

**Using Benefit-Cost Analysis to  
Inform Public Policy:  
Washington State's (Evolving) Approach**

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# Washington State Institute for Public Policy

## Nature of the Institute

- ✓ Non-partisan, created by 1983 Legislature
- ✓ General purpose, “real-time” legislative research unit
- ✓ Projects assigned by legislative bills
- ✓ Legislative & executive Board



## Recent Specific Directions to WSIPP from the WA Legislature

### What works?

### What are the costs & benefits of policies to improve these outcomes?

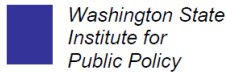
- ✓ **Crime** (1994, 1999, 2003, 2005, 2009),
- ✓ **Education, Early Ed.** (2003, 2006, 2009),
- ✓ **Child Abuse & Neglect** (2003, 2007, 2009),
- ✓ **Substance Abuse** (2003, 2005, 2009),
- ✓ **Mental Health** (2005, 2009),
- ✓ **Developmental Disabilities** (2008),
- ✓ **Teen Births** (1994),
- ✓ **Employment** (2009),
- ✓ **Public Assistance** (2009),
- ✓ **Public Health** (2009), and
- ✓ **Housing** (2009)

## **Return on Investment:**

### **Washington State's Public Policy Environment**

- **Improving outcomes in a economically sound way is politically attractive, no matter one's party affiliation.**
- **Implementing economically sound programs can help balance a budget:**
  - ✓ **Avoid criminal justice/victimization costs**
  - ✓ **Avoid child welfare system/victim costs**
  - ✓ **Increase taxpayer benefits of education**
- **Tying findings to budget drivers can improve forecasting of populations and expenditures.**

# Return on Investment: Reporting Results



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April 2012

## Return on Investment: Evidence-Based Options to Improve Statewide Outcomes —April 2012 Update—

In the mid-1990s, the Washington State Legislature first began to direct the Washington State Institute for Public Policy (Institute) to identify “evidence-based” policies that have been shown to improve particular outcomes.

The motivation for these assignments is straightforward: to provide Washington policymakers and budget writers with a list of well-researched policies that can, with a high degree of probability, lead to better statewide results and a more efficient use of taxpayer dollars.

This short report provides a snapshot, as of April 2012, of our current list of evidence-based policy options on many public policy topics. Where possible, we provide an independent assessment of the benefits and costs of each option from the perspective of Washington citizens and taxpayers.

In essence, this report is similar to an investment advisor’s “buy-sell” list—it contains current recommendations on policy options that can give taxpayers a good return on their investment (“buys”), as well as those that apparently cannot (“sells”). This report replaces previously published Institute reports on these topics.

We will occasionally add or update results for individual policy options on our website as new information becomes available. Exhibit 1 of this report includes hyperlinks to detailed results for each program.

Suggested citation: Lee, S., Aos, S., Drake, E., Pennucci, A., Miller, M., & Anderson, L. (2012). *Return on investment: Evidence-based options to improve statewide outcomes, April 2012* (Document No. 12-04-1001). Olympia: Washington State Institute for Public Policy.

### Background

The Institute was created by the 1983 Washington Legislature to carry out non-partisan research at legislative direction.

The 1997 Legislature directed the Institute to review “evidence-based” policy strategies in juvenile justice and adult corrections. We identified several programs that had been tried and evaluated elsewhere but were not then operating in Washington. We found that some, but not all, programs had the potential to reduce crime and save Washington taxpayers money.<sup>1</sup> In subsequent sessions, the legislature used the information to begin a series of policy reforms.<sup>2</sup> Many practical lessons have been learned about how to implement these programs with fidelity statewide.<sup>3</sup>

Based on this initial success, in the early 2000s the legislature began to direct the Institute to apply the same evidence-based and benefit-cost approach to other public policy areas, including K–12 education, early childhood education, prevention, child welfare, mental health, substance abuse, and public health.<sup>4</sup>

In this report, we discuss our research approach and summarize our current results on these topics.

### General Research Approach

As we have carried out these legislative assignments, we have been implementing a three-step research approach.

- 1) We systematically assess evidence on “what works” (and what does not) to improve outcomes.
- 2) We calculate costs and benefits for Washington State and produce a ranking of public policy options.
- 3) We measure the riskiness of our conclusions by testing how bottom lines vary when estimates and assumptions change.

A brief description of each step follows.

