Washington State Institute for Public Policy

Substance Use Disorders Benefit-Cost Results

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.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

Teen Intervene

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated June 2016.

Program Description: Teen Intervene is a brief motivational intervention for students using alcohol or drugs. School counselors identify youth suspected of using alcohol or drugs. Youth are then screened for substance abuse. Those meeting eligibility receive two 60-minute motivational interviews 7 to 10 days apart. In some of the studies included here the counselor also met separately with the parent, typically in the home.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$975	Benefit to cost ratio	$7.85
Participants	$2,043	Benefits minus costs	$2,735
Others	$206	Chance the program will produce	
Indirect	($91)	benefits greater than the costs	60 %
Total benefits	$3,134		
Net program cost	($399)		
Benefits minus cost	$2,735		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$44	$116	$22	$181
Labor market earnings associated with problem alcohol use	$2,017	$858	$0	$0	$2,875
Property loss associated with problem alcohol use	$7	$0	$13	$0	$20
Health care associated with problem alcohol use	$13	$70	$78	$35	$197
Mortality associated with problem alcohol	$6	$3	$0	$52	$61
Adjustment for deadweight cost of program	$0	$0	$0	($200)	($200)
Totals	$2,043	$975	$206	($91)	$3,134

[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.

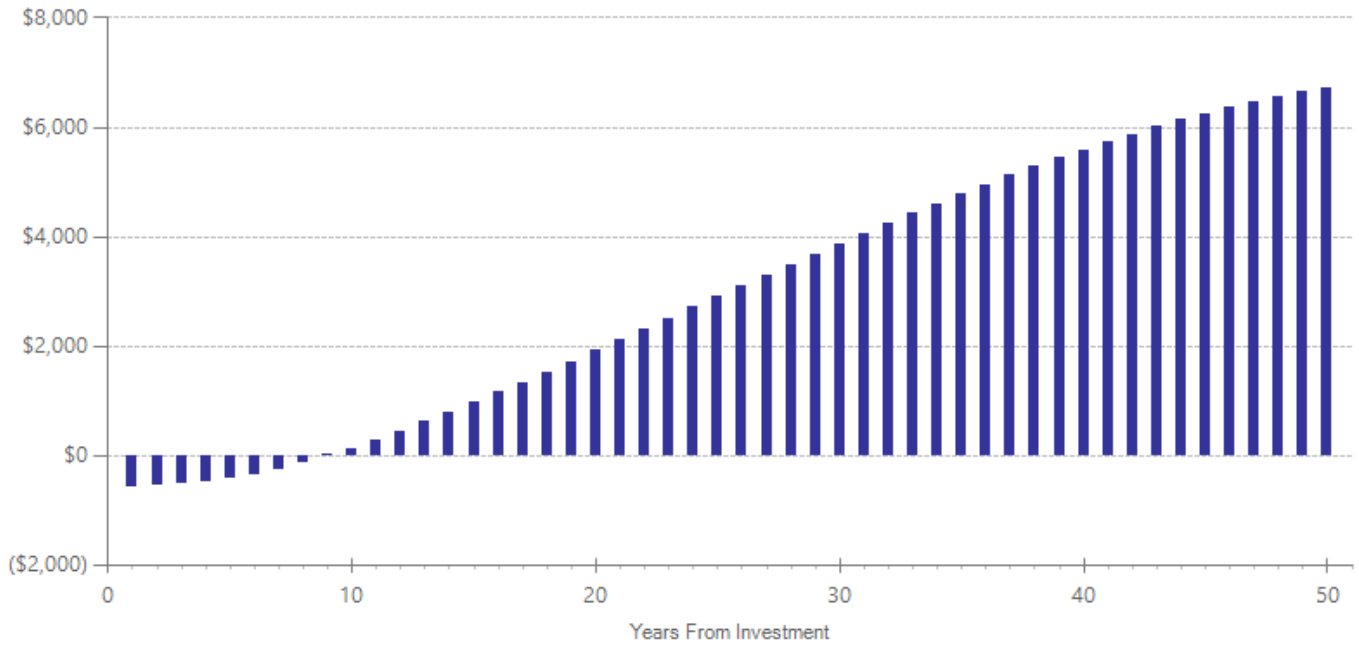
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$379	2014	Present value of net program costs (in 2018 dollars)	($399)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

Per-participant cost was estimated by multiplying the therapist time for two interviews times the rates for family therapy based on actuarial tables reported for non- disabled adults in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014. Half of the families in the studies also received a parent visit with the therapist. Family visits were estimated assuming therapist visits last 1 hour 30 minutes. Additional costs were added to account for screening, assuming 15 minutes of therapist time to screen students and that 70% of those screened are eligible for the intervention (personal communication with Ken Winters, Univ. of Minnesota, May 26, 2016.)

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Cannabis use before end of high school	16	2	259	-0.292	0.183	17	-0.040	0.274	18	-0.292	0.109
Problem alcohol use	16	4	311	-0.844	0.172	17	-0.116	0.258	19	-0.844	0.001
Substance use disorder^	16	2	52	-0.759	0.265	17	n/a	n/a	n/a	-0.759	0.004

^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.

Citations Used in the Meta-Analysis

Winters, K. C., & Leitten, W. (2007). Brief intervention for drug-abusing adolescents in a school setting. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors,* 21(2), 249-54.

Winters, K.C., Fahnhorst, T., Botzet, A., Lee, S., & Lalone, B. (2012). Brief intervention for drug-abusing adolescents in a school setting: Outcomes and mediating factors. *Journal of Substance Abuse Treatment,* 42(3), 279-288.

Brief intervention in primary care

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated September 2016.

Program Description: Patients in primary care are screened for "hazardous" alcohol and/or drug use (not dependence). Those screening positive receive a brief intervention. The intervention, commonly delivered by the primary care provider, includes feedback on the patients' consumption compared to their peers and motivational interview to encourage reduction in consumption. Patients typically receive a single intervention lasting 15 minutes to one hour. Some interventions included up to two brief telephone booster calls.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$742	Benefit to cost ratio	$8.46
Participants	$1,519	Benefits minus costs	$2,114
Others	$170	Chance the program will produce	
Indirect	($34)	benefits greater than the costs	72 %
Total benefits	$2,397		
Net program cost	($283)		
Benefits minus cost	$2,114		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$2	$0	$2
Labor market earnings associated with problem alcohol use	$1,481	$631	$0	$0	$2,112
Property loss associated with problem alcohol use	$4	$0	$7	$0	$11
Health care associated with emergency department visits	$30	$109	$161	$55	$354
Mortality associated with problem alcohol	$4	$2	$0	$53	$60
Adjustment for deadweight cost of program	$0	$0	$0	($142)	($142)
Totals	$1,519	$742	$170	($34)	$2,397

[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.

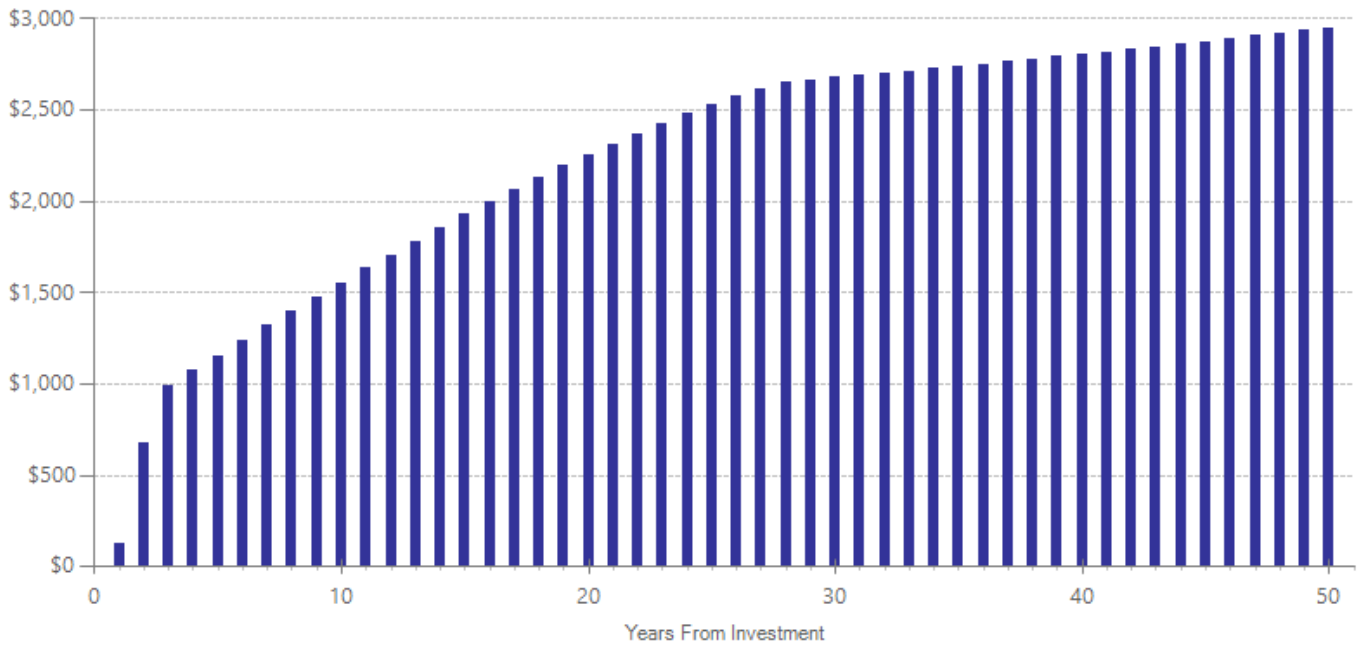
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$205	2000	Present value of net program costs (in 2018 dollars)	($283)
Comparison costs	$0	2000	Cost range (+ or -)	20 %

This program consists of a single brief intervention during a visit to the doctor. Per-participant cost from Fleming, M.F., Mundt, M.P., French, M.T., Manwell, L.B., Stauffacher, E.A. & Barry, K.L. (2002). Brief physician advice for problem drinkers: Long-term efficacy and benefit-cost analysis. *Alcoholism: Clinical and Experimental Research, 26*(1), 36-43.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use^	38	7	519	-0.262	0.153	39	n/a	n/a	n/a	-0.262	0.088
Drinking and driving^	38	2	543	-0.307	0.284	39	n/a	n/a	n/a	-0.307	0.279
Emergency department visits	38	2	784	-0.125	0.071	39	-0.017	0.107	41	-0.125	0.078
Hospitalization	38	2	652	-0.261	0.332	39	-0.036	0.498	41	-0.261	0.432
Illicit drug use^	38	9	1773	-0.155	0.073	39	n/a	n/a	n/a	-0.155	0.033
Opioid drug use^	38	4	249	-0.396	0.184	39	n/a	n/a	n/a	-0.396	0.031
Problem alcohol use	38	48	7318	-0.195	0.024	39	-0.027	0.037	41	-0.195	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.

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Citations Used in the Meta-Analysis

Aalto, M., Saksanen, R., Laine, P., Forsstrom, R., Raikaa, M., Kiviluoto, M., et al. (2000) Brief intervention for female heavy drinkers in routine general practice: A 3-year randomized controlled study. *Alcoholism: Clinical and Experimental Research, 24*(11), 1680-1686.

Aalto, M., Seppa, K., Mattila, P., Mustonen, H., Ruuth, K., , . . . Sillanaukee, P. (2001). Brief intervention for male heavy drinkers in routine general practice: a three-year randomized controlled study. *Alcohol and Alcoholism,* 36(3), 224-230.

Anderson, P. & Scott, E. (1992). The effect of general practitioners' advice to heavy drinking men. *British Journal of Addiction, 87*, 891-900.

Assanangkornchai, S., McNeil, E.B., Edwards, J.G., Nima, P., & Edwards, J.G. (2015). Comparative trial of the WHO ASSIST-linked brief intervention and simple advice for substance abuse in primary care. *Asian Journal of Psychiatry, 18*, 75-80.

Babor, T. F., & Grant, M. (1992). *Project on identification and management of alcohol-related problems: Report on Phase II: A randomized clinical trial of brief interventions in primary health care*. Geneva, Switzerland: World Health Organization.

Babor, T.F., Higgins-Biddle, J.C., Dauser, D., Burleson, J.A., Zarkin, G.A., & Bray, J. (2006). Brief interventions for at-risk drinking: patient outcomes and cost-effectiveness in managed care organizations. *Alcohol and Alcoholism (oxford, Oxfordshire), 41,* 6.

Bernstein, J., Bernstein, E., Tassiopoulos, K., Heeren, T., Levenson, S., & Hingson, R. (2005). Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug and Alcohol Dependence, 77*(1), 49-59.

Chang, G., McNamara, T. K., Orav, E. J., Koby, D., Lavigne, A., Ludman, B., Vincitorio, N. A., . . . Wilkins-Haug, L. (2005). Brief intervention for prenatal alcohol use: a randomized trial. *Obstetrics and Gynecology,* 105(5), 991-8.

Chang, G., Fisher, N.D.L., Hornstein, M.D., Jones, J.A., Hauke, S.H., Niamkey, N., Briegleb, C., . . . Orav, E.J. (2011). Brief intervention for women with risky drinking and medical diagnoses: A randomized controlled trial. *Journal of Substance Abuse Treatment,* 41(2), 105-114.

Crawford, M.J., Sanatinia, R., Barrett, B., Byford, S., Dean, M., Green, J., Jones, R., . . . Ward, H. (2014). The clinical effectiveness and cost-effectiveness of brief intervention for excessive alcohol consumption among people attending sexual health clinics: a randomised controlled trial (SHEAR). *Health Technology Assessment, 18*(30), 1-48.

Curry, S.J., Ludman, E.J., Grothaus, L.C., Donovan, D., & Kim, E. (2003). A randomized trial of a brief primary-care-based intervention for reducing at-risk drinking practices. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association,* 22(2), 156-65.

Emmen, M.J., Schippers, G.M., Wollersheim, H., & Bleijenberg, G. (2005). Adding psychologist's intervention to physicians' advice to problem drinkers in the outpatient clinic. *Alcohol and Alcoholism, 40*(3), 219-226.

Fleming, M.F., Manwell, L.B., Barry, K.L., Adams, W. & Stauffacher, E.A. (1999). Brief physician advice for alcohol problems in older adults: A randomized community-based trial. *Journal of Family Practice*, 48, 378-384.

Fleming, M.F., Barry, K.L., Manwell, L.B., Johnson, K. & London, R. (1997). Brief physician advice for problem alcohol drinkers: A randomized controlled trial in community-based primary care practices. *Journal of the American Medical Association*, 277, 1039-1045.

Fleming, M.F., Mundt, M.P., French, M.T., Manwell, L.B., Stauffacher, E.A. & Barry, K.L. (2002). Brief physician advice for problem drinkers: Long-term efficacy and benefit-cost analysis. *Alcoholism: Clinical and Experimental Research, 26(1)*, 36-43.

Fleming, M., Brown, R., & Brown, D. (2004). The efficacy of a brief alcohol intervention combined with CDT feedback in patients being treated for type 2 diabetes and/or hypertension. *Journal of Studies on Alcohol,* 65(5), 631-7.

Fleming, M.F., Lund, M.R., Wilton, G., Landry, M., & Scheets, D. (2008). The healthy moms study: The efficacy of brief alcohol intervention in postpartum women. *Alcoholism, Clinical and Experimental Research, 32*(9), 1600-6.

Fleming, M. F., Balousek, S. L., Grossberg, P. M., Mundt, M. P., Brown, D., Wiegel, J. R., Zakletskaia, L. I., . . . Saewyc, E. M. (2010). Brief physician advice for heavy drinking college students: a randomized controlled trial in college health clinics. *Journal of Studies on Alcohol and Drugs,* 71(1), 23-31.

Freeborn, D. K., Polen, M. R., Hollis, J. F., & Senft, R. A. (2000). Screening and brief intervention for hazardous drinking in an HMO: effects on medical care utilization. *The Journal of Behavioral Health Services & Research,* 27(4), 446-53.

Gelberg, L., Andersen, R. M., Afifi, A.A., Leake, B.D., Arangua, L., Vahidi, M., Singleton, K., . . . Baumeister, S.E. (2015). Project QUIT (Quit Using Drugs Intervention Trial): a randomized controlled trial of a primary care-based multi-component brief intervention to reduce risky drug use. *Addiction, 110*(11), 1777-1790.

Grossberg, P.M., Brown, D.D. & Fleming, M.F. (2004). Brief Physician Advice for High-Risk Drinking Among Young Adults. *Annals of Family Medicine*, 2(5), 474-480.

Heather, N., Campion, P.D., Neville, R.G., & Maccabe, D. (1987). Evaluation of a controlled drinking minimal intervention for problem drinkers in general practice (The DRAMS scheme). *Journal of the Royal College of General Practitioners, 37*(301), 358-363.

Humeniuk, R., Ali, R., Babor, T., Souza-Formigoni, M.L.O., de, L.R.B., Ling, W., McRee, B., . . . Vendetti, J. (2012). A randomized controlled trial of a brief intervention for illicit drugs linked to the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in clients recruited from primary health-care settings in four countries. *Addiction, 107*(5), 957-966.

Israel, Y., Hollander, O., Sanchez-Craig, M., Booker, S., Miller, V., Gingrich, R., & Rankin, J. G. (1996). Screening for problem drinking and counseling by the primary care physician-nurse team. *Alcoholism, Clinical and Experimental Research,* 20(8), 1443-50.

Kaner, E., Newbury-Birch, D., Bland, M., Coulton, S., Godfrey, C., Parrott, S., Cassidy, P., . . . Shepherd, J. (2013). Effectiveness of screening and brief alcohol intervention in primary care (SIPS trial): Pragmatic cluster randomised controlled trial. *Bmj, 346,* 7892.

Kristenson, H., Ohlin, H., Hulten-Nosslin, M.B., Trell, E., & Hood, B. (1983). Identification and intervention of heavy drinking in middle-aged men: Results and follow-up of 24-60 months of long-term study with randomized controls. *Alcoholism: Clinical and Experimental Research, 7*, 203-209.

Kypri, K., Saunders, J.B., Williams, S.M., McGee, R.O., Langley, J.D., Cashell-Smith, M.L., & Gallagher, S.J. (2004). Web-based screening and brief intervention for hazardous drinking: A double-blind randomized controlled trial. *Addiction, 99,* 11.

Kypri, K., Langley, J. D., Saunders, J. B., Cashell-Smith, M. L., & Herbison, P. (2008). Randomized controlled trial of web-based alcohol screening and brief intervention in primary care. *Archives of Internal Medicine, 168(*5), 530-536.

Lock, C. A., Kaner, E., Heather, N., Doughty, J., Crawshaw, A., McNamee, P., Purdy, S., . . . Pearson, P. (2006). Effectiveness of nurse-led brief alcohol intervention: a cluster randomized controlled trial. *Journal of Advanced Nursing,* 54(4), 426-439.

Maheswaran, R., Beevers, M., & Beevers, D.G. (1992). Effectiveness of advice to reduce alcohol consumption in hypertensive patients. *Hypertension, 19*, 79-84.

Maisto, S.A., Conigliaro, J., McNeil, M., Kraemer, K., Conigliaro, R. L., & Kelley, M. E. (2001). Effects of two types of brief intervention and readiness to change on alcohol use in hazardous drinkers. *Journal of Studies on Alcohol, 62*(5), 605-614.

Manwell, L.B., Fleming, M.F., Mundt, M.P., Staffacher, E.A., & Barry, K.L., (2000). Treatment of problem alcohol use in women of childbearing age: Results of a brief intervention trial. *Alcoholism: Clinical and Experimental Research, 24*(10), 1517-1524.

Mertens, J.R., Ward, C.L., Bresick, G.F., Broder, T., & Weisner, C.M. (2014). Effectiveness of nurse-practitioner-delivered brief motivational intervention for young adult alcohol and drug use in primary care in South Africa: A randomized clinical trial. *Alcohol and Alcoholism, 49*(4), 430-438.

Nilssen, O. (1991). The Tromso Study: Identification of and a controlled intervention on a population of early-stage risk drinkers. *Preventive Medicine,20*, 518-528.

Noknoy, S., Rangsin, R., Saengcharnchai, P., Tantibhaedhyangkul, U., & McCambridge, J. (2010). RCT of effectiveness of motivational enhancement therapy delivered by nurses for hazardous drinkers in primary care units in Thailand. *Alcohol and Alcoholism, 45*(3), 263-270.

Ockene, J.K., Adams, A., Hurley, T., Wheeler, E. & Hebert, J.R. (1999). Brief physician- and nurse practitioner-delivered counseling for high-risk drinkers: Does it work? *Archives of Internal Medicine, 159*(18), 2198-2205.

Richmond, R., Heather, N. Wodak, A. Kehoe, L., & Webster, I. (1995). Controlled evaluation of a general practice-based brief intervention for excessive drinking. *Addiction 90*(1), 119-132.

Romelsjö, A., Andersson, L, Barrner, H., Borg, S., Granstrand, C., Hultman, O., . . . Wikblad, O. (1989). A randomized study of secondary prevention of early stage problem drinkers in primary health care. *British Journal of Addiction, 84(*11), 1319-1327.

Roy-Byrne, P., Bumgardner, K., Krupski, A., Dunn, C., Ries, R., Donovan, D., West, I. I., . . . Zarkin, G.A. (2014). Brief intervention for problem drug use in safety-net primary care settings. *Jama,* 312(5), 492.

Saitz, R., Palfai, T.P., Cheng, D., Alford, D.P., Bernstein, J.A., Lloyd, T.C.A., Meli, S.M., . . . Samet, J.H. (2014). Screening and brief intervention for drug use in primary care: The ASPIRE randomized trial. *Drug and Alcohol Dependence, 140.*

Schaus, J. F., Sole, M. L., McCoy, T. P., Mullett, N., & O'Brien, M. C. (2009). Alcohol screening and brief intervention in a college student health center: A randomized controlled trial. *Journal of Studies on Alcohol and Drugs, Suppl. 16*, 131-141.

