

## Project Northland

### Public Health & Prevention: Community-based

Benefit-cost estimates updated December 2019. Literature review updated March 2019.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our [Technical Documentation](#).

**Program Description:** Project Northland is a multilevel, universal intervention designed to prevent substance use among adolescents in middle school. The 6th grade home component targets parent-child communication via homework assignments, group discussions, and the establishment of a communitywide task force. The 7th grade school-based curriculum, which focuses on improving resistance skills and social norms regarding teen alcohol use, includes class discussions, games, and role plays. The 8th grade components include the peer-led Powerlines curriculum, a mock town meeting, and a community action project. Our review of Project Northland is limited to the 6th-8th grade implementation model and does not include the Class Action high school component.

### Benefit-Cost Summary Statistics Per Participant

#### Benefits to:

Taxpayers	\$96	Benefit to cost ratio	\$2.73
Participants	\$179	Benefits minus costs	\$177
Others	\$42	Chance the program will produce	
Indirect	(\$37)	benefits greater than the costs	54 %
<b>Total benefits</b>	<b>\$280</b>		
<b>Net program cost</b>	<b>(\$102)</b>		
<b>Benefits minus cost</b>	<b>\$177</b>		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

## Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated			ES	p-value
				ES	SE	Age	ES	SE	Age		
Alcohol use before end of high school	12	1	1401	-0.018	0.037	16	-0.018	0.037	18	-0.056	0.131
Alcohol use before end of middle school	12	4	4111	-0.046	0.029	14	-0.046	0.029	14	-0.108	0.026
Cannabis use before end of middle school	12	1	950	-0.020	0.061	14	-0.020	0.061	14	-0.059	0.330
Problem alcohol use	12	1	1401	-0.011	0.037	16	-0.011	0.037	26	-0.033	0.375
Smoking before end of middle school	12	1	950	-0.059	0.061	14	-0.059	0.061	14	-0.179	0.004

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

## Detailed Monetary Benefit Estimates Per Participant

Affected outcome:	Resulting benefits: <sup>1</sup>	Benefits accrue to:				
		Taxpayers	Participants	Others <sup>2</sup>	Indirect <sup>3</sup>	Total
Alcohol use before end of middle school	Criminal justice system	\$14	\$0	\$34	\$7	\$55
Problem alcohol use	Labor market earnings associated with problem alcohol use	\$75	\$177	\$0	\$0	\$253
Problem alcohol use	Property loss associated with problem alcohol use	\$0	\$1	\$1	\$0	\$1
Problem alcohol use	Health care associated with problem alcohol use	\$6	\$1	\$7	\$3	\$17
Problem alcohol use	Mortality associated with problem alcohol	\$0	\$1	\$0	\$4	\$5
Program cost	Adjustment for deadweight cost of program	\$0	\$0	\$0	(\$51)	(\$51)
<b>Totals</b>		<b>\$96</b>	<b>\$179</b>	<b>\$42</b>	<b>(\$37)</b>	<b>\$280</b>

<sup>1</sup>In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

<sup>2</sup>"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

<sup>3</sup>"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

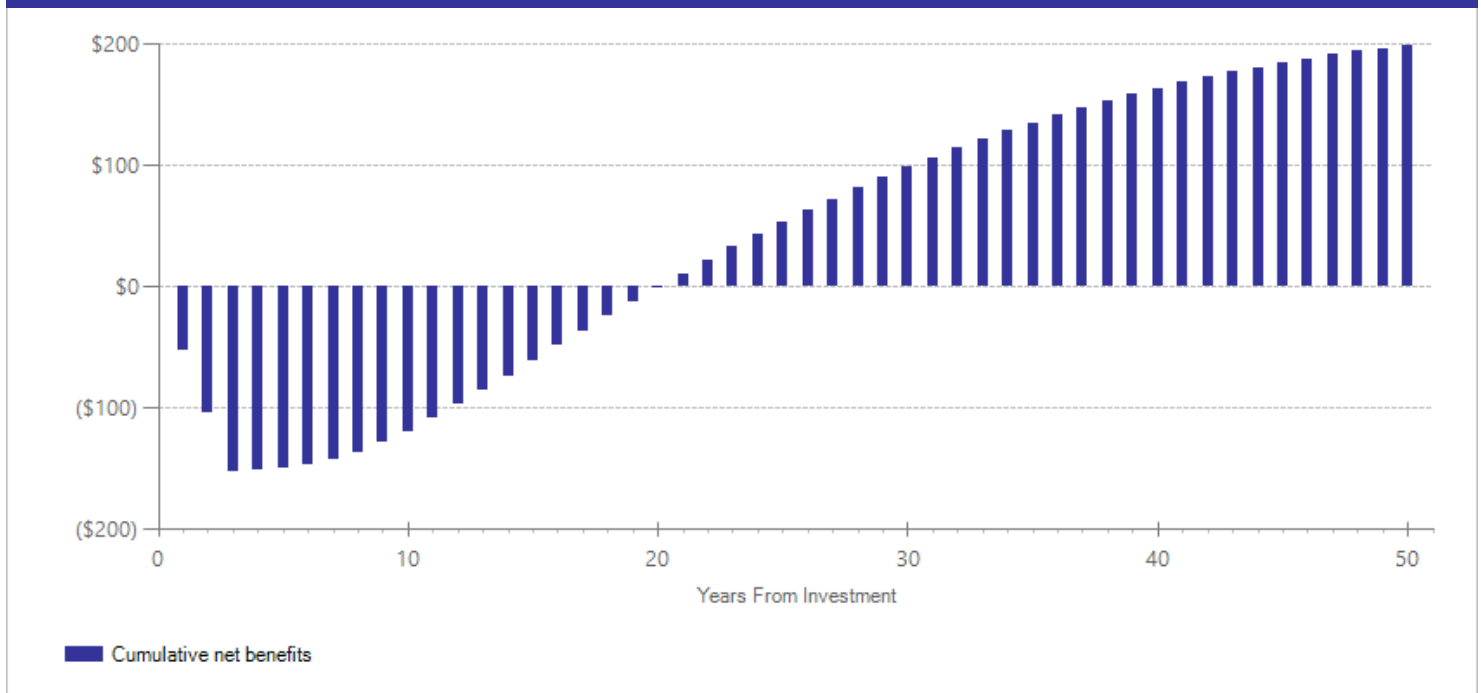
## Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	\$35	2018	Present value of net program costs (in 2018 dollars)	(\$102)
Comparison costs	\$0	2018	Cost range (+ or -)	20 %

