Model Smoking Prevention Program
Public Health & Prevention: School-based
Benefit-cost estimates updated December 2023. Literature review updated January 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: The Model Smoking Prevention Program (MSPP, formerly known as the Minnesota Smoking Prevention Program) is a school-based tobacco prevention program for adolescents in 5th through 8th grades. MSPP addresses tobacco use by influencing the social and psychological factors that encourage the onset of smoking. The program includes six classroom sessions and involves students working in collaboration with peers to learn about the consequences of smoking and skills to resist smoking. A 30-minute training session for peer leaders is also included. Teachers act as facilitators following a one-day training.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$310	Benefit to cost ratio	$117.36
Participants	$592	Benefits minus costs	$1,343
Others	$409	Chance the program will produce	
Indirect	$43	benefits greater than the costs	100%
Total benefits	$1,354		
Net program cost	($12)		
Benefits minus cost	$1,343		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2022). 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	SE	Age	ES	SE	Age	ES	p-value
Smoking before end of middle school	13	2	3131	-0.182	0.056	13	-0.182	0.056	13	-0.197	0.001

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:[1]	Benefits accrue to:				
		Taxpayers	Participants	Others[2]	Indirect[3]	Total
Smoking before end of middle school	Labor market earnings associated with high school graduation	$266	$627	$341	$0	$1,235
Smoking before end of middle school	Health care associated with smoking	$83	$24	$86	$42	$234
Smoking before end of middle school	Costs of higher education	($40)	($60)	($18)	($20)	($138)
Smoking before end of middle school	Mortality associated with smoking	$1	$2	$0	$27	$30
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($6)	($6)
Totals		$310	$592	$409	$43	$1,354

[1]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.

[2]"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.

[3]"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	$10	2017	Present value of net program costs (in 2022 dollars)	($12)
Comparison costs	$0	2017	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, and the cost of substitute teacher time while teachers attend off-site training. The cost includes $250 (2019 dollars) for curriculum and the training cost of $3,500 plus $1,750 for trainer travel (personal communication with Debra Hemphill, Hazelden Publishing, March 20, 2019). We include one day 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 assume three middle schools per school district implement the program, and that one teacher provides the program to all students in a single grade in a prototypical Washington middle school (RCW 28A.150.206).

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)
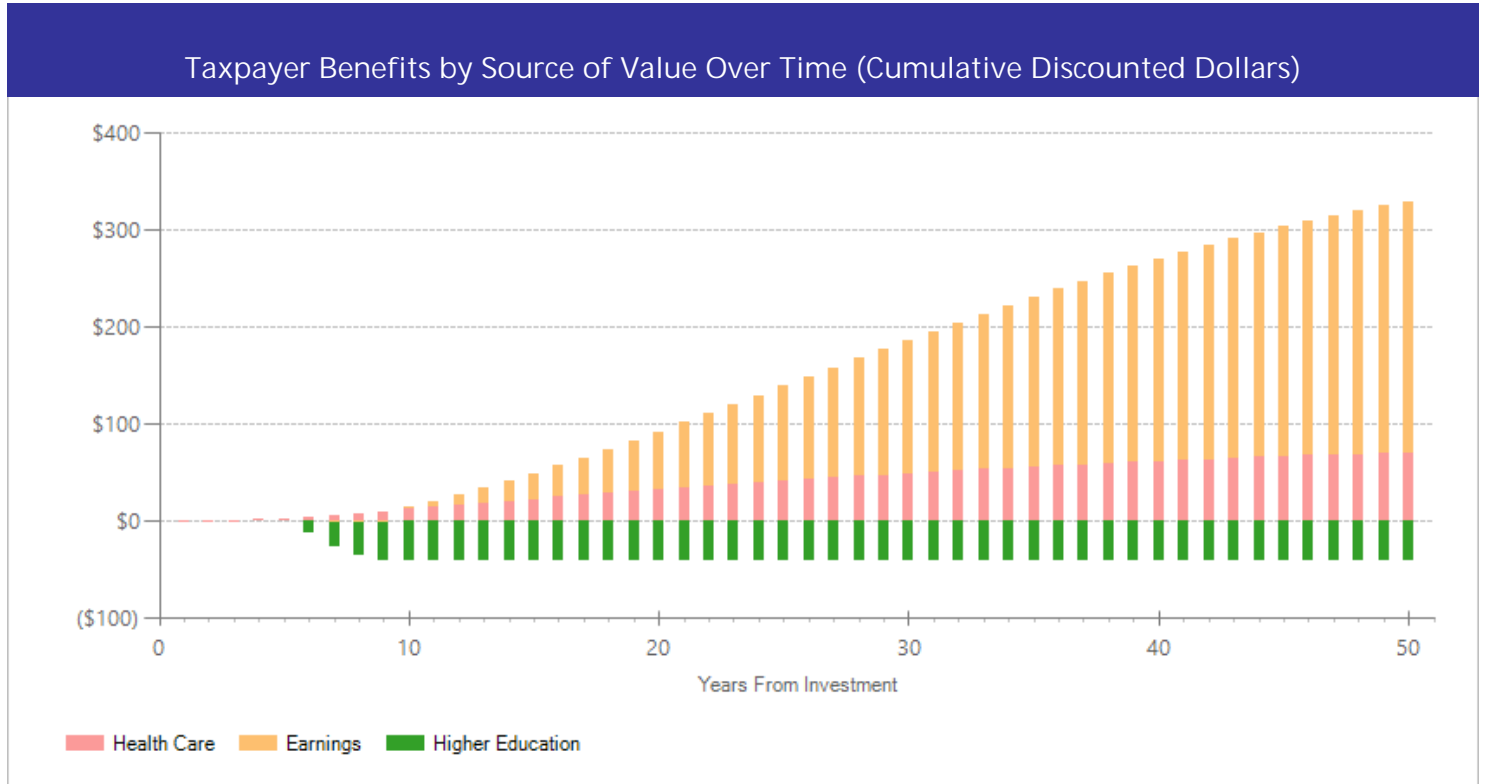