Scott, E. & Anderson, P. (1990). Randomized controlled trial of general practitioner intervention in women with excessive alcohol consumption. *Drug and Alcohol Review, 10*(4), 313-321.

Senft, R.A., Polen, M.R., Freeborn, D.K. & Hollis, J.F. (1997). Brief intervention in a primary care setting for hazardous drinkers. *American Journal of Preventive Medicine, 13*(6), 464-470.

Wallace, P., Cutler, S., & Haines , A. (1988). Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *British Medical Journal, 297*(6649), 663-668.

Brief intervention in emergency department (SBIRT)

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated September 2016.

Program Description: Screening, Brief Intervention, and Referral to Treatment (SBIRT) for patients in emergency departments is used to identify and address "hazardous" alcohol use (not alcohol dependence). Those screening positive receive a brief intervention, delivered by health care staff or other professional. The intervention includes feedback on the patients' consumption compared to their peers and a motivational interview to encourage reduction in consumption. Patients typically receive a single intervention lasting 15 minutes to one hour. Some interventions included up to two brief telephone booster calls. Patients meeting diagnostic criteria for abuse or dependence would be referred to chemical dependency treatment in lieu of brief intervention.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$757
Participants	$1,214
Others	$411
Indirect	($57)
Total benefits	$2,325
Net program cost	($451)
Benefits minus cost	$1,874

Benefit to cost ratio	$5.16
Benefits minus costs	$1,874
Chance the program will produce benefits greater than the costs	57 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$4	$0	$4
Labor market earnings associated with problem alcohol use	$1,134	$483	$0	$0	$1,616
Property loss associated with problem alcohol use	$3	$0	$6	$0	$9
Health care associated with emergency department visits	$74	$273	$401	$136	$884
Mortality associated with problem alcohol	$3	$1	$0	$32	$37
Adjustment for deadweight cost of program	$0	$0	$0	($225)	($225)
Totals	$1,214	$757	$411	($57)	$2,325

[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.

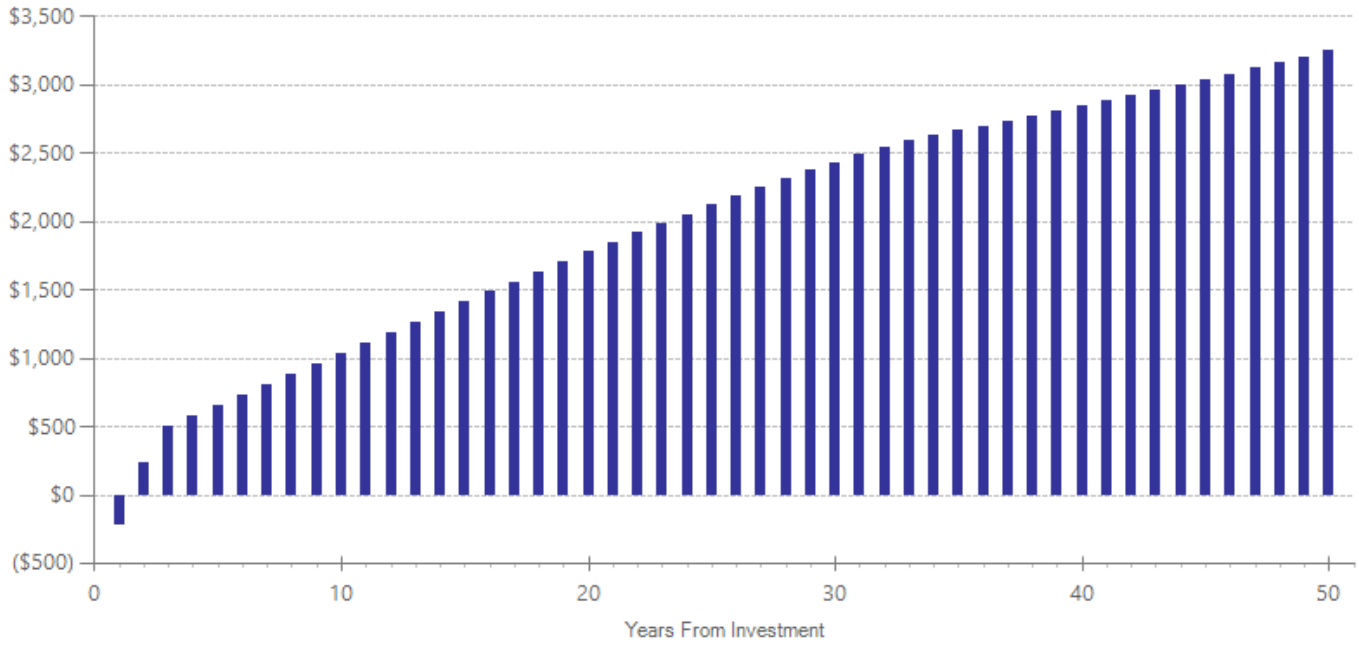
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$362	2005	Present value of net program costs (in 2018 dollars)	($451)
Comparison costs	$0	2005	Cost range (+ or -)	20 %

This program consists of a single brief intervention during a visit to the emergency department. According to one multisite US study, of 7,751 patients screened, 1,132 were eligible and consented. (Academic ED SBIRT Research Collaborative. (2007). The impact of screening, brief intervention, and referral for treatment on emergency department patients' alcohol use. Annals of Emergency Medicine, 50(6), 699-710). In Washington State, cost estimates from 2005 indicate $53 per patient screened based on an analysis by Washington State Division of Alcohol and Substance Abuse, presented at the 2006 Co-Occurring Disorders Conference.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use^	33	2	371	-0.012	0.073	34	n/a	n/a	n/a	-0.012	0.867
Drinking and driving^	33	4	776	-0.158	0.080	34	n/a	n/a	n/a	-0.158	0.048
Emergency department visits	33	1	52	-0.317	0.321	34	-0.043	0.481	36	-0.317	0.322
Illicit drug use^	33	2	721	-0.065	0.071	34	n/a	n/a	n/a	-0.065	0.362
Injuries^	33	1	122	-0.266	0.127	34	n/a	n/a	n/a	-0.266	0.037
Opioid drug use^	33	1	87	0.000	0.150	34	n/a	n/a	n/a	0.000	1.000
Problem alcohol use	33	27	4591	-0.139	0.032	34	-0.019	0.047	36	-0.139	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.

Citations Used in the Meta-Analysis

Academic ED SBIRT Research Collaborative. (2007). The impact of screening, brief intervention, and referral for treatment on emergency department patients' alcohol use. *Annals of Emergency Medicine, 50*(6), 699-710.

Blow, F.C., Barry, K.L., Walton, M.A., Maio, R.F., Chermack, S.T., Bingham, C.R., Ignacio, R.V., . . . Strecher, V.J. (2006). The efficacy of two brief intervention strategies among injured, at-risk drinkers in the emergency department: impact of tailored messaging and brief advice. *Journal of Studies on Alcohol,67* (4), 568-78.

Bogenschutz, M.P., Donovan, D.M., Mandler, R.N., Perl, H.I., Forcehimes, A.A., Crandall, C., Lindblad, R., . . . Douaihy, A. (2014). Brief intervention for patients with problematic drug use presenting in emergency departments: A randomized clinical trial. *JAMA Internal Medicine, 174*(11), 1736-1745.

Cherpitel, C.J., Korcha, R.A., Moskalewicz, J., Swiatkiewicz, G., Ye, Y., & Bond, J. (2010). Screening, brief intervention, and referral to treatment (SBIRT): 12-month outcomes of a randomized controlled clinical trial in a Polish emergency department. *Alcoholism: Clinical and Experimental Research, 34*(11), 1922-1928.

Crawford, M.J., Patton, R., Touquet, R., Drummond, C., Byford, S., Barrett, B., Reece, B., . . . Henry, J.A. (2004). Screening and referral for brief intervention of alcohol-misusing patients in an emergency department: a pragmatic randomised controlled trial. *Lancet, 364*(9442), 9-15.

Crawford, M.J., Csipke, E., Brown, A., Reid, S., Nilsen, K., Redhead, J., & Touquet, R. (2010). The effect of referral for brief intervention for alcohol misuse on repetition of deliberate self-harm: an exploratory randomized controlled trial. *Psychological Medicine, 40*(11), 1821-1828.

Daeppen, J.-B., Gaume, J., Bady, P., Yersin, B., Calmes, J.-M., Givel, J.-C., & Gmel, G. (2007). Brief alcohol intervention and alcohol assessment do not influence alcohol use in injured patients treated in the emergency department: a randomized controlled clinical trial. *Addiction, 102*(8), 1224-1233.

Dauer, A. R., Rubio, E. S., Coris, M. E., & Valls, J. M. (2006). Brief intervention in alcohol-positive traffic casualties: is it worth the effort?. *Alcohol and Alcoholism , 41*(1), 76-83.

D'Onofrio, G., Pantalon, M.V., Degutis, L.C., Fiellin, D.A., Busch, S.H., Chawarski, M.C., Owens, P.H., . . . O'Connor, P.G. (2008). Brief intervention for hazardous and harmful drinkers in the emergency department. *Annals of Emergency Medicine, 51*(6), 742.

D'Onofrio, G., Fiellin, D.A., Pantalon, M.V., Chawarski, M.C., Owens, P.H., Degutis, L.C., Busch, S.H., . . . O'Connor, P.G. (2012). A brief intervention reduces hazardous and harmful drinking in emergency department patients. *Annals of Emergency Medicine, 60*(2), 181-92.

Drummond, C., Deluca, P., Coulton, S., Bland, M., Cassidy, P., Crawford, M., Dale, V., . . . Kaner, E. (2014). The effectiveness of alcohol screening and brief intervention in emergency departments: A multicentre pragmatic cluster randomized controlled trial. *Plos One, 9*(6), e99463.

Field, C.A., Cochran, G., & Caetano, R. (2012). Ethnic differences in the effect of drug use and drug dependence on brief motivational interventions targeting alcohol use. *Drug and Alcohol Dependence, 126,* 21-26.

Goodall, C. A., Ayoub, A. F., Crawford, A., Smith, I., Bowman, A., Koppel, D., & Gilchrist, G. (2008). Nurse-delivered brief interventions for hazardous drinkers with alcohol-related facial trauma: A prospective randomised controlled trial. *British Journal of Oral and Maxillofacial Surgery, 46*(2), 96-101.

Havard, A., Shakeshaft, A.P., Conigrave, K.M., & Doran, C.M. (2012). Randomized controlled trial of mailed personalized feedback for problem drinkers in the emergency department: the short-term impact. *Alcoholism, Clinical and Experimental Research, 36*(3), 523-31.

Kunz, F.M.J., French, M.T., & Bazargan-Hejazi, S. (2004). Cost-effectiveness analysis of a brief intervention delivered to problem drinkers presenting at an inner-city hospital emergency department. *Journal of Studies on Alcohol, 65*(3), 363-70.

Longabaugh, R., Woolard, R.E., Nirenberg, T.D., Minugh, A.P., Becker, B., Clifford, P.R., . . . Gogineni, A. (2001). Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. *Journal of Studies on Alcohol, 62*(6), 806-816.

Mello, M.J., Baird, J., Lee, C., Strezsak, V., French, M.T., & Longabaugh, R. (2016). A randomized controlled trial of a telephone intervention for alcohol misuse with injured emergency department patients. *Annals of Emergency Medicine, 67*(2), 263–275.

Mello, M.J., Longabaugh, R., Baird, J., Nirenberg, T., & Woolard, R. (2008). DIAL: A telephone brief intervention for high-risk alcohol use with injured emergency department patients. *Annals of Emergency Medicine, 51*(6), 755-764.

Mello, M. J., Baird, J., Nirenberg, T.D., Lee, C., Woolard, R., & Longabaugh, R. (2013). DIAL: a randomised trial of a telephone brief intervention for alcohol. *Injury Prevention : Journal of the International Society for Child and Adolescent Injury Prevention, 19*(1), 44-48.

Monti, P.M., Colby, S.M., Barnett, N.P., Spirito, A., Rohsenow, D.J., Myers, M., . . . Lewander, W. (1999). Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *Journal of Consulting and Clinical Psychology, 67*(6), 989-994.

Monti, P.M., Barnett, N.P., Colby, S.M., Gwaltney, C.J., Spirito, A., Rohsenow, D.J., & Woolard, R. (2007). Motivational interviewing versus feedback only in emergency care for young adult problem drinking. *Addiction, 102*(8), 1234-1243.

Segatto, M. L., Andreoni, S., de, S. S. R., Diehl, A., & Pinsky, I. (2011). Brief motivational interview and educational brochure in emergency room settings for adolescents and young adults with alcohol-related problems: a randomized single-blind clinical trial. *Revista Brasileira De Psiquiatria, 33*(3), 225-33.

Sommers, M.S., Lyons, M.S., Fargo, J.D., Sommers, B.D., McDonald, C.C., Shope, J.T., & Fleming, M.F. (2013). Emergency department-based brief intervention to reduce risky driving and hazardous/harmful drinking in young adults: A randomized controlled trial. *Alcoholism, Clinical and Experimental Research, 37*(10), 1753-1762.

Woodruff, S.I., Clapp, J.D., Eisenberg, K., McCabe, C., Hohman, M., Shillington, A.M., Sise, C.B., . . . Gareri, J. (2014). Randomized clinical trial of the effects of screening and brief intervention for illicit drug use: The Life Shift/Shift Gears study. *Addiction Science & Clinical Practice, 9*(8).

Woolard, R., Baird, J., Longabaugh, R., Nirenberg, T., Lee, C.S., Mello, M.J., & Becker, B. (2013). Project Reduce: Reducing alcohol and marijuana misuse: Effects of a brief intervention in the emergency department. *Addictive Behaviors, 38*(3), 1732-1739.

Brief intervention in a medical hospital

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated September 2016.

Program Description: Inpatients in medical hospitals are screened for "hazardous" alcohol use (not dependence). Those screening positive receive a brief intervention, delivered by health care staff or other professionals. The intervention includes feedback on the patients' consumption compared to their peers and a motivational interview to encourage reduction in consumption. Patients typically receive a single intervention lasting 15 minutes to one hour. Some interventions included up to two brief telephone booster calls.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$572	Benefit to cost ratio	$11.24
Participants	$1,283	Benefits minus costs	$1,706
Others	$40	Chance the program will produce	
Indirect	($23)	benefits greater than the costs	66 %
Total benefits	$1,873		
Net program cost	($167)		
Benefits minus cost	$1,706		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$2	$0	$2
Labor market earnings associated with problem alcohol use	$1,271	$541	$0	$0	$1,812
Property loss associated with problem alcohol use	$3	$0	$6	$0	$10
Health care associated with problem alcohol use	$5	$29	$32	$15	$82
Mortality associated with problem alcohol	$4	$2	$0	$46	$51
Adjustment for deadweight cost of program	$0	$0	$0	($83)	($83)
Totals	$1,283	$572	$40	($23)	$1,873

[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.

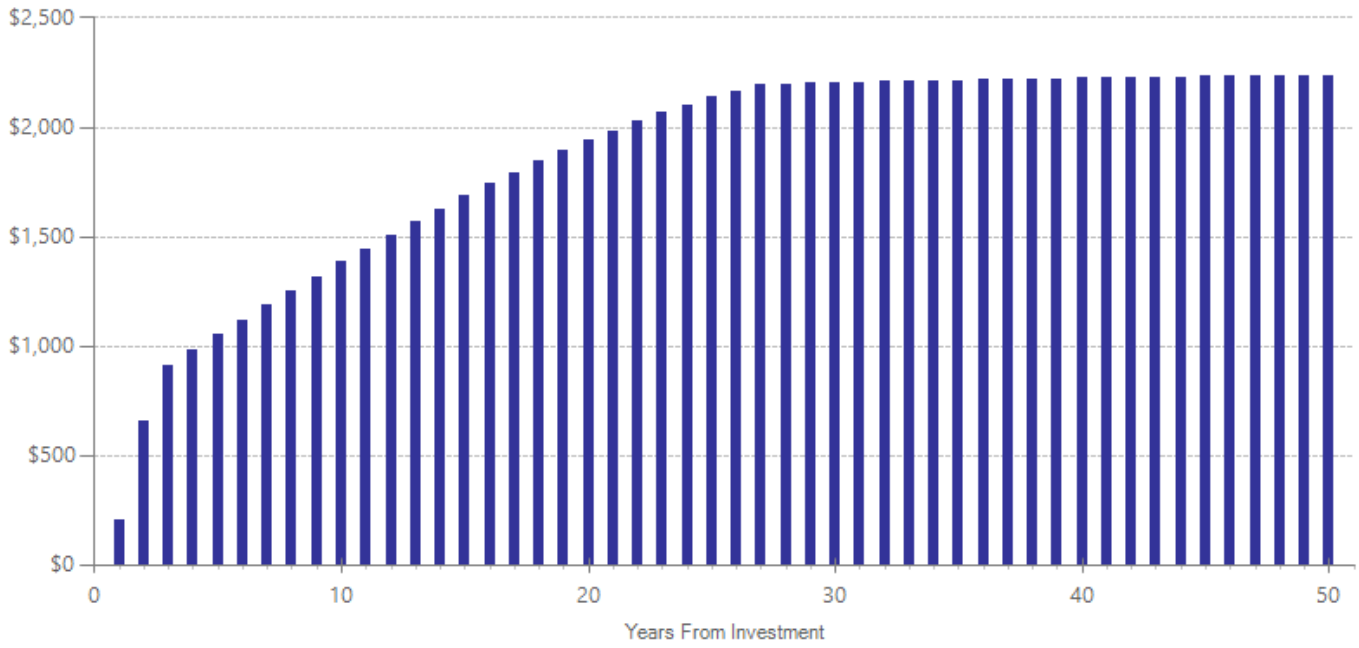
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$151	2011	Present value of net program costs (in 2018 dollars)	($167)
Comparison costs	$0	2011	Cost range (+ or -)	20 %

This program consists of a single brief intervention during a visit to the hospital. The average duration of intervention in these studies was 0.65 hours. We assume it takes 15 minutes to screen patients and 20% of the screened patients meet eligibility requirements. We further assume that nurses conduct the screens and the intervention. To compute the cost per screened individual, we use salary information from the Bureau of Labor Statistics for registered nurses in surgical medical hospitals in 2011 multiplied by the time required by the intervention.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Death	39	1	59	-0.045	0.701	40	0.000	0.000	42	-0.045	0.949
Drinking and driving^	39	1	62	-0.686	0.340	40	n/a	n/a	n/a	-0.686	0.043
Problem alcohol use	39	15	1403	-0.170	0.050	40	-0.023	0.075	42	-0.170	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.

Citations Used in the Meta-Analysis

Antti-Poika, I., Karaharju, E., Roine, R., & Salaspuro, M. (1988). Intervention of heavy-drinking-a prospective and controlled study of 438 consecutive injured male patients. *Alcohol and Alcoholism, 23*(2), 115-121.

Bager, P., & Vilstrup, H. (2010). Post-discharge brief intervention increases the frequency of alcohol abstinence-a randomized trial. *Journal of Addictions Nursing, 21*(1), 37-41.

Chick, J., Lloyd, G., & Crombie, E. (1985). Counseling problem drinkers in medical wards: A controlled study. *British Medical Journal, 290,* 965-967.

Elvy, G.A., J.E. Wells, and K.A. Baird. (1988). Attempted referral as intervention for problem drinking in the general hospital. *British Journal of Addiction, 83*(1), 83-89.

Freyer-Adam, J., Coder, B., Baumeister, S.E., Bischof, G., Riedel, J., Paatsch, K., Wedler, B., ... Hapke, U. (2008). Brief alcohol intervention for general hospital inpatients: A randomized controlled trial. *Drug and Alcohol Dependence, 93*(3), 233-243.

Heather, N., Rollnick, S., Bell, A., & Richmond, R. (1996). Effects of brief counseling among male heavy drinkers identified on general hospital wards. *Drug and Alcohol Review, 15*(1), 29-38.

Holloway, A.S., Watson, H.E., Arthur, A.J., Starr, G., McFadyen, A.K., & McIntosh, J. (2007). The effect of brief interventions on alcohol consumption among heavy drinkers in a general hospital setting. *Addiction, 102*(11), 1762-1770.

Kuchipudi, V., Hobein, K., Flickinger, A., & Iber, F.L. (1990). Failure of a 2-hour motivational intervention to alter recurrent drinking behavior in alcoholics with gastrointestinal disease. *Journal of Studies on Alcohol, 51*(4), 356-360.

Liu, S.-I., Wu, S.-I., Chen, S.-C., Huang, H.-C., Sun, F.-J., Fang, C.-K., Hsu, C.-C., ... Shih, S.-C. (2011). Randomized controlled trial of a brief intervention for unhealthy alcohol use in hospitalized Taiwanese men. *Addiction, 106*(5), 928-940.

Saitz, R., Palfai, T.P., Cheng, D.M., Horton, N.J., Freedner, N., Dukes, K., Kraemer, K.L., . . . Samet, J.H. (2007). Brief intervention for medical inpatients with unhealthy alcohol use: A randomized, controlled trial. *Annals of Internal Medicine, 146*(3), 167-176.

Schermer, C.R., Moyers, T.B., Miller, W.R., & Bloomfield, L.A. (2006). Trauma center brief interventions for alcohol disorders decrease subsequent driving under the influence arrests. *The Journal of Trauma, 60*(1), 29-34.

Shiles, C.J., Canning, U.P., Kennell-Webb, S.A., Gunstone, C.M., Marshall, E.J., Peters, T.J., & Wessely, S.C. (2013). Randomised controlled trial of a brief alcohol intervention in a general hospital setting. *Trials, 14,* 345.

Shourie, S., Conigrave, K.M., Proude, E.M., Ward, J.E., Wutzke, S.E., & Haber, P.S. (2006). The effectiveness of a tailored intervention for excessive alcohol consumption prior to elective surgery. *Alcohol and Alcoholism, 41*(6), 643-649.

