Multisystemic Therapy-Substance Abuse (MST-SA) for court-involved youth
Juvenile Justice
Benefit-cost estimates updated December 2023. Literature review updated May 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: Multisystemic Therapy—Substance Abuse (MST-SA) is an adaptation of Multisystemic Therapy (MST) that targets youth who engage in disordered use of drugs or alcohol. MST-SA is intended to reduce drug use and abuse, as well as related delinquent or criminal behavior. Referrals to MST-SA typically come from juvenile drug court or as a condition to probation. Therapists deliver MST-SA in the participants' home, school, and community. MST-SA includes a written plan, intensive family-focused therapy, job training, and inclusion in positive activities (e.g., sports or clubs). This program also includes random drug testing and rewards for positive behavior (e.g., rewarding a clean urinalysis with monetary compensation).

This analysis includes adolescents identified and diagnosed as substance-abusing or dependent. In the included studies, the average MST-SA treatment lasted four months, with several therapist visits with the youth and their family visits per week. In the studies in our analysis that reported demographic information, 65% of participants were youth of color and 21% were female.

We exclude evaluations of Multisystemic Therapy, Multisystemic Therapy-Family Integrated Transitions, and Multisystemic Therapy-Problem Sexual Behavior from this analysis and analyze them separately.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$5,008	Benefit to cost ratio	$1.58
Participants	$5	Benefits minus costs	$5,529
Others	$12,420	Chance the program will produce	
Indirect	($2,299)	benefits greater than the costs	59%
Total benefits	$15,134		
Net program cost	($9,605)		
Benefits minus cost	$5,529		

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	15	2	86	-0.217	0.209	16	-0.217	0.209	24	-0.217	0.300
Externalizing behavior symptoms^^	15	1	43	0.162	0.264	16	n/a	n/a	n/a	0.162	0.540
Internalizing symptoms^^	15	1	43	0.114	0.264	16	n/a	n/a	n/a	0.114	0.665
Alcohol use disorder^^	15	1	37	-0.352	0.286	15	n/a	n/a	n/a	-0.352	0.219
Cannabis use disorder	15	2	80	-0.345	0.223	15	0.000	0.187	18	-0.345	0.121
Illicit drug use disorder^^	15	1	43	-0.315	0.323	16	n/a	n/a	n/a	-0.315	0.329
Problem alcohol use^^	15	1	37	-0.363	0.286	15	n/a	n/a	n/a	-0.363	0.204

^^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
Crime	Criminal justice system	$4,984	$0	$12,395	$2,492	$19,871
Cannabis use disorder	Labor market earnings associated with cannabis abuse or dependence	$0	$0	$0	$0	$0
Cannabis use disorder	Health care associated with cannabis abuse or dependence	$23	$5	$25	$12	$65
Program cost	Adjustment for deadweight cost of program	$0	$0	$0	($4,802)	($4,802)
Totals		$5,008	$5	$12,420	($2,299)	$15,134

[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	$8,142	2016	Present value of net program costs (in 2022 dollars)	($9,605)
Comparison costs	$0	2016	Cost range (+ or -)	20%

We estimate the per-participant cost by applying an average monthly cost of Multisystemic Therapy-Substance Abuse (MST-SA) to the average length of treatment in the included studies. We estimate a monthly cost for MST-SA using the cost of a similar program, Multisystemic Therapy (MST). We use the cost and average length of MST in Washington, provided by C. Redman (personal communication, Washington State Juvenile Rehabilitation, April 16, 2019), to estimate a monthly cost. This cost reflects estimates from Barnoski, R. (2009). Providing evidence-based programs with fidelity in Washington State juvenile courts: Cost analysis (Doc. No. 09-12-1201). Olympia: Washington State Institute for Public Policy. We multiply the monthly cost estimate and the average length of MST-SA in the included studies, approximately 4.2 months.

