

RETURN ON (TAXPAYER) INVESTMENT: EVIDENCE-BASED PREVENTION AND INTERVENTION —INITIAL REPORT TO THE LEGISLATURE ON STUDY DESIGN—

The 2009 Washington State Legislature directed the Washington State Institute for Public Policy (Institute) “to calculate the return on investment to taxpayers from evidence-based prevention and intervention programs and policies.”¹

This legislative request, while clearly broad in scope, centers narrowly on one straightforward question: Are there more effective ways to use taxpayer money to achieve particular public outcomes?

The Legislature specifically asked the Institute to identify public policies that have been shown to improve—*cost efficiently*—these outcomes:

- ✓ Crime,
- ✓ K–12 education,
- ✓ Child maltreatment,
- ✓ Substance abuse,
- ✓ Mental health,
- ✓ Public health,
- ✓ Public assistance,
- ✓ Employment, and
- ✓ Housing.²

Work on the project began in July 2009; this short report simply summarizes the approach the Institute is taking to carry out this assignment. When the two-year project is complete, the Legislature instructed the Institute to produce an investment guide containing “a comprehensive list of programs and policies that improve these outcomes for children and adults in Washington and result in more cost-efficient use of public resources.”³

Suggested citation: S. Aos, (2009). *Return on (Taxpayer) Investment: Evidence-Based Prevention and Intervention—Initial Report to the Legislature on Study Design*. Olympia: Washington State Institute for Public Policy, Document No. 09-12-1202.

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¹ Chapter 564, Laws of 2009, Section 610 (4).

² *Ibid.*

³ *Ibid.*

Summary

The 2009 Washington State Legislature directed the Washington State Institute for Public Policy “to calculate the return on investment to taxpayers from evidence-based prevention and intervention programs and policies.”

This short report summarizes the four-step approach the Institute is taking to this assignment. First, we describe how we assess research evidence from throughout the United States to determine what works and what does not. Second, we indicate how we calculate costs and benefits for Washington. Third, we briefly discuss our procedures to provide a “portfolio-level” analysis on how a set of policy options could affect the statewide outcomes identified by the Legislature. Fourth, we describe our approach to testing the uncertainty in our conclusions.

When the two-year project is complete, the Legislature instructed the Institute to produce “a comprehensive list of programs and policies that improve these outcomes for children and adults in Washington and result in more cost-efficient use of public resources.”

An interim report will be available by October 2010 to assist in biennial budget preparation, with a final report by June 2011. As the project progresses, comments are welcomed.

The Institute must submit interim reports to the Legislature by December 15, 2009 and October 1, 2010, with a final report by June 30, 2011.

The legislation authorized the Institute to receive outside funding for this project, and the MacArthur Foundation is supporting 80 percent of the work, with the Legislature funding the other 20 percent.⁴

⁴ Strengthening policy through research. (2009, Summer). *Newsletter from the John D. and Catherine T. MacArthur Foundation*, 1. Retrieved from <http://www.macfound.org/att/cf/%7Bb0386ce3-8b29-4162-8098-e466fb856794%7D/POLICYRESEARCHNEWSLETTER.PDF>

Project Background

This assignment from the Legislature addresses fundamental public policy questions:

- ✓ How can Washington State government better achieve particular public outcomes while providing citizens with a superior return on their tax dollars?
- ✓ Can the legislature use “evidence” and “costs and benefits” to help craft strategic public policies that lead to measurable improvements in key statewide outcomes?

As an example, a task for this project is to identify evidence-based public policies shown to improve high school graduation rates. Washington’s on-time high school graduation rate has not increased for several decades.⁵

- What “evidence-based” public policies could lead to improved high school graduation rates in Washington?
- Which of these public policies can also pass an economic test producing benefits that exceed costs?
- If Washington adopted a combination of the best policies, how could policymakers expect the state’s high school graduation rate to change over the next decade?
- What measurable benefits would this have to Washington’s economy, and how could taxpayer costs of other public services, such as prison or health care costs, be reduced if graduation rates increase?

The purpose of this project is to address these types of questions for an array of public outcomes. As noted, the Legislature asked the Institute to identify evidence-based and cost-beneficial policies that could improve the following statewide outcomes:

- ✓ Crime,
- ✓ K–12 education,
- ✓ Child maltreatment,
- ✓ Substance abuse,
- ✓ Mental health,
- ✓ Public health,
- ✓ Public assistance,
- ✓ Employment, and
- ✓ Housing.

⁵ R. Lieb, S. Aos, A. Pennucci, (2007). *Basic Education Finance Joint Task Force: Initial Report to the Joint Task Force*. Olympia: Washington State Institute for Public Policy, Document No. 07-09-2201.

Focusing public policy on evidence-based and cost-beneficial answers to these questions has not, in general, been a common approach used by most legislatures in the United States.

