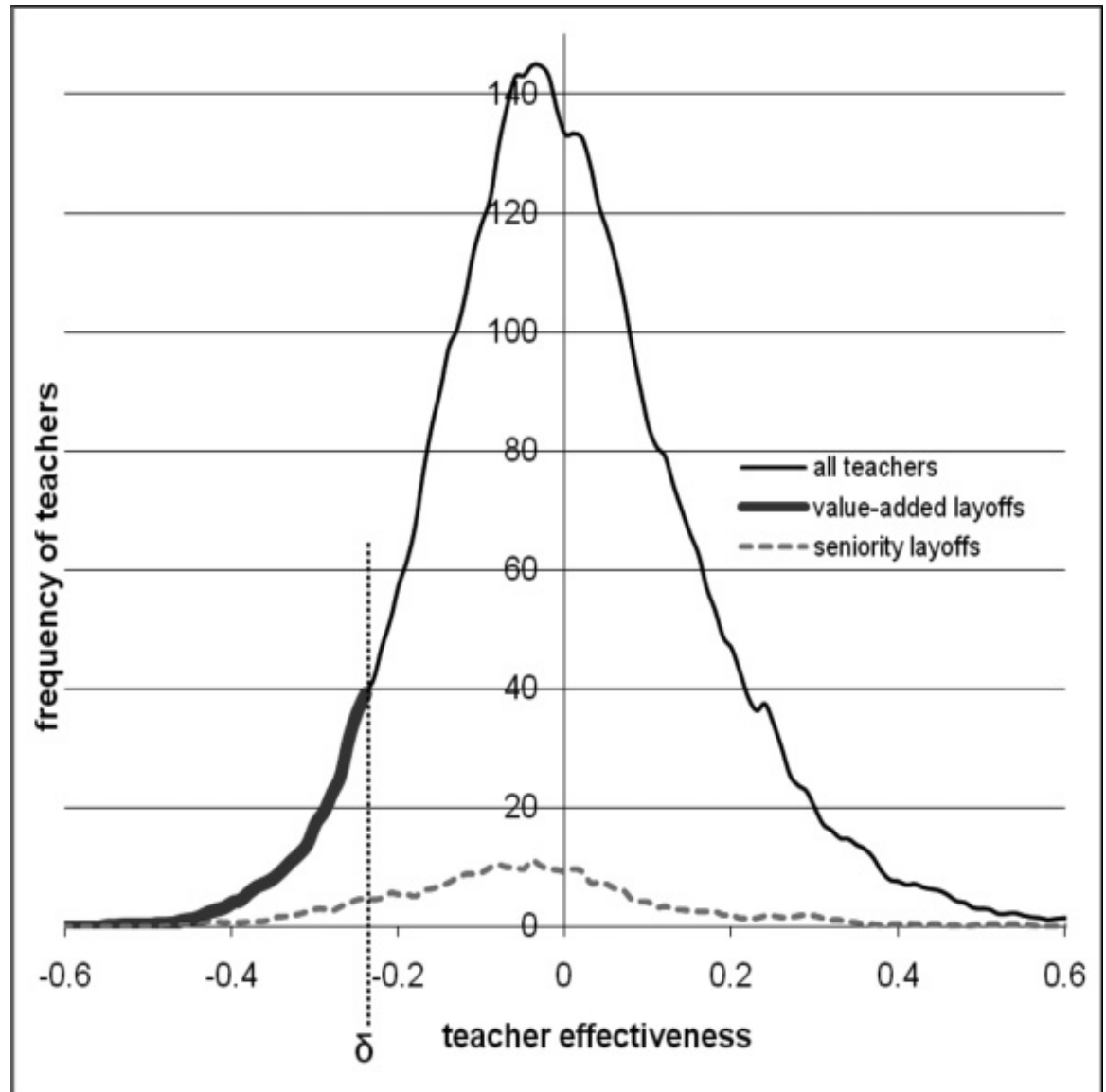
1990-2008



LIFO (Last in, first out)

- Commonly used reverse seniority
- Vergara v. California case
- Simulations of alternatives

LIFO v. Effectiveness



Source: Boyd, Lankford, Loeb, and Wykoff (2011)

Washington, DC teacher policies

- IMPACT
 - Value-added + observations
 - Bonuses to 1000
 - Firing 400
- Research component
 - Multiple measures
 - Two years
 - Minimum number of students for value-added
- Dee and Wyckoff (2013)
 - Regression discontinuity
 - Bottom: +11 percent voluntary attrition; +0.27 s.d. for stayers
 - Top: sizable achievement response (effect size=0.24)
- Largest state gains in NAEP in 2013