

**K-12 Finance
& Student Outcomes:**
Research Update

**Joint Task Force on
Basic Education Finance
November 20, 2007**

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Review of E2SSB 5627 Assignments...

To the Task Force

- ✓ **“Review** the definition of basic education and all current basic ed. funding formulas.”
- ✓ **“Develop** options for a new funding structure and all necessary formulas.”
- ✓ **“Propose** a new definition of basic ed. that is realigned with the new expectations of the state's education system.”
- ✓ **Review and build upon** reports produced for the Washington learns study, including reports by the K–12 advisory committee.
- ✓ **Take into consideration** the legislative priorities in Section 3 of the bill and be based on research-proven education programs and activities with demonstrated cost benefits.
- ✓ **“Provide maximum transparency.”**
- ✓ Structure **“linked to accountability for student outcomes and performance.”**

To the Institute

- ✓ Provide research support to the Task Force.
- ✓ Consult with stakeholders and experts.
- ✓ Request assistance from the legislative and executive staff.
- ✓ Provide three reports to the Task Force:
 - September 15, 2007
 - **December 1, 2007**
 - By September 15, 2008

Specific E2SSB 5627 Directive for WSIPP December 2007 Report to the Task Force

- ✓ “At least two but no more than four options for allocating **school employee compensation.**”
- ✓ “One of the options must be a redirection and prioritization within existing resources based on **research-proven** education programs.” (**The zero-sum option**)
- ✓ “The report must also include a **projection of the expected effect** of the investment made under the new funding structure.”
- ✓ And the report “shall also include a finalized timeline and plan for addressing the remaining components of a new funding system.”

Today, I Will Talk About How Are We Approaching These Tasks

“Costing Out” Methods Focused on Student Outcomes

<u>Four Approaches</u>	<u>Limitations¹</u>	<u>Used in WA</u>
Successful School: Find “beat-the-odds” schools and emulate their resource and budget decisions.	Hard to identify beat-the-odds schools and/or emulate them.	Minor roles in Odden-Picus & Conley (WEA).
Professional Judgment: Gather a panel of educators who recommend a budget based on their experience & knowledge.	Incentive to over-estimate needs. Schools may not follow model.	Odden-Picus. <u>Major role in Conley (WEA).</u>
Regression Cost Studies: Develop econometric models of actual school expenses and outcomes, then estimate costs.	“Black box” problem; conflicting results from different assumptions.	A minor role in Conley (WEA).
Evidence-Based: Build prototype school budgets based on results from various evaluation studies.	Research is limited on many topics; optimistic studies may be picked.	<u>Major role in Odden-Picus.</u> Conley (WEA).

¹ Source: Susanna Loeb (2007), “Difficulties in estimating the cost of achieving education standards.” University of Washington, School Finance Redesign Project, Daniel J Evans School of Public Affairs.

Institute Research Approach

- 1. Our focus is on **student outcomes** (e.g. test scores, graduation rates) and how they are connected to funding levels and allocations.*
- 2. Our method is a version of the evidence-based approach:*
 - ✓ Include **all** higher-quality studies on a topic, not just one or two selected studies.*
 - ✓ Take an **average result** to obtain a “betting persons” best estimate.*
 - ✓ When research evidence is insufficient, say so.*
- 3. As required, we are developing a model to **project statewide student outcomes** for different options.*
- 4. Other research duties as directed by Task Force.*

Required December Institute Report to Task Force:

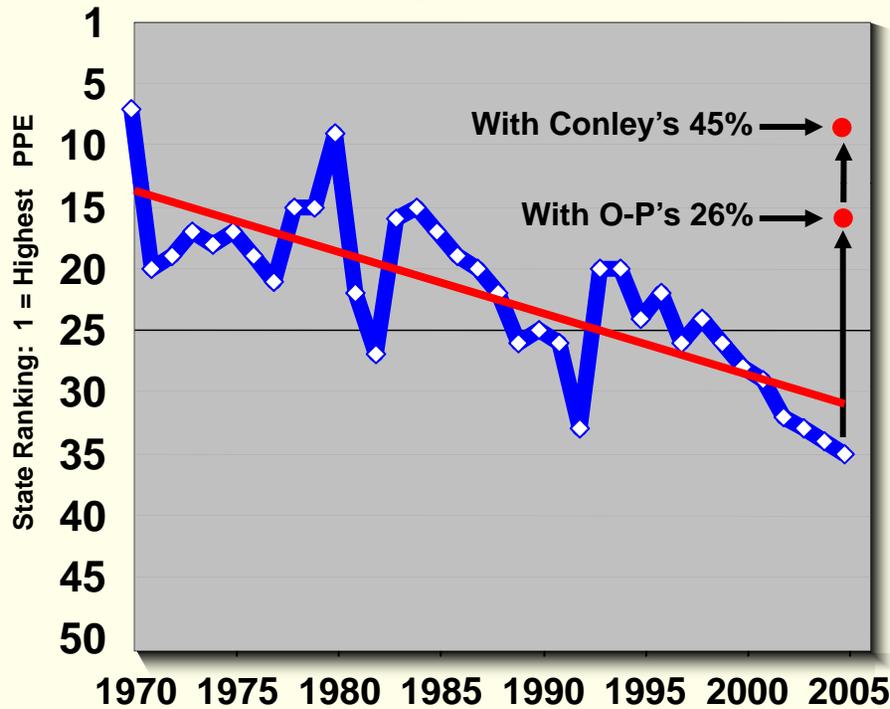
Preliminary Analysis of Compensation-Related Options that Affect Student Outcomes

