Washington State Institute for Public Policy

Benefit-Cost Results

Multidimensional Family Therapy (MDFT)

Substance Use Disorders: Treatment for Youth

Benefit-cost estimates updated December 2023. Literature review updated May 2015.

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: Multidimensional Family Therapy (MDFT) is an integrative, family-based, multiple systems treatment for youth with drug abuse and related behavior problems. The therapy consists of four domains: (1) engage adolescent in treatment, (2) increase parental involvement with youth and improve limit-setting, (3) decrease family-interaction conflict, and (4) collaborate with extra-familial social systems. Youth are generally aged 11 to 16 and have been clinically referred to outpatient treatment. For this meta-analysis, two studies measured the effects of MDFT on delinquency and ten measured the effects on subsequent substance use. All 12 studies included youth who were referred from the juvenile justice system as well as schools, child welfare agencies, health and mental health agencies, and parents.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$2,026
Participants	$152
Others	$4,353
Indirect	($3,753)
Total benefits	$2,778
Net program cost	($9,504)
Benefits minus cost	($6,726)

Benefit to cost ratio	$0.29
Benefits minus costs	($6,726)
Chance the program will produce benefits greater than the costs	30%

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
Crime	14	3	151	-0.215	0.157	17	-0.215	0.157	27	-0.215	0.169
Substance use disorder^	14	7	354	-0.406	0.102	17	n/a	n/a	n/a	-0.406	0.001
Cannabis use disorder	14	6	251	-0.308	0.128	17	0.000	0.187	20	-0.308	0.016
Grade point average^	14	1	40	0.168	0.301	17	n/a	n/a	n/a	0.168	0.577
Externalizing behavior symptoms	14	4	346	-0.145	0.084	17	-0.080	0.061	20	-0.145	0.085
Internalizing symptoms	14	3	290	-0.049	0.132	17	-0.049	0.132	19	-0.049	0.710

^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
Crime	Criminal justice system	$1,625	$0	$4,049	$813	$6,486
Externalizing behavior symptoms	K-12 special education	$77	$0	$0	$39	$116
Cannabis use disorder	Labor market earnings associated with cannabis abuse or dependence	$29	$68	$0	$0	$97
Externalizing behavior symptoms	Health care associated with externalizing behavior symptoms	$295	$83	$304	$147	$830
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($4,752)	($4,752)
Totals		$2,026	$152	$4,353	($3,753)	$2,778

[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.

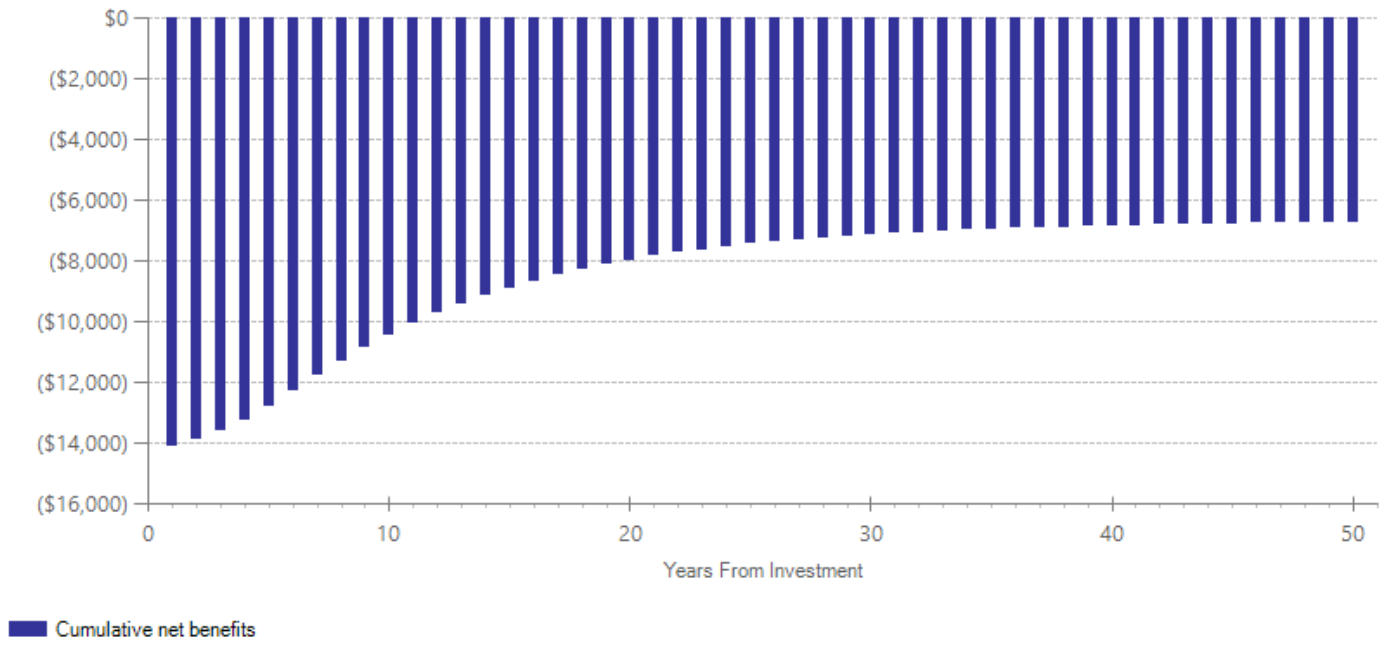
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$6,168	2001	Present value of net program costs (in 2022 dollars)	($9,504)
Comparison costs	$0	2001	Cost range (+ or -)	10%