Smith, A.J., Hodgson, R.J., Bridgeman, K., & Shepherd, J.P. (2003). A randomized controlled trial of a brief intervention after alcohol-related facial injury RESEARCH REPORT. *Addiction, 98*(1), 43-52.

Brief Alcohol Screening and Intervention of College Students (BASICS): A Harm Reduction Approach

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: College students recruited or referred are screened for "hazardous" drinking (not alcohol dependence.) Those reporting high rates of consumption receive one to two brief motivational sessions that include comparison of the students' alcohol consumption relative to their peers. Interventions are typically delivered by graduate students or counselors.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$283	Benefit to cost ratio	$12.48
Participants	$613	Benefits minus costs	$872
Others	$61	Chance the program will produce benefits greater than the costs	65 %
Indirect	($9)		
Total benefits	$948		
Net program cost	($76)		
Benefits minus cost	$872		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$28	$0	$28
Labor market earnings associated with problem alcohol use	$604	$257	$0	$0	$861
Property loss associated with problem alcohol use	$3	$0	$5	$0	$8
Health care associated with problem alcohol use	$5	$25	$27	$12	$69
Mortality associated with problem alcohol	$2	$1	$0	$17	$20
Adjustment for deadweight cost of program	$0	$0	$0	($38)	($38)
Totals	$613	$283	$61	($9)	$948

[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.

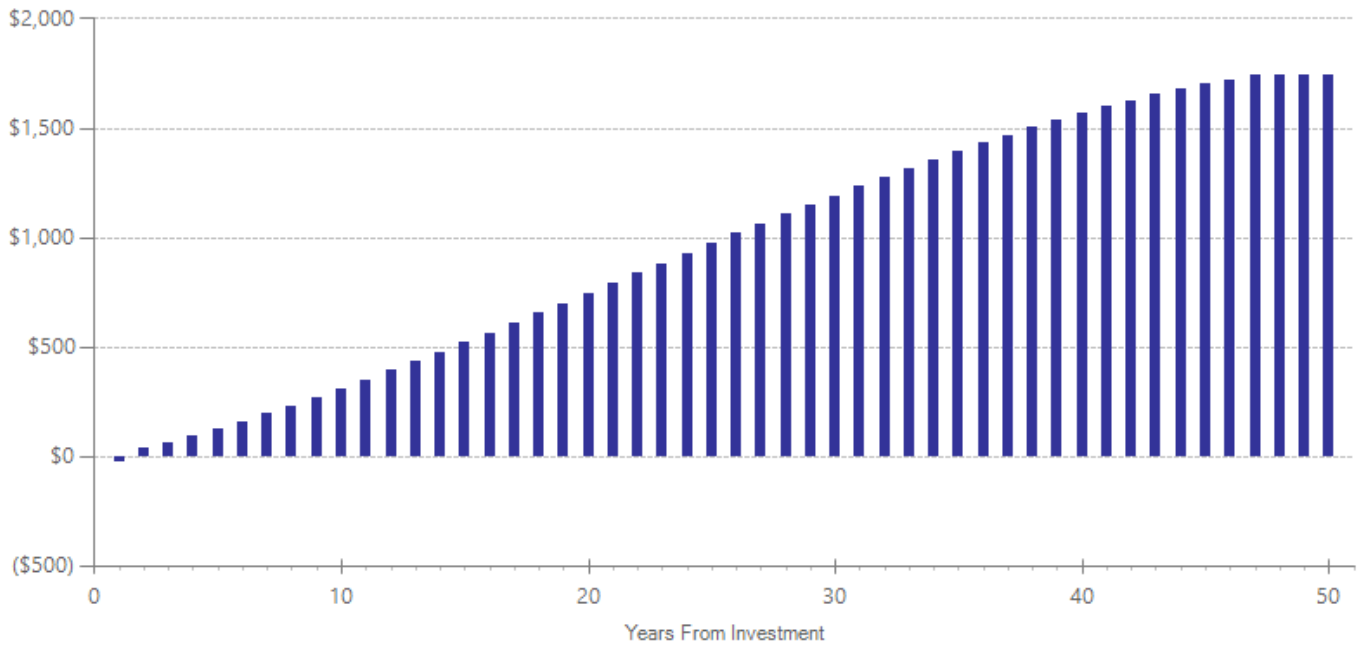
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$72	2014	Present value of net program costs (in 2018 dollars)	($76)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average duration of the intervention in these studies was 1.5 hours. We assume the following: (1) 36% of screened students are eligible and agree to the intervention (per Carey et al., 2006); (2) screening takes 30 minutes to administer the screen, score, and identify those with hazardous drinking; and (3) graduate students or counselors receive $25 per hour (2014 dollars) to administer the screening and intervention.

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.

Detailed Annual Cost Estimates Per Participant



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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
Cannabis use^	19	1	118	0.000	0.205	19	n/a	n/a	n/a	0.000	1.000
Problem alcohol use	19	20	3296	-0.166	0.031	19	-0.023	0.047	21	-0.166	0.001
Regular smoking	19	1	118	0.000	0.205	19	0.000	0.308	21	0.000	1.000

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

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Citations Used in the Meta-Analysis

Borsari, B., & Carey, K.B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology, 68*(4), 728-733.

Carey, K.B., Carey, M.P., Maisto, S.A., & Henson, J.M. (2006). Brief motivational interventions for heavy college drinkers: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 74*(5), 943-54.

Chiauzzi, E., Green, T.C., Lord, S., Thum, C., & Goldstein, M. (2005). My Student Body: A High-Risk Drinking Prevention Web Site for College Students. *Journal of American College Health, 53*(6), 263.

Collins, S.E., Carey, K.B., & Sliwinski, M.J. (2002). Mailed personalized normative feedback as a brief intervention for at-risk college drinkers. *Journal of Studies on Alcohol, 63*(5), 559-567.

DiFulvio, G.T., Linowski, S.A., Mazziotti, J.S., & Puleo, E. (2012). Effectiveness of the brief alcohol and screening intervention for college students (BASICS) program with a mandated population. *Journal of American College Health, 60*(4), 269-280.

Dimeff, L.A. (1997). *Brief intervention for heavy and hazardous college drinkers in a student primary health care setting* (Doctoral dissertation). UMI No. 9819231.

Hansson, H., Rundberg, J., Zetterlind, U., Johnsson, K.O., & Berglund, M. (2006). An intervention program for university students who have parents with alcohol problems: a randomized controlled trial. *Alcohol and Alcoholism (oxford, Oxfordshire), 41*(6), 655-663.

Juarez, P., Walters, S.T., Daugherty, M., & Radi, C. (2006). A randomized trial of motivational interviewing and feedback with heavy drinking college students. *Journal of Drug Education, 36*(3), 233-246.

Kulesza, M., McVay, M.A., Larimer, M.E., & Copeland, A.L. (2013). A randomized clinical trial comparing the efficacy of two active conditions of a brief intervention for heavy college drinkers. *Addictive Behaviors, 38*(4), 2094-101.

Larimer, M.E., Turner, A.P., Anderson, B.K., Fader, J.S., Kilmer, J.R., Palmer, R.S., & Cronce, J.M. (2001). Evaluating a brief alcohol intervention with fraternities. *Journal of Studies on Alcohol, 62*(3), 370-380.

Marlatt, G.A., J.S. Baer, D.R. Kivlahan, L.A. Dimeff, M.E. Larimer, L.A. Quigley, J.M. Somers, and E. Williams. (1998). Screening and Brief Intervention for High-Risk College Student Drinkers: Results From a 2-Year Follow-Up Assessment. *Journal of Consulting and Clinical Psychology,* 66, 604-615.

Murphy, J.G., Duchnick, J.J., Vuchinich, R.E., Davison, J.W., Karg, R.S., Olson, A.M., . . . Coffey, T.T. (2001). Relative efficacy of a brief motivational intervention for college student drinkers. *Psychology of Addictive Behaviors, 15*(4), 373-379.

Neighbors, C., Larimer, M.E., & Weis, M.A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of acomputer-delivered personalized normative feedback interventions. *Journal of Consulting and Clinical Psychology, 72*(3), 434-447.

Schaus, J.F., Sole, M.L., McCoy, T.P., Mullett, N., & O'Brien, M.C. (2009). Alcohol screening and brief intervention in a college student health center: A randomized controlled trial. *Journal of Studies on Alcohol and Drugs,* Suppl. 16, 131-141.

Turrisi, R., Larimer, M.E., Mallett, K.A., Kilmer, J.R., Ray, A.E., Mastroleo, N.R., . . . Montoya, H. (2009 A randomized clinical trial evaluating a combined alcohol intervention for high-risk college students. *Journal of Studies on Alcohol and Drugs, 70*(4), -67.

White, H.R., Morgan, T.J., Pugh, L.A., Celinska, K., Labouvie, E.W., & Pandina, R.J. (2006). Evaluating two brief substance-use interventions for mandated college students. *Journal of Studies on Alcohol, 67*(2) 309-17.

Brief intervention for youth in medical settings

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated February 2015.

Program Description: This category of treatment for youth using alcohol, marijuana, or other drugs is defined by several features: (1) substance abusing youth are identified in primary care or emergency department settings, often using a structured substance abuse screening instrument, and (2) interventions are brief, typically one session of less than one hour duration, and often utilize motivational interviewing techniques.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$141
Participants	$262
Others	$64
Indirect	($151)
Total benefits	$316
Net program cost	($345)
Benefits minus cost	($29)

Benefit to cost ratio	$0.92
Benefits minus costs	($29)
Chance the program will produce benefits greater than the costs	46 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$21	$52	$10	$83
Labor market earnings associated with problem alcohol use	$259	$110	$0	$0	$369
Property loss associated with problem alcohol use	$1	$0	$2	$0	$3
Health care associated with problem alcohol use	$2	$9	$10	$5	$26
Mortality associated with problem alcohol	$1	$0	$0	$7	$8
Adjustment for deadweight cost of program	$0	$0	$0	($172)	($172)
Totals	$262	$141	$64	($151)	$316

[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

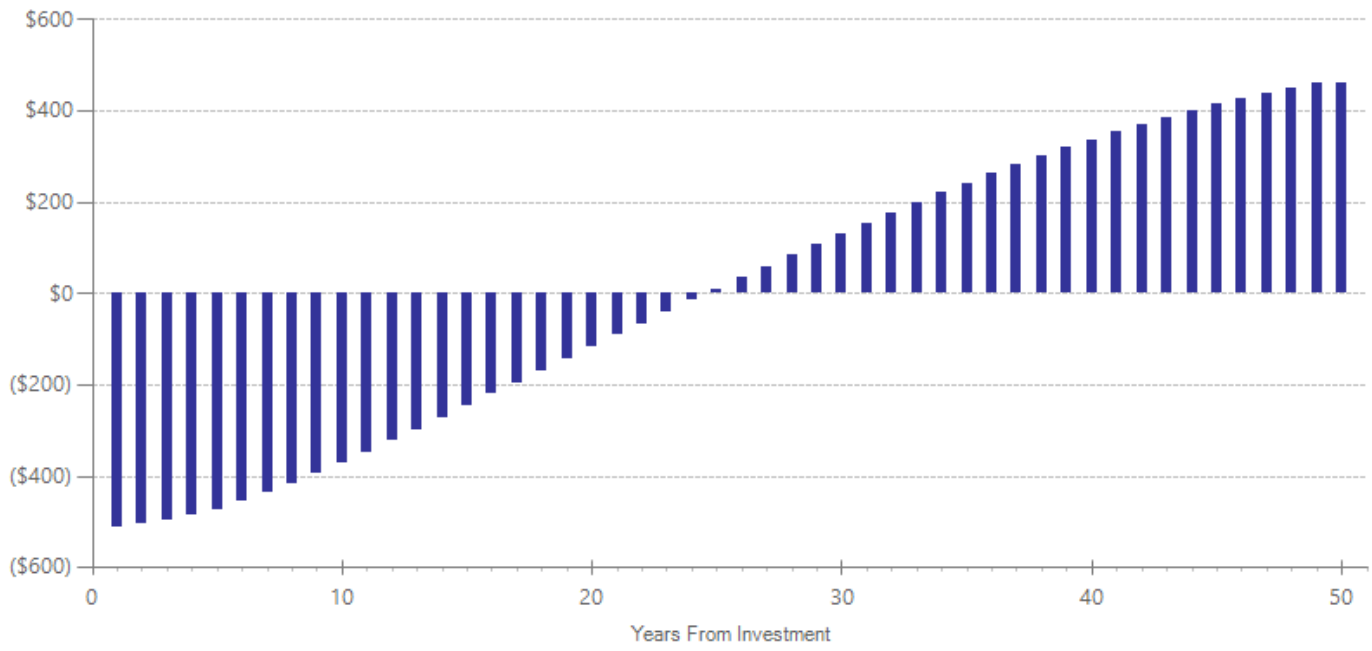
	Annual cost	Year dollars	Summary	
Program costs	$328	2014	Present value of net program costs (in 2018 dollars)	($345)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

These interventions typically take place during a single visit to a primary care or emergency department setting. We estimate the per-participant cost for youth based on similar programs for adults. For primary care, we use the estimate from Fleming, M.F., Mundt, M.P., French, M.T., Manwell, L.B., Stauffacher, E.A. & Barry, K.L. (2002). Brief physician advice for problem drinkers: Long-term efficacy and benefit-cost analysis. *Alcoholism: Clinical and Experimental Research, 26*(1), 36-43.

In emergency departments, we use a cost estimate from a study in Washington State of $53 per person screened. O'Neil, S. (2006). *Expanding the continuum— Improving care: Washington State brief intervention and referral to treatment program,* paper delivered at the Co-occurring Disorder Conference. In the collection of studies in our meta-analysis, 11,613 patients were screened to identify 2,171 youth eligible for the intervention. Our cost estimate is weighted by the numbers in treatment groups in these studies.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Cannabis use before end of high school	17	4	596	-0.025	0.113	18	-0.003	0.170	18	-0.025	0.825
Problem alcohol use	17	5	854	-0.099	0.068	17	-0.014	0.102	19	-0.099	0.145

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.

Citations Used in the Meta-Analysis

Bernstein, E., Edwards, E., Dorfman, D., Heeren, T., Bliss, C., & Bernstein, J. (2009). Screening and brief intervention to reduce marijuana use among youth and young adults in a pediatric emergency department. *Academic Emergency Medicine : Official Journal of the Society for Academic Emergency Medicine, 16*(11), 1174-85.

Bernstein, J., Heeren, T., Edward, E., Dorfman, D., Bliss, C., Winter, M., & Bernstein, E. (2010). A brief motivational interview in a pediatric emergency department, plus 10-day telephone follow-up, increases attempts to quit drinking among youth and young adults who screen positive for problematic drinking. *Academic Emergency Medicine : Official Journal of the Society for Academic Emergency Medicine, 17*(8), 890-902.

D'Amico, E.J., Miles, J.N.V., Stern, S.A., & Meredith, L.S. (2008). Brief motivational interviewing for teens at risk of substance use consequences: A randomized pilot study in a primary care clinic. *Journal of Substance Abuse Treatment, 35*(1), 53-61.

Haller, D.M., Meynard, A., Lefebvre, D., Ukoumunne, O.C., Narring, F., & Broers, B. (2014). Effectiveness of training family physicians to deliver a brief intervention to address excessive substance use among young patients: a cluster randomized controlled trial. *Canadian Medical Association Journal, 186,* 8.

Spirito, A., Monti, P.M., Barnett, N.P., Colby, S.M., Sindelar, H., Rohsenow, D.J., . . . Myers, M. (2004). A randomized clinical trial of a brief motivational intervention for alcohol-positive adolescents treated in an emergency department. *The Journal of Pediatrics, 145*(3), 396-402.

Walton, M.A., Chermack, S.T., Shope, J. T., Bingham, C.R., Zimmerman, M.A., Blow, F.C., & Cunningham, R.M. (2010). Effects of a brief intervention for reducing violence and alcohol misuse among adolescents: a randomized controlled trial. *Jama, 304*(5), 527-35.

Alcohol Literacy Challenge (for college students)

Substance Use Disorders: Early Intervention

Benefit-cost estimates updated December 2019. Literature review updated June 2016.

Program Description: Alcohol Literacy Challenge is a universal intervention for high school students and college students. In a single 60 to 90 minute group session, the intervention provides information about standard drinks, the range of alcohol expectancies, the difference between pharmacological effects and placebo effects, and efforts by alcohol companies to portray positive alcohol expectancies in advertisements. Part of the lesson involves watching video clips of commercials advertising alcohol. Students deconstruct the advertisements, identifying the positive alcohol expectancies conveyed and discussing the contradictions between those expectancies and alcohol's pharmacological and behavioral effects. In the high school version of ALC, students also divide into teams and assess the alcohol effects portrayed in alcohol-related video clips, earning points for correct answers.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	($29)
Participants	($64)
Others	($6)
Indirect	($5)
Total benefits	($104)
Net program cost	($4)
Benefits minus cost	($108)

Benefit to cost ratio	($25.63)
Benefits minus costs	($108)
Chance the program will produce benefits greater than the costs	50 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	($3)	$0	($3)
Labor market earnings associated with problem alcohol use	($63)	($27)	$0	$0	($89)
Property loss associated with problem alcohol use	$0	$0	$0	$0	($1)
Health care associated with problem alcohol use	$0	($2)	($3)	($1)	($7)
Mortality associated with problem alcohol	$0	$0	$0	($2)	($2)
Adjustment for deadweight cost of program	$0	$0	$0	($2)	($2)
Totals	($64)	($29)	($6)	($5)	($104)

[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.

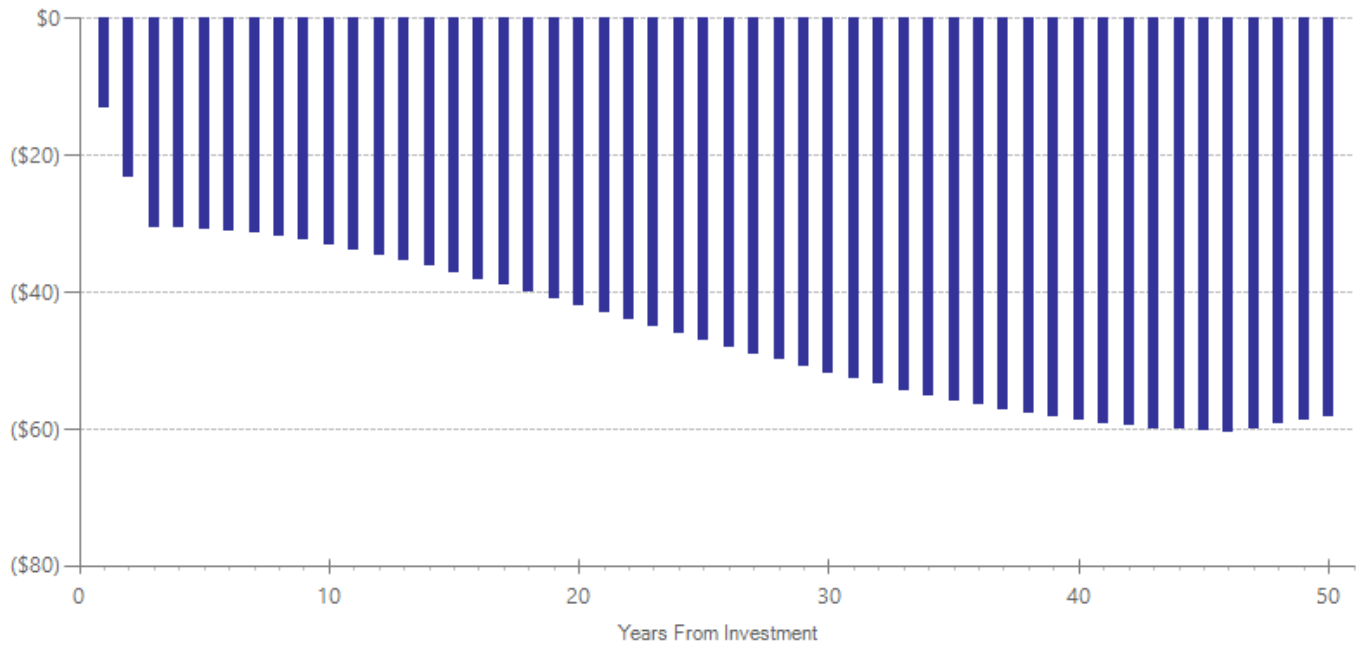
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$4	2014	Present value of net program costs (in 2018 dollars)	($4)
Comparison costs	$0	2014	Cost range (+ or -)	15 %

We estimate per-participant costs assuming a training cost of $5000 plus $1500 for travel, that 5 school counselors would be trained at one time (training amortized over 3 years), and that one facilitator would provide the intervention to 200 students each year. An additional cost of $1 per student is required by the program license. More information is available at: http://medialiteracy.net/alcohol-literacy-challenge-curricula/.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use^	20	2	297	-0.203	0.152	21	n/a	n/a	n/a	-0.615	0.001
Problem alcohol use	20	1	54	0.020	0.191	21	0.003	0.286	23	0.059	0.757

^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.

Citations Used in the Meta-Analysis

Fried, A.B., & Dunn, M.E. (2012). The Expectancy Challenge Alcohol Literacy Curriculum (ECALC): a single session group intervention to reduce alcohol use. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors, 26*(3), 615-20.

Fried, A. (2010). *Evaluation of an expectancy challenge presentation in reducing high-risk alcohol use among Greek affiliated college students*. Orlando, Fla: University of Central Florida.

Fried, A.B. (2013). *Evaluation of digitally enhanced Expectancy Challenge Alcohol Literacy Curriculum (ECALC) for use with mandated college students*. Orlando, Fla: University of Central Florida.

Teen Marijuana Check-Up (TMCU)

Substance Use Disorders: Treatment for Youth

Benefit-cost estimates updated December 2019. Literature review updated September 2018.