Exhibit 4 Reducing Crime With Evidence-Based Options: What Works, and Benefits & Costs					
Washington State Institute for Public Policy Estimates as of October, 2006	Effect on Crime Outcomes (Percent change in crime outcomes, & the number of evidence-based studies on which the estimate is based (in parentheses))	Benefits and Costs (Per Participant, Not Present Value, 2006 Dollars)			
		Benefits to Crime Victims (of the reduction in crime) (2)	Costs to Taxpayers (of the reduction in crime) (3)	Costs (marginal program cost, compared to the cost of alternative) (4)	Benefits (total) Minus Costs (per participant) (5)
<b>Notes:</b>					
“n/e” means not estimated at this time.					
Prevention program costs are partial program costs, prorated to match crime outcomes.					
<b>Programs for People in the Adult Offender System</b>					
Vocational education in prison	-9.0% (4)	\$8,114	\$6,806	\$1,182	\$13,738
Intensive supervision: treatment-oriented programs	-16.7% (11)	\$9,318	\$9,369	\$7,124	\$11,663
General education in prison (basic education or post-secondary)	-7.0% (17)	\$6,325	\$5,308	\$962	\$10,569
Cognitive-behavioral therapy in prison or community	-6.3% (25)	\$5,658	\$4,746	\$1,105	\$10,299
Drug treatment in community	-9.3% (6)	\$5,133	\$5,495	\$574	\$10,054
Correctional industries in prison	-5.9% (4)	\$5,300	\$4,496	\$417	\$9,439
Drug treatment in prison (therapeutic communities or outpatient)	-5.7% (20)	\$5,133	\$4,306	\$1,604	\$7,835
Adult drug courts	-8.0% (57)	\$4,395	\$4,705	\$4,333	\$4,767
Employment and job training in the community	-4.3% (16)	\$2,373	\$2,386	\$400	\$4,359
Electronic monitoring to offset jail time	0% (9)	\$0	\$0	-\$870	\$870
Sex offender treatment in prison with aftercare	-7.0% (6)	\$6,442	\$2,865	\$12,285	-\$3,258
Intensive supervision: surveillance-oriented programs	0% (23)	\$0	\$0	\$3,747	-\$3,747
Washington’s Dangerously Mentally Ill Offender program	-20.0% (1)	\$18,020	\$15,116	n/e	n/e
Drug treatment in jail	-4.5% (9)	\$2,481	\$2,656	n/e	n/e
Adult boot camps	0% (22)	\$0	\$0	n/e	n/e
Domestic violence education/cognitive-behavioral treatment	0% (9)	\$0	\$0	n/e	n/e
Jail diversion for mentally ill offenders	0% (11)	\$0	\$0	n/e	n/e
Life Skills education programs for adults	0% (4)	\$0	\$0	n/e	n/e
<b>Programs for Youth in the Juvenile Offender System</b>					
Multidimensional Treatment Foster Care (v. regular group care)	-22.0% (3)	\$51,828	\$32,915	\$6,945	\$77,798
Adolescent Diversion Project (for lower risk offenders)	-19.0% (6)	\$24,328	\$18,208	\$1,913	\$40,623
Family Integrated Transitions	-13.0% (1)	\$30,708	\$19,022	\$9,665	\$40,645
Functional Family Therapy on probation	-15.9% (7)	\$15,529	\$14,617	\$2,325	\$31,621
Multisystemic Therapy	-10.5% (10)	\$12,855	\$9,622	\$4,264	\$18,213
Aggression Replacement Training	-7.3% (4)	\$8,897	\$8,659	\$897	\$14,660
Teen courts	-11.1% (5)	\$5,907	\$4,238	\$236	\$9,208
Juvenile boot camp to offset institution time	0% (14)	\$0	\$0	-\$8,077	\$8,077
Sex offender cognitive-behavioral treatment	-10.2% (5)	\$32,515	\$8,377	\$33,064	\$7,829
Restorative justice for low-risk offenders	-8.7% (21)	\$4,828	\$3,320	\$690	\$7,087
Interagency coordination programs	-2.5% (15)	\$3,084	\$2,308	\$205	\$5,186
Juvenile drug courts	-3.5% (15)	\$4,232	\$3,167	\$2,777	\$4,622
Regular surveillance-oriented parole (v. no parole supervision)	0% (2)	\$0	\$0	\$1,201	-\$1,201
Juvenile intensive probation supervision programs	0% (3)	\$0	\$0	\$1,598	-\$1,598
Juvenile wilderness challenge	0% (9)	\$0	\$0	\$3,085	-\$3,085
Juvenile intensive parole supervision	0% (10)	\$0	\$0	\$6,460	-\$6,460
Scared Straight	+6.8% (10)	-\$8,355	-\$8,253	\$58	-\$14,667
Counseling/psychotherapy for juvenile offenders	-18.9% (6)	\$23,126	\$17,309	n/e	n/e
Juvenile education programs	-17.5% (3)	\$41,181	\$26,153	n/e	n/e
Other family-based therapy programs	-12.2% (12)	\$15,006	\$11,231	n/e	n/e
Team Child	-10.9% (2)	\$5,759	\$4,131	n/e	n/e
Juvenile behavior modification	-8.2% (4)	\$19,271	\$12,238	n/e	n/e
Life skills education programs for juvenile offenders	-2.7% (3)	\$6,441	\$4,091	n/e	n/e
Diversion progs. with services (v. regular juvenile court)	-2.7% (20)	\$1,441	\$1,034	n/e	n/e
Juvenile cognitive-behavioral treatment	-2.5% (8)	\$3,123	\$2,337	n/e	n/e
Court supervision vs. simple release without services	0% (9)	\$0	\$0	n/e	n/e
Diversion programs with services (v. simple release)	0% (7)	\$0	\$0	n/e	n/e
Juvenile intensive probation (as alternative to incarceration)	0% (5)	\$0	\$0	n/e	n/e
Guided Group Interaction	0% (4)	\$0	\$0	n/e	n/e
<b>Prevention Programs (crime reduction effects only)</b>					
Nurse Family Partnership-Mothers	-56.2% (1)	\$11,531	\$8,161	\$5,409	\$14,283
Nurse Family Partnership-Children	-16.4% (1)	\$8,632	\$4,922	\$733	\$12,622
Pre-K education for low income 3 & 4 year olds	-14.2% (8)	\$8,145	\$4,644	\$593	\$12,196
Seattle Social Development Project	-18.6% (1)	\$1,605	\$4,341	n/e	n/e
High school graduation	-10.4% (1)	\$1,738	\$2,851	n/e	n/e
Guiding Good Choices	-9.1% (1)	\$570	\$2,092	n/e	n/e
Parent-Child Interaction Therapy	-3.7% (1)	\$268	\$784	n/e	n/e
<b>Program types in need of additional research &amp; development before we can conclude they do or do not reduce crime outcomes:</b>					
<b>Programs needing more research for people in the adult offender system</b>					
Case management in the community for drug offenders	0% (13)			Findings are mixed for this broad grouping of programs.	
COJA (Faith-based supervision of sex offenders)	-22.3% (1)			Too few evaluations to date.	
Day fines (compared to standard probation)	0% (1)			Too few evaluations to date.	
Domestic violence courts	0% (2)			Too few evaluations to date.	
Faith-based programs	0% (5)			Too few evaluations to date.	
Intensive supervision of sex offenders in the community	0% (4)			Findings are mixed for this broad grouping of programs.	
Medical treatment of sex offenders	-21.4% (1)			Too few evaluations to date.	
Mixed treatment of sex offenders in the community	0% (2)			Too few evaluations to date.	
Regular parole supervision vs. no parole supervision	0% (1)			Too few evaluations to date.	
Restorative justice programs for lower risk adult offenders	0% (6)			Findings are mixed for this broad grouping of programs.	
Therapeutic community programs for mentally ill offenders	-20.8% (2)			Too few evaluations to date.	
Work release programs from prison	-4.3% (4)			Too few recent evaluations.	
<b>Programs needing more research for youth in the juvenile offender system</b>					
Dialectical Behavior Therapy	0% (1)			Too few evaluations to date.	
Increased drug testing (on parole) vs. minimal drug testing	0% (1)			Too few evaluations to date.	
Juvenile curfews	0% (1)			Too few evaluations to date.	
Juvenile day reporting	0% (2)			Too few evaluations to date.	
Juvenile jobs programs	0% (2)			Too few recent evaluations.	
Juvenile therapeutic communities	0% (1)			Too few evaluations to date.	
Mentoring in juvenile justice	0% (1)			Too few evaluations to date.	

# Benefit-Cost Analysis: The Basics

- **Key features of benefit-cost analysis:**
  - ✓ Lifespan time horizon
  - ✓ Societal perspective
  - ✓ Net present value
- **What it can't do:**
  - ✓ Evaluate all outcomes
  - ✓ Answer all policy questions

# Benefit-Cost Analysis: The WSIPP Approach

*“Are there evidence-based policy options  
that improve outcomes, at less cost?”*

## 1. What works (to improve outcomes); what doesn't?

We analyze ALL, RIGOROUS evaluations of REAL WORLD ways to improve the key public outcomes.