Cumulative net benefits
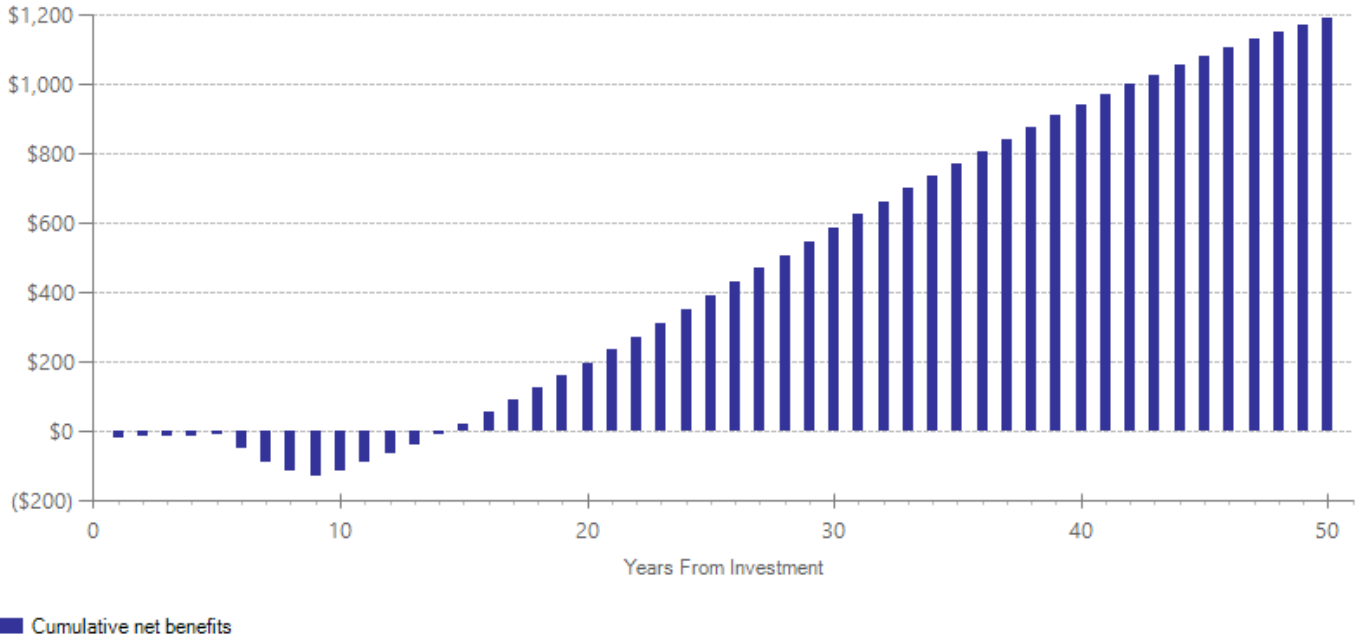
The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost 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)

