Washington State Institute for Public Policy

Benefit-Cost Results

Cognitive behavioral therapy (CBT) for children & adolescents with depression

Children's Mental Health: Depression

Benefit-cost estimates updated December 2023. Literature review updated August 2017.

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: Cognitive behavioral therapy (CBT) for depression includes such elements as cognitive restructuring, scheduling pleasant experiences, emotion regulation, communication skills, and problem-solving. In this review, CBT is provided to children and adolescents aged 7 to 17 with major or minor depression, dysthymia, or subthreshold depression. We include programs such as Coping With Depression—Adolescent (CWD-A), Primary and Secondary Control Enhancement Training (PASCET), the Treatment for Adolescents with Depression (TADS) Study, and other CBT models. On average, treatments in this review provided 14 therapeutic hours per client over three months, with a range of 6 to 28 therapeutic hours per client. Therapies were provided in both individual and group modalities.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$98
Participants	$27
Others	$93
Indirect	($180)
Total benefits	$38
Net program cost	($517)
Benefits minus cost	($479)

Benefit to cost ratio	$0.07
Benefits minus costs	($479)
Chance the program will produce benefits greater than the costs	49%

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
Anxiety disorder^^	14	5	79	-0.201	0.202	14	n/a	n/a	n/a	-0.249	0.218
Major depressive disorder	14	19	580	-0.299	0.076	14	0.000	0.310	16	-0.488	0.001
Disruptive behavior disorder symptoms	14	3	184	-0.042	0.121	14	-0.023	0.073	17	-0.042	0.730
Externalizing behavior symptoms	14	4	208	0.001	0.101	14	0.001	0.061	17	0.031	0.760
Global functioning^	14	6	357	0.172	0.109	14	n/a	n/a	n/a	0.192	0.078
Internalizing symptoms^^	14	5	183	0.084	0.109	14	n/a	n/a	n/a	0.104	0.341
Hospitalization (psychiatric)^^	14	1	41	-0.143	0.214	14	n/a	n/a	n/a	-0.143	0.504
Suicide attempts^	14	1	41	0.000	0.232	14	n/a	n/a	n/a	0.000	1.000
Suicidal ideation^	14	3	252	-0.302	0.093	14	n/a	n/a	n/a	-0.302	0.001
Specialist visits^	14	1	41	-0.135	0.214	14	n/a	n/a	n/a	-0.135	0.529

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

^^WSIPP does not include this outcome when conducting benefit-cost analysis for this program.

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	$0	$0	($1)	$0	($2)
Disruptive behavior disorder symptoms	K-12 grade repetition	$1	$0	$0	$1	$2
Externalizing behavior symptoms	K-12 special education	($1)	$0	$0	$0	($1)
Major depressive disorder	Labor market earnings associated with major depression	$0	$0	$0	$0	$1
Major depressive disorder	Health care associated with major depression	$81	$23	$83	$40	$228
Externalizing behavior symptoms	Health care associated with externalizing behavior symptoms	($3)	($1)	($3)	($1)	($7)
Major depressive disorder	Mortality associated with depression	$2	$5	$0	$30	$37
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($250)	($219)
Totals		$98	$27	$93	($180)	$38

[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.