## 2. What are the economics?

We compute the benefits and costs to the people of Washington (participants, taxpayers, and others) for each policy option.

## 3. How much risk of failure?

# Individual Policy Option: Nurse Family Partnership

Total Cost Per Family	Benefits Minus Total Benefits	Benefits Minus Cost	Benefit-Cost Ratio	Return on Investment	Probability of Positive Return
(\$9,600)	\$22,781	\$13,181	\$2.37	6%	80%

Source of Benefits	Benefits to:				Total Benefits
	Participants	Taxpayers	Other	Other Indirect	
<b>For Child</b>					
Crime	\$0	\$939	\$2,634	\$476	\$4,049
Earnings via education	\$3,205	\$1,180	\$0	\$587	\$4,972
Child abuse and neglect	\$696	\$113	\$0	\$56	\$865
K-12 grade repetition	\$0	-\$108	\$0	-\$54	-\$162
K-12 special education	\$0	-\$1,047	\$0	-\$526	-\$1,573
Health care (disruptive behavior)	\$20	\$59	\$58	\$30	\$166
Health care costs via education	-\$3	\$26	-\$19	\$13	\$17
<b>For Mother</b>					
Crime	\$0	\$341	\$1,269	\$163	\$1,773
Earnings via education	\$7,378	\$2,715	\$0	\$1,360	\$11,453
Public assistance	-\$869	\$956	\$0	\$485	\$572
Health care costs via education	-\$135	\$1,046	-\$785	\$523	\$649
<b>Total</b>	\$10,291	\$6,219	\$3,158	\$3,112	\$22,781

# Summarizing Across Policy Options: Reporting Results

**Monetary Benefits and Costs of Evidence-Based Public Policies**  
Summary of policy topics assigned to the Washington State Institute for Public Policy by the Washington State Legislature  
Estimates for Washington State, as of April 2012

Topic Area/Program	Last Updated	Monetary Benefits		Costs		Summary Statistics		
		Total Benefits	Taxpayer Non-Taxpayer	Total	Benefit to Cost Ratio (at present value)	Benefit to Cost Ratio	Measured Risk Ratio of a positive net present value	
<b>Juvenile Justice</b>								
<a href="#">Functional Family Therapy (Institutional)</a>	April 2012	\$70,370	\$14,476	\$55,892	(\$3,262)	\$67,108	\$21.57	100%
<a href="#">Aggression Replacement Training (Institutional)</a>	April 2012	\$62,941	\$12,872	\$49,971	(\$1,508)	\$61,440	\$41.75	94%
<a href="#">Multidirectional Treatment Foster Care</a>	April 2012	\$36,191	\$6,166	\$30,025	(\$7,822)	\$51,278	\$4.95	85%
<a href="#">Functional Family Therapy (Probation)</a>	April 2012	\$33,961	\$8,055	\$25,911	(\$3,261)	\$30,706	\$10.42	100%
<a href="#">Aggression Replacement Training (Probation)</a>	April 2012	\$31,246	\$7,422	\$23,822	(\$1,510)	\$28,740	\$20.70	96%
<a href="#">Multisystemic Therapy (MST)</a>	April 2012	\$32,121	\$7,138	\$24,983	(\$7,370)	\$24,781	\$4.36	90%
<a href="#">Family Integrated Transition (Institutional)</a>	April 2012	\$28,131	\$5,751	\$22,380	(\$11,219)	\$16,918	\$2.51	91%
<a href="#">Drug Court</a>	April 2012	\$13,661	\$3,094	\$10,567	(\$3,091)	\$10,878	\$4.42	94%
<a href="#">Coordination of Services</a>	April 2012	\$5,501	\$1,412	\$4,089	(\$3,95)	\$5,106	\$13.94	82%
<a href="#">Victim Offender Mediation</a>	April 2012	\$4,202	\$1,006	\$3,192	(\$679)	\$3,628	\$7.27	95%
<a href="#">Scared Straight</a>	April 2012	(\$4,949)	(\$1,271)	(\$3,678)	(\$65)	(\$5,014)	(\$70.35)	0%
Juvenile justice programs for which we have not calculated benefits and costs (at this time):								
Cognitive Behavioral Therapy (general)	October 2009							See previous WISIPP publication for past findings.
Diversion Programs	October 2009							See previous WISIPP publication for past findings.
Juvenile Boot Camps	October 2009							See previous WISIPP publication for past findings.
Supervision for Juvenile Offenders	October 2009							See previous WISIPP publication for past findings.
Sex Offender Treatment for Juvenile Offenders	October 2009							See previous WISIPP publication for past findings.
Team Courts	October 2009							See previous WISIPP publication for past findings.
Teen Courts	October 2009							See previous WISIPP publication for past findings.
Witness Challenge Programs	October 2009							See previous WISIPP publication for past findings.
<b>Adult Criminal Justice</b>								
<a href="#">Offender Re-entry Community Safety Program (dangerously mentally ill offenders)</a>	April 2012	\$70,532	\$19,126	\$51,411	(\$32,247)	\$56,288	\$2.16	100%
<a href="#">Drug Offender Sentencing Alternative (drug offenders)</a>	April 2012	\$22,362	\$5,316	\$17,047	(\$1,542)	\$20,823	\$14.51	100%
<a href="#">Supervision with Risk Need and Responsivity Principles (high and moderate risk)</a>	April 2012	\$24,202	\$5,811	\$18,391	(\$3,543)	\$20,660	\$6.83	100%
<a href="#">Conventional Education in Prison</a>	April 2012	\$21,422	\$5,238	\$16,184	(\$1,128)	\$20,298	\$19.06	100%
<a href="#">Electronic Monitoring (radio frequency or global positioning systems)</a>	April 2012	\$18,742	\$4,432	\$14,310	\$1,067	\$19,812	n/a	100%
<a href="#">Vocational Education in Prison</a>	April 2012	\$20,446	\$5,011	\$15,435	(\$1,571)	\$18,876	\$13.01	100%
<a href="#">Mental Health Courts</a>	April 2012	\$20,424	\$4,996	\$15,428	(\$2,905)	\$17,488	\$6.96	100%
<a href="#">Drug Treatment in the Community</a>	April 2012	\$17,711	\$4,206	\$13,505	(\$1,602)	\$16,108	\$11.05	100%
<a href="#">Drug Courts</a>	April 2012	\$15,432	\$3,376	\$12,056	(\$4,178)	\$11,288	\$3.69	100%
<a href="#">Drug Treatment in Prison</a>	April 2012	\$15,571	\$3,834	\$11,737	(\$4,603)	\$10,974	\$3.38	100%
<a href="#">Drug Offender Sentencing Alternative (property offenders)</a>	April 2012	\$11,272	\$2,696	\$8,576	(\$1,540)	\$8,733	\$7.32	70%
<a href="#">Cognitive Behavioral Therapy (moderate and high risk)</a>	April 2012	\$9,692	\$2,302	\$7,390	(\$412)	\$8,283	\$23.55	100%
<a href="#">Intensive Supervision With Treatment</a>	April 2012	\$15,166	\$3,816	\$11,350	(\$7,874)	\$7,296	\$1.93	96%
<a href="#">Work Release</a>	April 2012	\$7,111	\$1,746	\$5,365	(\$681)	\$6,456	\$10.77	99%
<a href="#">Conventional Industries in Prison</a>	April 2012	\$7,042	\$1,712	\$5,330	(\$1,417)	\$5,822	\$4.97	100%
<a href="#">Employment Training/Job Assistance in the Community</a>	April 2012	\$5,501	\$1,311	\$4,190	(\$138)	\$5,368	\$40.78	100%
<a href="#">Intensive Supervision - Surveillance Only</a>	April 2012	(\$570)	(\$133)	(\$445)	(\$4,140)	(\$4,718)	(\$0.14)	11%
<a href="#">Domestic Violence Perpetrator Treatment Programs</a>	April 2012	(\$4,900)	(\$1,165)	(\$3,735)	(\$1,359)	(\$6,286)	(\$3.01)	14%
Adult criminal justice programs for which we have not calculated benefits and costs (at this time):								
Adult Boot Camps	October 2009							See previous WISIPP publication for past findings.
Drug Treatment in Jail	October 2009							See previous WISIPP publication for past findings.
Jail Diversion for Mentally Ill Offenders	October 2009							See previous WISIPP publication for past findings.
Life Skills Education Programs for Adults	October 2009							See previous WISIPP publication for past findings.
Restorative Justice for Lower-Risk Adult Offenders	October 2009							See previous WISIPP publication for past findings.
Sex Offender Community Notification and Registration	June 2009							See previous WISIPP publication for past findings.
Sex Offender Treatment	October 2009							See previous WISIPP publication for past findings.