This program is typically administered over a three-month period. Per-participant costs from Zavala, S. K., French, M. T., Henderson, C. E., Alberga, L., Rowe, C., & Liddle, H.A. (2005). Guidelines and challenges for estimating the economic costs and benefits of adolescent substance abuse treatments. *Journal of Substance Abuse Treatment, 29*(3), 191-205.

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)

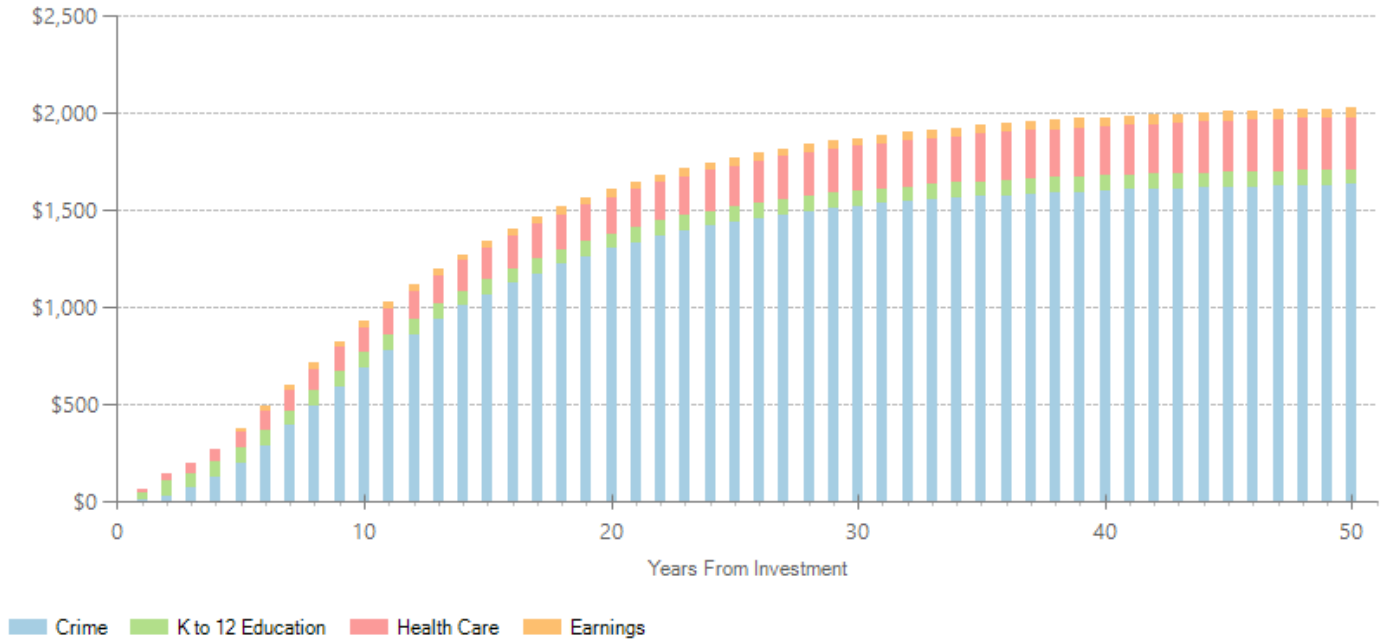


The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost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

Henderson, C.E., Dakof, G.A., Liddle, H.A., & Greenbaum, P.E. (2010). Effectiveness of multidimensional family therapy with higher severity substance-abusing adolescents: Report from two randomized controlled trials. *Journal of Consulting and Clinical Psychology, 78*(6), 885-897.

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Liddle, H.A., Dakof, G.A., Parker, K., Diamond, G.S., Barrett, K., & Tejeda, M. (2001) Multidimensional family therapy for adolescent drug abuse: Results of a randomized clinical trial. *American Journal of Drug Abuse, 27*(4), 651-688.

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Liddle, H.A., Dakof, G.A., Turner, R.M., Henderson, C.E., & Greenbaum, P.E. (2008). Treating adolescent drug abuse: A randomized trial comparing multidimensional family therapy and cognitive behavior therapy. *Addiction, 103*(10), 1660-1670.

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For further information, contact:
(360) 664-9800, institute@wsipp.wa.gov

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