Participant   Taxpayer   Others   Indirect
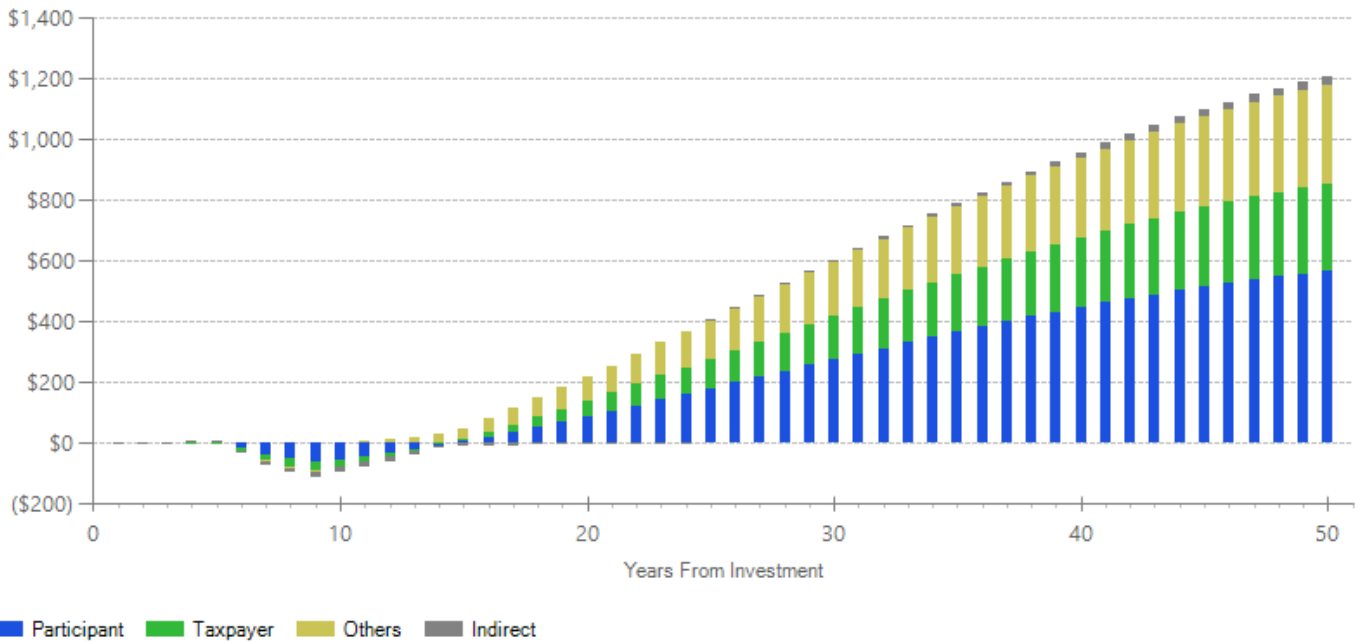
The graph above illustrates the breakdown of the estimated cumulative benefits (not including program costs) per-participant for the first fifty years beyond the initial investment in the program. These cash flows provide a breakdown of the classification of dollars over time into four perspectives: 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

Arkin, R., Roemhild, H., Johnson, C.A., Luepker, R., & Murray, D. (1981). The Minnesota Smoking Prevention Program: A seventh grade health curriculum supplement. *Journal of School Health, 51*(19), 611-616.

Perry, C.L., Kelder, S.H., Murray, D.M., & Klepp, K.I. (1992). Communitywide smoking prevention: Long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. *American Journal of Public Health, 82*(9), 1210-1216.

Washington State Institute for Public Policy

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