Roots of Empathy
Public Health & Prevention: School-based
Benefit-cost estimates updated December 2023. Literature review updated June 2020.

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: Roots of Empathy (RoE) is a year-long, school-based program designed to encourage prosocial behavior and reduce aggression in elementary school (kindergarten through 8th grade) children and youth. The core of the program is regular visits to the classroom by an infant and its parent. Visits begin in the fall when infants are two to four months old and occur about every three weeks. During the visits, students sit around the baby, parent, and instructor to observe the baby's development, growth, and interactions between parent and baby. Each classroom "adopts" its baby for the school year.

The RoE instructor, who is typically not the classroom teacher, provides a pre-visit lesson on infant development and then a follow-up lesson the week after the infant visit. RoE has developed curricula specific to the ages of children in the classrooms (kindergarten, grades 1 to 3, grades 4 to 6, and grades 7 to 8). The children in the studies included in the analysis were, on average, nine years old.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Benefits to:			
Taxpayers	$620	Benefit to cost ratio	$4.59
Participants	$317	Benefits minus costs	$1,238
Others	$561	Chance the program will produce	
Indirect	$84	benefits greater than the costs	90%
Total benefits	$1,583		
Net program cost	($345)		
Benefits minus cost	$1,238		

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
Social and emotional development^	9	5	1748	0.153	0.053	9	n/a	n/a	n/a	0.161	0.001
Externalizing behavior symptoms	9	5	1746	-0.161	0.049	9	-0.089	0.048	12	-0.177	0.001

^WSIPP's benefit-cost model does not monetize this outcome.

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
Externalizing behavior symptoms	Criminal justice system	$42	$0	$99	$21	$162
Externalizing behavior symptoms	Labor market earnings associated with high school graduation	$106	$250	$136	$0	$492
Externalizing behavior symptoms	K-12 special education	$165	$0	$0	$82	$247
Externalizing behavior symptoms	Health care associated with externalizing behavior symptoms	$323	$91	$334	$162	$910
Externalizing behavior symptoms	Costs of higher education	($17)	($25)	($8)	($8)	($57)
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($173)	($173)
Totals		$620	$317	$561	$84	$1,583

[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	$289	2014	Present value of net program costs (in 2022 dollars)	($345)
Comparison costs	$0	2014	Cost range (+ or -)	20%

The per-student cost of this intervention was derived from an evaluation in Northern Ireland (Connolly, P., Miller, S., Kee, F., Sloan, S., Gildea, A., McIntosh, E., . . . Bland, M. (2018). Cluster randomised controlled trial and evaluation and cost-effectiveness analysis of the Roots of Empathy schools-based programme for improving social and emotional well-being outcomes among 8- to 9-year-olds in Northern Ireland. Southampton, United Kingdom: NIHR Journals Library). Costs include personnel; administrative support; instructor time, training, and materials. We converted 2014 British pounds to US dollars using the exchange rate in 2014, $1.6484 per pound, based on information from the St. Louis Federal Reserve Bank. (https://alfred.stlouisfed.org/series?seid=DEXUSUK).

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)
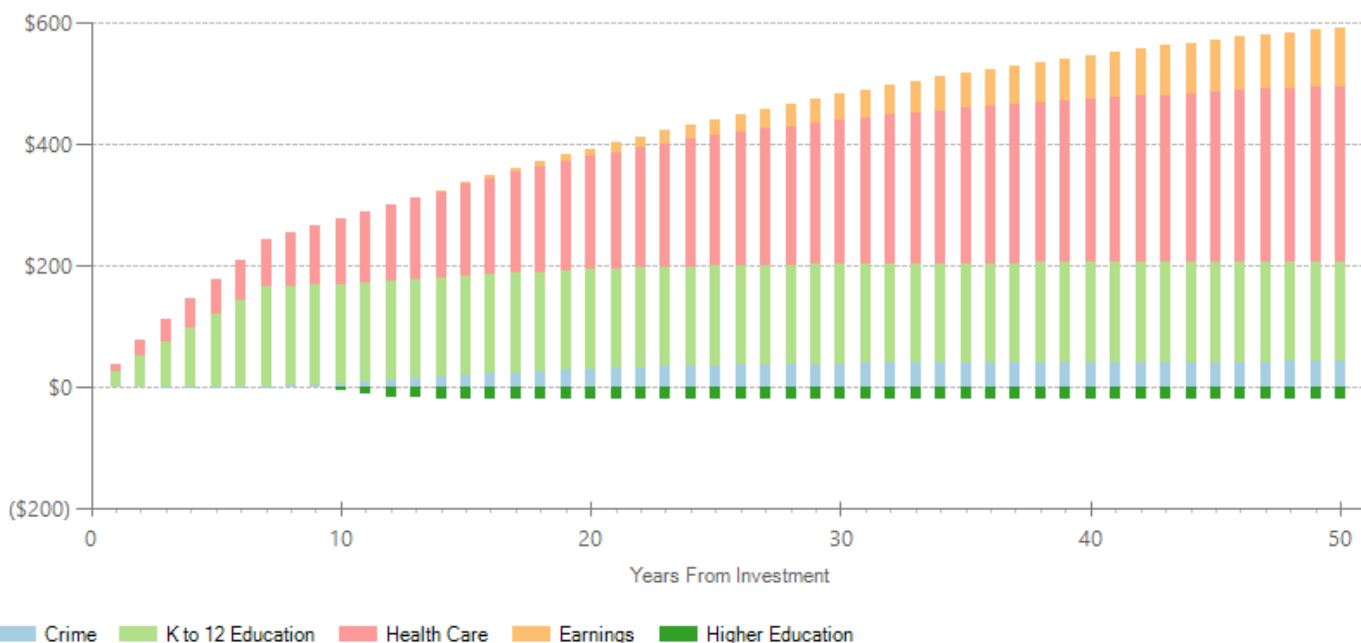