Program Description: Teen Marijuana Check-Up (TMCU) is a brief, school-based intervention for youth meeting diagnostic criteria for cannabis use disorder. Youth are introduced to the program via classroom presentations, and those who report an interest in the program and are concerned with reducing cannabis use are screened for eligibility. Participants receive two 45- to 60-minute motivational enhancement therapy (MET) interviews one and two weeks after a youth is accepted to participate. These interviews are provided by counselors trained in the "no pressure to change" philosophy of the TMCU program. The intervention is provided during the school day without parental involvement. Four optional sessions of cognitive behavioral therapy are offered to both TMCU participants and participants in the comparison group for those interested in the cessation of their cannabis use.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$24
Participants	$12
Others	$23
Indirect	($46)
Total benefits	$13
Net program cost	($113)
Benefits minus cost	($100)

Benefit to cost ratio	$0.12
Benefits minus costs	($100)
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 (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with cannabis abuse or dependence	$7	$3	$0	$0	$10
Health care associated with cannabis abuse or dependence	$4	$21	$23	$11	$59
Adjustment for deadweight cost of program	$0	$0	$0	($57)	($57)
Totals	$12	$24	$23	($46)	$13

[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.

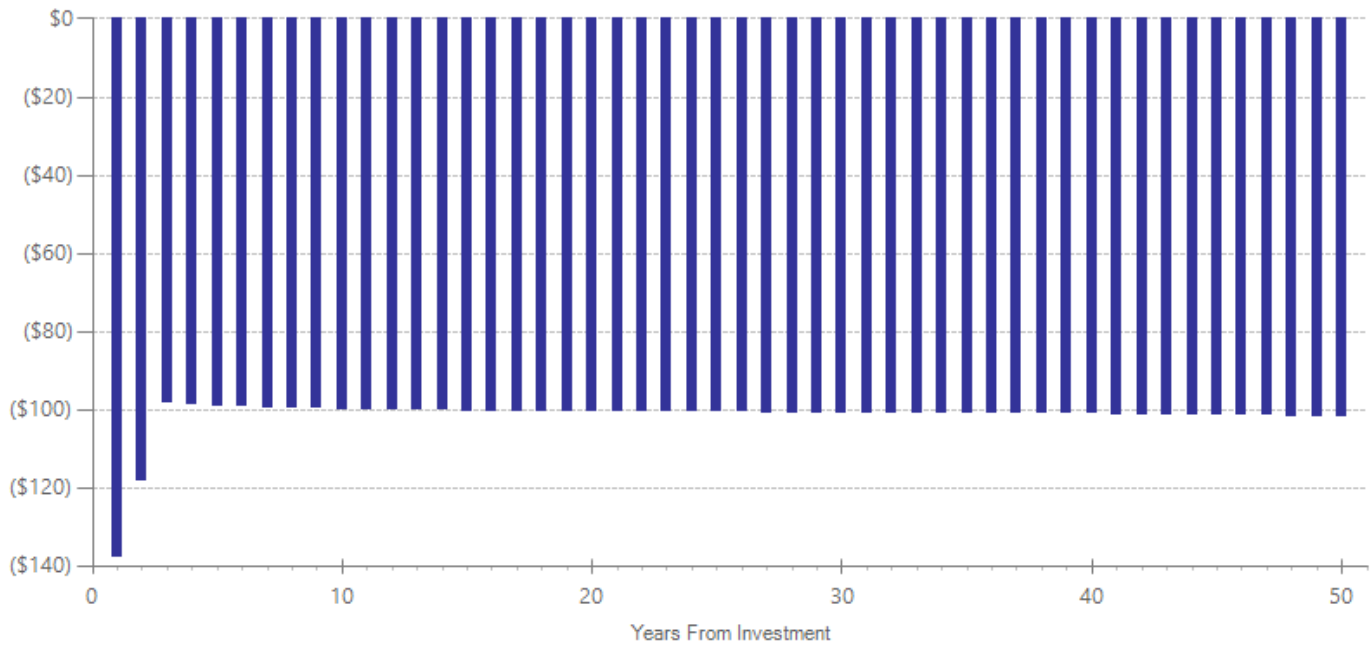
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$106	2013	Present value of net program costs (in 2018 dollars)	($113)
Comparison costs	$0	2013	Cost range (+ or -)	20 %

Per-participant cost data was provided by the program developer (email from Denise Walker to Marna Miller, 10/9/2014). The cost includes recruitment, screening, and direct intervention hours. The treatment cost represents the cost of providing only Teen Marijuana Check-Up (TMCU) and does not include the costs of the optional sessions of cognitive-behavioral therapy offered to both treatment and comparison participants.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use disorder	16	2	148	-0.284	0.142	16	0.000	0.187	19	-0.284	0.045

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.

Citations Used in the Meta-Analysis

Walker, D.D., Roffman, R.A., Stephens, R.S., Wakana, K., Berghuis, J., & Kim, W. (2006). Motivational enhancement therapy for adolescent marijuana users: a preliminary randomized controlled trial. *Journal of Consulting and Clinical Psychology, 74*(3), 628-32.

Walker, D.D., Stephens, R., Roffman, R., Demarce, J., Lozano, B., Towe, S., & Berg, B. (2011). Randomized controlled trial of motivational enhancement therapy with nontreatment-seeking adolescent cannabis users: a further test of the Teen Marijuana Check-Up. *Psychology of Addictive Behaviors, 25*(3), 474-84.

Adolescent Assertive Continuing Care (ACC)

Substance Use Disorders: Treatment for Youth

Benefit-cost estimates updated December 2019. Literature review updated September 2018.

Program Description: Adolescent Assertive Continuing Care (ACC) is a home-based program for youth with substance use disorders returning to the community following substance use treatment. ACC combines the Adolescent Community Reinforcement Approach (A-CRA) with case management services. Trained providers deliver weekly in-home support to youth and their caregivers to improve abstinence and risk reduction skills, encourage youth to engage in more pro-social behavior, and refer youth to additional community services. On average, sessions last for an hour and treatment typically occurs over 12-14 weeks.

Among studies included in this analysis, youth in the comparison groups engaged in the same substance use treatment as the ACC youth but do not receive Assertive Continuing Care following substance use treatment.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$19
Participants	$17
Others	$20
Indirect	($988)
Total benefits	($932)
Net program cost	($2,065)
Benefits minus cost	($2,997)

Benefit to cost ratio	($0.45)
Benefits minus costs	($2,997)
Chance the program will produce benefits greater than the costs	39 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$2	$7	$1	$10
Labor market earnings associated with alcohol abuse or dependence	$8	$3	$0	$0	$11
Property loss associated with alcohol abuse or dependence	$1	$0	$2	$0	$3
Health care associated with cannabis abuse or dependence	$2	$11	$12	$5	$30
Mortality associated with alcohol	$5	$2	$0	$39	$46
Adjustment for deadweight cost of program	$0	$0	$0	($1,033)	($1,033)
Totals	$17	$19	$20	($988)	($932)

[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.

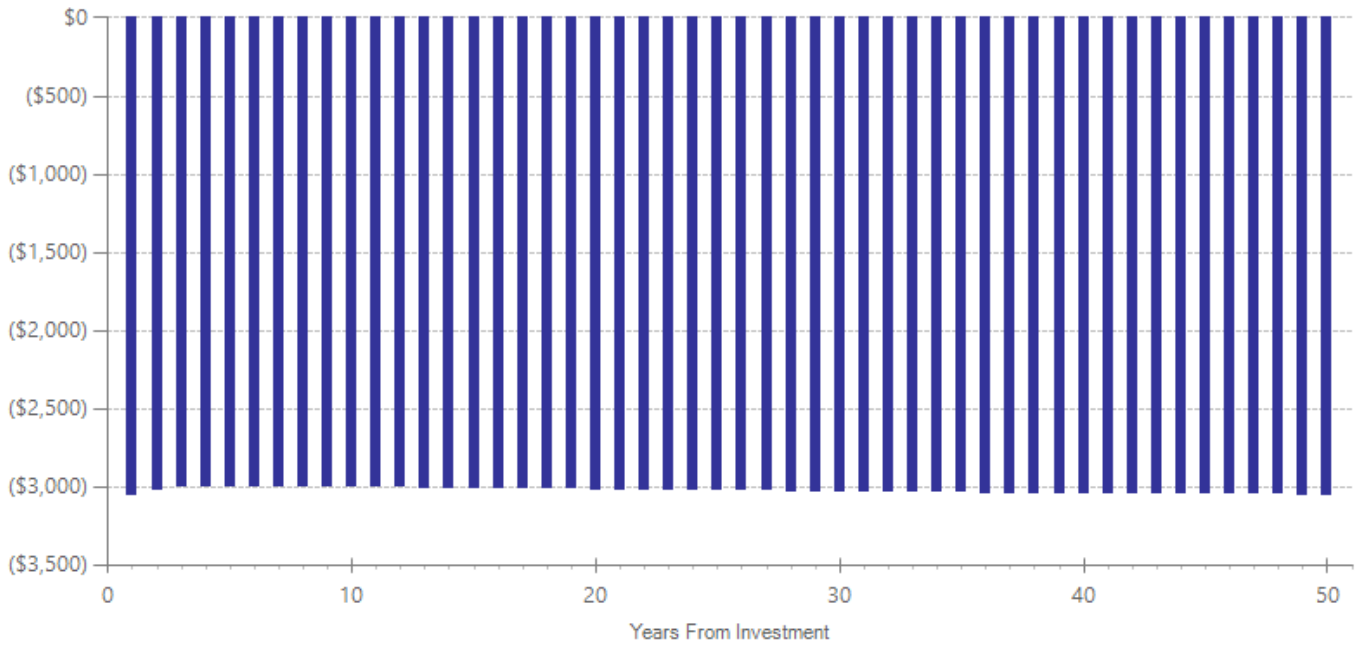
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,968	2015	Present value of net program costs (in 2018 dollars)	($2,065)
Comparison costs	$0	2015	Cost range (+ or -)	10 %

Per-participant costs are based on the weighted average therapist time as reported in the studies (approximately 12 hours of individual treatment and 2 hours of family treatment), multiplied by DSHS reimbursement rates reported in Mercer. (2016). Behavioral health data book for the state of Washington for rates effective October 7, 2016. The treatment cost represents the cost of providing only Adolescent Assertive Continuing Care and does not include the costs of residential substance use treatment received by both the treatment and comparison groups.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	16	3	249	-0.296	0.111	16	0.000	0.187	19	-0.296	0.008
Cannabis use before end of high school^^	16	1	80	-0.340	0.262	16	n/a	n/a	n/a	-0.340	0.194
Cannabis use disorder	16	2	169	-0.154	0.150	16	0.000	0.187	19	-0.154	0.304
Substance use disorder^	16	3	397	-0.141	0.128	16	n/a	n/a	n/a	-0.141	0.272

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

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

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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.

Citations Used in the Meta-Analysis

Garner, B.R., Godley, M.D., Funk, R.R., Lee, M.T., & Garnick, D.W. (2010). The Washington Circle continuity of care performance measure: Predictive validity with adolescents discharged from residential treatment. *Journal of Substance Abuse Treatment, 38*(1), 3-11.

Godley, M.D., Godley, S.H., Dennis, M.L., Funk, R.R., & Passetti, LL. (2007). Research report: The effect of assertive continuing care on continuing care linkage, adherence and abstinence following residential treatment for adolescents with substance use disorders. *Addiction, 102*(1), 81-93.

Godley, M.D., Godley, S.H., Dennis, M.L., Funk, R.R., Passetti, L.L., & Petry, N.M. (2014). A randomized trial of Assertive Continuing Care and Contingency Management for adolescents with substance use disorders. *Journal of Consulting and Clinical Psychology, 82*(1),40-51.

Godley, S.H., Garner, B.R., Passetti, L.L., Funk, R.R., Dennis, M.L., & Godley, M.D. (2010). Adolescent outpatient treatment and continuing care: Main findings from a randomized clinical trial. *Drug and Alcohol Dependence, 110*(1), 44-54.

Kaminer, Y., Burleson, J.A., & Burke, R.H. (2008). Efficacy of outpatient aftercare for adolescents with alcohol use disorders: A randomized controlled study. *Journal of American Academy of Child and Adolescent Psychiatry, 47*(12), 1405-1412.

Functional Family Therapy (FFT) for adolescents with substance use disorder

Substance Use Disorders: Treatment for Youth

Benefit-cost estimates updated December 2019. Literature review updated June 2016.

Program Description: Functional Family Therapy (FFT) is a structured family-based intervention that uses a multi-step approach to enhance protective factors and reduce risk factors in the family. Functional Family Therapy is a Blueprint program identified by the University of Colorado's Center for the Study and Prevention of Violence.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$31
Participants	$97
Others	$49
Indirect	($1,444)
Total benefits	($1,267)
Net program cost	($3,599)
Benefits minus cost	($4,866)

Benefit to cost ratio	($0.35)
Benefits minus costs	($4,866)
Chance the program will produce benefits greater than the costs	35 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	($11)	($29)	($6)	($45)
K-12 grade repetition	$0	$2	$0	$1	$3
K-12 special education	$0	($8)	$0	($4)	($12)
Labor market earnings associated with alcohol abuse or dependence	$47	$20	$0	$0	$67
Health care associated with alcohol abuse or dependence	$12	$63	$69	$31	$175
Property loss associated with alcohol abuse or dependence	$8	$0	$15	$0	$24
Health care associated with externalizing behavior symptoms	($21)	($75)	($77)	($37)	($211)
Mortality associated with alcohol	$51	$22	$0	$360	$433
Adjustment for deadweight cost of program	$0	$20	$71	($1,789)	($1,699)
Totals	$97	$31	$49	($1,444)	($1,267)

[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.

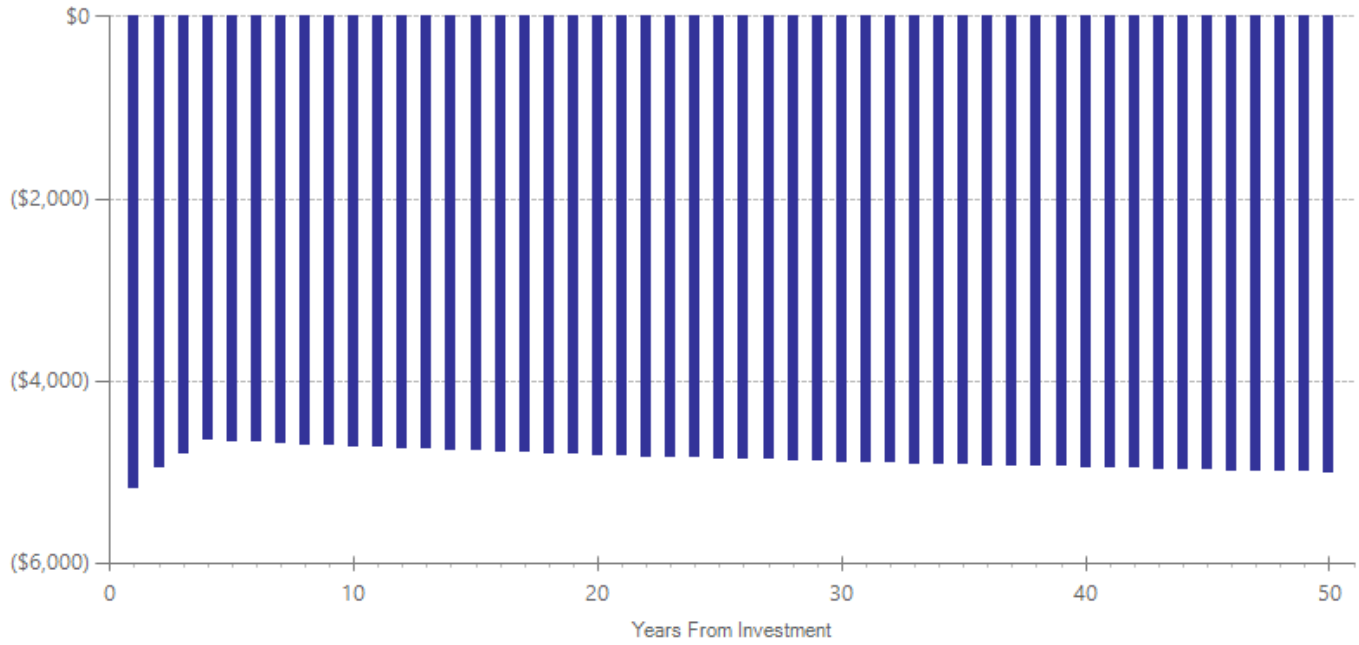
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$3,134	2008	Present value of net program costs (in 2018 dollars)	($3,599)
Comparison costs	$0	2008	Cost range (+ or -)	10 %

Per-participant cost from Barnoski, R. (2009, December). Providing evidence-based programs with fidelity in Washington State juvenile courts: Cost analysis (Document No. 09-12-1201). Olympia: Washington State Institute for Public Policy.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	15	1	40	-0.664	0.228	16	0.000	0.187	19	-0.664	0.004
Cannabis use disorder^^	15	1	30	-0.745	0.653	16	n/a	n/a	n/a	-0.745	0.254
Externalizing behavior symptoms	15	1	40	0.040	0.221	16	0.022	0.133	19	0.040	0.855
Internalizing symptoms	15	1	40	0.058	0.221	16	0.058	0.221	18	0.058	0.795
Major depressive disorder	15	1	40	-0.247	0.222	16	0.000	0.310	18	-0.247	0.265
Substance use disorder^	15	1	85	0.099	0.230	16	n/a	n/a	n/a	0.099	0.667

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

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

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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.

Citations Used in the Meta-Analysis

Slesnick, N., & Prestopnik, J.L. (2009). Comparison of family therapy outcome with alcohol-abusing, runaway adolescents. *Journal of Marital and Family Therapy, 35*(3), 255-277.

Stanton, M.D. & Shadish, W.R. (1997). Outcome, attrition, and family-couples treatment for drug abuse: A meta-analysis and review of the controlled, comparative studies. *Psychological Bulletin, 122*(5), 170-191.

Waldron, H.B., Slesnick, N., Brody, J.L., Turner, C.W., & Peterson, T.R. (2001). Treatment outcomes for adolescent substance abuse at 4- and 7-month assessments. *Journal of Consulting and Clinical Psychology, 69*(5), 802-813.

Multidimensional Family Therapy (MDFT)

Substance Use Disorders: Treatment for Youth

Benefit-cost estimates updated December 2019. Literature review updated May 2015.

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	$1,776
Participants	$136
Others	$3,842
Indirect	($3,307)
Total benefits	$2,448
Net program cost	($8,365)
Benefits minus cost	($5,918)

Benefit to cost ratio	$0.29
Benefits minus costs	($5,918)
Chance the program will produce benefits greater than the costs	28 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1,431	$3,565	$716	$5,713
K-12 special education	$0	$51	$0	$25	$76
Labor market earnings associated with cannabis abuse or dependence	$61	$26	$0	$0	$86
Health care associated with externalizing behavior symptoms	$76	$268	$277	$134	$755
Adjustment for deadweight cost of program	$0	$0	$0	($4,183)	($4,183)
Totals	$136	$1,776	$3,842	($3,307)	$2,448

[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.

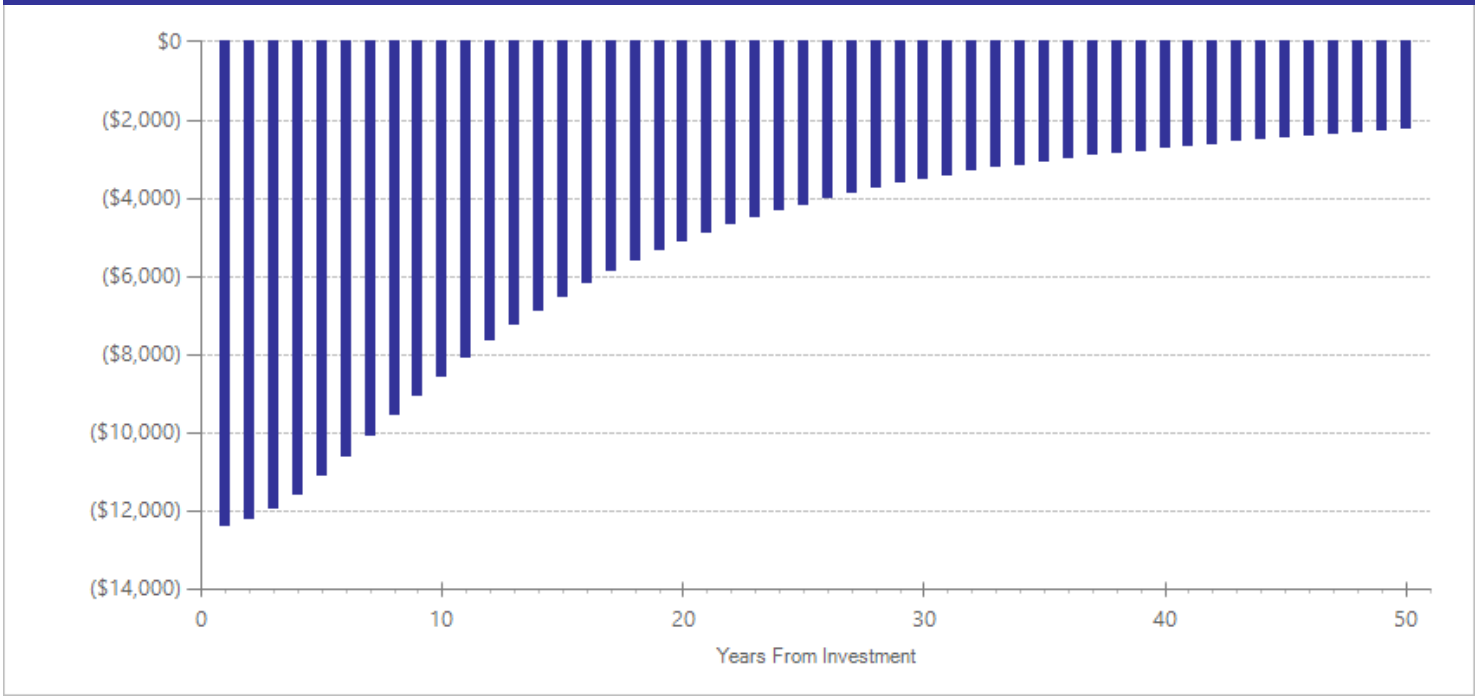
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$6,168	2001	Present value of net program costs (in 2018 dollars)	($8,365)
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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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

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

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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.