- 1. Base Case: *more money into current system***
- 2. Zero-Based Redirection: *modify salary allocation schedule to reflect research-based findings on graduate degrees and experience.***
- 3. Review of other options considered by Washington Learns K–12 advisory committee and in E2SSB 5627.**

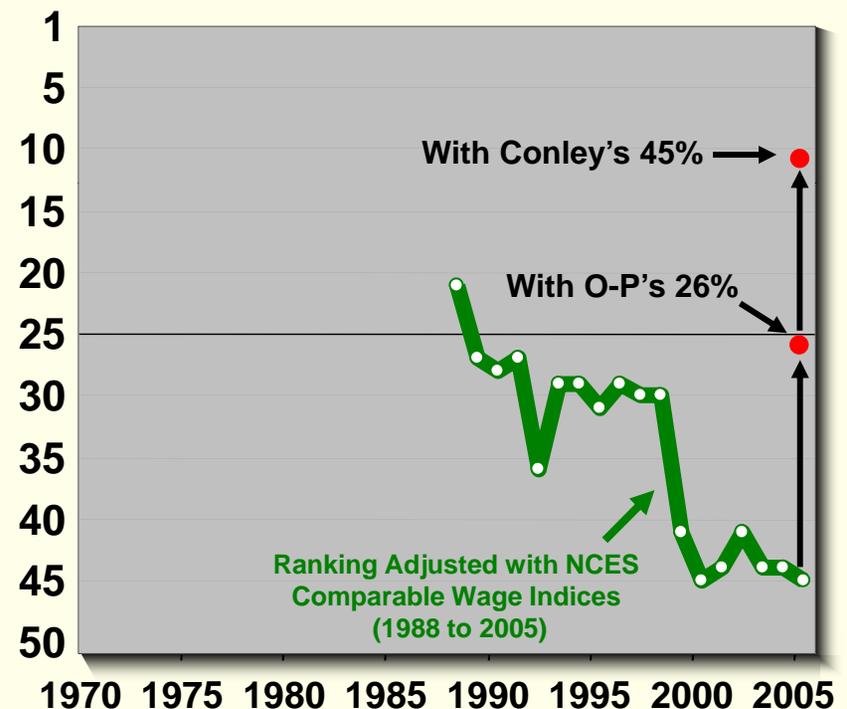
Per-Pupil K-12 Expenditures (PPE): View #1

Washington's PPE Ranking Among the States: 1970 to 2005

Unadjusted PPE



Adjusted PPE (Comparable Wage Index)

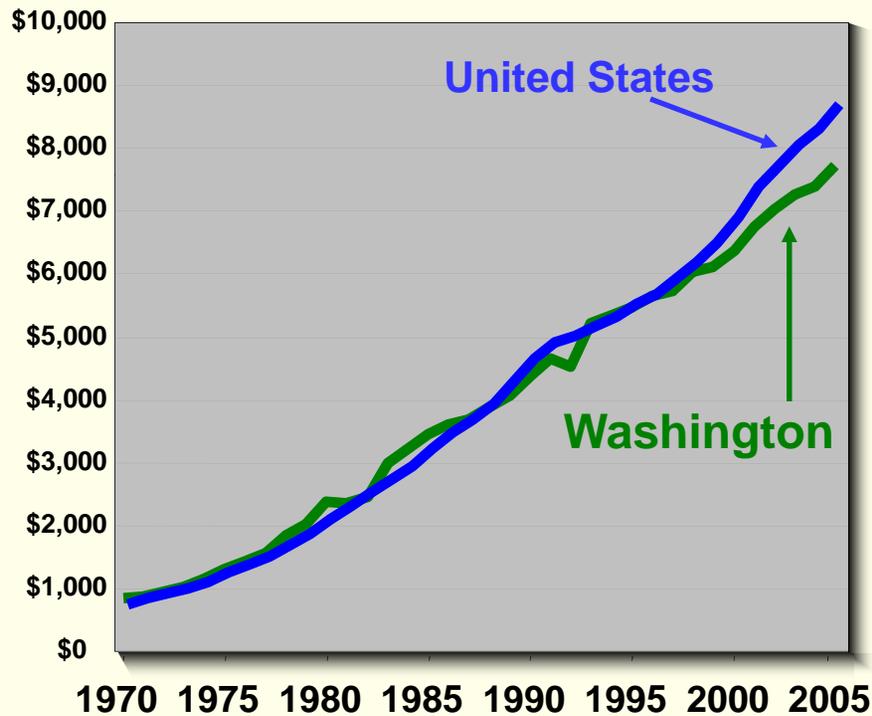


Source: US Department of Education, National Center for Education Statistics. Data are for academic years 1969-70 to 2004-05. The Comparable Wage Index used here is a composite of the Comparable Wage Index by Lori Taylor (2007) and the General Wage Index by Dan Goldhaber (1999). "O-P" is the Odden-Picus report for Washington Learns and its 25.7% increase (memo from J. Priddy, OSPI); "Conley" is the 44.8% from his study, published in 2007, for WEA.