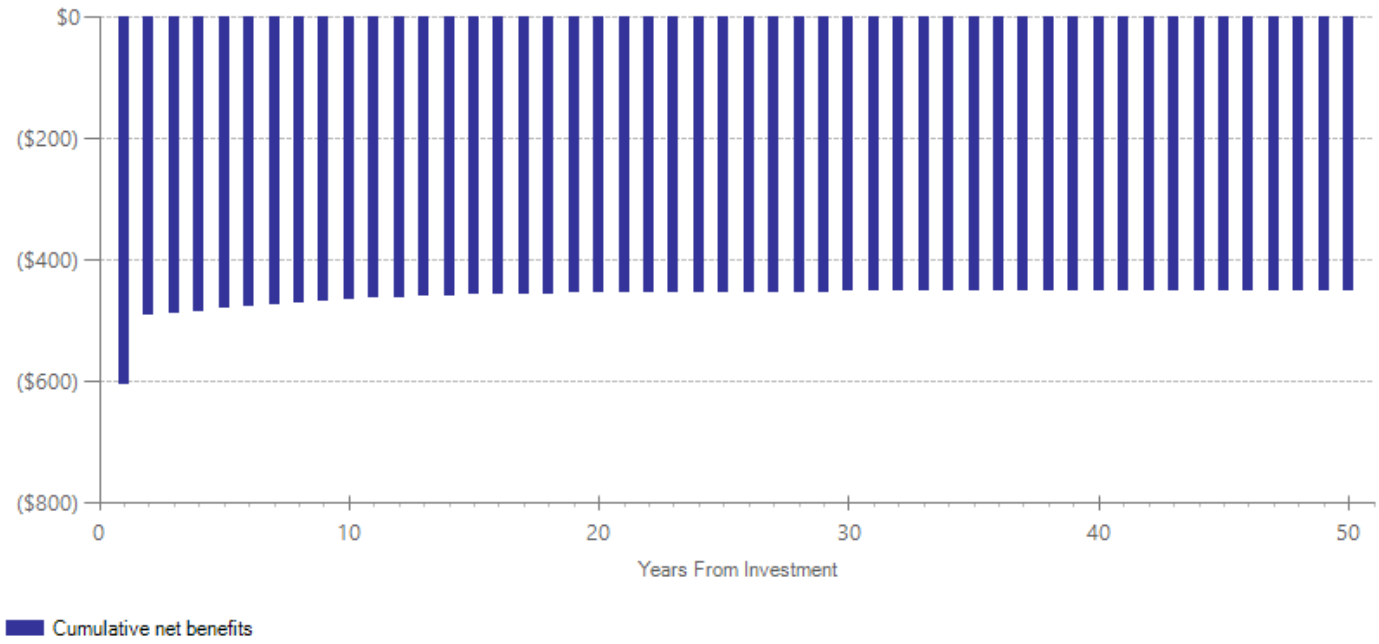
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,245	2015	Present value of net program costs (in 2022 dollars)	($517)
Comparison costs	$753	2010	Cost range (+ or -)	15%

On average, participants received 14 therapeutic hours. Per-participant costs are based on weighted average therapist time, as reported in the included studies. Hourly therapist cost is based on the actuarial estimates of reimbursement for treatment by group or individual modality (Mercer. (2016). Mental health and substance use disorder services data book for the state of Washington). For comparison group costs we use 2010 Washington State DSHS data to estimate the average reimbursement rate for treatment of child and adolescent depression.

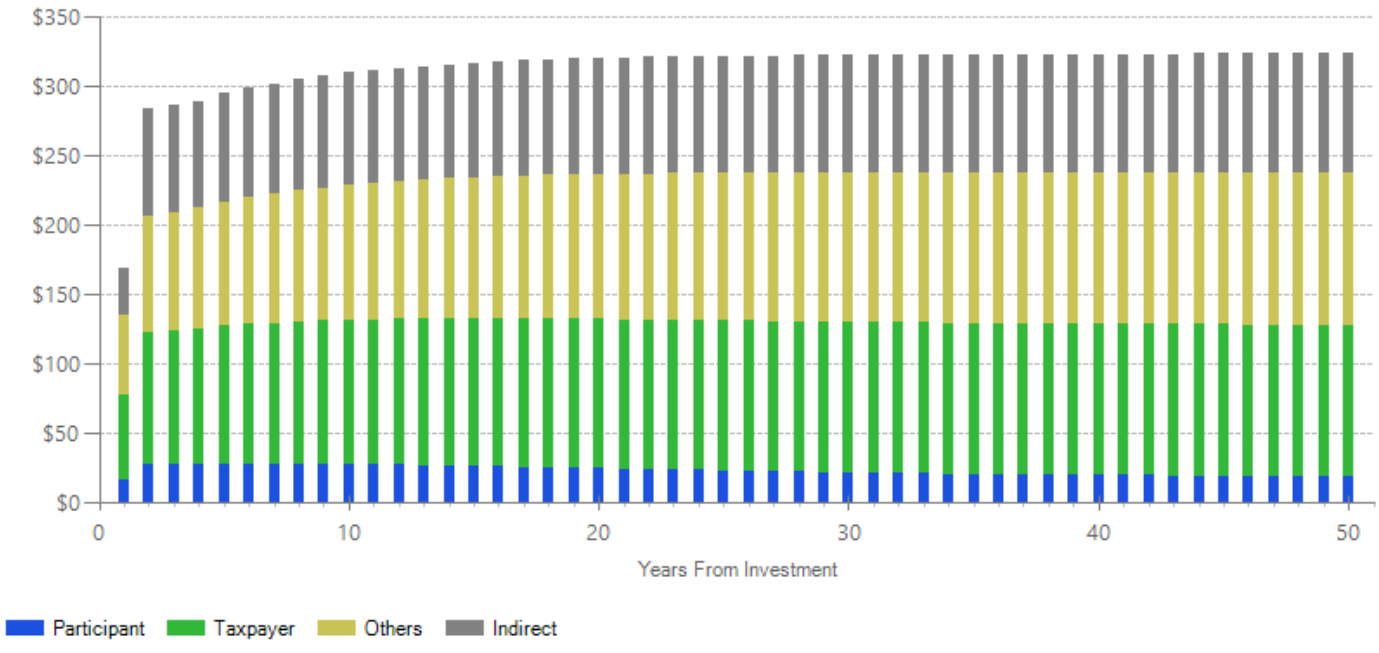
The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty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