Hendriks, V., van, . S.E., & Blanken, P. (2011). Treatment of adolescents with a cannabis use disorder: Main findings of a randomized controlled trial comparing multidimensional family therapy and cognitive behavioral therapy in The Netherlands. *Drug and Alcohol Dependence,* 119, 64-71.

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.

Liddle, H.A., Rowe, C.L., Dakof, G.A., Henderson, C.E., & Greenbaum, P.E. (2009). Multidimensional Family Therapy for young adolescent substance abuse: Twelve-month outcomes of a randomized controlled trial. *Journal of Consulting and Clinical Psychology, 77*(1), 12-25.

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.

Rigter, H., Henderson, C.E., Pelc, I., Tossmann, P., Phan, O., Hendriks, V., Schaub, M., ... Rowe, C.L. (2013). Multidimensional family therapy lowers the rate of cannabis dependence in adolescents: a randomised controlled trial in Western European outpatient settings. *Drug and Alcohol Dependence,* 130, 1-3.

Contingency management (higher cost) for substance use disorders

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with drug and/or alcohol substance use disorder (excluding marijuana use disorder) where contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: (1) A voucher system where abstinence earned vouchers that were exchangeable for goods provided by the clinic or counseling center, and (2) a prize or raffle system where clients who remained abstinent could earn the opportunity to draw from a prize bowl. Higher-cost contingency management was determined by maximum voucher or maximum expected value of prizes possible. Based on a statistical analysis of contingency management studies, we determined that programs with a maximum value of vouchers or prizes greater than $500 (in 2012 dollars) represent higher-cost contingency management. Treatment lasted two to three months and reward opportunities occurred two to three times per week.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$3,148
Participants	$4,060
Others	$1,563
Indirect	$14,504
Total benefits	$23,275
Net program cost	($593)
Benefits minus cost	$22,682

Benefit to cost ratio	$39.27
Benefits minus costs	$22,682
Chance the program will produce benefits greater than the costs	77 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$4	$1	$6
Labor market earnings associated with illicit drug abuse or dependence	$2,763	$1,176	$0	$0	$3,940
Health care associated with illicit drug abuse or dependence	$235	$1,517	$1,559	$759	$4,070
Mortality associated with illicit drugs	$1,062	$452	$0	$14,041	$15,555
Adjustment for deadweight cost of program	$0	$0	$0	($296)	($296)
Totals	$4,060	$3,148	$1,563	$14,504	$23,275

[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.

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[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	$548	2012	Present value of net program costs (in 2018 dollars)	($593)
Comparison costs	$0	2012	Cost range (+ or -)	20 %

Contingency management is typically provided for less than a year. We calculated the weighted average of the variable per-participant treatment and comparison group costs across studies estimating the cost-effectiveness of an incentive program with an average cost of greater than $500 in 2012 (Olmstead & Petry, 2009; Olmstead, Sindelar, & Petry, 2007; Olmstead et al., 2007). Costs of administering the incentive program include staff costs to inventory, shop, and restock prizes; material cost of items; counseling session costs; and toxicology screens. All staff costs include salary, benefits, and overhead. All costs are calculated from the clinic perspective. Note that because treatment group participants have higher retention rates than the control group, costs also reflect the increased number of counseling sessions attended and urinalysis tests performed for the treated group.

Olmstead, T.A., & Petry, N.M. (2009). The cost-effectiveness of prize-based and voucher-based contingency management in a population of cocaine- or opioid-dependent outpatients. *Drug and Alcohol Dependence, 102*(1), 108-115. Olmstead, T.A., Sindelar, J.L., & Petry, N.M. (2007). Cost-effectiveness of prize-based incentives for stimulant abusers in outpatient psychosocial treatment programs. *Drug and Alcohol Dependence, 87*(2), 175-182. Olmstead, T.A., Sindelar, J.L., Easton, C.J., & Carroll, K.M. (2007). The cost-effectiveness of four treatments for marijuana dependence. *Addiction, 102*(9), 1443-1453.

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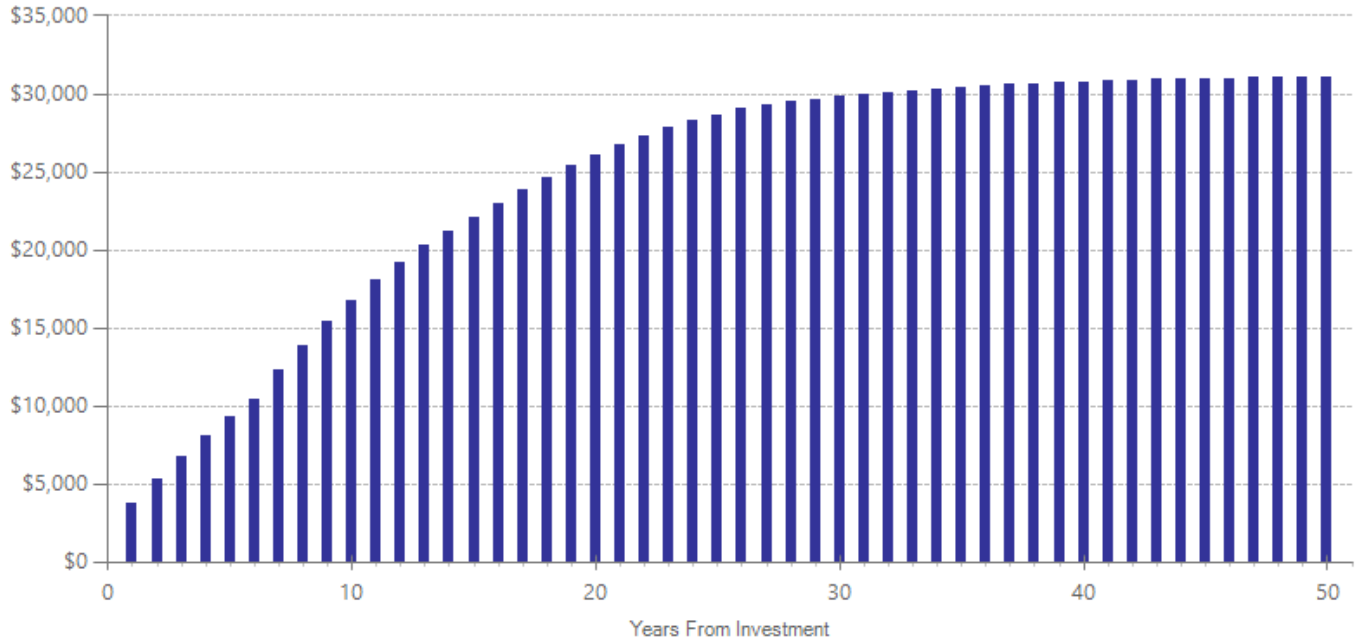
Detailed Annual Cost Estimates Per Participant



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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
Alcohol use disorder^^	39	1	19	-0.096	0.310	39	n/a	n/a	n/a	-0.096	0.758
Cannabis use^	39	1	19	-0.301	0.312	39	n/a	n/a	n/a	-0.301	0.334
Illicit drug use disorder	39	37	1323	-0.519	0.060	39	-0.154	0.238	40	-0.519	0.001

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

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

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Citations Used in the Meta-Analysis

Alessi, S.M., Hanson, T., Wieners, M., & Petry, N.M. (2007). Low-cost contingency management in community clinics: delivering incentives partially in group therapy. *Experimental and Clinical Psychopharmacology, 15*(3), 293-300.

Brooner, R.K., Kidorf, M.S., King, V.L., Stoller, K.B., Neufeld, K.J., & Kolodner, K. (2007). Comparing adaptive stepped care and monetary-based voucher interventions for opioid dependence. *Drug and Alcohol Dependence*, 88, S14-S23.

Carroll, K.M., Ball, S.A., Nich, C., O'Connor, P.G., Eagan, D.A., Frankforter, T.L., Triffleman, E.G., Shi, J., & Rounsaville, B.J. (2001). Targeting behavioral therapies to enhance naltrexone treatment of opioid dependence: efficacy of contingency management and significant other involvement. *Archives of General Psychiatry, 58*(8), 755-761.

Carroll, K.M., Sinha, R., Nich, C., Babuscio, T., & Rounsaville, B.J. (2002). Contingency management to enhance naltrexone treatment of opioid dependence: a randomized clinical trial of reinforcement magnitude. *Experimental and Clinical Psychopharmacology, 10*(1), 54-63.

Chutuape, M.A., Silverman, K., & Stitzer, M. (1999). Contingent reinforcement sustains post-detoxification abstinence from multiple drugs: A preliminary study with methadone patients. *Drug and Alcohol Dependence, 54*(1), 69-81.

Downey, K.K., Helmus, T.C., & Schuster, C.R. (2000). Treatment of heroin-dependent poly-drug abusers with contingency management and buprenorphine maintenance. *Experimental and Clinical Psychopharmacology, 8*(2), 176-184.

Elk, R., Mangus, L., Rhoades, H., Andres, R., & Grabowski, J. (1998). Cessation of cocaine use during pregnancy: effects of contingency management interventions on maintaining abstinence and complying with prenatal care. *Addictive Behaviors, 23*(1), 57-64.

Epstein, D.H., Hawkins, W.E., Covi, L., Umbricht, A., & Preston, K.L. (2003). Cognitive-behavioral therapy plus contingency management for cocaine use: Findings during treatment and across 12-month follow-up. *Psychology of Addictive Behaviors, 17*(1), 73-82.

Epstein, D.H., Schmittner, J., Umbricht, A., Schroeder, J.R., Moolchan, E.T., & Preston, K.L. (2009). Promoting abstinence from cocaine and heroin with a methadone dose increase and a novel contingency. *Drug and Alcohol Dependence, 101*(1), 92-100.

Garcia-Fernandez, G., Secades-Villa, R., Garcia-Rodriguez, O., Sanchez-Hervas, E., Fernandez-Hermida, J.R., & Higgins, S.T. (2011). Adding voucher-based incentives to community reinforcement approach improves outcomes during treatment for cocaine dependence. *The American Journal on Addictions, 20*(5), 456-461.

Hall, S.M., Bass, A., Hargreaves, W.A., & Loeb, P. (1979). Contingency management and information feedback in outpatient heroin detoxification. *Behavior Therapy, 10*(4), 443-451.

Higgins, S.T., Budney, A.J., Bickel, W.K., Foerg, F.E., Donham, R., & Badger, G.J. (1994). Incentives Improve Outcome in Outpatient Behavioral Treatment of Cocaine Dependence. *Archives of General Psychiatry 51*(7), 568-576.

Higgins, S.T., Wong, C.J., Badger, G.J., Odgen, D.E.H., Dantona, R.L. (2000). Contingent Reinforcement increases cocaine abstinence during outpatient treatment and 1 year of follow-up. *Journal of Consulting and Clinical Psychology, 68*(1), 64-72.

Jones, H.E., Haug, N., Silverman, K., Stitzer, M., & Svikis, D. (2001). The effectiveness of incentives in enhancing treatment attendance and drug abstinence in methadone-maintained pregnant women. *Drug and Alcohol Dependence, 61*(3), 297-306.

Kennedy, A.P., Phillips, K.A., Epstein, D.H., Reamer, D.A., Schmittner, J., & Preston, K.L. (2013). A randomized investigation of methadone doses at or over 100mg/day, combined with contingency management. *Drug and Alcohol Dependence, 130*(1), 77-84.

Kirby, K.C., Marlowe, D.B., Festinger, D.S., Lamb, R.J., & Platt, J.J. (1998). Schedule of voucher delivery influences initiation of cocaine abstinence. *Journal of Consulting and Clinical Psychology, 66*(5), 761-7.

Kosten, T., Oliveto, A., Feingold, A., Poling, J., Sevarino, K., McCance-Katz, E., Stine, S., ... Gonsai, K. (2003). Desipramine and contingency management for cocaine and opiate dependence in buprenorphine maintained patients. *Drug and Alcohol Dependence, 70*(3), 315-325.

Oliveto, A., Poling, J., Sevarino, K.A., Gonsai, K.R., McCance-Katz, E.F., Stine, S.M., & Kosten, T.R. (2005). Efficacy of dose and contingency management procedures in LAAM-maintained cocaine-dependent patients. *Drug and Alcohol Dependence, 79*(2), 157-165.

Petry, N.M. and B. Martin. (2002). Low-Cost Contingency Management for Treating Cocaine- and Opioid-Abusing Methadone Patients. *Journal of Consulting and Clinical Psychology, 70*(2), 398-405

Petry, N.M., Martin, B., & Simcic, F. (2005). Prize Reinforcement Contingency Management for Cocaine Dependence: Integration with Group Therapy in a Methadone Clinic. *Journal of Consulting and Clinical Psychology, 73*(2), 354-359.

Petry, N.M., Alessi, S.M., Marx, J., Austing, M., Tardif, M. 2005. Vouchers versus prizes: Contingency management treatment of substance abusers in community settings. *Journal of Consulting and Clinical Psychology, 73*(6), 1005-1014

Petry, N.M., Alessi, S.M., Carroll, K.M., Hanson, T., MacKinnon, S., Rounsaville, B., & Sierra, S. (2006). Contingency Management Treatments: Reinforcing Abstinence Versus Adherence with Goal-Related Activities. *Journal of Consulting and Clinical Psychology, 74*(3), 592-601.

Piotrowski, N.A., Tusel, D.J., Sees, K.L., Reilly, P.M., Banys, P., Meek, P., et al. (1999). Contingency contracting with monetary reinforcers for abstinence from multiple drugs in a methadone program. *Experimental and Clinical Psychopharmacology, 7*(4), 399-411.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2000). Methadone dose increase and abstinence reinforcement for treatment of continued heroin use during methadone maintenance. *Archives of General Psychiatry, 57*(4), 395-404.

Rawson, R.A., Huber, A., McCann, M., Shoptaw, S., Farabee, D., Reiber, C., & Ling, W. (2002). A comparison of contingency management and cognitive-behavioral approaches during methadone maintenance treatment for cocaine dependence. *Archives of General Psychiatry, 59*(9), 817-824.

Shoptaw, S., Reback, C.J., Peck, J.A., Yang, X., Rotheram-Fuller, E., Larkins, S., Veniegas, R.C., ... Hucks-Ortiz, C. (2005). Behavioral treatment approaches for methamphetamine dependence and HIV-related sexual risk behaviors among urban gay and bisexual men. *Drug and Alcohol Dependence, 78*(2), 125-134.

Shoptaw, S., Huber, A., Peck, J., Yang, X., Liu, J., Jeff, D., Roll, J., ... Ling, W. (2006). Randomized, placebo-controlled trial of sertraline and contingency management for the treatment of methamphetamine dependence. *Drug and Alcohol Dependence, 85*(1), 12-18.

Silverman, K., Higgins, S.T., Brooner, R.K., Montoya, I.D., Cone, E.J. & Schuster, C.R. (1996). Sustained Cocaine Abstinence in Methadone Maintenance Patients Through Voucher-Based Reinforcement Therapy. *Archives of General Psychiatry, 53*(5), 409-415.

Silverman, K., Wong, C.J., Umbricht-Schneiter, A., Montoya, I.D., Schuster, C.R. & Preston, K.L. (1998). Broad Beneficial Effects of Cocaine Abstinence Reinforcement Among Methadone Patients. *Journal of Consulting and Clinical Psychology, 66*(5), 811-824.

Silverman, K., Robles, E., Mudric, T., Bigelow, G.E., & Stitzer, M.L. (2004). A Randomized Trial of Long-Term Reinforcement of Cocaine Abstinence in Methadone-Maintained Patients Who Inject Drugs. *Journal of Consulting and Clinical Psychology, 72*(5), 839-854.

Seeking Safety

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Seeking Safety is a manualized, standalone therapy designed to treat comorbid trauma/PTSD and substance use disorders. Seeking Safety covers 25 topics over two to three months. In the included studies, each topic is independent of the others, and allows for flexible use (mixed settings, fewer topics, etc.). The five main principles of Seeking Safety are (1) safety in relationships, thinking, behavior, and emotions; (2) treating trauma/PTSD and substance abuse at the same time; (3) a focus on ideals; (4) four content areas: cognitive, behavioral, interpersonal, and case management; and (5) attention to clinician processes (e.g. clinician self-care).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$5,648
Participants	$9,855
Others	$1,704
Indirect	$1,196
Total benefits	$18,404
Net program cost	($411)
Benefits minus cost	$17,993

Benefit to cost ratio	$44.80
Benefits minus costs	$17,993
Chance the program will produce benefits greater than the costs	71 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with alcohol abuse or dependence	($33)	($14)	$0	$0	($47)
Health care associated with alcohol abuse or dependence	$0	$0	$0	$0	($1)
Property loss associated with alcohol abuse or dependence	$0	$0	$0	$0	$0
Labor market earnings associated with PTSD	$9,370	$3,989	$0	$0	$13,359
Health care associated with PTSD	$467	$1,652	$1,705	$826	$4,649
Mortality associated with illicit drugs	$52	$22	$0	$576	$649
Mortality associated with alcohol	$0	$0	$0	$0	($1)
Adjustment for deadweight cost of program	$0	$0	$0	($205)	($205)
Totals	$9,855	$5,648	$1,704	$1,196	$18,404

[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.

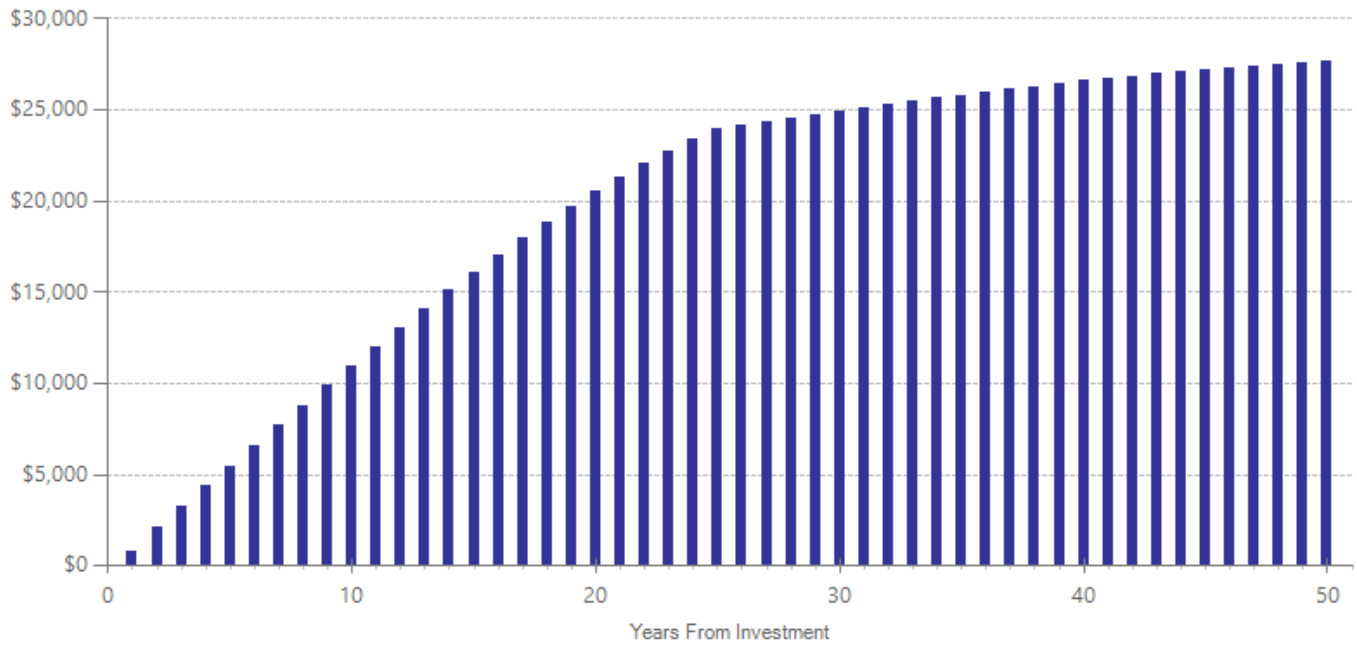
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$526	2013	Present value of net program costs (in 2018 dollars)	($411)
Comparison costs	$141	2013	Cost range (+ or -)	10 %

In the included studies, Seeking Safety was administered over a two- to three-month period. The per-participant cost of treatment is the weighted average estimate of the individual or group therapy sessions provided in the studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rate for outpatient individual and group therapy multiplied by the weighted average of the total hours of these therapies across the studies (averaging 24 total hours). Comparison group costs are computed in a similar manner based on treatment received in the studies (no treatment or standard group treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	41	2	72	0.009	0.175	41	0.000	0.187	44	0.009	0.957
Illicit drug use disorder	41	5	346	-0.058	0.093	41	0.000	0.187	44	-0.058	0.535
Post-traumatic stress	41	6	409	-0.211	0.102	41	-0.211	0.102	42	-0.211	0.039
Psychiatric symptoms^	41	2	84	0.057	0.305	41	n/a	n/a	n/a	0.057	0.852

^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.

Citations Used in the Meta-Analysis

Boden, M.T., Kimerling, R., Jacobs-Lentz, J., Bowman, D., Weaver, C., Carney, D., Walser, R., ... Trafton, J.A. (2012). Seeking Safety treatment for male veterans with a substance use disorder and post-traumatic stress disorder symptomatology. *Addiction, 107*(3), 578-586.