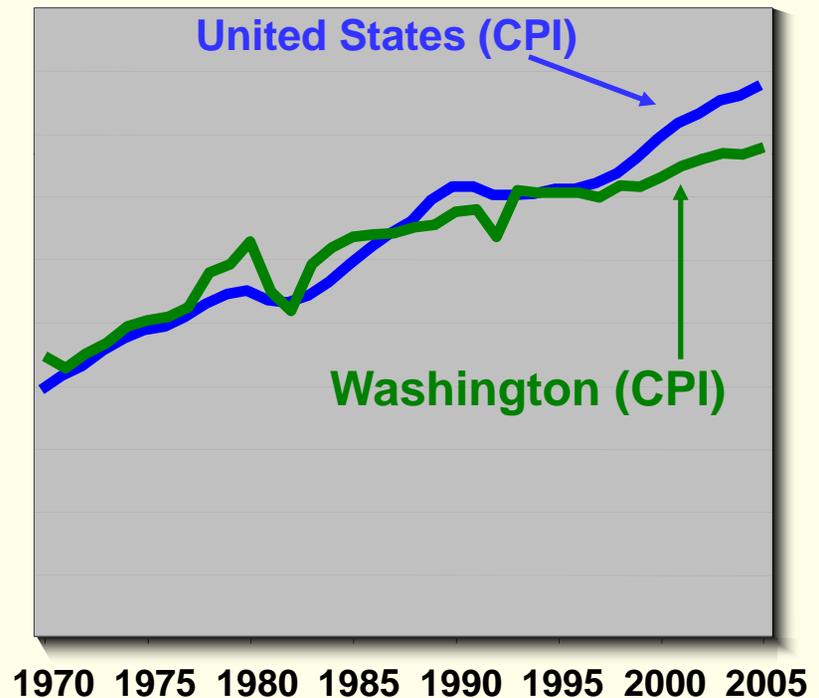
Per-Pupil K-12 Expenditures (PPE): View # 2

Nominal and Inflation-Adjusted PPE: 1970 to 2005

Nominal PPE (Not Inflation-Adjusted)



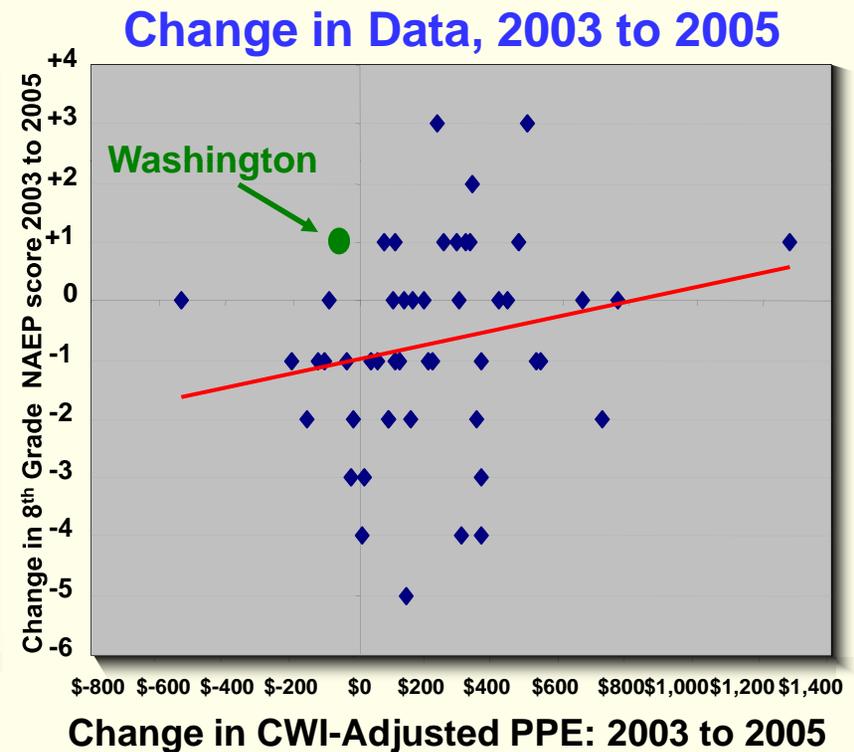
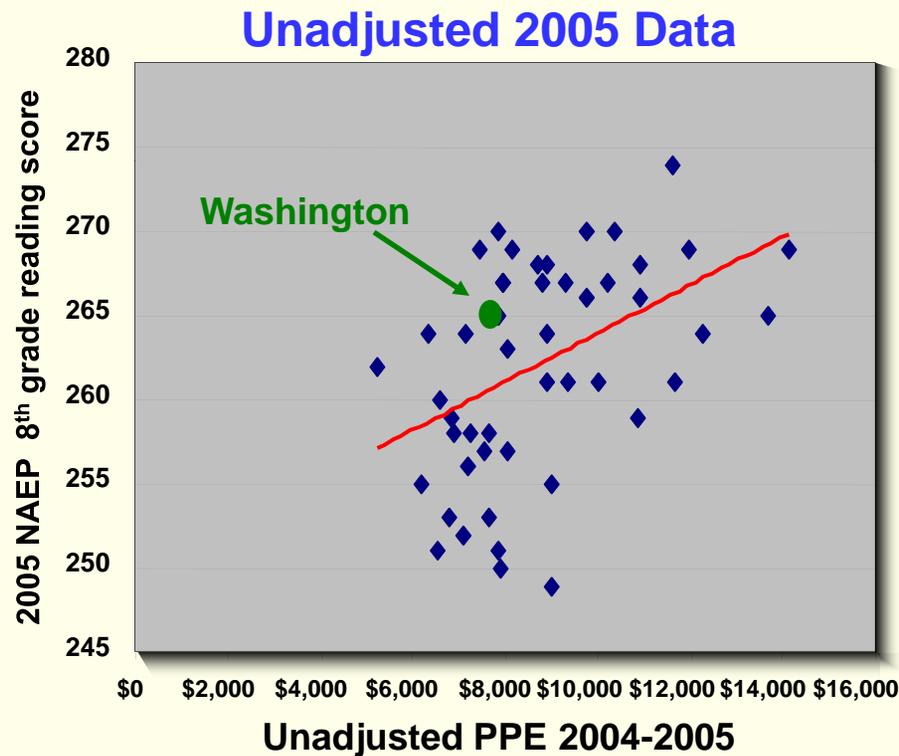
Inflation-Adjusted PPE (in 2005 dollars)



