Benefits and Costs of K–12 Education Policies

Evidence-Based Effects of Class Size Reductions & Full-Day Kindergarten

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Legislative Direction to WSIPP
(From the 2006 and 2007 Operating Budget Bills)

- **WSIPP**: “to begin the development of a repository of research and evaluations of the cost-benefits of various K–12 educational programs and services.”

- **Reports**: “The institute shall provide ... by March 1, 2007, a report with preliminary findings; and annual updates each year thereafter.”

- **E2SSB 5627**: Our efforts this biennium will be rolled into the K–12 basic education funding study.
Previous Legislatively-Assigned WSIPP Cost-Benefit Studies and Evidence-Based Reviews

- Prevention programs for youth
- Early childhood education
- Juvenile justice
- Adult corrections and incarceration
- Substance abuse
- Mental health
- Child welfare

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The Research Question

What Public Policy Levers Lead to Improved Education Outcomes?

Measured K–12 Student Outcomes in the Research Literature

- Test Scores
- High School Graduation
- Subsequent College Enrollment
- Subsequent Labor Force Participation
- Special Education
- Grade Repetition
Our Research Approach

First: What Works to Improve Education Outcomes?

1. **WSIPP researcher gathers all the studies she can locate on a topic**

2. **She applies “standards of evidence” to identify the high quality studies**

3. **She analyzes all of the high quality studies to estimate an average effect**
Our Research Approach (Cont.)
Second: What Are the Economics of Each Option?

1. Costs: what does each option cost?
   ✓ For example, we estimate the operating and capital costs to lower class sizes or fund full-day vs. half-day kindergarten.

2. Benefits: for each option, what is the economic value of any statistically significant increase in education outcomes?
   ✓ We estimate life-time labor market and other benefits (e.g. reduced costs of health care, crime, foster care) of gains in K-12 test score outcomes.

3. Compute return-on-investment information & test the sensitivity of the results.
Class Size Reductions

&

Full-Day Kindergarten
Does Reducing Class Size Improve Test Scores?

The results of 38 statistically-sound studies (with 69 grade-level tests) of the effect of class size reductions on test-score outcomes.

Each circle is the result from a study.

* Effect Size Metric: the change in the standard deviation of test scores on standardized tests.
Does Reducing Class Size Improve Test Scores?

Multivariate results

The Change in Test Scores Per Class Size Reduction*

95% Confidence Interval

K to 2 3 to 6 7 to 8 9 to 12

Grade When Class Size is Reduced

* Effect Size Metric: the change in the standard deviation of test scores on standardized tests.
Boxes are the average effects; vertical lines are 95% confidence intervals.
1. Do Class Size Reductions Boost Test Scores?

- The results are mixed, they vary by grade level:
  - Yes, in K through grade 2.
  - Yes, (but less so) in grades 3 through 6.
  - Apparently not in middle and high school (more research needed).

2. What are the economics?

- A one-unit drop in class size costs about $220 per student per year (operating and amortized capital costs).
- For K-2, the return on investment (ROI) is 8.3% (range 5.7 to 11%). This is equal to $2.79 in benefits per dollar of cost.
- For grades 3 through 6, the ROI is 6%.
- For middle and high school, return is negative.

Does Full-Day K Improve Test Scores?

The results of 23 statistically-sound studies with 32 grade-level tests of the effect of full-day K on test-score outcomes.

* Effect Size Metric: the change in the standard deviation of test scores on standardized tests. Boxes are the average effects; vertical lines are 95% confidence intervals.
1. Does full-day K improve test scores?
   ✓ Effects are significant at the end of kindergarten…
   ✓ But they erode quickly between grades 1 and 3

2. What about disadvantaged students?
   ✓ Test score gains at the end of K are about the same and benefits erode at about the same rate.

3. What are the economics of full-day K?
   ✓ Moving from half-day to full-day K costs an additional $2,611 per student.
   ✓ To generate long-term net benefits, public policies need to examine how to sustain the early gains from any investments in full-day kindergarten.
   ✓ Experimentation seems warranted.
Thank You

Questions?
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