In Washington, on the other hand, over the last 15 years the legislature has been moving in this direction. For example, in the mid-1990s, the Legislature directed the Institute to examine evidence-based and cost-beneficial juvenile justice options.⁶ The Legislature subsequently used the Institute’s findings to alter funding priorities in this public policy area.

Then, in 2003, the Legislature asked the Institute to perform an initial analysis of prevention programs by examining a wider array of outcomes.⁷ This study led directly to a 2005 legislative request to identify evidence-based options in prevention, juvenile justice, and adult corrections that could help the state lower crime rates, reduce taxpayer costs, and decrease future prison construction.⁸ Subsequent legislatures have used the results of this study to inform budget decisions and to adjust the state’s forecast of the need to construct future prison beds.

In recent sessions, the legislature has also directed the Institute to perform similar analyses in K–12 education, child welfare services, mental health, substance abuse, and developmental disabilities.⁹

⁶ S. Aos, R. Barnoski, R. Lieb, (1998). *Watching the Bottom Line: Cost-Effective Interventions for Reducing Crime in Washington*, Olympia: Washington State Institute for Public Policy, Document No. 98-01-1201.

⁷ S. Aos, R. Lieb, J. Mayfield, M. Miller, A. Pennucci, (2004). *Benefits and Costs of Prevention and Early Intervention Programs for Youth*. Olympia: Washington State Institute for Public Policy, Document No. 04-07-3901.

⁸ S. Aos, M. Miller, E. Drake, (2006). *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates*. Olympia: Washington State Institute for Public Policy, Document No. 06-10-1201.

⁹ S. Lee, S. Aos, M. Miller, (2008). *Evidence-Based Programs to Prevent Children from Entering and Remaining in the Child Welfare System: Benefits and Costs for Washington*. Olympia: Washington State Institute for Public Policy, Document No. 08-07-3901.

S. Aos, M. Miller, A. Pennucci, (2007). *Report to the Joint Task Force on Basic Education Finance: School Employee Compensation and Student Outcomes*. Olympia: Washington State Institute for Public Policy, Document No. 07-12-2201.

S. Aos, M. Miller, J. Mayfield, (2007). *Benefits and Costs of K–12 Educational Policies: Evidence-Based Effects of Class Size Reductions and Full-Day Kindergarten*. Olympia: Washington State Institute for Public Policy, Document No. 07-03-2201.

S. Aos, J. Mayfield, M. Miller, W. Yen, (2006). *Evidence-Based Treatment of Alcohol, Drug, and Mental Health Disorders: Potential Benefits, Costs, and Fiscal Impacts for Washington State*. Olympia: Washington State Institute for Public Policy, Document No. 06-06-3901.

This new two-year project builds on and extends these previous legislatively directed efforts. When this project is complete (June 2011), the state will have an up-to-date economic analysis of many evidence-based policy choices. A secondary goal of the project is to develop software that will allow legislative and executive staff timely and efficient access to the information.

Specific Research Steps

The legislature generally assigns two types of projects to the Institute. One type of study requires the Institute to evaluate the outcomes of particular programs currently operating in Washington. For example, the Institute has previously been directed to evaluate whether certain Washington juvenile justice programs achieve reductions in criminal recidivism rates.¹⁰

The second type of legislative assignment involves assessing the results of other research studies and drawing conclusions about what works and what does not. The Institute's job for this type of study is to provide "investment advice" to the legislature after reviewing all research conducted anywhere in the United States. The basic idea is to learn about what has been found to be successful elsewhere and determine whether an option would be a good choice for Washington.

The project described in this report, as well as the other reviews just mentioned, is the second type of legislative assignment. Over the last decade, as we have carried out each of these research reviews, we have been developing and improving a consistent four-step analytical procedure.

1. We assess evidence on what works.
2. We calculate costs and benefits for Washington and produce a *Consumer Reports*-like list of public policy options.
3. We provide a "portfolio-level" analysis to estimate how a set of policy options affect statewide outcomes of interest.
4. We measure the riskiness in our conclusions by testing how bottom lines vary when assumptions are changed.

Step 1: Review of the Research Evidence on What Works (and What Does Not). The first step in our process produces estimates of what works and what does not on key topics of legislative interest. For each of the topics we study, we begin by carefully analyzing all high-quality research from anywhere in the United States and elsewhere to determine what options have best achieved desired outcomes (and which ones have not). We look for research studies with strong, credible evaluation designs and we discard studies with weak designs.

The goal of this stage of the analysis is to estimate an expected effect of "actionable" public policies. By actionable we mean the identification of specific kinds of decisions that state legislators can or do make when they craft legislation. We have found that framing the research question to be studied is vital; otherwise, the results of the analysis may be irrelevant to legislators and staff.