Desai, R.A., Harpaz-Rotem, I., Najavits, L.M., & Rosenheck, R.A. (2008). Impact of the Seeking Safety Program on Clinical Outcomes Among Homeless Female Veterans With Psychiatric Disorders. *Psychiatric Services, 59*(9), 996-1003.

Hien, D.A., Cohen, L.R., Miele, G.M., Litt, L.C., Capstick, C. 2004. Promising treatments for women with comorbid PTSD and substance use disorders. *American Journal of Psychiatry, 161*(8), 1426-1432.

Hien, D.A., Wells, E.A., Jiang, H., Suarez-Morales, L., Campbell, A.N., Cohen, L.R., Miele, G.M., ... Nunes, E.V. (2009). Multisite randomized trial of behavioral interventions for women with co-occurring PTSD and substance use disorders. *Journal of Consulting and Clinical Psychology, 77*(4), 607-619.

Lynch, S., Heath, N., Mathews, K., & Cepeda, G. (2012). Seeking Safety: An Intervention for Trauma-Exposed Incarcerated Women?. *Journal of Trauma & Dissociation, 13*(1), 88-101.

Zlotnick, C., Johnson, J., & Najavits, L.M. (2009). Randomized controlled pilot study of cognitive-behavioral therapy in a sample of incarcerated women with substance use disorder and PTSD. *Behavior Therapy, 40*(4), 325-336.

Contingency management (higher cost) for marijuana use

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with marijuana abuse or dependence where contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: (1) A voucher system where abstinence earned vouchers that were exchangeable for goods provided by the clinic or counseling center, and (2) a prize or raffle system where clients who remained abstinent could earn the opportunity to draw from a prize bowl. Higher-cost contingency management was determined by maximum voucher or maximum expected value of prizes possible. Based on a statistical analysis of contingency management studies, we determined that programs with a maximum value of vouchers or prizes greater than $500 (in 2012 dollars) represent higher-cost contingency management. Treatment in the included studies lasted between 1 and 6.5 months with a weighted average of three months of contingency management and reward opportunities occurring two times per week, on average.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$4,293
Participants	$9,207
Others	$439
Indirect	($92)
Total benefits	$13,847
Net program cost	($593)
Benefits minus cost	$13,254

Benefit to cost ratio	$23.36
Benefits minus costs	$13,254
Chance the program will produce benefits greater than the costs	78 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with cannabis abuse or dependence	$9,125	$3,885	$0	$0	$13,010
Health care associated with cannabis abuse or dependence	$82	$408	$439	$204	$1,133
Adjustment for deadweight cost of program	$0	$0	$0	($296)	($296)
Totals	$9,207	$4,293	$439	($92)	$13,847

[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

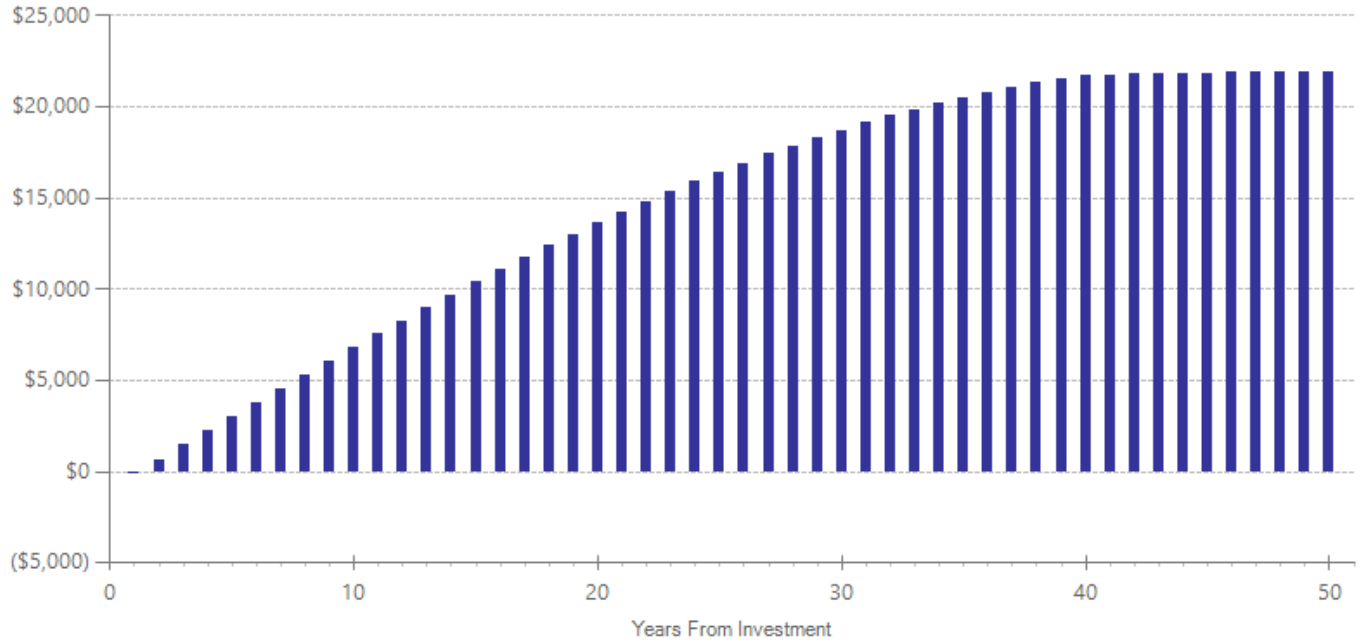
	Annual cost	Year dollars	Summary	
Program costs	$548	2012	Present value of net program costs (in 2018 dollars)	($593)
Comparison costs	$0	2012	Cost range (+ or -)	20 %

Contingency management is typically provided for less than a year. We calculated the weighted average of the variable per-participant treatment and comparison group costs across studies estimating the cost-effectiveness of an incentive program with an average cost of greater than $500 in 2012 (Olmstead & Petry, 2009; Olmstead, Sindelar, & Petry, 2007; Olmstead et al., 2007). Costs of administering the incentive program include staff costs to inventory, shop for, and restock prizes; material cost of items; counseling session costs; and toxicology screens. All staff costs include salary, benefits, and overhead. All costs are calculated from the clinic perspective. Note that because treatment group participants have higher retention rates than the control group, costs also reflect the increased number of counseling sessions attended and urinalysis tests performed for the treated group.

Olmstead, T.A., & Petry, N.M. (2009). The cost-effectiveness of prize-based and voucher-based contingency management in a population of cocaine- or opioid-dependent outpatients. *Drug and Alcohol Dependence, 102*(1), 108-115. Olmstead, T.A., Sindelar, J.L., & Petry, N.M. (2007). Cost-effectiveness of prize-based incentives for stimulant abusers in outpatient psychosocial treatment programs. *Drug and Alcohol Dependence, 87*(2), 175-182.Olmstead, T.A., Sindelar, J.L., Easton, C.J., & Carroll, K.M. (2007). The cost-effectiveness of four treatments for marijuana dependence. *Addiction, 102*(9), 1443-1453.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use disorder	26	4	116	-0.354	0.154	26	-0.325	0.412	27	-0.354	0.021

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.

Citations Used in the Meta-Analysis

Carroll, K.M., Easton, C.J., Nich, C., Hunkele, K.A., Neavins, T.M., Sinha, R., . . . Rounsaville, B.J. (2006). The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology, 74*(5), 955-966.

Budney, A.J., Higgins, S.T., Radonovich, K.J., & Novy, P.L. (2000). Adding voucher-based incentives to coping skills and motivational enhancement improves outcomes during treatment for marijuana dependence. *Journal of Consulting and Clinical Psychology, 68*(6), 1051-1061.

Budney, A.J., Moore, B.A., Rocha, H.L., & Higgins, S.T. (2006). Clinical trial of abstinence-based vouchers and cognitive-behavioral therapy for cannabis dependence. *Journal of Consulting and Clinical Psychology, 74*(2), 307-316.

Brief marijuana dependence counseling

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Brief marijuana dependence counseling is a standalone treatment that combines motivational enhancement therapy (usually two sessions) and cognitive-behavioral therapy (usually seven sessions) as well as case management. Sessions are generally individual in nature and focus on motivations and readiness for change; building cognitive, behavioral, and emotional skills; and assisting the client with access to additional support services.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$4,049	Benefit to cost ratio	$22.60
Participants	$8,738	Benefits minus costs	$12,486
Others	$387	Chance the program will produce benefits greater than the costs	91 %
Indirect	($109)		
Total benefits	$13,064		
Net program cost	($578)		
Benefits minus cost	$12,486		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with cannabis abuse or dependence	$8,666	$3,689	$0	$0	$12,355
Health care associated with cannabis abuse or dependence	$72	$359	$387	$180	$998
Adjustment for deadweight cost of program	$0	$0	$0	($289)	($289)
Totals	$8,738	$4,049	$387	($109)	$13,064

[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.

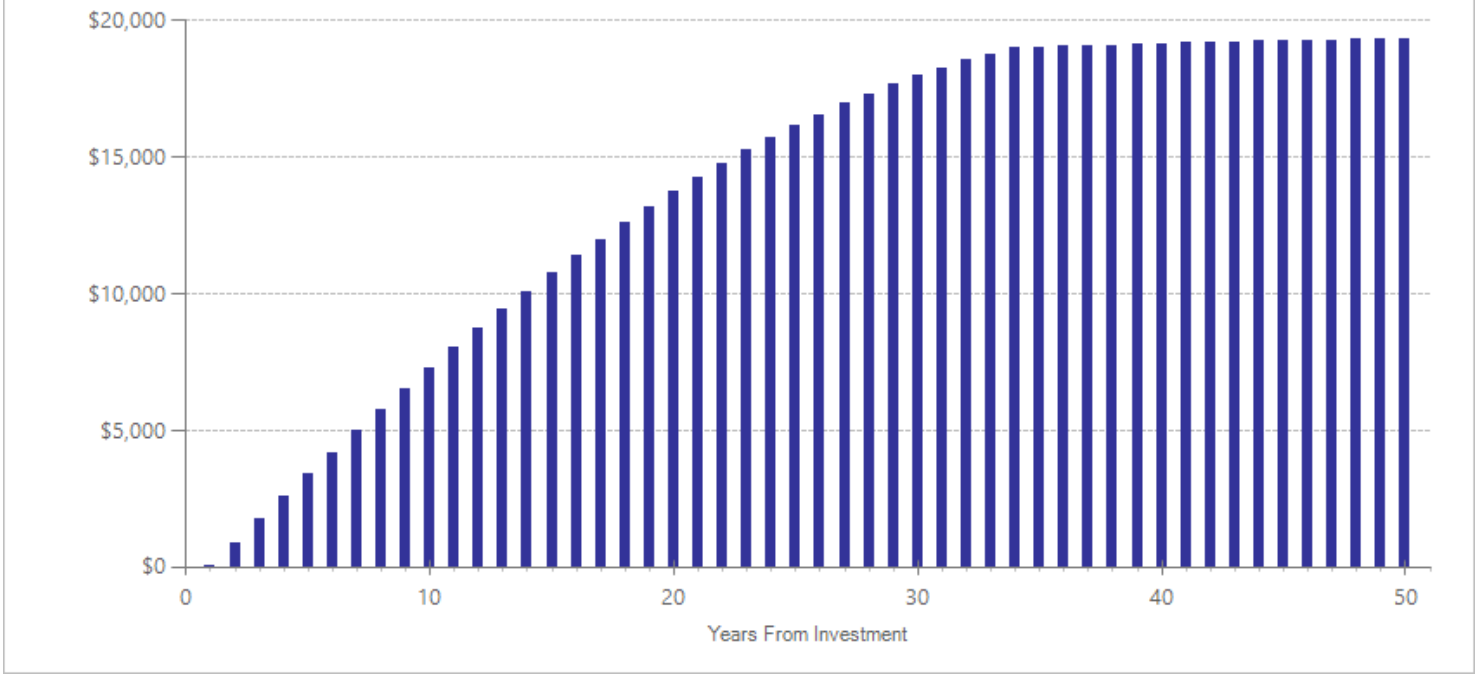
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$822	2013	Present value of net program costs (in 2018 dollars)	($578)
Comparison costs	$280	2013	Cost range (+ or -)	10 %

Brief marijuana dependence counseling was provided over a two- to three-month period in the included studies. The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rates for individual and/or group outpatient therapy multiplied by the weighted average of total hours of outpatient individual and/or group therapy across the studies (averaging 12 total hours). Comparison group costs are computed in a similar manner based on treatment received in the studies (individual or group treatment as usual or no treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use disorder	32	8	506	-0.364	0.138	32	-0.323	0.226	33	-0.364	0.009

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.

Citations Used in the Meta-Analysis

Budney, A J., Moore, B.A., Rocha, H.L., & Higgins, S.T. (2006). Clinical trial of abstinence-based vouchers and cognitive-behavioral therapy for cannabis dependence. *Journal of Consulting and Clinical Psychology, 74*(2), 307-316.

Carroll, K.M., Easton, C.J., Nich, C., Hunkele, K.A., Neavins, T.M., Sinha, R., . . . Rounsaville, B.J. (2006). The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology, 74*(5), 955-966.

Copeland, J., Swift, W., Roffman, R., & Stephens, R. (2001). A randomized controlled trial of brief cognitive-behavioral interventions for cannabis use disorder. *Journal of Substance Abuse Treatment, 21*(2), 55-64.

Litt, M.D., Kadden, R.M., Kabela-Cormier, E., & Petry, N.M. (2008). Coping skills training and contingency management treatments for marijuana dependence: exploring mechanisms of behavior change. *Addiction, 103*(4), 638-648.

The Marijuana Treatment Project Research Group. (2004). Brief treatments for cannabis dependence: Findings from a randomized multisite trial. *Journal of Consulting and Clinical Psychology, 72*(3), 455-466.

Stephens, R.S., Roffman, R.A., & Curtin, L. (2000). Comparison of extended versus brief treatments for marijuana use. *Journal of Consulting and Clinical Psychology, 68*(5), 898-908.

Brief cognitive behavioral intervention for amphetamine users

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Brief cognitive behavioral interventions for amphetamine users is a manualized, standalone treatment that consists of two to four individual weekly sessions of cognitive-behavioral therapy. Key approaches included in this intervention include motivational interviewing, coping skills, controlling thoughts, and relapse prevention. While the manual focuses on a four-session model, the developer indicates that practitioners may use a two-session model according to client needs.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$2,314
Participants	$2,675
Others	$1,301
Indirect	$5,181
Total benefits	$11,471
Net program cost	($218)
Benefits minus cost	$11,253

Benefit to cost ratio	$52.57
Benefits minus costs	$11,253
Chance the program will produce benefits greater than the costs	64 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$5	$14	$3	$22
Labor market earnings associated with illicit drug abuse or dependence	$1,920	$817	$0	$0	$2,738
Health care associated with illicit drug abuse or dependence	$194	$1,252	$1,287	$626	$3,359
Mortality associated with illicit drugs	$561	$239	$0	$4,662	$5,462
Adjustment for deadweight cost of program	$0	$0	$0	($109)	($109)
Totals	$2,675	$2,314	$1,301	$5,181	$11,471

[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.

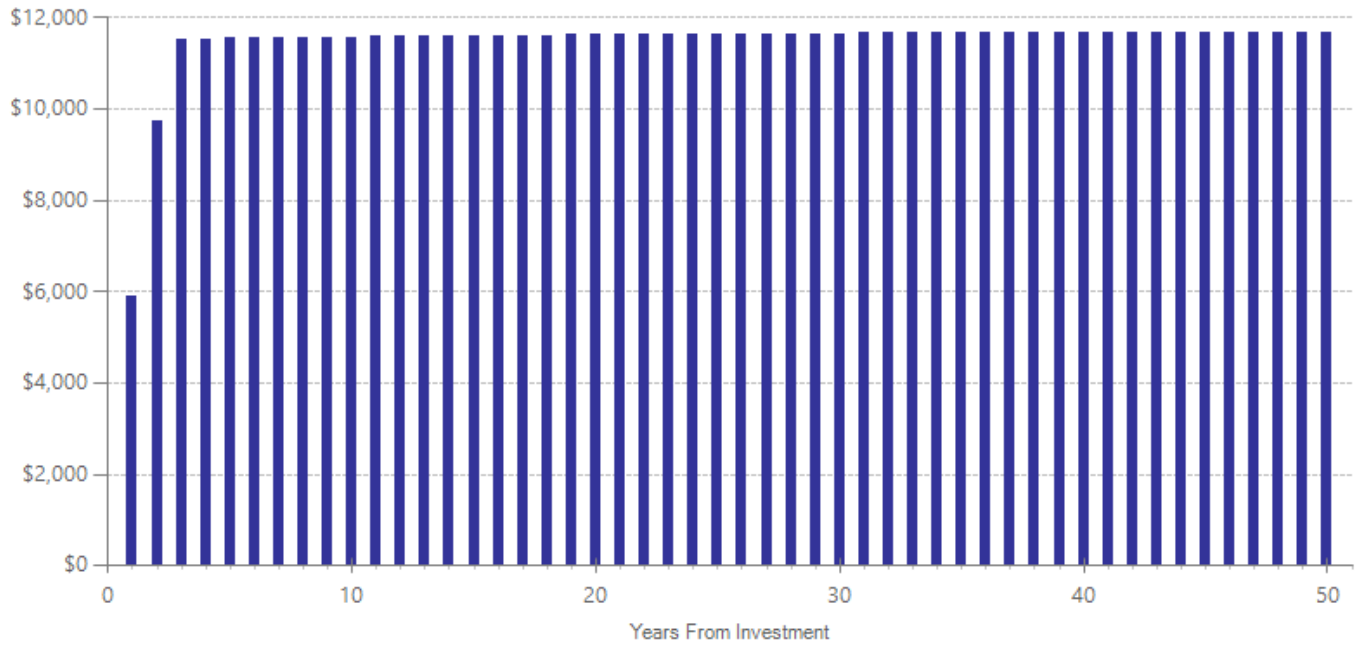
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$204	2013	Present value of net program costs (in 2018 dollars)	($218)
Comparison costs	$0	2013	Cost range (+ or -)	10 %

This program is administered over a two- to four-week period. The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rates for individual outpatient therapy multiplied by the weighted average of total hours of outpatient individual therapy across the studies. Treatment group therapy costs are in addition to the costs of a self-help book provided to both the comparison and treated groups.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Illicit drug use disorder	30	2	172	-0.703	0.193	30	0.000	0.187	33	-0.703	0.001

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.

Citations Used in the Meta-Analysis

Baker, A., Boggs, T.G., Lewin, T.J. (2001) Randomized controlled trial of brief cognitive-behavioural interventions among regular users of amphetamine. *Addiction 96*(9), 1279-1287.

Baker, A., Lee, N.K., Claire, M., Lewin, T.J., Grant, T., Pohlman, S., et al (2005). Brief Cognitive Behavioural Interventions for Regular Amphetamine Users: A Step in the Right Direction. *Addiction, 100*,(3), 367-378.

12-Step Facilitation Therapy

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: 12-Step Facilitation Therapy is a stand-alone program that encourages patients' active participation in 12-step programs such as Alcoholics Anonymous or Narcotics Anonymous. The intervention involves a brief, structured, and manual-driven approach, typically delivered in 12 to 15 weekly individual sessions.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,744
Participants	$3,039
Others	$504
Indirect	$3,806
Total benefits	$9,094
Net program cost	$333
Benefits minus cost	$9,427

Benefit to cost ratio	n/a
Benefits minus costs	$9,427
Chance the program will produce benefits greater than the costs	60 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$2
Labor market earnings associated with alcohol abuse or dependence	$2,637	$1,122	$0	$0	$3,759
Property loss associated with alcohol abuse or dependence	$3	$0	$6	$0	$10
Health care associated with illicit drug abuse or dependence	$75	$483	$497	$242	$1,296
Mortality associated with illicit drugs	$324	$138	$0	$3,398	$3,860
Adjustment for deadweight cost of program	$0	$0	$0	$167	$167
Totals	$3,039	$1,744	$504	$3,806	$9,094

[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.