Our  
“Consumer Reports”  
Lists:

*What Works?*

*What Doesn't?*

*What Can Give Washington  
Taxpayers a Good Return on  
Their Money?*

*Given the Current Level  
of Rigorous Research,  
What Don't We Know?*



# Road Map: Overview of WSIPP Benefit-Cost Model

## 1. Compute Effect Sizes (from 2 literatures)

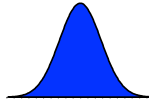
### Program Evaluations: What Works?

Method:

Meta-analytic reviews

Example:

Does early childhood education increase the likelihood of HSGrad?



ES & SE

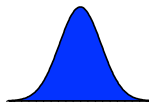
### Linkages Between Two Outcomes

Method:

Meta-analytic reviews

Example:

Does high school graduation cause reduced crime rates?



ES & SE

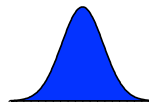
## 2. Apply Monetary Valuation (to Unit Changes)

### Direct Monetization

Example:

Effect of change in HSGrad probability:

1. Lifetime labor market earnings
2. Taxes paid

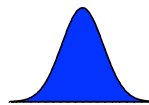


PV \$

### Indirect Monetization of Benefits, Example:

Effect of crime change on:

1. Crime victim costs
2. Criminal justice system costs



PV \$

## 3. Compute Benefit-Cost Statistics

### Additional Information

1. Cost of program
2. Discount rates
3. Dead-weight costs
4. Tax rates
5. Inflation index

Convert all nominal dollars to base year.

Perform "trumping."

Arrange cash flows from investment year.

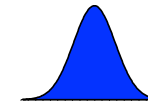
Compute:

1. Net Present Value,
2. Benefit-Cost Ratio
3. Internal Rate of Return

Perform Monte Carlo

Simulation:

1. Vary all inputs randomly, run the model many times
2. Compute risk: the odds that an investment will not break-even.



NPV \$ or IRR

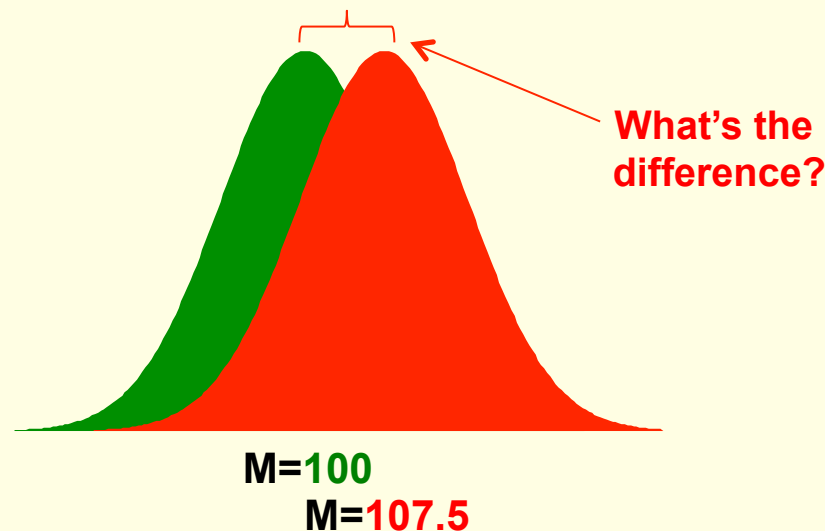
## Step 1: What Works?