Cumulative net benefits
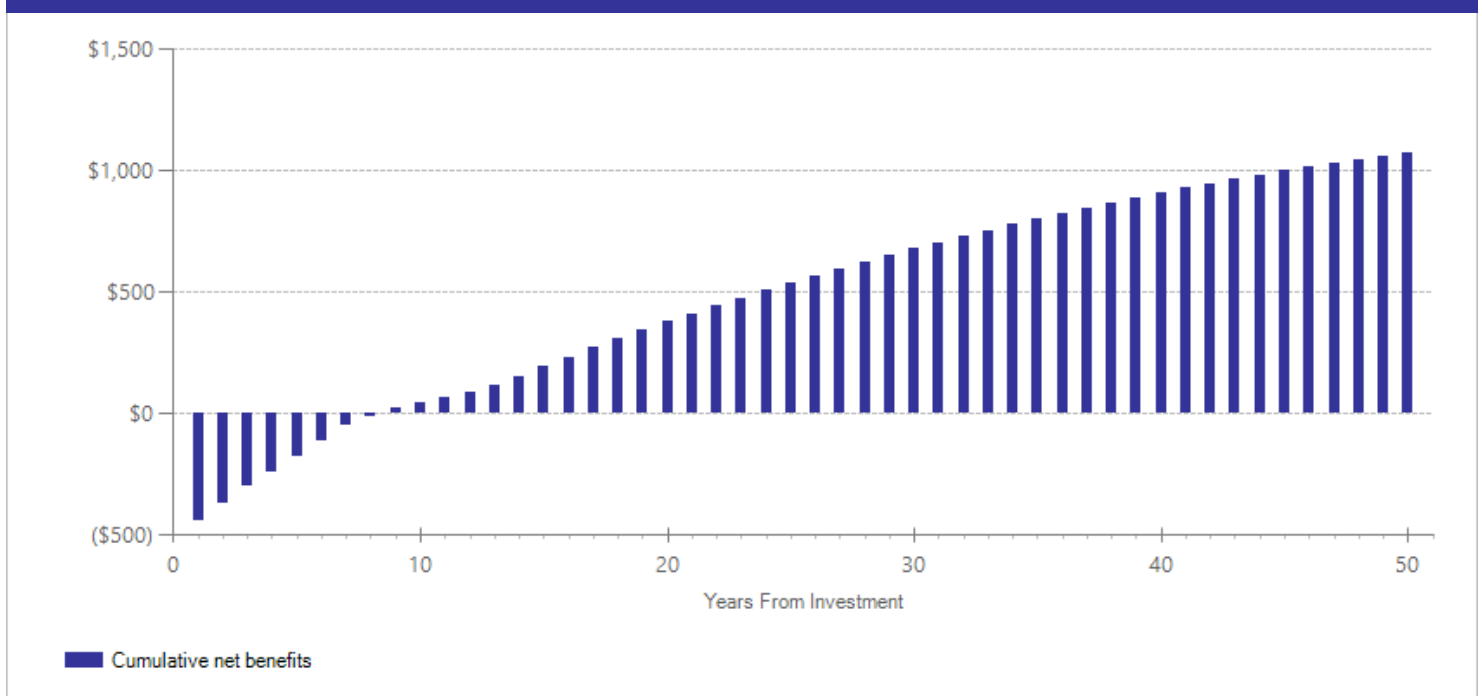
The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost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