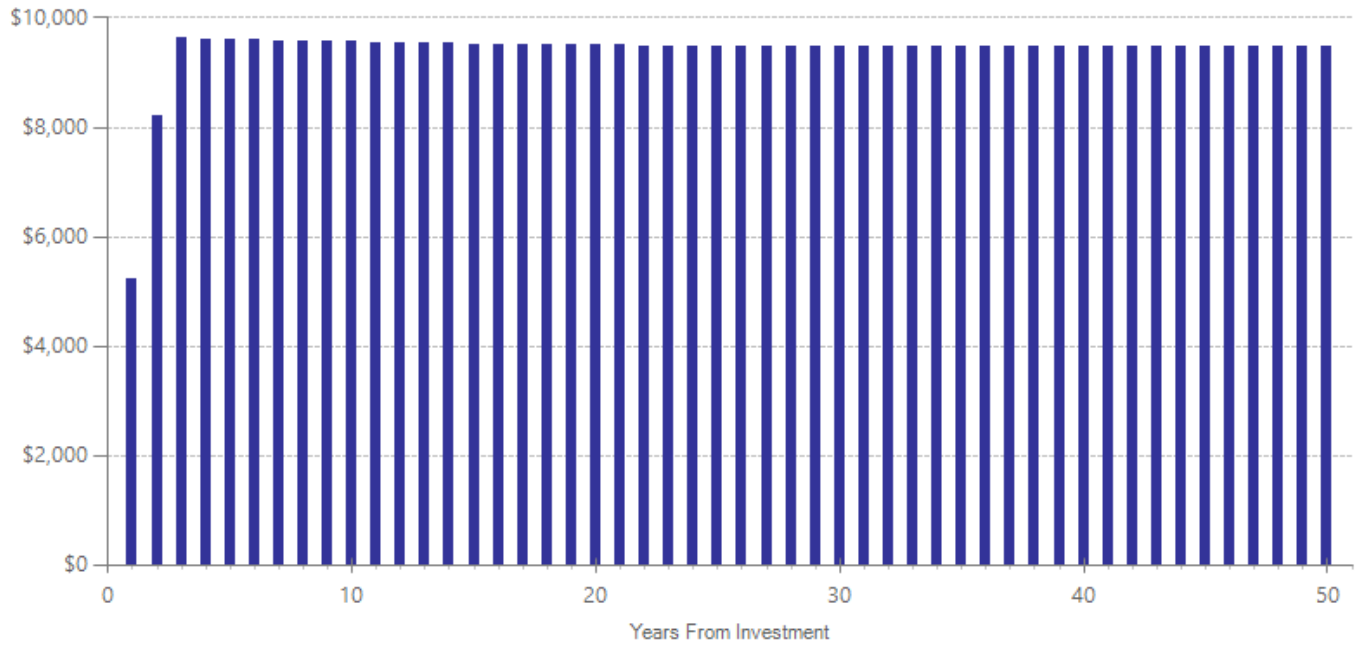
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$407	1993	Present value of net program costs (in 2018 dollars)	$333
Comparison costs	$924	2014	Cost range (+ or -)	10 %

12-Step Facilitation Therapy typically takes place over a three- to four-month period. Our per-participant costs are based on Cisler, R., Holder, H.D., Longabaugh, R., Stout, R.L., & Zweben, A., et al., (1998). Actual and estimated replication costs for alcohol treatment modalities: Case study from Project MATCH. *Journal of Studies on Alcohol, 59*(5), 503-12. Comparison groups in the largest studies received 12 individual hour-long sessions. We estimated the cost of this with Washington's Medicaid reimbursement rate for substance abuse treatment.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Alcohol use disorder	39	6	627	-0.331	0.132	39	0.000	0.187	42	-0.317	0.016
Illicit drug use disorder	39	5	545	-0.360	0.118	39	0.000	0.187	42	-0.374	0.002

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.

Citations Used in the Meta-Analysis

Carroll, K., Nich, C., Ball, S., Mccance, E., & Rounsavile, B. (1998). Treatment of cocaine and alcohol dependence with psychotherapy and disulfiram. *Addiction, 93*(5), 713-727.

Carroll, K.M., Nich, C., Shi, J.M., Eagan, D., Ball, S.A. (2012) Efficacy of disulfiram and Twelve Step Facilitation in cocaine-dependent individuals maintained on methadone: A randomized placebo-controlled trial. *Drug and Alcohol Dependence, 126*, 224-231.

Donovan, D.M., Daley, D.C., Brigham, G.S., Hodgkins, C.C., Perl, H. I., Garrett, S.B., Doyle, S.R., . . . Zammarelli, L. (2013). Stimulant abuser groups to engage in 12-Step: A multisite trial in the National Institute on Drug Abuse Clinical Trials Network. *Journal of Substance Abuse Treatment, 44*(1), 103-114

Kahler, C.W., Read, J.P., Ramsey, S.E., Stuart, G. L., McCrady, B.S., & Brown, R.A. (2004). Motivational enhancement for 12-step involvement among patients undergoing alcohol detoxification. *Journal of Consulting and Clinical Psychology, 72*(4), 736-741.

Kaskutas, L.A., Subbaraman, M., Witbrodt, J., Zemore, S.E. (2009) Effectiveness of Making Alcoholics Anonymous Easier (MAAEZ), a group format 12-step facilitation program. *Journal of Substance Abuse Treatment, 37*(3), 228-239.

Timko, C., DeBenedetti, A., & Billow, R. (2006). Intensive referral to 12-Step self-help groups and 6-month substance use disorder outcomes. *Addiction, 101*(5), 678-688.

Walitzer, K.S., Dermen, K.H., & Barrick, C. (2009). Facilitating involvement in Alcoholics Anonymous during out-patient treatment: a randomized clinical trial. *Addiction, 104*(3), 391-401.

Community Reinforcement Approach (CRA) with vouchers

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: This intervention combines the Community Reinforcement Approach with contingency management. The Community Reinforcement Approach to therapy is relatively intensive and consists of four main topics: (1) minimizing contact with known antecedents to substance use and recognizing consequences of use, (2) counseling to find alternative activities, (3) employment counseling (if needed), and (4) reciprocal relationship counseling if partner was not involved in substance use. Counseling generally occurs twice a week for the first three months and once a week for the next three months. The contingency management portion of the intervention rewards clients with vouchers if they have negative urinalysis exams. These vouchers can be exchanged for prizes that range in value.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$2,004
Participants	$2,317
Others	$1,127
Indirect	$3,958
Total benefits	$9,406
Net program cost	($1,248)
Benefits minus cost	$8,158

Benefit to cost ratio	$7.53
Benefits minus costs	$8,158
Chance the program will produce benefits greater than the costs	58 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$4	$12	$2	$19
Labor market earnings associated with illicit drug abuse or dependence	$1,663	$708	$0	$0	$2,371
Health care associated with illicit drug abuse or dependence	$168	$1,085	$1,114	$542	$2,909
Mortality associated with illicit drugs	$486	$207	$0	$4,038	$4,731
Adjustment for deadweight cost of program	$0	$0	$0	($624)	($624)
Totals	$2,317	$2,004	$1,127	$3,958	$9,406

[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.

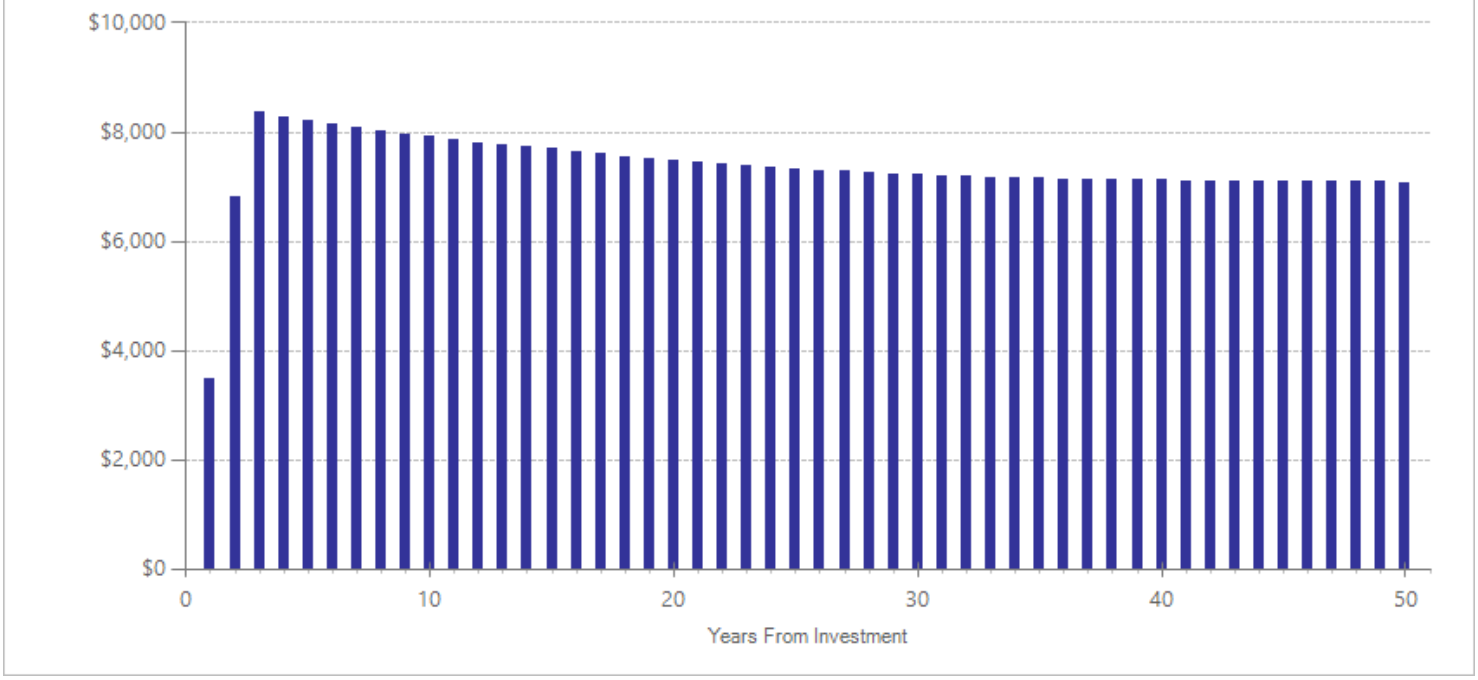
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$2,602	2013	Present value of net program costs (in 2018 dollars)	($1,248)
Comparison costs	$1,432	2013	Cost range (+ or -)	20 %

The cost of treatment is the weighted average cost for studies included in the analysis. We calculate this average cost using Washington's Medicaid hourly reimbursement rates for individual or group outpatient therapy times the weighted average of total hours of outpatient individual or group therapy across the studies. Treatment group costs also include the cost of the vouchers. These costs are estimated from the studies included in the analysis. We used the average voucher received when available and the maximum possible voucher when an average was not reported. Comparison group costs are computed in a similar manner based on treatment received in the studies (individual or group treatment as usual or no treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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^^	30	1	19	-0.641	0.470	30	n/a	n/a	n/a	-0.641	0.173
Illicit drug use disorder	30	8	248	-0.580	0.129	30	0.000	0.187	33	-0.580	0.001
Major depressive disorder^^	30	1	19	0.002	0.472	30	n/a	n/a	n/a	0.002	0.996

^^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.

Citations Used in the Meta-Analysis

Bickel, W.K., Marsch, L.A., Buchhalter, A.R., & Badger, G.J. (2008). Computerized behavior therapy for opioid-dependent outpatients: a randomized controlled trial. *Experimental and Clinical Psychopharmacology, 16*(2), 132-143.

Chopra, M.P., Landes, R.D., Gatchalian, K.M., Jackson, L.C., Buchhalter, A.R., Stitzer, M.L., . . . Bickel, W.K. (2009). Buprenorphine medication versus voucher contingencies in promoting abstinence from opioids and cocaine. *Experimental and Clinical Psychopharmacology, 17*(4), 226-236.

Garcia-Rodriguez, O., Secades-Villa, R., Higgins, S.T., Fernandez-Hermida, J.R., Carballo, J.L., Errasti, P.J.M., & Al-halabi, D.S. (2009). Effects of voucher-based intervention on abstinence and retention in an outpatient treatment for cocaine addiction: a randomized controlled trial. *Experimental and Clinical Psychopharmacology, 17*(3), 131-138.

Higgins, S.T., Delaney, D.D., Budney, A.J., Bickel, W.K., Hughes, J.R., Foerg, F., & Fenwick, J.W. (1991). A behavioral approach to achieving initial cocaine abstinence. *The American Journal of Psychiatry, 148*(9), 1218-1224.

Higgins, S.T., Budney, A.J, Bickel, W.K., Hughes, J.R., Foerg, F., & Badger, G. (1993). Achieving Cocaine Abstinence with a Behavioral Approach. *American Journal of Psychiatry, 150*(5), 763-769.

Secades-Villa, R., Garci?a-Rodríguez, O., García-Fernández, G., Sànchez-Hervàs, E., Fernández-Hermida, J.R., & Higgins, S.T. (2011). Community reinforcement approach plus vouchers among cocaine-dependent outpatients: twelve-month outcomes. *Psychology of Addictive Behaviors : Journal of the Society of Psychologists in Addictive Behaviors, 25*(1), 174-9.

Secades-Villa, R., Garci?a-Rodri?guez, O., Higgins, S.T., Ferna?ndez-Hermida, J.R., & Carballo, J.L. (2008). Community reinforcement approach plus vouchers for cocaine dependence in a community setting in Spain: six-month outcomes. *Journal of Substance Abuse Treatment, 34*(2), 202-207.

Supportive-expressive psychotherapy for substance use disorders

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Supportive-expressive psychotherapy (SEP) is a manualized, time-limited psychotherapy originally developed for treating psychiatric disorders that has been adapted for use with individuals with heroin and cocaine addictions. In the studies reviewed for this analysis, clients also had co-morbid psychiatric disorders. SEP generally lasts about six months and is provided in an individual format with two components: (1) supportive techniques to allow patients to feel comfortable discussing experiences, and (2) an expressive component to help patients to understand problematic relationship patterns.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$3,566
Participants	$9,053
Others	($322)
Indirect	($3,650)
Total benefits	$8,648
Net program cost	($2,112)
Benefits minus cost	$6,536

Benefit to cost ratio	$4.09
Benefits minus costs	$6,536
Chance the program will produce benefits greater than the costs	60 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	($4)	($11)	($2)	($17)
Labor market earnings	$9,149	$3,895	$0	$0	$13,044
Property loss associated with alcohol abuse or dependence	$0	$0	$1	$0	$1
Health care associated with illicit drug abuse or dependence	($48)	($312)	($321)	($156)	($837)
Health care associated with major depression	$3	$9	$10	$5	$26
Mortality associated with illicit drugs	($50)	($21)	$0	($2,444)	($2,516)
Mortality associated with alcohol	$0	$0	$0	$3	$4
Adjustment for deadweight cost of program	$0	$0	$0	($1,056)	($1,056)
Totals	$9,053	$3,566	($322)	($3,650)	$8,648

[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.

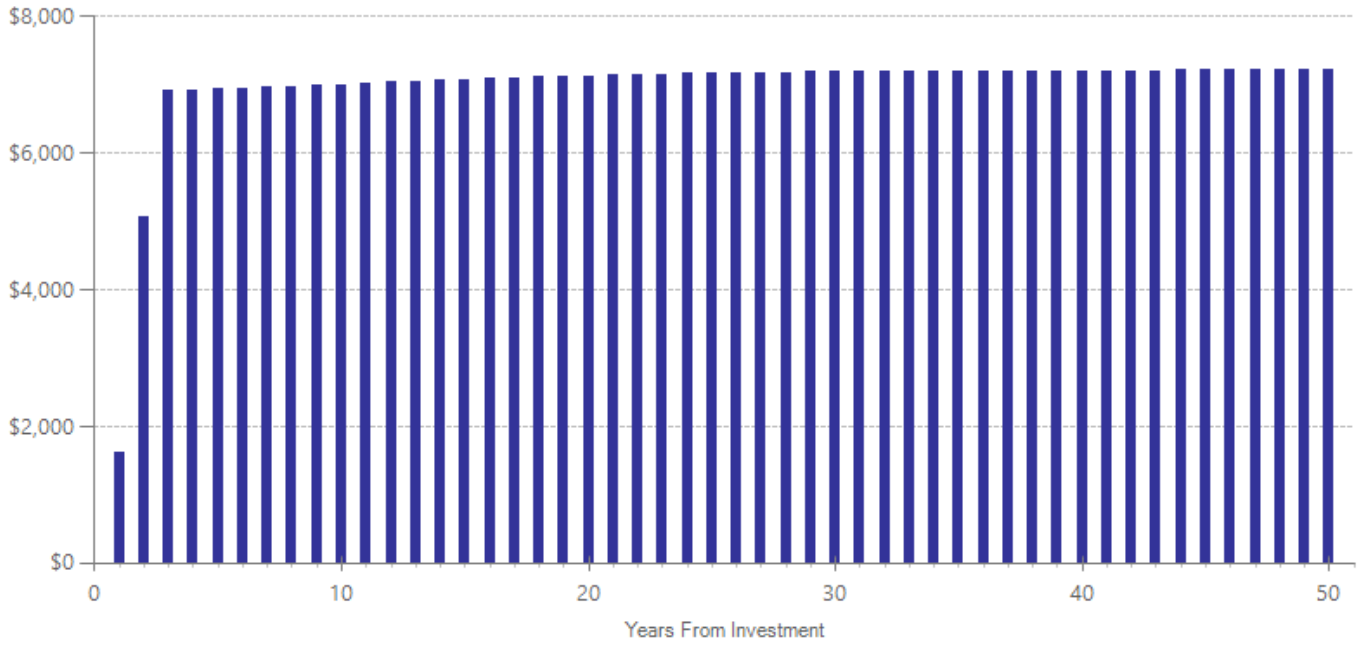
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,979	2013	Present value of net program costs (in 2018 dollars)	($2,112)
Comparison costs	$0	2013	Cost range (+ or -)	20 %

Supportive-expressive psychotherapy lasts about six months. The per-participant cost of treatment is the weighted average estimate of the individual sessions provided in the studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rate for outpatient individual therapy multiplied by the weighted average of the total hours of therapy across the studies (averaging 25 total hours). The costs of this intervention are in addition to the individual drug counseling and methadone treatment provided to both the treated and comparison groups in the reviewed studies.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	36	3	176	-0.057	0.126	36	0.000	0.000	39	-0.057	0.652
Anxiety disorder	36	2	123	0.120	0.143	36	0.000	0.000	39	0.120	0.401
Crime	36	2	89	0.157	0.309	36	0.000	0.000	39	0.157	0.611
Employment	36	2	89	0.364	0.245	36	0.000	0.000	39	0.364	0.138
Illicit drug use disorder	36	3	213	0.161	0.150	36	0.000	0.187	39	0.161	0.211
Major depressive disorder	36	3	180	-0.056	0.242	36	0.000	0.000	39	-0.056	0.953
Psychiatric symptoms^	36	3	180	-0.146	0.215	36	n/a	n/a	n/a	-0.146	0.497

^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.

Citations Used in the Meta-Analysis

Crits-Christoph, P., Siqueland, L., McCalmont, E., Frank, A., Blaine, J., Weiss, R.D., ..., Thase, M.E. (2001). Impact of Psychosocial Treatments on Associated Problems of Cocaine-Dependent Patients. *Journal of Consulting and Clinical Psychology, 69*(5), 825-830.

Crits-Christoph, P., Siqueland, L., Blaine, J., Frank, A., Luborsky, L., Onken, L. S., ..., Beck, A.T. (1999). Psychosocial treatments for cocaine dependence: National Institute on Drug Abuse Collaborative Cocaine Treatment Study. *Archives of General Psychiatry, 56*(6), 493-502.

Woody, G.E., Luborsky, L., McLellan, A.T., O'Brien, C.P., Beck, A.T., Blaine, J., Herman, I., Hole, A. (1983). Psychotherapy for opiate addicts: Does it help?. *Archives of General Psychiatry, 40*(6), 639-645.

Woody, G.E., McLellan, A.T., Luborsky, L. & OBrien, C.P. (1995). Psychotherapy in Community Methadone Programs: A Validation Study. *American Journal of Psychiatry, 152*(9), 1302-1308.

Motivational interviewing to enhance treatment engagement

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated December 2014.

Program Description: Motivational interviewing is a non-confrontational technique, used early in treatment, to help clients increase their motivation and commitment to change. Most commonly, motivation interviewing involves one or two individual sessions.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,554
Participants	$3,037
Others	$299
Indirect	$1,472
Total benefits	$6,363
Net program cost	($276)
Benefits minus cost	$6,086

Benefit to cost ratio	$23.04
Benefits minus costs	$6,086
Chance the program will produce benefits greater than the costs	56 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$4	$1	$6
Labor market earnings associated with alcohol abuse or dependence	$2,828	$1,204	$0	$0	$4,032
Property loss associated with alcohol abuse or dependence	$4	$0	$7	$0	$11
Health care associated with illicit drug abuse or dependence	$43	$280	$288	$140	$751
Mortality associated with illicit drugs	$162	$69	$0	$1,469	$1,699
Adjustment for deadweight cost of program	$0	$0	$0	($138)	($138)
Totals	$3,037	$1,554	$299	$1,472	$6,363

[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.

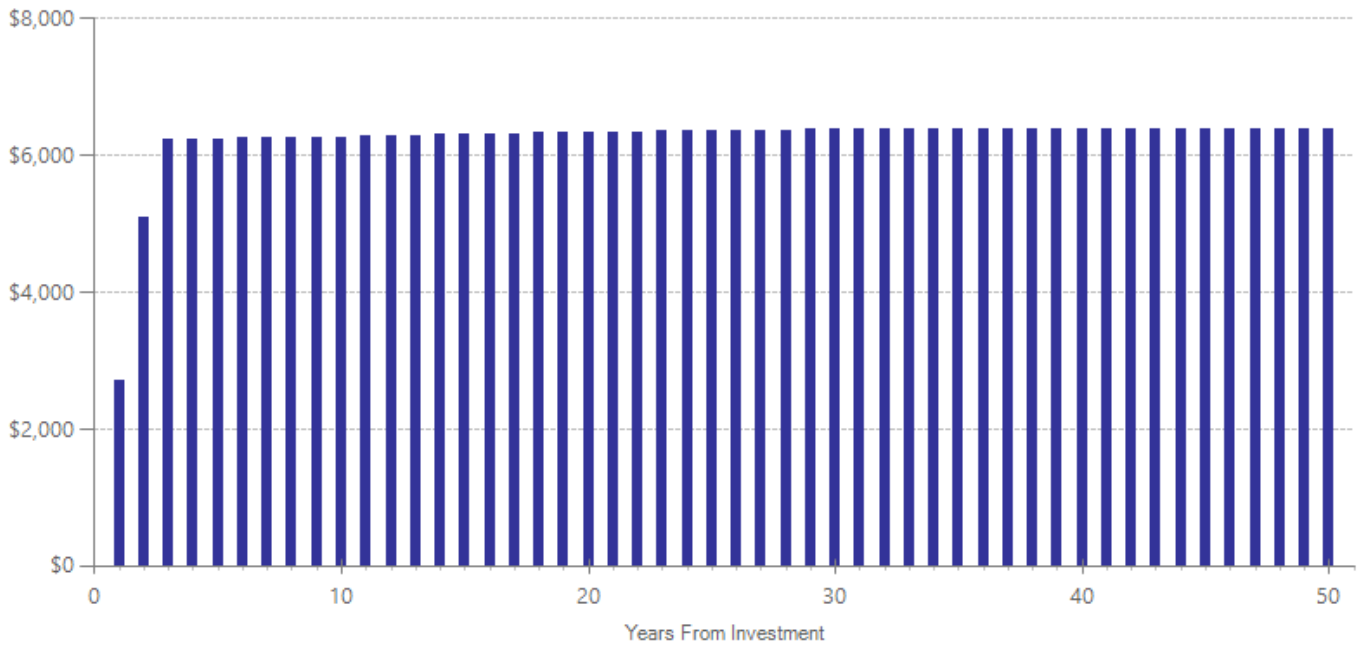
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$263	2014	Present value of net program costs (in 2018 dollars)	($276)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

This program typically consists of one or two individual sessions. Our per-participant cost is the weighted average estimate of the individual and group sessions provided in the studies included in the analysis, using rates for Medicaid clients paid by Washington State for substance abuse treatment in 2014. The costs of this intervention are in addition to other treatment clients might receive.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	34	4	238	-0.378	0.187	34	0.000	0.187	37	-0.378	0.043
Engagement/Retention^	34	19	1024	0.156	0.071	34	n/a	n/a	n/a	0.156	0.035
Illicit drug use disorder	34	9	650	-0.150	0.064	34	0.000	0.187	37	-0.150	0.020
Opioid use disorder	34	1	52	-0.392	0.201	34	0.000	0.187	37	-0.392	0.051
Substance use disorder^	34	5	250	-0.083	0.105	34	n/a	n/a	n/a	-0.083	0.428

^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.