Source: US Department of Education, National Center for Education Statistics. Data are for academic years 1969-70 to 2004-05. The Comparable Wage Index used here is a composite of the Comparable Wage Index by Lori Taylor (2007) and the General Wage Index by Dan Goldhaber (1999). "O-P" is the Odden-Picus 25.7% increase (memo from J. Priddy, OSPI); "Conley" is the 44.8% from his study for WEA.

Does spending more money in the current systems raise student outcomes?

Before Considering Controlled Studies,
Here are “Raw” Data for National Test Scores and PPE



Source: US Department of Education, National Center for Education Statistics. Test score data are for NAEP 8th grade reading test scores. The Comparable Wage Index developed by Lori Taylor (2007) for NCES was used in the “change in CWI-adjusted PPE” model shown here.

Does spending more money in the current systems raise student outcomes?

The unadjusted data on the previous slide are not a “study” that we would use (no controls, too high a level of aggregation).

The small relationships shown with those state-level data are almost certainly an over-estimate of the effect of PPE on test scores.

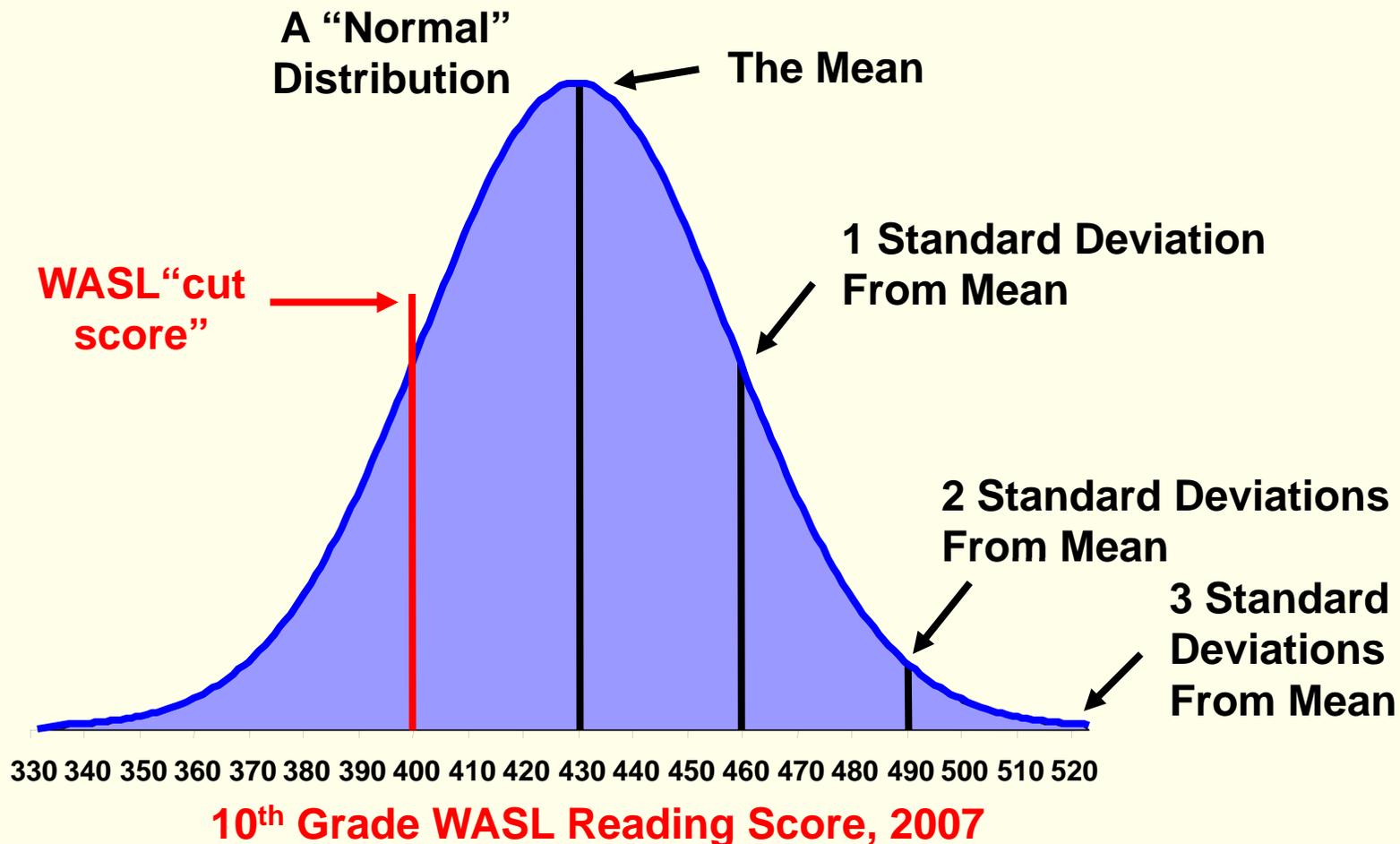
Our 3-Step Evidence-Based Approach:

- 1. Review all higher-quality controlled studies addressing this question.**
- 2. Take an average (weighted) of the results of these studies as the best estimate.**
- 3. Project what the best estimate would mean to Washington in terms of key statewide student outcomes.**

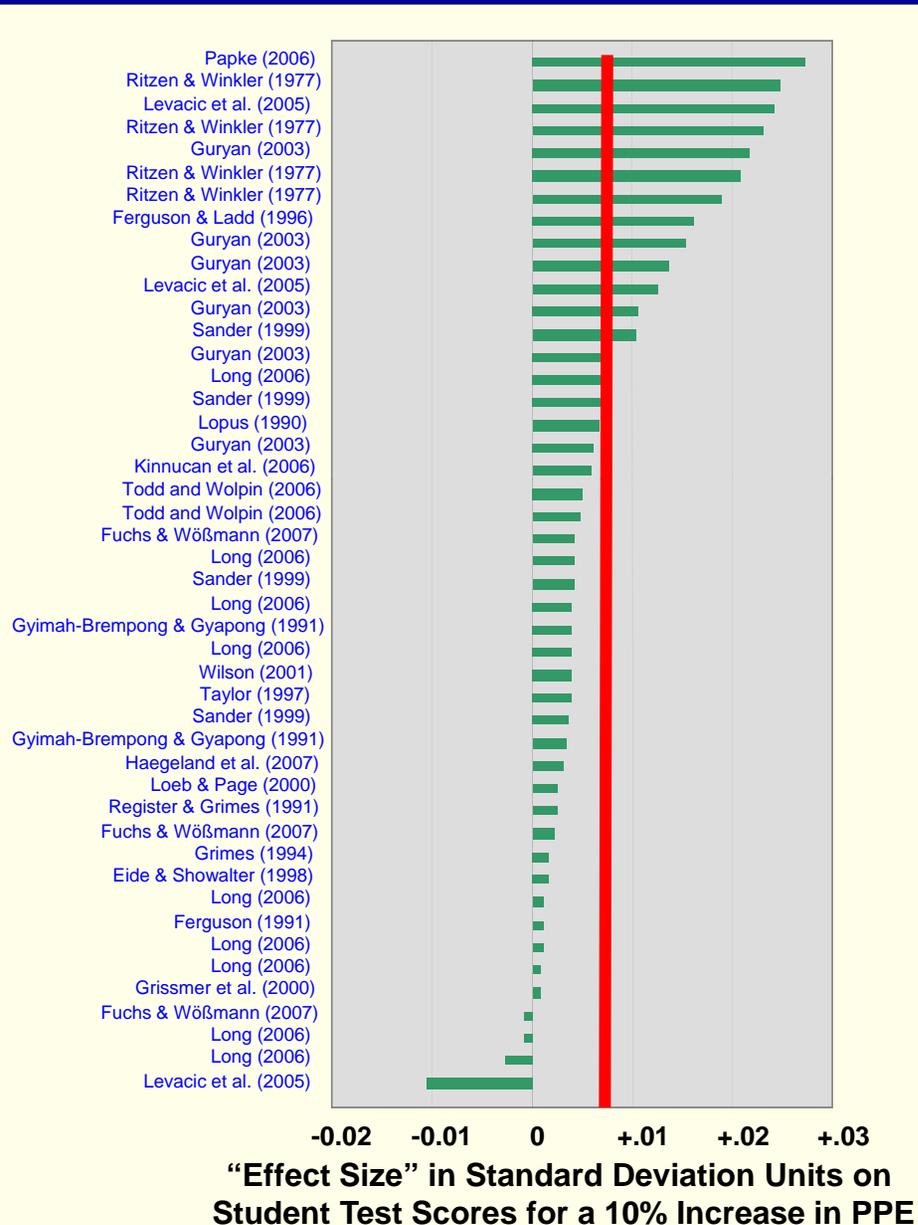
Methodological Diversion

What Are “Effect Sizes” & “Standard Deviation” Units?

- ✓ Effect Sizes and Standard Deviation Units are the main metrics used by education (and other) researchers to summarize findings.
- ✓ In education research: Effect Sizes = Standard Deviation Units.



Does an Increase in PPE Affect Student Outcomes?



Research Approach

We located and analyzed 46 results from 23 high quality studies we could find on this topic.