The per-student cost includes the cost of providing training and materials to teachers, the cost of program-related teacher time that occurs outside of regular school hours, the cost of substitute teacher time while teachers attend off-site training, and other school staff time required for program implementation. The cost includes \$638 (2019 dollars) for 3-year curriculum and materials, and training cost of \$5,000 plus \$2,200 for trainer travel (personal communication with Debra Hemphill, Hazelden Publishing, June 6, 2019). We assume two teachers per grade in a school will deliver the program, and include two days of substitute time per teacher at the state-funded rate of \$151.86 per day (personal communication from Financial Resources staff at the Office of the Superintendent of Public Instruction, July 2019) to allow teachers to attend training. We include 50% of a school counselor at each school with an annual salary of \$84,240 (based on the School District Personnel Summary Reports 2017–18 School Year) to coordinate the program, and assume student populations of the prototypical Washington middle school (RCW 28A.150.260).

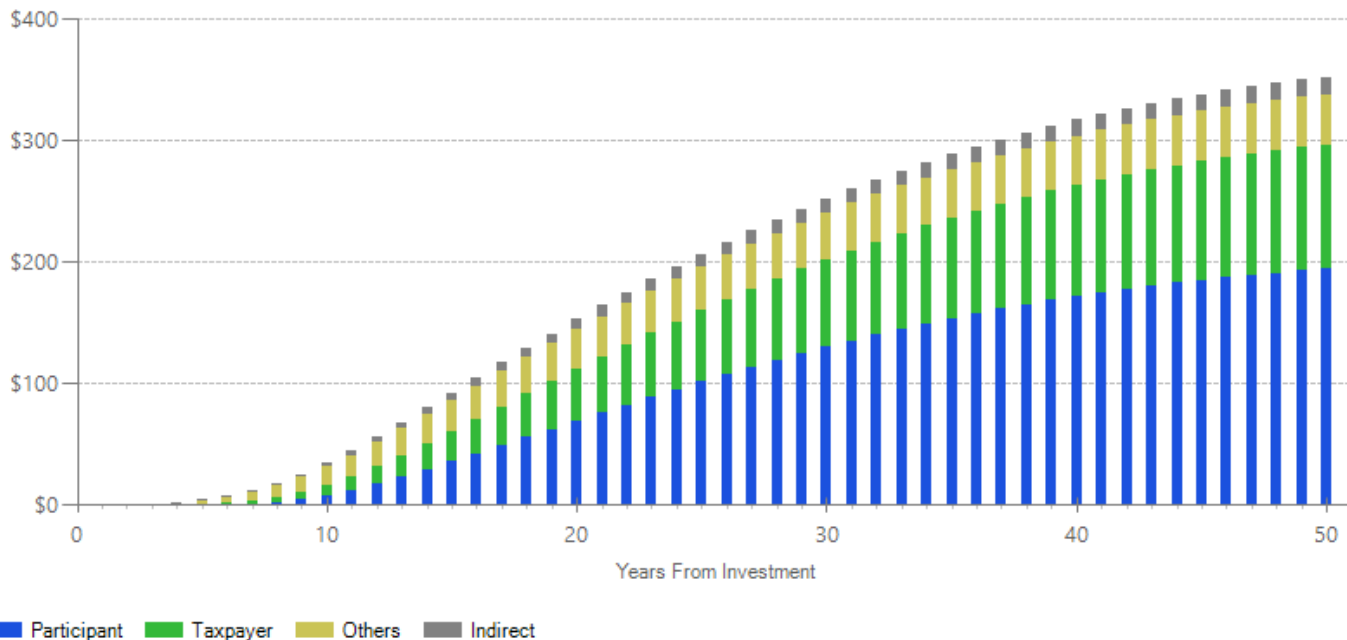
The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our [Technical Documentation](#).

