Washington State Institute for Public Policy

Benefit-Cost Results

Group and individual cognitive behavioral therapy (CBT) for children & adolescents with anxiety

Children's Mental Health: Anxiety

Benefit-cost estimates updated December 2023. Literature review updated May 2018.

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) uses cognitive restructuring and self-talk, exposure to feared stimuli, and other strategies to treat mental health conditions, including anxiety. CBT interventions are typically delivered by therapists in individual or group format in an outpatient setting; well-known examples include the Coping Cat and Coping Koala programs. Programs in this analysis served typically or atypically developing children with anxiety disorders. This analysis includes both traditional CBT interventions, which on average provided an estimated 15 hours of therapy over 12 weeks, and brief, intensive CBT interventions, which on average provided an estimated 30 hours of therapy over two weeks.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$4,542
Participants	$7,716
Others	$1,242
Indirect	$439
Total benefits	$13,939
Net program cost	($516)
Benefits minus cost	$13,423

Benefit to cost ratio	$27.04
Benefits minus costs	$13,423
Chance the program will produce benefits greater than the costs	94%

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
School attendance^	10	1	24	0.019	0.286	10	n/a	n/a	n/a	0.019	0.948
Attention-deficit/hyperactivity disorder symptoms	10	1	42	-0.683	0.219	10	0.000	0.141	11	-0.683	0.002
Anxiety disorder	10	39	1342	-0.681	0.059	10	-0.269	0.190	11	-0.914	0.001
Major depressive disorder	10	14	605	-0.187	0.068	10	0.000	0.310	12	-0.224	0.001
Externalizing behavior symptoms	10	9	495	-0.258	0.073	10	-0.142	0.075	13	-0.292	0.001
Global functioning^	10	3	173	0.775	0.307	10	n/a	n/a	n/a	0.775	0.011
Internalizing symptoms	10	12	600	-0.338	0.065	10	-0.338	0.065	12	-0.379	0.001
Hospitalization (psychiatric)^^	10	2	182	0.000	0.145	10	n/a	n/a	n/a	0.000	1.000
Suicide attempts^	10	2	182	0.000	0.115	10	n/a	n/a	n/a	0.000	1.000
Suicidal ideation^	10	2	182	0.186	0.145	10	n/a	n/a	n/a	0.186	0.199
Emergency department visits^^	10	1	19	0.000	0.457	10	n/a	n/a	n/a	0.000	1.000
Hospitalization^^	10	1	140	-0.082	0.168	10	n/a	n/a	n/a	-0.082	0.627
Health care costs*^^	10	1	24	0.046	79.057	10	n/a	n/a	n/a	0.046	1.000

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

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

*The effect size for this outcome indicates percentage change, not a standardized mean difference effect size.

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	$66	$0	$157	$33	$256
Internalizing symptoms	K-12 grade repetition	$41	$0	$0	$20	$61
Externalizing behavior symptoms	K-12 special education	$236	$0	$0	$118	$354
Anxiety disorder	Labor market earnings associated with anxiety disorder	$3,149	$7,419	$0	$0	$10,568
Internalizing symptoms	Health care associated with internalizing symptoms	$1,051	$297	$1,084	$525	$2,958
Major depressive disorder	Mortality associated with depression	$0	$0	$0	$0	$0
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($258)	($258)
Totals		$4,542	$7,716	$1,242	$439	$13,939

[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.