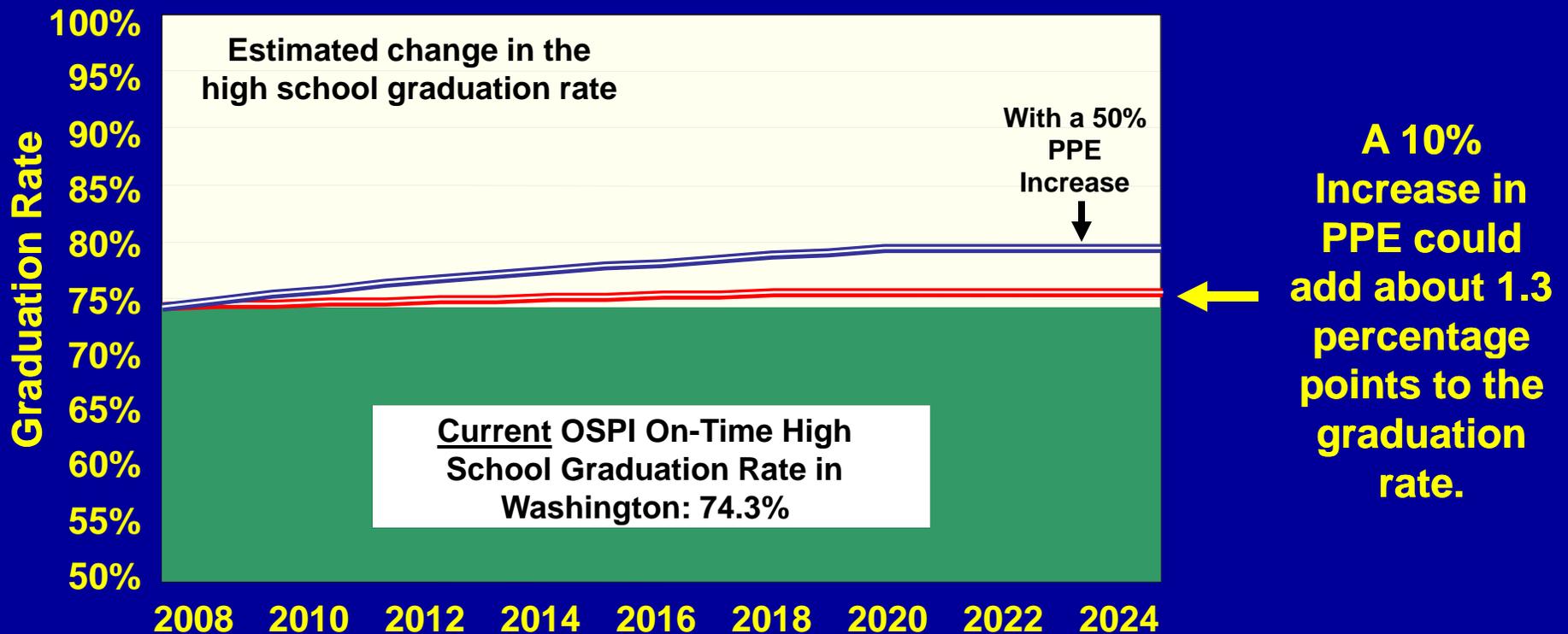
Preliminary Finding

A 10 percent increase in average PPE can boost student test scores by about .007 standard deviation units per year, per grade.

Changes to Per Pupil Expenditure (PPE) and Projected Statewide Student Outcomes

Research Approach

As directed by E2SSB 5627, we are building a model to estimate expected statewide effects of different options. Here we show some **preliminary** calculations.



Required December Institute Report to Task Force:

Preliminary Compensation-Related Options Affecting Student Outcomes

- 1. Base Case: more money into current system***
- 2. Zero-Based Redirection: modify salary allocation schedule to reflect research-based findings on graduate degrees and experience.***
- 3. Review of other options considered by Washington Learns K–12 advisory committee and those listed in E2SSB 5627.***

Research Update

Teacher Effectiveness & Student Outcomes

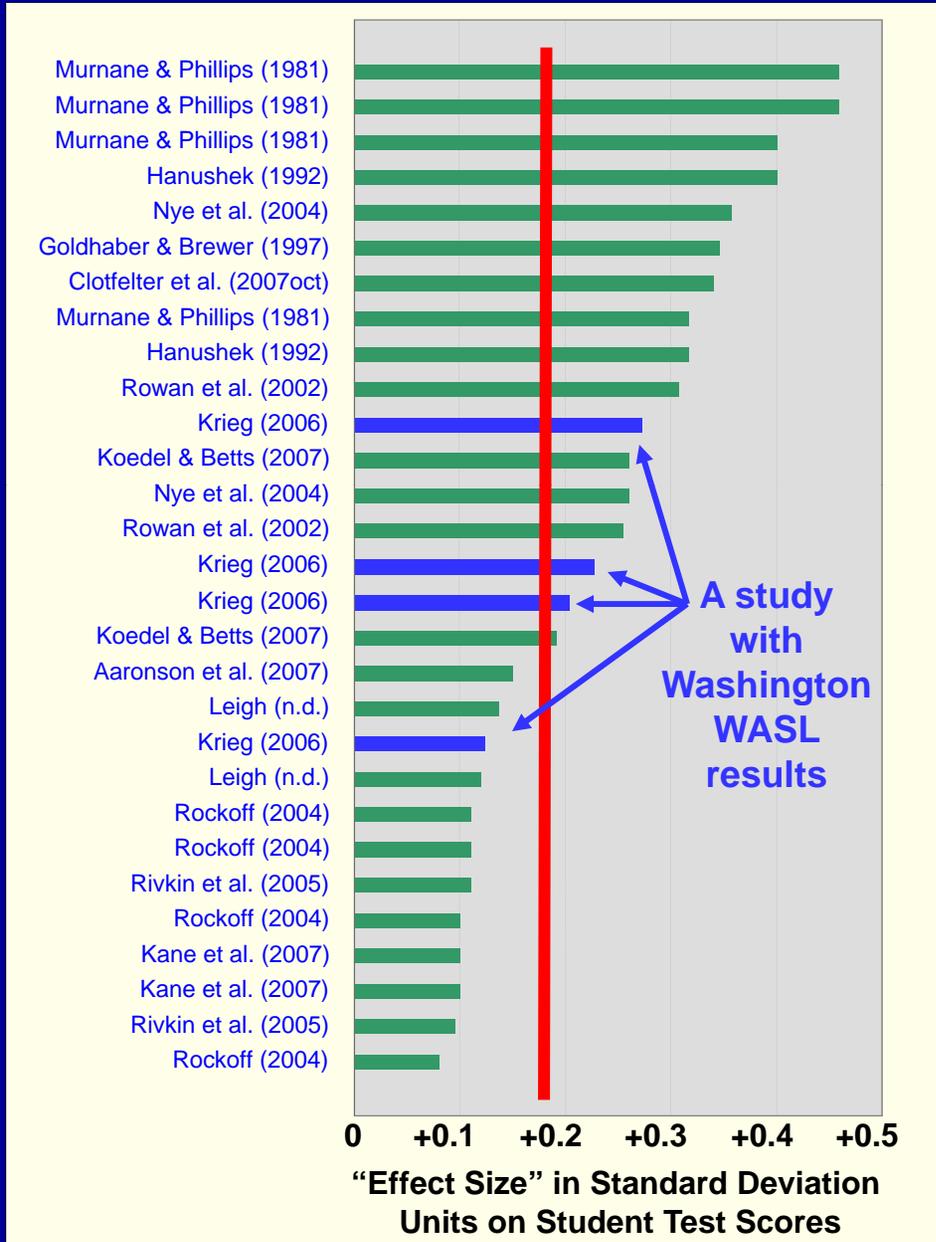
At the September Task Force meeting we reported a tentative finding from our research review:

Effective Teachers Raise Student Outcomes...

We can now add the following qualifier:

...By Quite a Bit.

Effective Teachers and Student Outcomes



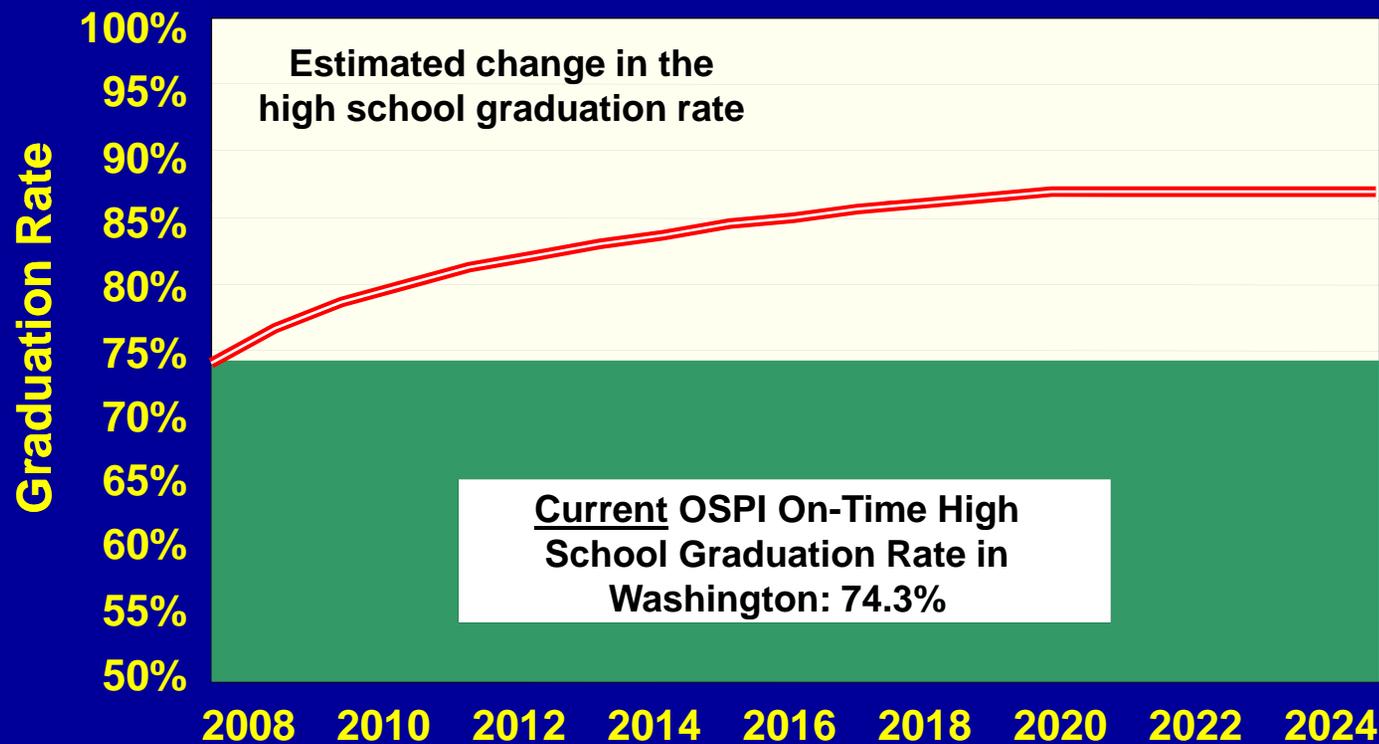
Research Approach

We located and analyzed 29 results from 13 high quality studies we could find on this topic.