## Benefits Minus Costs Over Time (Cumulative Discounted Dollars)



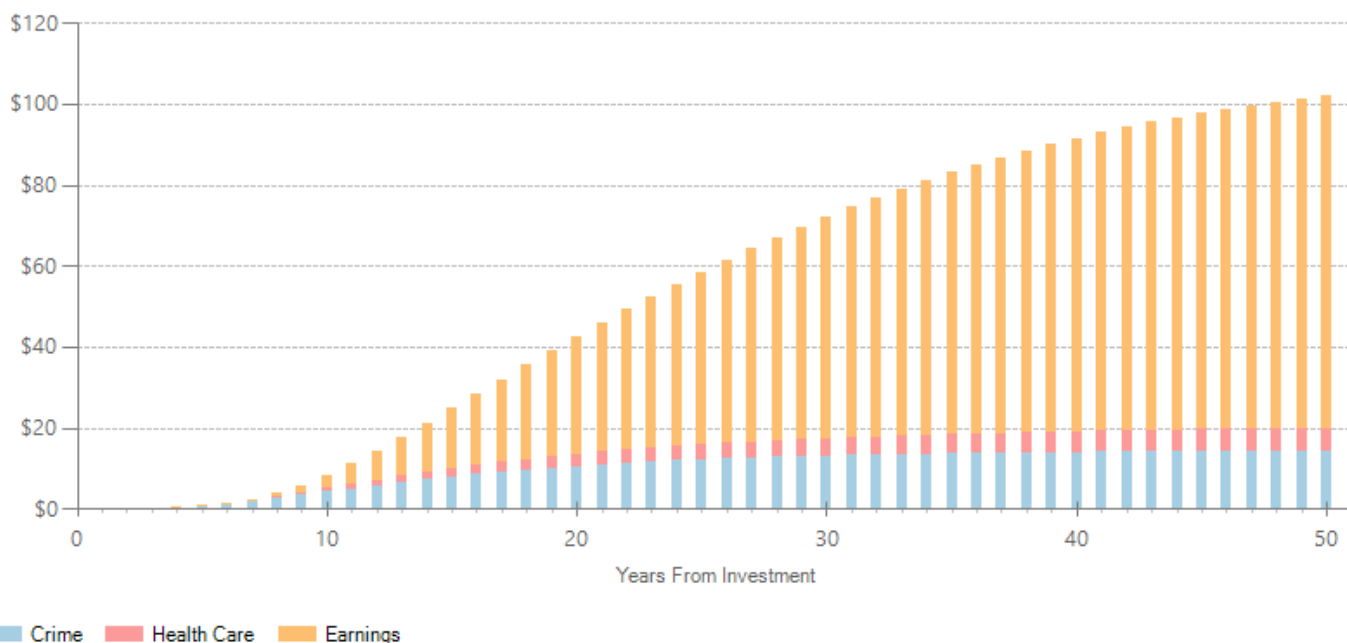
The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below \$0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach \$0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above \$0, the benefits of the program exceed the initial investment.

## Benefits by Perspective Over Time (Cumulative Discounted Dollars)



The graph above illustrates the breakdown of the estimated cumulative benefits (not including program costs) per-participant for the first fifty years beyond the initial investment in the program. These cash flows provide a breakdown of the classification of dollars over time into four perspectives: taxpayer, participant, others, and indirect. "Taxpayers" includes expected savings to government and expected increases in tax revenue. "Participants" includes expected increases in earnings and expenditures for items such as health care and college tuition. "Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance. "Indirect benefits" includes estimates of the changes in the value of a statistical life and changes in the deadweight costs of taxation. If a section of the bar is below the \$0 line, the program is creating a negative benefit, meaning a loss of value from that perspective.

## Taxpayer Benefits by Source of Value Over Time (Cumulative Discounted Dollars)



The graph above focuses on the subset of estimated cumulative benefits that accrue to taxpayers. The cash flows are divided into the source of the value.

## Citations Used in the Meta-Analysis

- Komro, K.A., Perry, C.L., Veblen-Mortenson, S., Farbakhsh, K., Toomey, T.L., Stigler, M.H., Jones-Webb, R., . . . Williams, C.L. (2008). Outcomes from a randomized controlled trial of a multi-component alcohol use preventive intervention for urban youth: Project Northland Chicago. *Addiction, 103*(4), 606-618.
- Perry, C.L. et al. (1996). Project Northland: Outcomes of a communitywide alcohol use prevention program during early adolescence. *American Journal of Public Health, 86*(7), 956-965.
- Perry, C.L., Williams, C.L., Komro, K.A., Veblen-Mortenson, S., Stigler, M.H., Munson, K.A., et al. (2002). Project Northland: Long-term outcomes of community action to reduce adolescent alcohol use. *Health Education Research, 17*(1), 117-132.
- West, B., Abatemarco, D., Ohman-Strickland, P.A., Zec, V., Russo, A., & Milic, R. (2008). Project Northland in Croatia: results and lessons learned. *Journal of Drug Education, 38*(1), 55-70.

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Printed on 05-16-2021



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