- Gather all the studies we can locate on a topic
- Apply “standards of evidence” to identify the high quality studies
- Analyze all of the higher quality studies to estimate an average effect

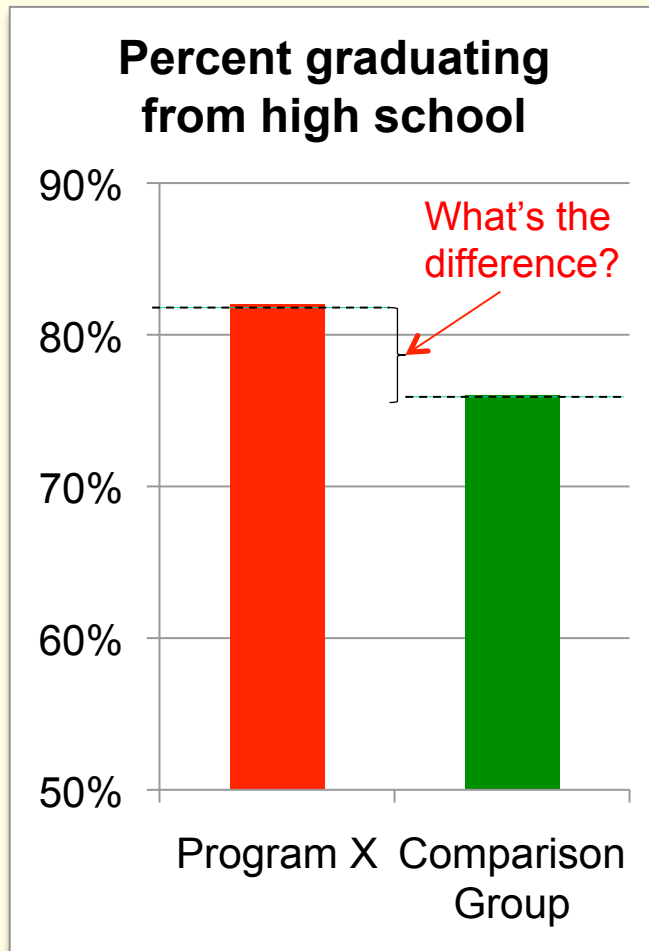
## Step 1: Computing an Effect Size

- Students who participated in Program X had mean test scores of **107.5**, SD = 15;
- A **comparison** group had mean scores of **100**, SD = 15.



- $ES = (M_{tx} - M_{cn}) / \text{Pooled SD}$
- **ES = 0.5**

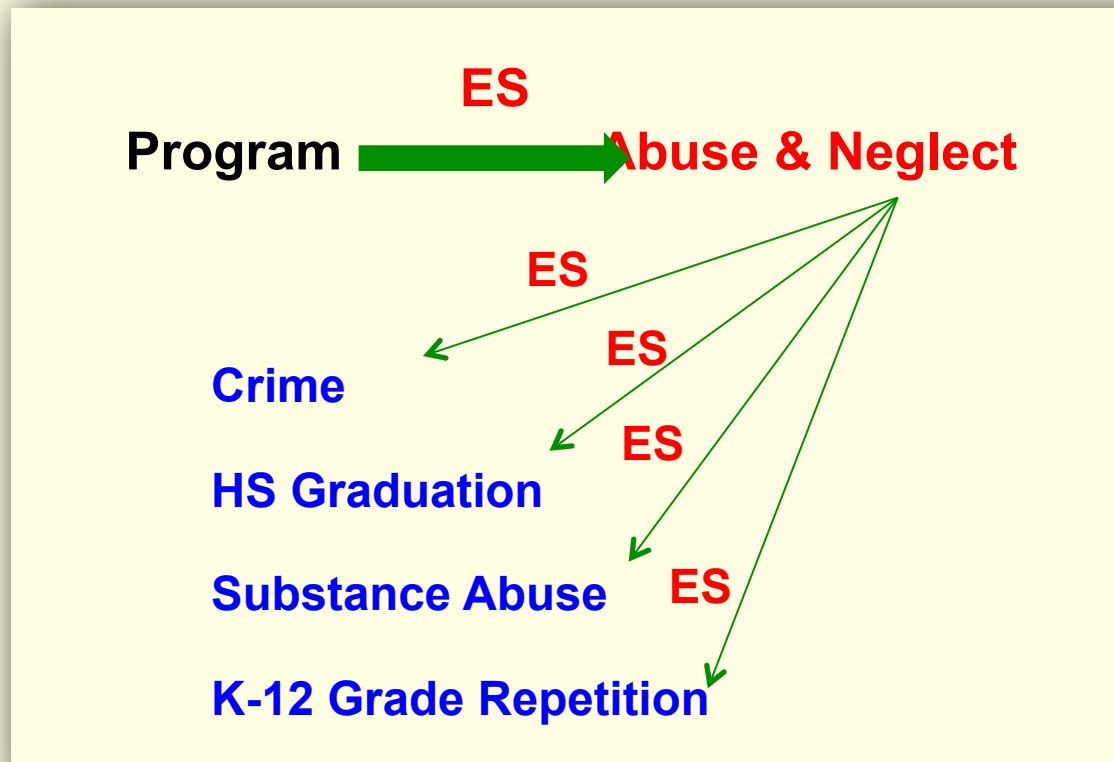
## Step 1: Computing an Effect Size



- Students who participated in **Program X** had a high school graduation rate of **82%**;
- A **comparison** group had a rate of **76%**.
- $ES = \frac{\ln((Tx\% * (1 - Cn\%)) / (Cn\% * (1 - Tx\%)))}{1.65}$
- **ES = 0.22**

## Step 1: Computing “Linked” Effect Sizes

- Are there long-term effects of program outcomes on *other outcomes*?



# Step 1 Example:

## Functional Family Therapy

### Effect on Crime (Meta-Analytic Results)

#### 1. Identify and Code Credible Studies

Study with Acceptable Rigor	Effect Size	Number in treatment group	Number in control group	Inverse variance weight	Inverse variance weight (RE)	Specific Outcome	Adj Effect Size
Alexander & Parsons, 1973	-0.26	46	40	9.4	5.0	Convictions	-0.09
Barnoski, 2004	-0.13	181	313	77.4	9.5	Convictions	-0.13
Barton et al., 1985	-1.31	30	44	5.6	3.7	Arrests	-0.47
Gordon et al., 1995	-1.18	23	22	3.7	2.8	Convictions	-0.59
Hansson, 1998	-0.96	45	50	12.1	5.7	Arrests	-0.95
Klein et al., 1977	-0.96	46	40	11.5	5.6	Convictions	-0.35
Gordon, 1995	-0.76	27	25	8.0	4.6	Incarceration	-0.38
Sexton & Turner, 2010	-0.25	283	325	150.1	10.1	Convictions	-0.09

#### 2. Compute Meta-Analytic Statistics

Weighted Mean ES:	Random Effects Model	-0.585
Standard Error:		<b>0.146</b>
p Value:		0.000
Lower 95% Confidence Interval:		-0.870
Upper 95% Confidence Interval:		-0.299
Q Statistic:		8.279
p-value on Q:		0.309
Adjusted Weighted Mean ES		<b>-0.323</b>
Number of studies in the analysis:	8	
# of subjects in treatment groups:	681	



# Road Map: Overview of WSIPP Benefit-Cost Model

1. Compute Effect Sizes  
(from 2 literatures)

2. Apply Monetary Valuation  
(to Unit Changes)

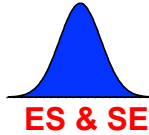
## Program Evaluations: What Works?