Once relevant and specific research questions are established, then our empirical approach follows a meta-analytic framework to assess systematically the entire research literature on a given topic. Instead of just reporting the results of one or two favorite studies, a competently done meta-analysis reviews all the credible literature on a topic, after carefully screening and adjusting effect sizes for research design quality and other factors. This process produces an expected effect, as well as a measure of uncertainty, of a public policy option, given the weight of the credible evidence.

Step 2: Compute the Economics (Costs and Benefits) of Specific Policy Options. The product of Step 1 reveals whether a given actionable policy option can be expected to affect desired public outcomes. For example, Step 1 answers this type of question: Does the weight of the credible research evidence indicate that early childhood education programs improve the academic success of students? If so, by how much?

Once this average effect is estimated, we then insert costs and benefits into the analysis by answering two further questions: How much does it cost to produce the effect found in Step 1, and how much is it worth to people in Washington to achieve the outcome?

To answer these benefit-cost questions, we have been building formal economic models. The resulting analyses provide internally consistent

¹⁰ R. Barnoski, (2004). *Outcome Evaluation of Washington State's Research-Based Programs for Juvenile Offenders*. Olympia: Washington State Institute for Public Policy, Doc. No. 04-01-1201.

bottom lines given the estimated effects, the benefit-cost input parameters selected, and the modeling structure employed. We summarize the economic findings by reporting standard financial statistics: net present values, benefit-cost ratios, and return on investment. We also present the estimates from three distinct perspectives: the benefits that accrue directly to program participants; the benefits received by taxpayers; and we include a non-participant, non-taxpayer perspective for other benefits that don't fall into those two categories. The addition of these three perspectives provides a "total state" bottom line.

To continue our previous example, an early childhood education program may directly benefit the participant by increasing his or her lifetime economic earnings. It may also directly benefit taxpayers, because some of these earnings will be taxed and some other program benefits, such as reduced crime, will lower taxpayer costs of the criminal justice system. And the program may achieve benefits for non-participants in other ways, such as reducing the costs of criminal victimization. Adding these three perspectives produces a total state perspective. We have found that it is useful for the public policy process in Washington to provide information for all three perspectives, because each can help answer specific questions that arise when legislators are considering particular policy options.

Step 3: Analyze "Portfolio-Level" Effects.

The main products of Steps 1 and 2 are *Consumer Reports*-like lists of what works and what does not, ranked by benefit-cost estimates. That information has proven to be helpful to Washington legislators as they make decisions.

What is more helpful, we have found, is to estimate how a set of adopted policies are likely to achieve broad public policy goals. In this third analytic step, we estimate the degree to which a portfolio of adopted policies is likely to affect statewide outcomes.

For example, in the 2007 session, the Legislature began to use the Institute's estimates on how a portfolio of evidence-based

and economically sound prevention, juvenile justice, and adult corrections programs could be expected to affect Washington State's crime rate, the need to build additional prisons, and the overall level of criminal justice spending by state and local entities in the state. Step 3 thus moves from lists of what works to measurable statewide outcomes.

Step 4: Conduct Uncertainty Analysis to Assess the Riskiness of the Bottom-Line Estimates.

Our final analytical step involves testing the robustness of our results. Single-point bottom lines offer a convenient finding but, because a considerable amount of uncertainty can exist in any estimates of benefits and costs, it is important to see how conclusions change when assumptions are altered. To do this, we perform an analysis called "Monte Carlo simulation" where we vary the key factors that enter our calculations and then re-estimate the results of our analysis. The purpose is to determine the probability that our estimates would produce a contrary finding—that is, that money would be lost rather than gained if a particular policy were adopted.

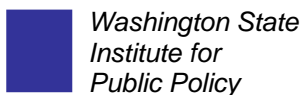
Thus, this analysis produces two bottom-line statistics: an expected value of overall benefits minus costs, and an estimate of the risk that a given strategy could produce negative net benefits. This type of risk and uncertainty analysis is commonly used by many businesses in private sector decision making; we use the same tools to test the riskiness of the public sector options we have been assigned to study.

Software Development. An additional goal of this project is to develop user-friendly software that will allow Washington legislative and executive staff easy access to the Institute's findings. Since the Institute also regularly receives inquiries from other states, the software will allow other interested states an easier way to adapt Washington's approach to their own state.

Upcoming Reports on the Project

We will have an interim report available by October 2010 for use in biennial budget preparation, and a final report on the project by June 2011.

Document No. 09-12-1202



The Washington State Legislature created the Washington State Institute for Public Policy in 1983. A Board of Directors—representing the legislature, the governor, and public universities—governs the Institute and guides the development of all activities. The Institute's mission is to carry out practical research, at legislative direction, on issues of importance to Washington State.