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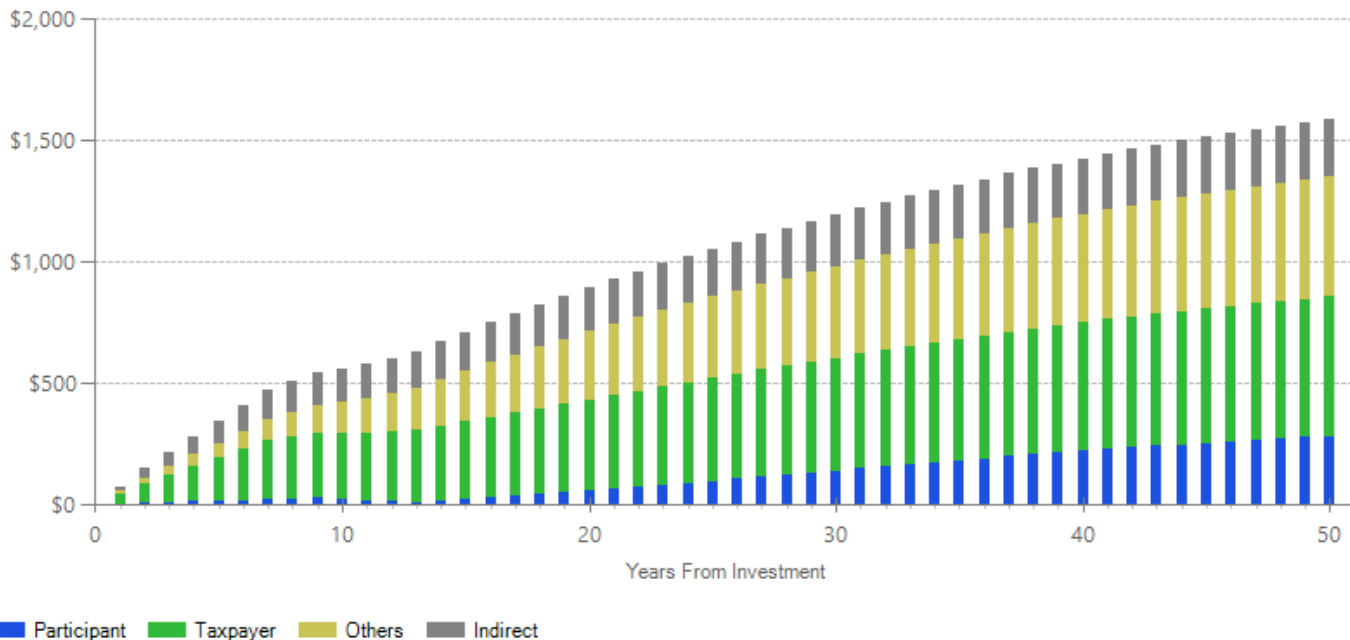
The graph above illustrates the breakdown of the estimated cumulative benefits (not including program costs) per-participant for the first fifty years beyond the initial investment in the program. These cash flows provide a breakdown of the classification of dollars over time into four perspectives: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

Legend: Crime · K to 12 Education · Health Care · Earnings · Higher Education

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

Connolly, P., Miller, S., Kee, F., Sloan, S., Gildea, A., McIntosh, E. . . . Bland, M. (2018). *Cluster randomised controlled trial and evaluation and cost-effectiveness analysis of the Roots of Empathy schools-based programme for improving social and emotional well-being outcomes among 8- to 9-year-olds in Northern Ireland.* Place of publication not identified: NIHR Journals Library.

Kendall, G., Schonert-Reichl, K., Smith, V., Jacoby, P., Austin, R., Stanley, F., & Hertzman, C. (2006). *The evaluation of Roots of Empathy in Western Australian schools 2005.* Perth, WA: Telethon Institute for Child Health Research.

Latch, D., Stauffer, M., & Bolling, M. (2017). *Evaluation of the Roots of Empathy program in Switzerland, Years 2015 to 2017: Full Report.* Bern Switzerland: Bern University of Applied Sciences.

Schonert-Reichl, K.A., Smith, V., Zaidman-Zait, A., & Hertzman, C. (2012). Promoting children's prosocial behaviors in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. *Social Mental Health: a Multidisciplinary Research and Practice Journal, 4*(1), 1-21.

Wrigley, J., Makara, K., & Elliot, D. (2016). *Evaluation of Roots of Empathy in Scotland 2014-2015. Final Report.* York, England: Action for Children