Method:

Meta-analytic reviews

Example:

Does early childhood education increase the likelihood of HSGrad?

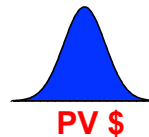


## Direct Monetization

Example:

Effect of change in HSGrad probability:

1. Lifetime labor market earnings
2. Taxes paid



## Linkages Between Two Outcomes

Method:

Meta-analytic reviews

Example:

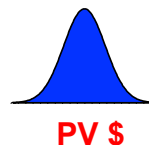
Does high school graduation cause reduced crime rates?



## Indirect Monetization of Benefits, Example:

Effect of crime change on:

1. Crime victim costs
2. Criminal justice system costs



## Step 2: Establishing a Baseline

- Who does the program target?
- What are the characteristics of that population, relative to the measured outcomes?
  - **Substance abuse**
    - ✓ Treatment for those with abuse/dependence
    - ✓ Prevention
  - **Crime**
    - ✓ Low-risk, community supervision
    - ✓ High-risk, exiting prison
- Do the costs of resources differ among populations?
- Are certain populations more likely to use resources than others?



## **Step 2:**

# **Estimating Benefits and Costs**

- **What are the costs of the program? Compared to what?**
- **What are the long-term effects of program outcomes on:**
  - 1. The participant**
    - ✓ Increased education
    - ✓ Reduced abuse/neglect
  - 2. The taxpayer**
    - ✓ Avoided incarceration costs
    - ✓ Avoided child welfare system costs
  - 3. Other people in society**
    - ✓ Reduced victimization

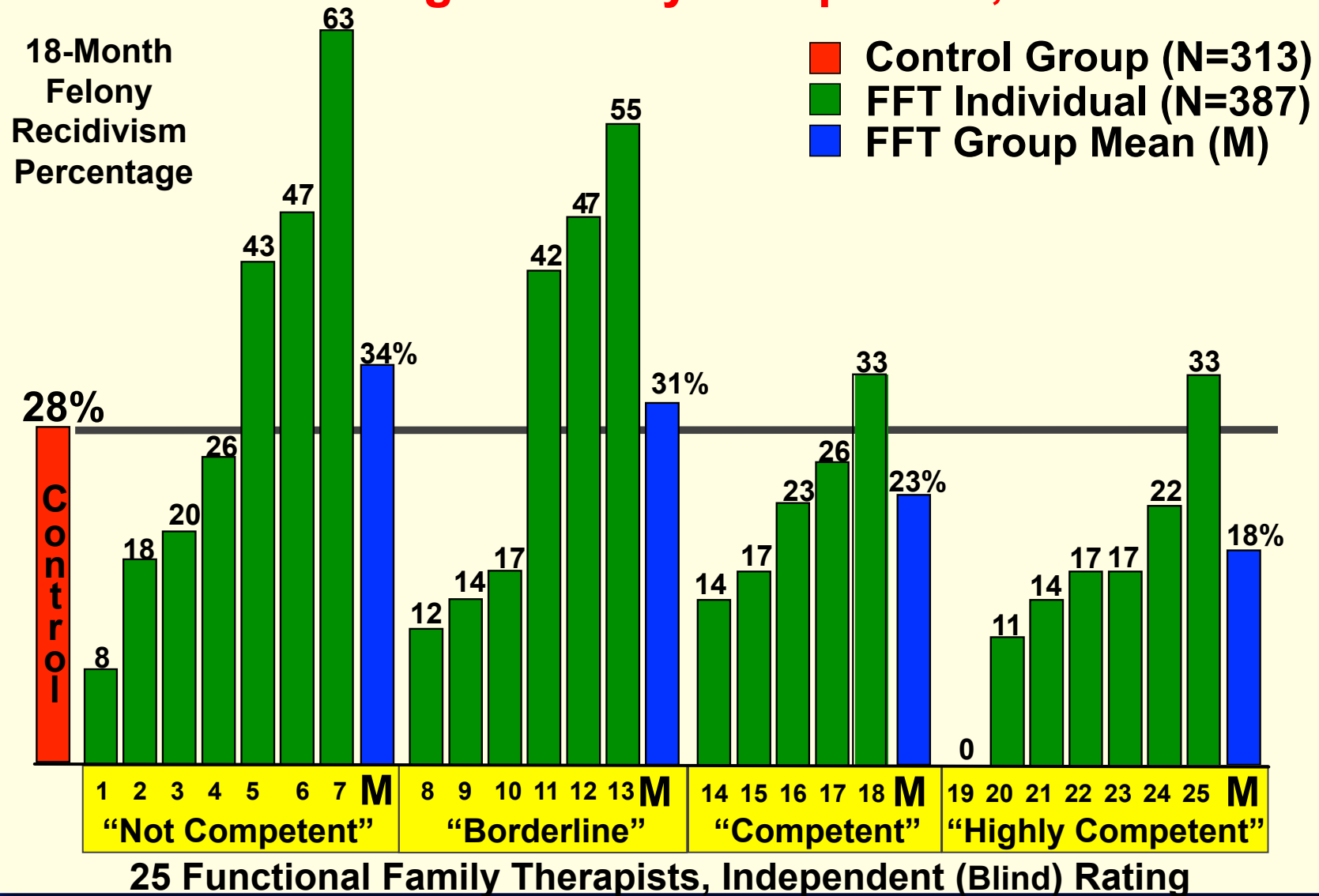
## Step 2 Example: Early Childhood Education for Low-Income Children

Total Cost Per Family	Total Benefits	Benefits Minus Cost	Benefit-Cost Ratio	Return on Investment	Probability of Positive Return
(\$7,523)	\$22,457	\$14,934	\$2.99	6%	100%

Source of Benefits	Benefits to:				Total Benefits
	Participants	Taxpayers	Other	Other Indirect	
<b>For Child</b>					
Crime	\$0	\$1,371	\$4,075	\$686	\$6,132
Earnings via education	\$8,241	\$3,033	\$0	\$1,517	\$12,791
Child abuse and neglect	\$878	\$132	\$0	\$66	\$1,077
Out-of-home placement	\$0	\$251	\$0	\$126	\$376
K-12 grade repetition	\$0	\$217	\$0	\$108	\$325
K-12 special education	\$0	\$723	\$0	\$363	\$1,087
Property loss (via disordered drug use)	\$1	\$0	\$1	\$0	\$2
Health care costs via education	-\$138	\$1,076	-\$804	\$535	\$668
<b>Total</b>	\$8,982	\$6,802	\$3,272	\$3,401	\$22,457

A Brief Sidebar . . .