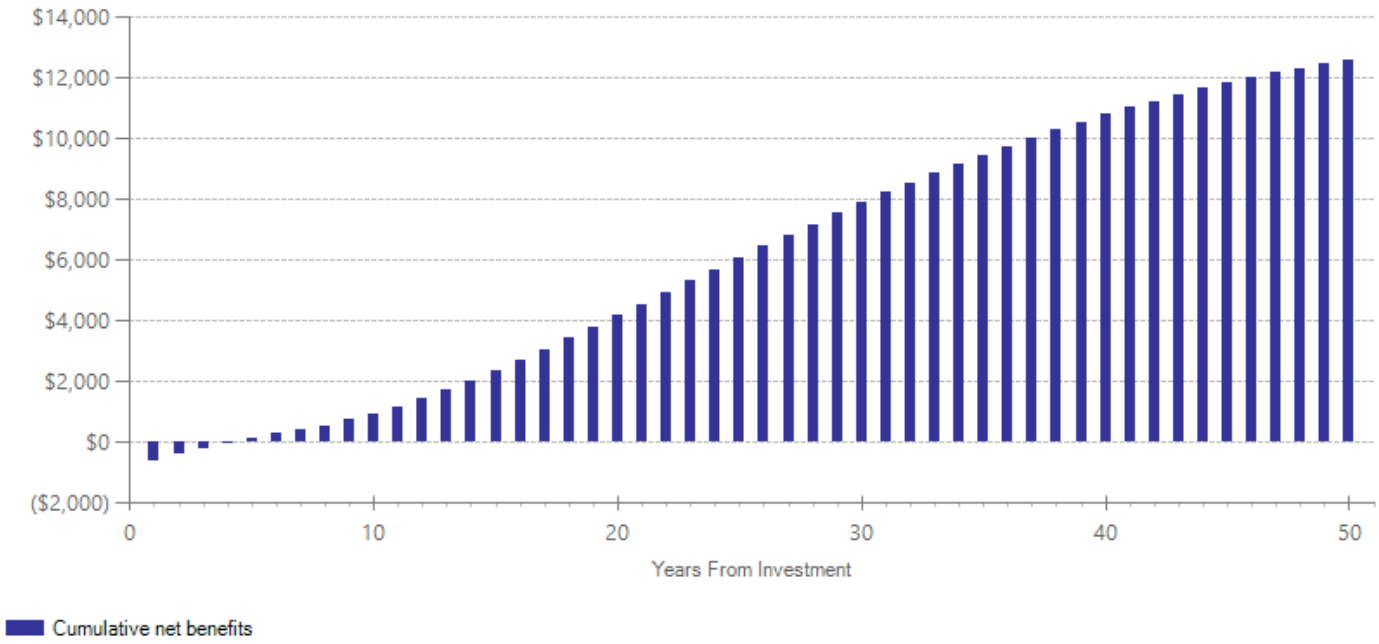
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,431	2015	Present value of net program costs (in 2022 dollars)	($516)
Comparison costs	$927	2010	Cost range (+ or -)	30%

In studies included in this analysis, participants received an average of 15 hours of therapist time. Per-participant cost estimates are based on weighted average therapist time, as reported in the treatment studies. Hourly therapist cost is based on the actuarial estimates of reimbursement by 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 anxiety treatment for children and adolescents.

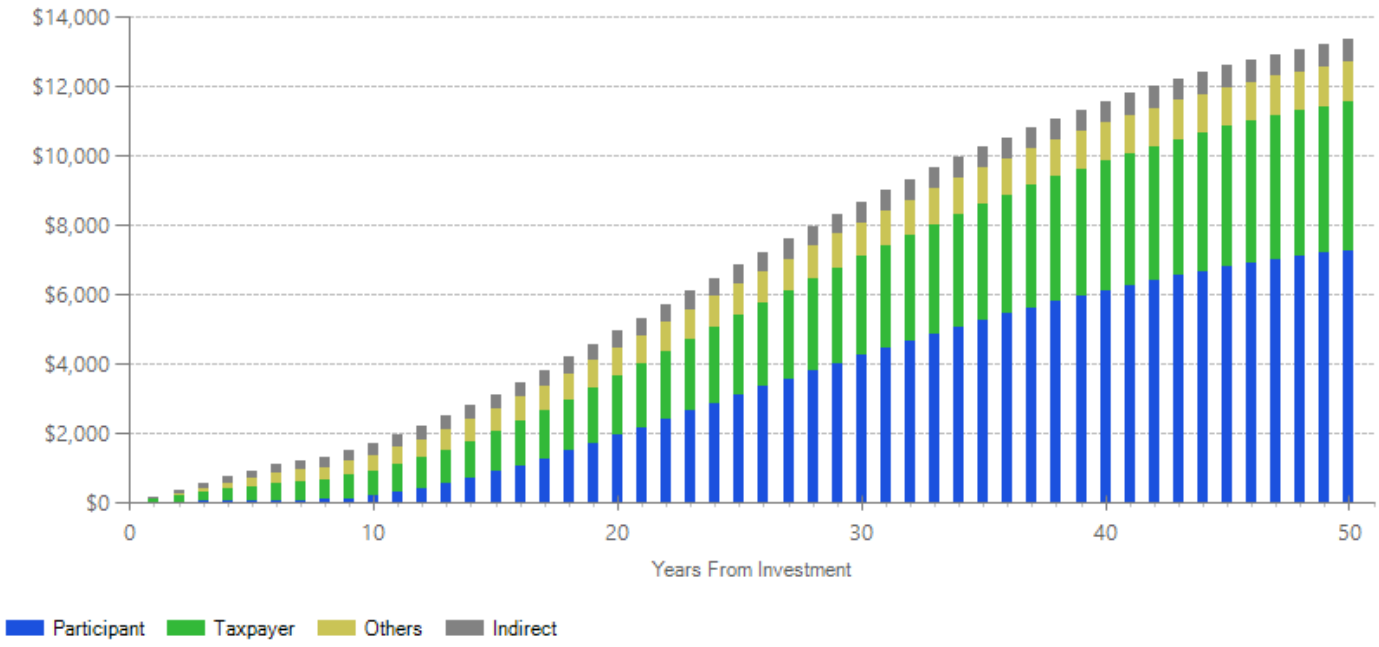
The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty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