Preliminary Finding

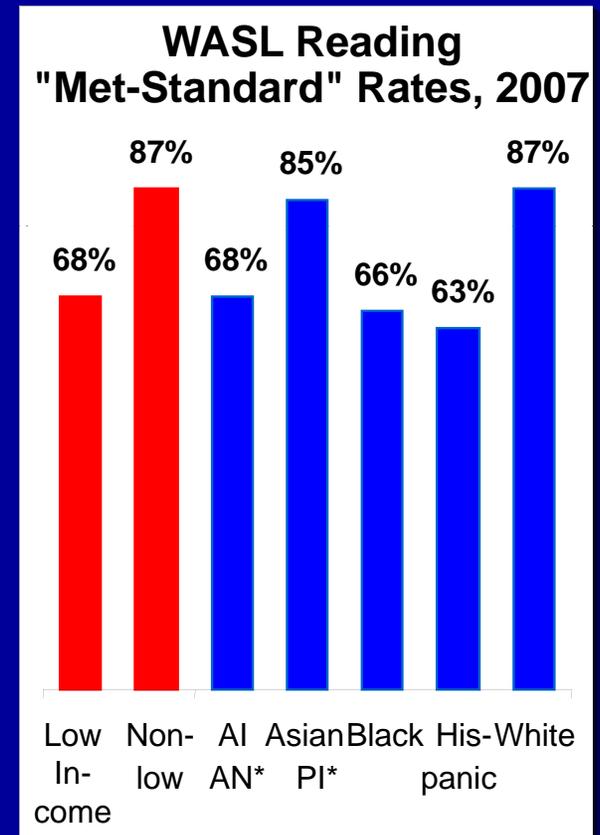
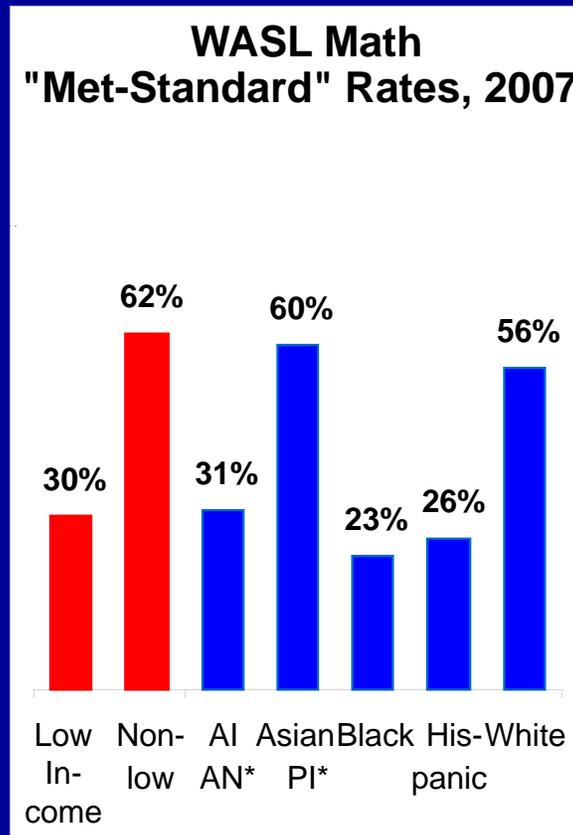
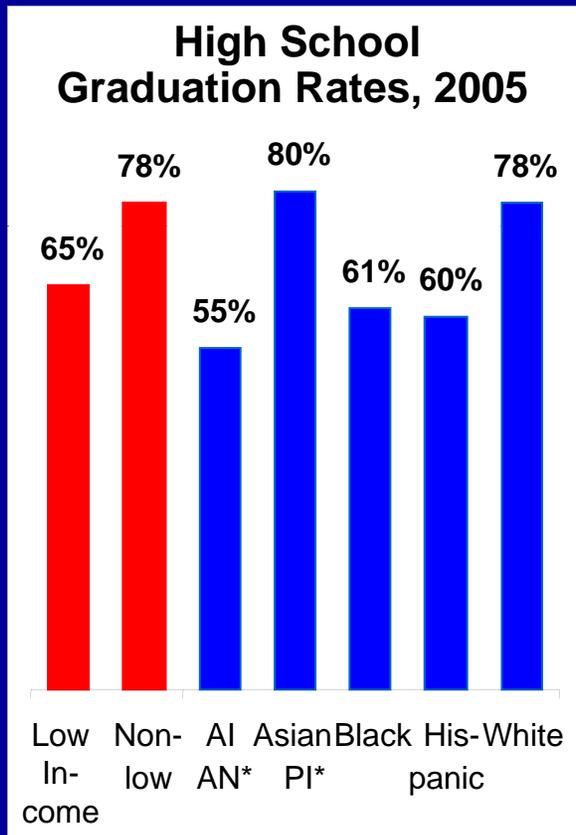
A teacher 1 standard deviation above average in effectiveness can boost student test scores from .1 to .4 standard deviation units per year; best estimate: .18 SD.

Effective Teachers and Projected Student Outcomes



A 1 standard deviation increase in system-wide teacher effectiveness could add about 13 percentage points to the graduation rate.

Student Outcomes: High School Graduation and WASL "Met-Standard" Rates by Income Level and Ethnicity



* PI, AI, and AN are OSPI ethnic groupings for Pacific Islanders, American Indians, and Alaskan Natives.

Source: OSPI