# Picking Economically Sound Programs is Not Enough! Fidelity is Important, Too.



# Road Map: Overview of WSIPP Benefit-Cost Model

## 1. Compute Effect Sizes (from 2 literatures)

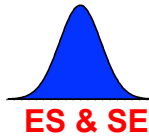
### Program Evaluations: What Works?

Method:

Meta-analytic reviews

Example:

Does early childhood education increase the likelihood of HSGrad?



### Linkages Between Two Outcomes

Method:

Meta-analytic reviews

Example:

Does high school graduation cause reduced crime rates?



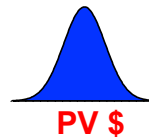
## 2. Apply Monetary Valuation (to Unit Changes)

### Direct Monetization

Example:

Effect of change in HSGrad probability:

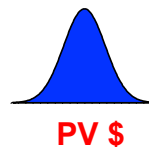
1. Lifetime labor market earnings
2. Taxes paid



### Indirect Monetization of Benefits, Example:

Effect of crime change on:

1. Crime victim costs
2. Criminal justice system costs



## 3. Compute Benefit-Cost Statistics

### Additional Information

1. Cost of program
2. Discount rates
3. Dead-weight costs
4. Tax rates
5. Inflation index

Convert all nominal dollars to base year.

Perform "trumping."

Arrange cash flows from investment year.

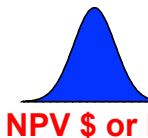
Compute:

1. Net Present Value,
2. Benefit-Cost Ratio
3. Internal Rate of Return

Perform Monte Carlo

Simulation:

1. Vary all inputs randomly, run the model many times
2. Compute risk: the odds that an investment will not break-even.

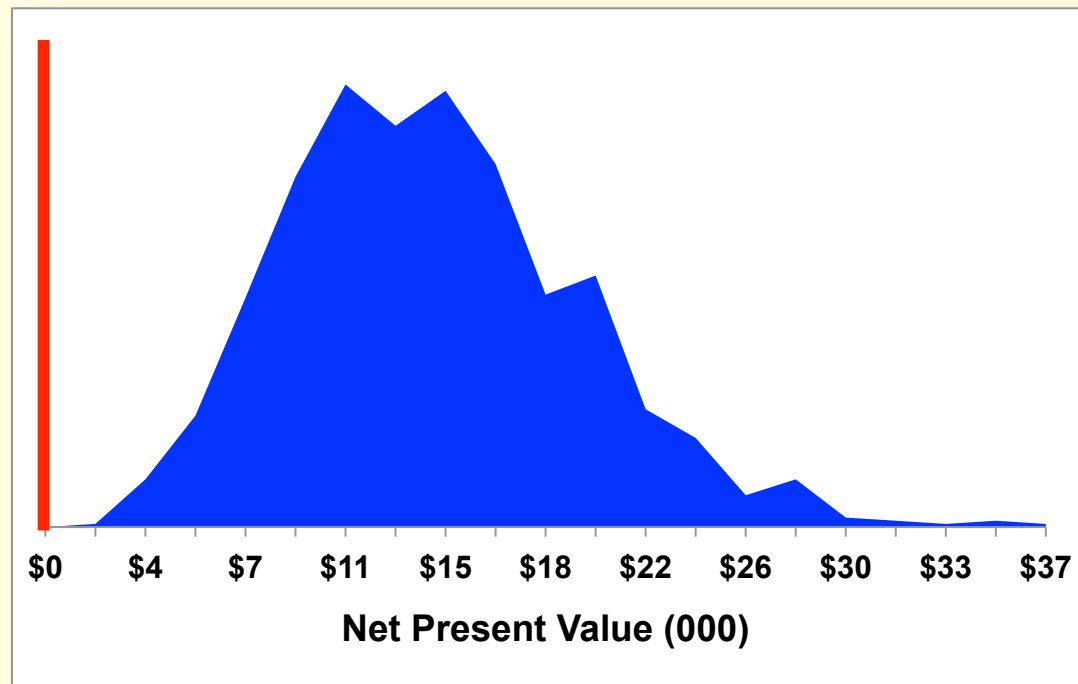


## **Step 3: Assessing Risk**

- **How risky is an investment?**
- **Measurement error, e.g.,**
  - ✓ **Effect size**
  - ✓ **Program cost**
- **Incorrect assumptions, e.g.,**
  - ✓ **Discount rate**
  - ✓ **Rate of deadweight cost**
- **Monte Carlo analysis**
  - ✓ **Randomly vary inputs**
  - ✓ **500 to 10,000 iterations**

## Step 3 Example: Early Childhood Education for Low-Income Children

Total Cost Per Family	Total Benefits	Benefits Minus Cost	Benefit-Cost Ratio	Return on Investment	Probability of Positive Return
(\$7,523)	\$22,457	\$14,934	\$2.99	6%	100%