Benefits Minus Costs Over Time (Cumulative Discounted Dollars)

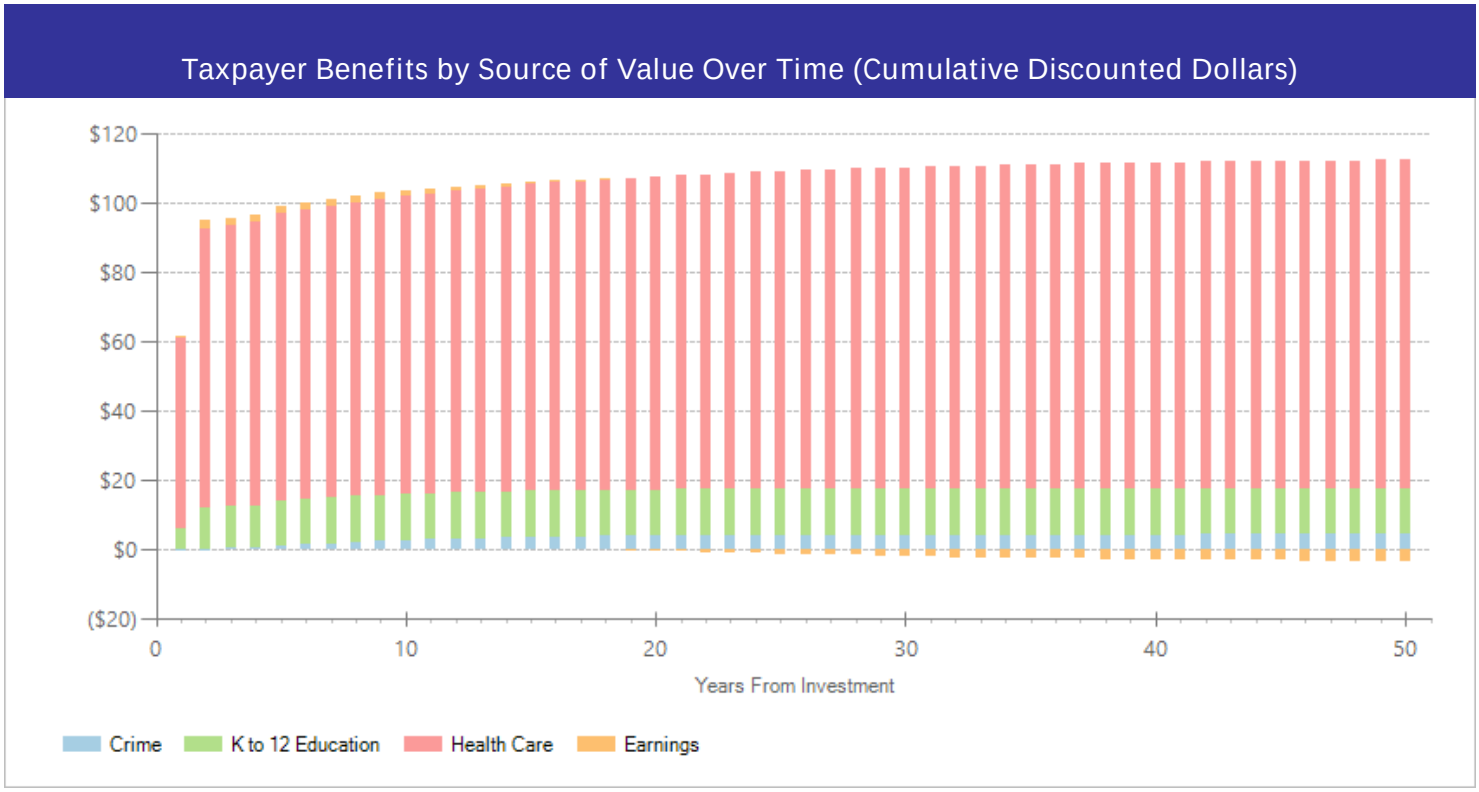


The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost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



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.

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