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)
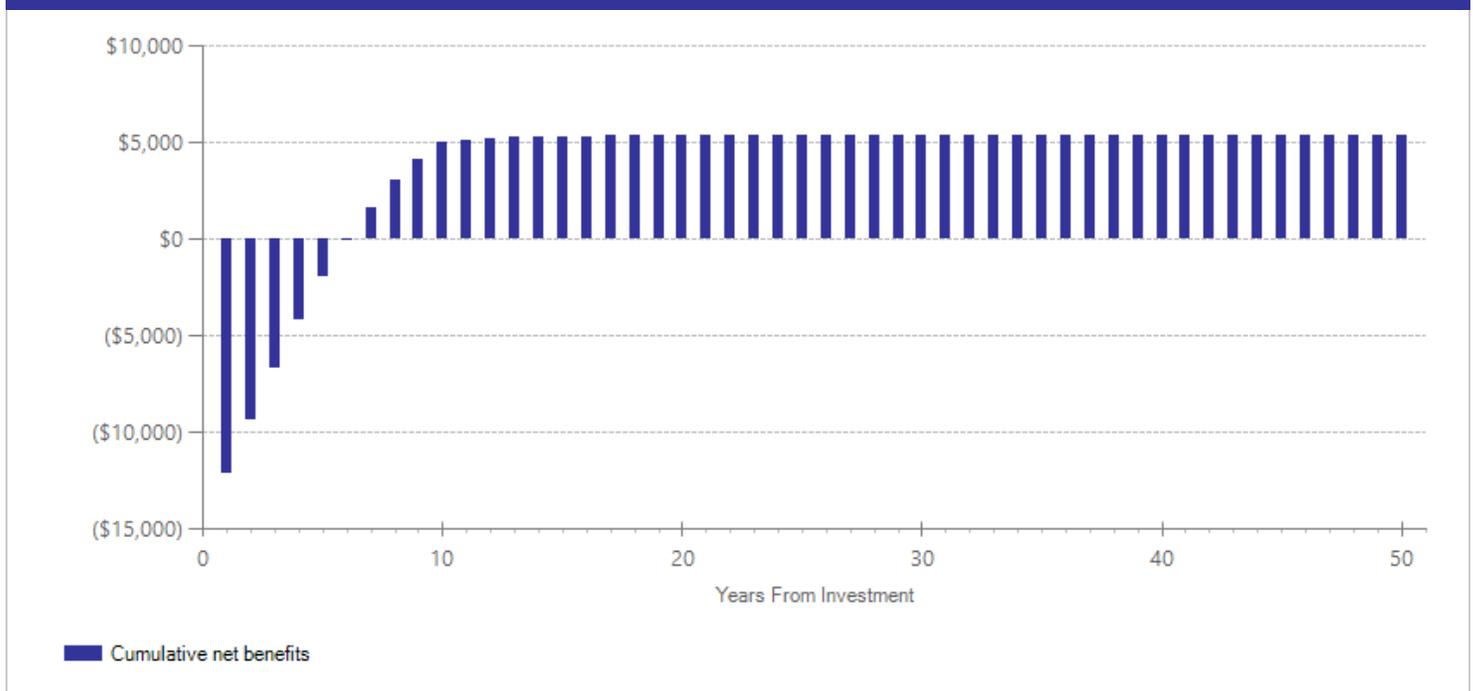
The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost 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)
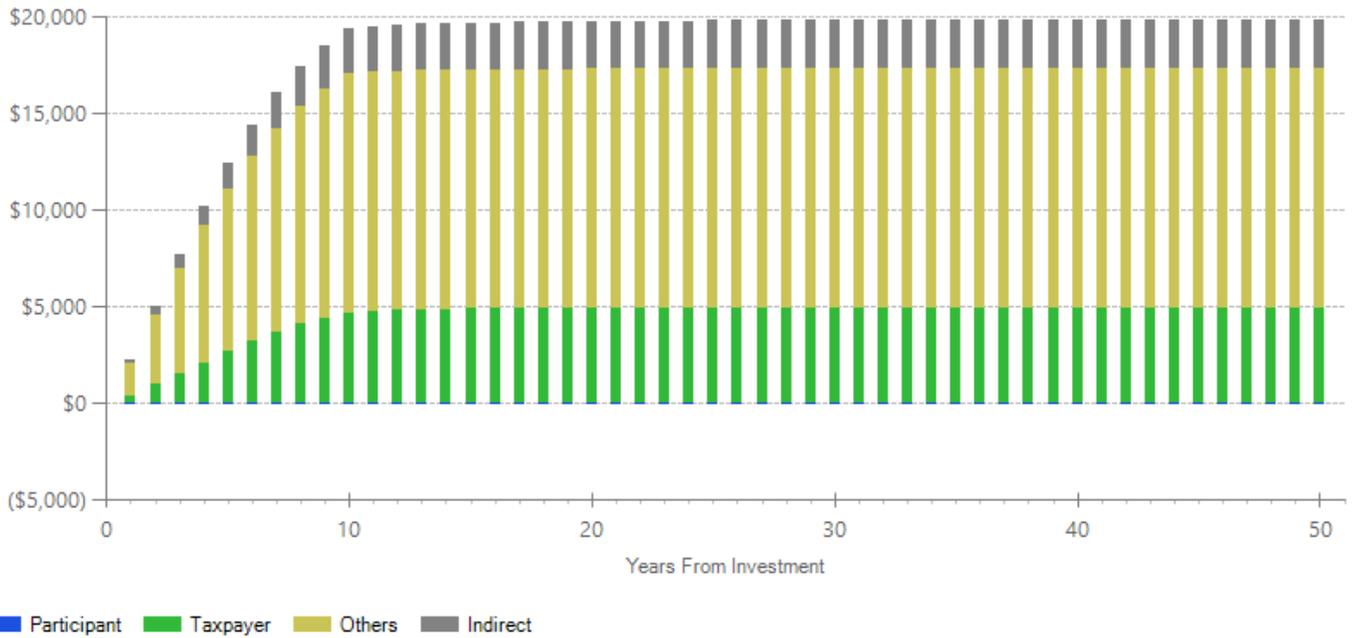
The graph above illustrates the breakdown of the estimated cumulative benefits (not including program costs) per-participant for the first fifty years beyond the initial investment in the program. These cash flows provide a breakdown of the classification of dollars over time into four perspectives: 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)
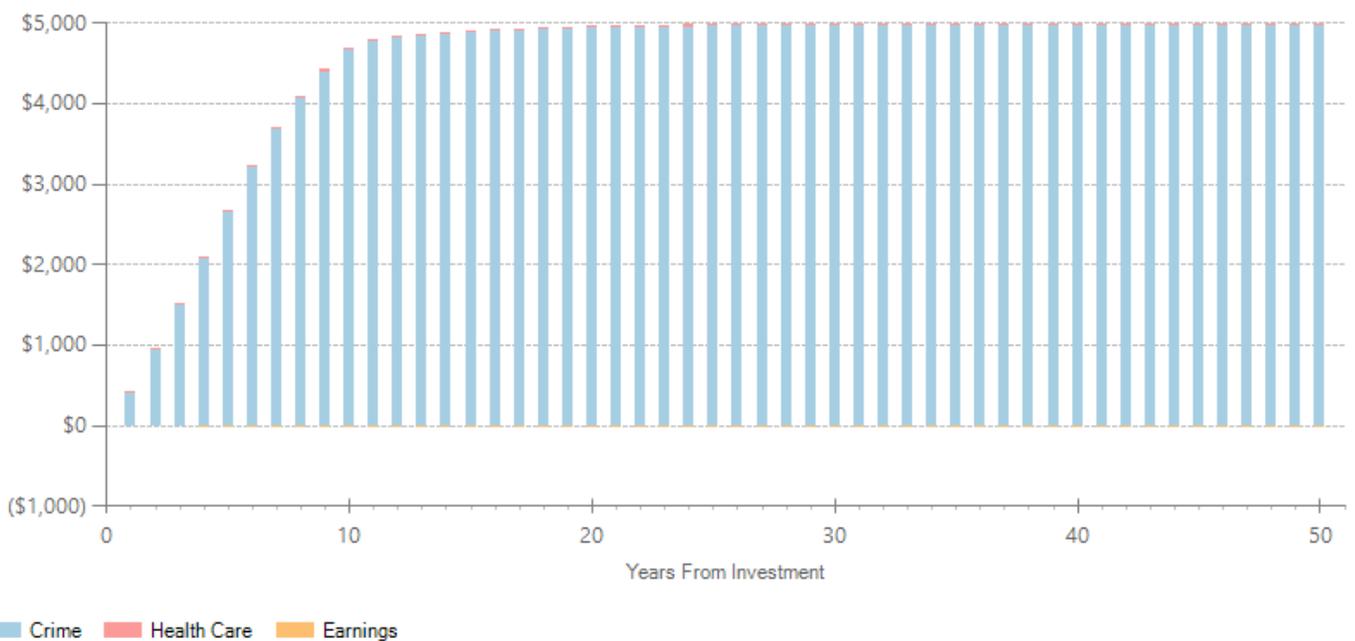
The graph above focuses on the subset of estimated cumulative benefits that accrue to taxpayers. The cash flows are divided into the source of the value.

Citations Used in the Meta-Analysis

Henggeler, S.W., Clingempeel, W.G., Brondino, M.J., & Pickrel, S.G. (2002). Four-year follow-up of multisystemic therapy with substance-abusing and substance-dependent juvenile offenders. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(7), 868-874.

Henggeler, S.W., Halliday-Boykins, C.A., Cunningham, P.B., Randall, J., Shapiro, S.B, & Chapman, J.E. (2006). Juvenile drug court: Enhancing outcomes by integrating evidence-based treatments. *Journal of Consulting and Clinical Psychology, 74*(1), 42-54.