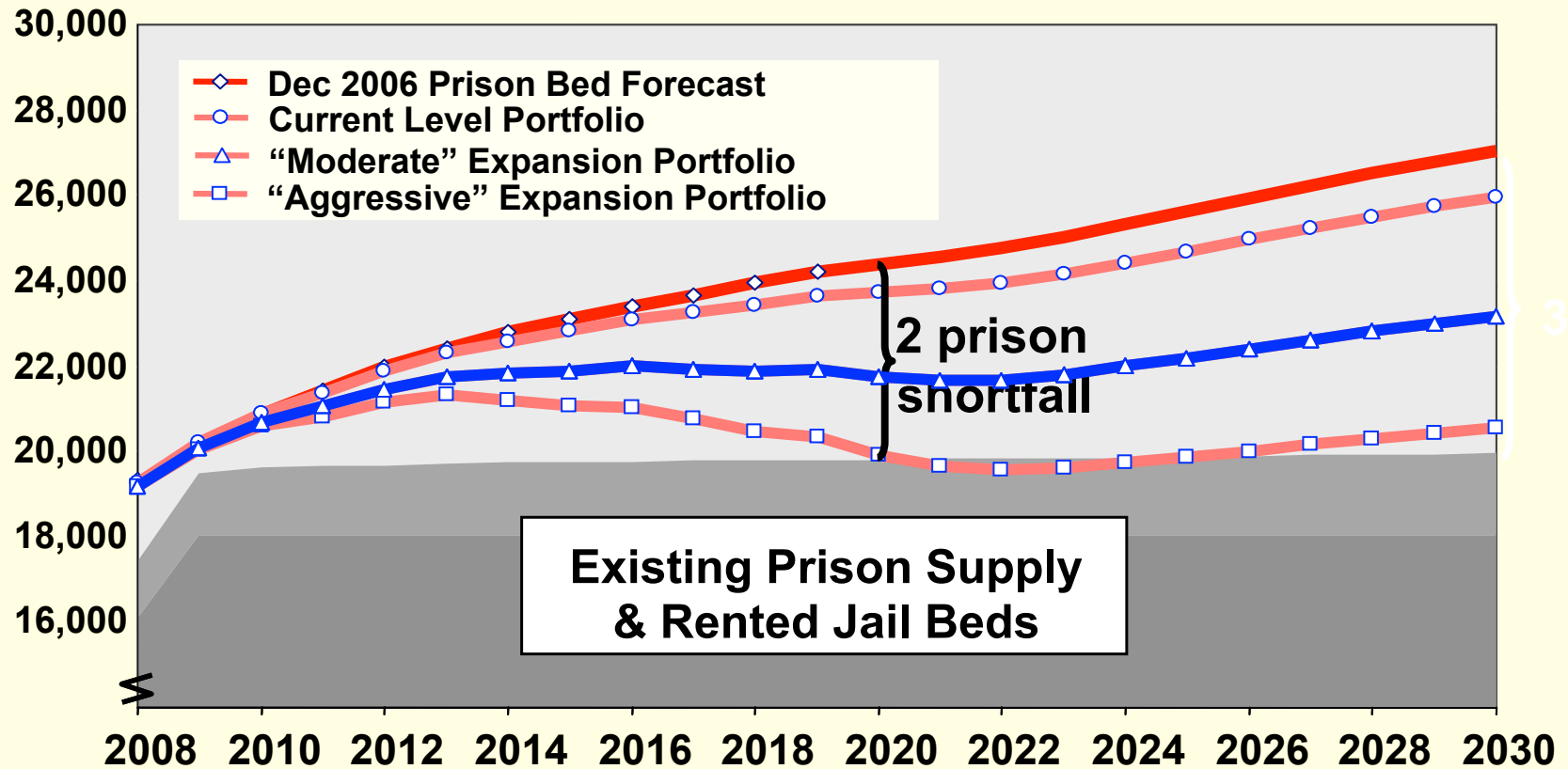


## Individual Policy Option: Nurse Family Partnership

Total Cost Per Family	Total Benefits	Benefits Minus Cost	Benefit-Cost Ratio	Return on Investment	Probability of Positive Return
(\$9,600)	\$22,781	\$13,181	\$2.37	6%	80%



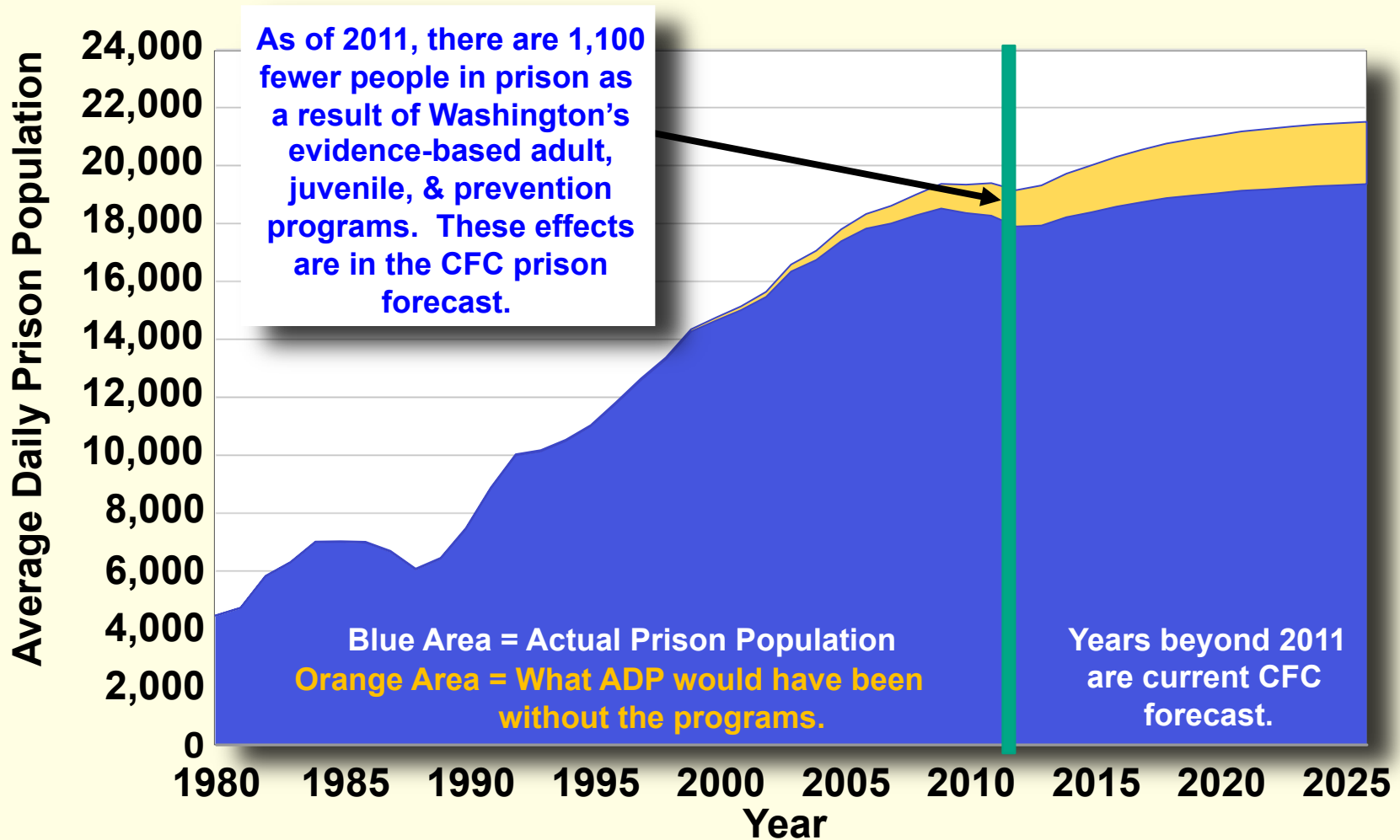
# Example from the Washington Legislature: How Information is Used



Prison Supply & Demand in Washington: 2008 to 2030

# Keeping Track of Results: Prison Beds Avoided

## Cumulative Effect of Washington's History of Evidence-based Programming



## What Washington State has Learned

It is increasingly possible to...

- ✓ Use rigorous evidence to identify what works and what doesn't.
- ✓ Calculate return on investment information routinely, and consistently.
- ✓ Have the information actually used in policy making.

It is also important to...

- ✓ Be patient. Policy making is a “people-oriented” enterprise. Policy makers are not benefit-cost robots.



**Thank You!**

**Mount Rainier, Washington State**