Benefits Minus Costs Over Time (Cumulative Discounted Dollars)

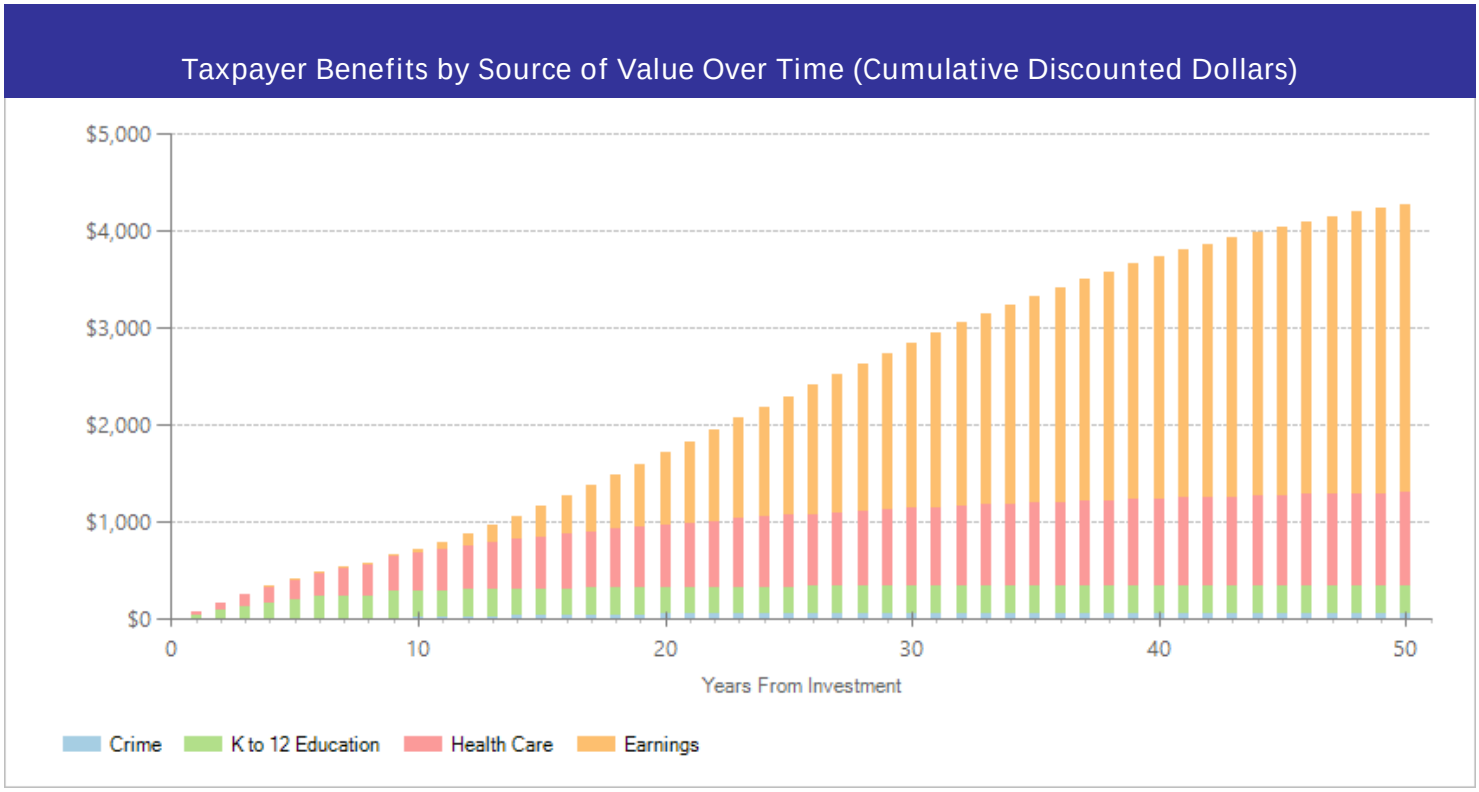


The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost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