Citations Used in the Meta-Analysis

Ball, S.A., Martino, S., Nich, C., Frankforter, T.L., Van, H.D., Crits-Christoph, P., . . . Carroll, K.M. (2007). Site matters: Multisite randomized trial of motivational enhancement therapy in community drug abuse clinics. *Journal of Consulting and Clinical Psychology, 75* (4), 556-567.

Blondell, R.D., Frydrych, L.M., Jaanimagi, U., Ashrafioun, L., Homish, G.G., Foschio, E.M., & Bashaw, H.L. (2011). A randomized trial of two behavioral interventions to improve outcomes following inpatient detoxification for alcohol dependence. *Journal of Addictive Diseases, 30*(2), 136-148.

Brown, J.M., & Miller, W.R. (1993). Impact of motivational interviewing on participation and outcome in residential alcoholism treatment. *Psychology of Addictive Behaviors, 7*(4), 211-218.

Carroll, K.M., Libby, B., Sheehan, J. & Hyland, N. (2001). Motivational interviewing to Enhance Treatment Initiation in Substance Abusers: An Effectiveness Study. *The American Journal on Addictions, 10*(4), 335-339.

Carroll, K.M., Ball, S.A., Nich, C., Martino, S., Frankforter, T.L., Farentinos, C., . . . Woody, G.E. (2006). Motivational interviewing to improve treatment engagement and outcome in individuals seeking treatment for substance abuse: A multisite effectiveness study. *Drug and Alcohol Dependence, 81*(3), 301-312.

Carroll, K.M., Martino, S., Ball, S.A., Nich, C., Frankforter, T., Anez, L. M., . . . Farentinos, C. (2009). A multisite randomized effectiveness trial of motivational enhancement therapy for Spanish-speaking substance users. *Journal of Consulting and Clinical Psychology, 77*(5), 993-999.

Daley, D.C., Salloum, I.M., Zuckoff, A., Kirisci, L., & Thase, M.E. (1998). Increasing treatment adherence among outpatients with depression and cocaine dependence: Results of a pilot study. *The American Journal of Psychiatry, 155*(11), 1611-1613.

Davis, T.M., Baer, J.S., Saxon, A.J., & Kivlahan, D.R. (2003). Brief motivational feedback improves post-incarceration treatment contact among veterans with substance use disorders. *Drug and Alcohol Dependence, 69*(2), 197-203.

Dench, S., & Bennett, G. (2000). The impact of brief motivational intervention at the start of an outpatient day programme for alcohol dependence. *Behavioral and Cognitive Psychotherapy, 28*(2), 121-130.

Longshore, D., & Grills, C. (2000). Motivating illegal drug use recovery: Evidence for a culturally congruent intervention. *Journal of Black Psychology, 26*(3), 288-301.

Lozano, B.E., LaRowe, S.D., Smith, J.P., Tuerk, P., & Roitzsch, J. (2013). Brief motivational feedback may enhance treatment entry in veterans with comorbid substance use and psychiatric disorders. *The American Journal on Addictions, 22*(2), 132-135.

Martino, S., Carroll, K.M., Nich, C., & Rounsaville, B.J. (2006). A randomized controlled pilot study of motivational interviewing for patients with psychotic and drug use disorders. *Addiction, 101*(10), 1479-1492.

Miller, W.R., Yahne, C.E., & Tonigan, J.S. (2003). Motivational interviewing in drug abuse services: a randomized trial. *Journal of Consulting and Clinical Psychology, 71*(4), 754-63.

Mitcheson, L., McCambridge, J., & Byrne, S. (2007). Pilot cluster-randomised trial of adjunctive motivational interviewing to reduce crack cocaine use in clients on methadone maintenance. *European Addiction Research, 13*(1), 6-10.

Mullins, S.M., Suarez, M., Ondersma, S.J., & Page, M.C. (2004). The impact of motivational interviewing on substance abuse treatment retention: A randomized control trial of women involved with child welfare. *Journal of Substance Abuse Treatment, 27*(1), 51-58.

Nyamathi, A., Shoptaw, S., Cohen, A., Greengold, B., Nyamathi, K., Marfisee, M., de, C.V., ... Leake, B. (2010). Effect of motivational interviewing on reduction of alcohol use. *Drug and Alcohol Dependence, 107*(1), 23-30.

Nyamathi, A.M., Nandy, K., Greengold, B., Marfisee, M., Khalilifard, F., Cohen, A., & Leake, B. (2011). Effectiveness of intervention on improvement of drug use among methadone maintained adults. *Journal of Addictive Diseases, 30*(1), 6-16.

Saunders, B., Wilkinson, C., & Phillips, M. (1995). The impact of a brief motivational intervention with opiate users attending a methadone programme. *Addiction, 90*(3), 415-424.

Winhusen, T., Kropp, F., Babcock, D., Hague, D., Erickson, S. J., Renz, C., . . . Somoza, E. (2008). Motivational enhancement therapy to improve treatment utilization and outcome in pregnant substance users. *Journal of Substance Abuse Treatment, 35*(2), 161-173.

Cognitive-behavioral coping-skills therapy for alcohol or drug use disorders

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated September 2016.

Program Description: Cognitive-behavioral coping-skills therapy is a manualized, standalone treatment for alcohol and/or drug abuse or dependence. This intervention emphasizes identifying high-risk situations that could lead to relapse such as social situations, depression, etc. and developing skills to cope with those situations. Clients engage in problem solving, role playing, and homework practice. The intervention is often provided in an individual therapy format but can be conducted in groups as well. Treatment in the included studies occurred over an average of three months.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,250
Participants	$2,143
Others	$379
Indirect	$2,586
Total benefits	$6,358
Net program cost	($275)
Benefits minus cost	$6,083

Benefit to cost ratio	$23.08
Benefits minus costs	$6,083
Chance the program will produce benefits greater than the costs	56 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$2	$0	$3
Labor market earnings associated with alcohol abuse or dependence	$1,819	$774	$0	$0	$2,593
Property loss associated with alcohol abuse or dependence	$2	$0	$5	$0	$7
Health care associated with illicit drug abuse or dependence	$56	$363	$373	$181	$972
Mortality associated with illicit drugs	$265	$113	$0	$2,543	$2,921
Adjustment for deadweight cost of program	$0	$0	$0	($138)	($138)
Totals	$2,143	$1,250	$379	$2,586	$6,358

[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.

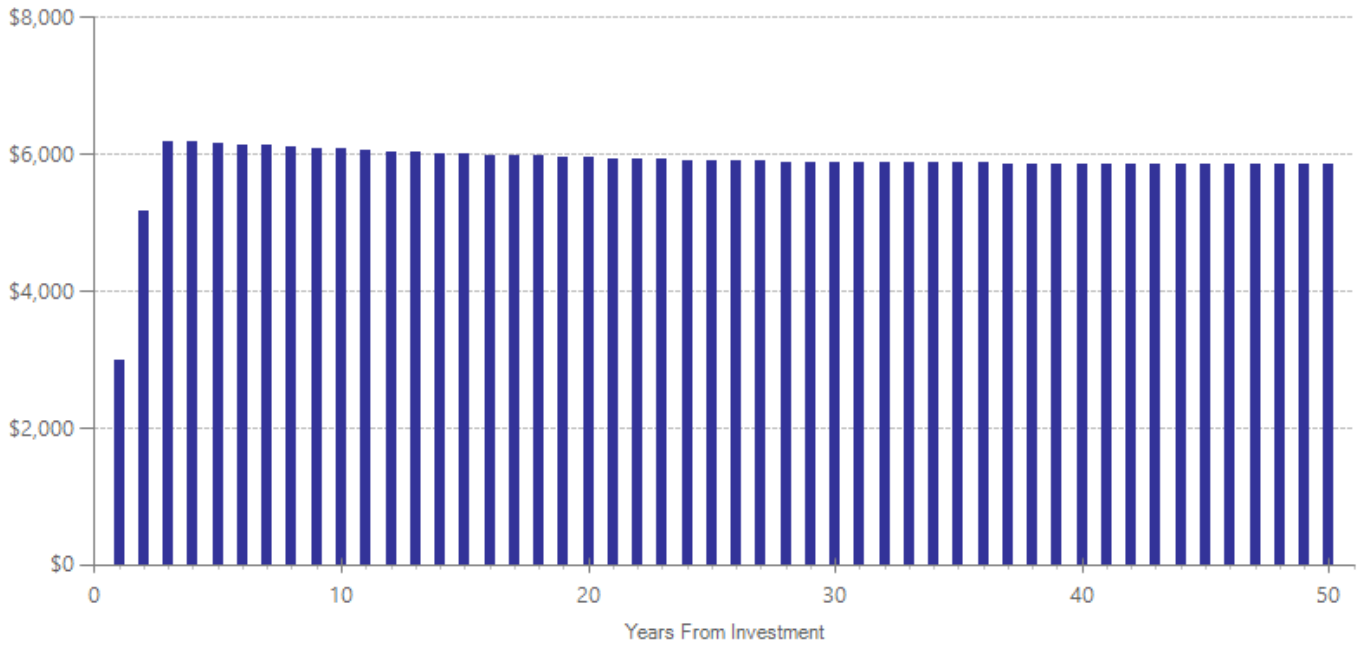
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$842	2013	Present value of net program costs (in 2018 dollars)	($275)
Comparison costs	$584	2013	Cost range (+ or -)	10 %

The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rates for individual and group outpatient therapy multiplied by the weighted average of total hours of outpatient individual and group therapy across the studies (averaging 18 total hours). Comparison group costs are computed in a similar manner based on treatment received in the studies (individual or group treatment as usual or no treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	36	7	190	-0.229	0.122	36	0.000	0.187	39	-0.229	0.060
Employment^^	36	2	44	0.363	0.291	36	n/a	n/a	n/a	0.363	0.673
Illicit drug use disorder	36	6	312	-0.218	0.095	36	0.000	0.187	39	-0.218	0.021
Post-traumatic stress^^	36	1	34	-0.269	0.247	36	n/a	n/a	n/a	-0.269	0.276

^^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.

Citations Used in the Meta-Analysis

Ball, S.A., Todd, M., Tennen, H., Armeli, S., Mohr, C., Affleck, G., & Kranzler, H.R. (2007). Brief motivational enhancement and coping skills interventions for heavy drinking. *Addictive Behaviors, 32*(6), 1105-1118.

Balldin, J., Berglund, M., Borg, S., Magnsson, M., Bendtsen, P., Franck, J., . . . Willander, A. (2003). A 6-month controlled naltrexone study: combined effect with cognitive behavioral therapy in outpatient treatment of alcohol dependence. *Alcoholism, Clinical and Experimental Research, 27*(7), 1142-1149.

Carroll, K.M., Rounsaville, B.J., Gordon, L.T., Nich, C., Jatlow, P.M. & Bisighini, R.M. (1994). Psychotherapy and Pharmacotherapy for Ambulatory Cocaine Abusers. *Archives of General Psychiatry, 51*(3), 177-187.

Carroll, K., Nich, C., Ball, S., Mccance, E., & Rounsavile, B. (1998). Treatment of cocaine and alcohol dependence with psychotherapy and disulfiram. *Addiction, 93*(5), 713-727.

Chaney, E.F., M.R. O'Leary, and A.G. Marlatt. (1978). Skill Training With Alcoholics. *Journal of Consulting and Clinical Psychology, 46*(5), 1092-1104.

Hawkins, J.D., Catalano, R.F., Gillmore, M.R. & Wells, E.A. (1989). Skills Training for Drug Abusers: Generalization, Maintenance, and Effects on Drug Use. *Journal of Consulting and Clinical Psychology, 57*(4), 559-563.

Hien, D.A., Cohen, L.R., Miele, G.M., Litt, L.C., Capstick, C. 2004. Promising treatments for women with comorbid PTSD and substance use disorders. *American Journal of Psychiatry, 161*(8), 1426-1432.

Kadden, R.M., Cooney, N.L., Getter, H., & Litt, M.D. (1989). Matching alcoholics to coping skills or interactional therapies: Posttreatment results. *Journal of Consulting and Clinical Psychology, 57*(6), 698-704.

Monti, P., Rohsenow, D., Michalec, E., Martin, R., & Abrams, D. (1997). Brief coping skills treatment for cocaine abuse: substance use outcomes at three months. *Addiction, 92*(12), 1717-1728.

O'Malley, S.S., Jaffe, A.J., Chang, G., Schottenfeld, R.S., Meyer, R.E., & Rounsaville, B. (1992). Naltrexone and coping skills therapy for alcohol dependence: A controlled study. *Archives of General Psychiatry, 49*(11), 881-887.

Sanchez-Craig, M., & Walker, K. (1982). Teaching coping skills to chronic alcoholics in a coeducational halfway house: I. Assessment of programme effects. *British Journal of Addiction, 77*(1), 35-50.

Relapse Prevention Therapy

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: This intervention, developed by Marlatt & Gordon, uses a cognitive-behavioral approach to help patients anticipate problems and identify strategies to avoid using alcohol and drugs. Typically patients are receiving outpatient treatment; sometimes Relapse Prevention is part of aftercare following inpatient treatment and sometimes as a stand-alone intervention. In the studies used in this meta-analysis, the intervention was delivered in various modalities. In some of the studies all sessions were individual treatment, others studies examined a mix of group and individual treatment. Duration varied from eight sessions in four weeks to weekly sessions for several months.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,193
Participants	$2,148
Others	$312
Indirect	$2,243
Total benefits	$5,896
Net program cost	$0
Benefits minus cost	$5,896

Benefit to cost ratio	n/a
Benefits minus costs	$5,896
Chance the program will produce benefits greater than the costs	55 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$1
Labor market earnings associated with alcohol abuse or dependence	$1,906	$811	$0	$0	$2,717
Property loss associated with alcohol abuse or dependence	$2	$0	$4	$0	$7
Health care associated with illicit drug abuse or dependence	$46	$299	$307	$149	$801
Mortality associated with illicit drugs	$194	$82	$0	$2,094	$2,370
Totals	$2,148	$1,193	$312	$2,243	$5,896

[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.

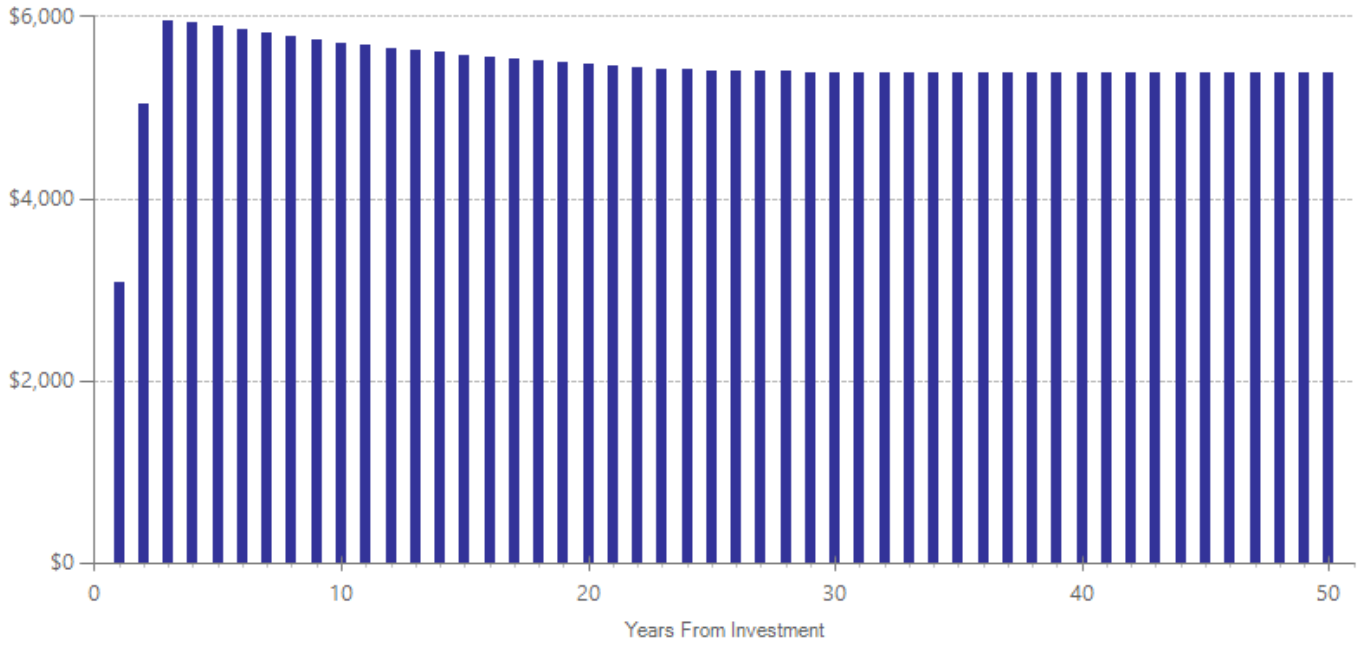
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,050	2014	Present value of net program costs (in 2018 dollars)	$0
Comparison costs	$1,050	2014	Cost range (+ or -)	15 %

This treatment varies in length, from four weeks to several months. We calculated a weighted average per-participant cost based on hours of individual and group counseling reported in the studies, assuming reimbursement at Washington's 2014 Medicaid rates.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	40	4	156	-0.234	0.153	40	0.000	0.187	43	-0.234	0.126
Cannabis use disorder	40	1	80	-0.130	0.248	40	0.000	0.187	43	-0.103	0.677
Illicit drug use disorder	40	3	118	-0.217	0.288	40	0.000	0.187	43	-0.217	0.577
Opioid use disorder^^	40	1	13	-1.340	0.575	40	n/a	n/a	n/a	-1.340	0.020

^^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.

Citations Used in the Meta-Analysis

Allsop, S., Saunders, B., Phillips, M., & Carr, A. (1997). A trial of relapse prevention with severely dependent male problem drinkers. *Addiction, 92,* 61-74.

Bennett, G.A., Withers, J., Thomas, P.W., Higgins, D.S., Bailey, J., Parry, L., & Davies, E. (2005). A randomised trial of early warning signs relapse prevention training in the treatment of alcohol dependence. *Addictive Behaviors, 30*(6), 1111-1124.

Jafari, E., Eskandari, H., Sohrabi, F., Delavar, A., Heshmati, R., & World Conference on Psychology, Counselling and Guidance, WCPCG-2010. (2010). Effectiveness of coping skills training in relapse prevention and resiliency enhancement in people with substance dependency. *Procedia - Social and Behavioral Sciences, 5,* 1376-1380.

McKay, J.R., Alterman, A.I., Cacciola, J.S., O'Brien, C.P., Koppenhaver, J.M., & Shepard, D.S. (1999). Continuing care for cocaine dependence: Comprehensive 2-year outcomes. *Journal of Consulting and Clinical Psychology, 67*(3), 420-427.

O'Connell, J.M. (1987). *Effectiveness of an alcohol relapse prevention program.* (Doctoral dissertation, Fordham University, 1987, UMI No. 8725685).

Wells, E.A., Peterson, P.L., Gainey, R.R., Hawkins, J.D. & Catalano, R.F. (1994). Outpatient treatment for cocaine abuse: A controlled comparison of relapse prevention and twelve-step approaches. *American Journal of Drug and Alcohol Abuse, 20*(1), 1-17.

Holistic Harm Reduction Program (HHRP+)

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: The Holistic Harm Reduction Program (HHRP+), also called Holistic Health Recovery Program, is a manualized treatment for those with drug abuse or dependence who are HIV positive. The primary goals of HHRP+ are harm reduction, health promotion, and improving quality of life. These goals are achieved by providing the knowledge, motivation, and skills necessary to make choices that reduce harm to oneself and others. HHRP+ also addresses medical, emotional, social, and spiritual problems that can impede harm reduction. The treatment is generally provided in 12 group sessions over three to six months. In the reviewed studies, HHRP+ was provided in addition to methadone treatment and standard counseling.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$916
Participants	$1,211
Others	$441
Indirect	$2,805
Total benefits	$5,374
Net program cost	($842)
Benefits minus cost	$4,531

Benefit to cost ratio	$6.38
Benefits minus costs	$4,531
Chance the program will produce benefits greater than the costs	57 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$2
Labor market earnings associated with illicit drug abuse or dependence	$858	$365	$0	$0	$1,223
Health care associated with illicit drug abuse or dependence	$66	$428	$440	$214	$1,149
Mortality associated with illicit drugs	$287	$122	$0	$3,012	$3,422
Adjustment for deadweight cost of program	$0	$0	$0	($421)	($421)
Totals	$1,211	$916	$441	$2,805	$5,374

[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.

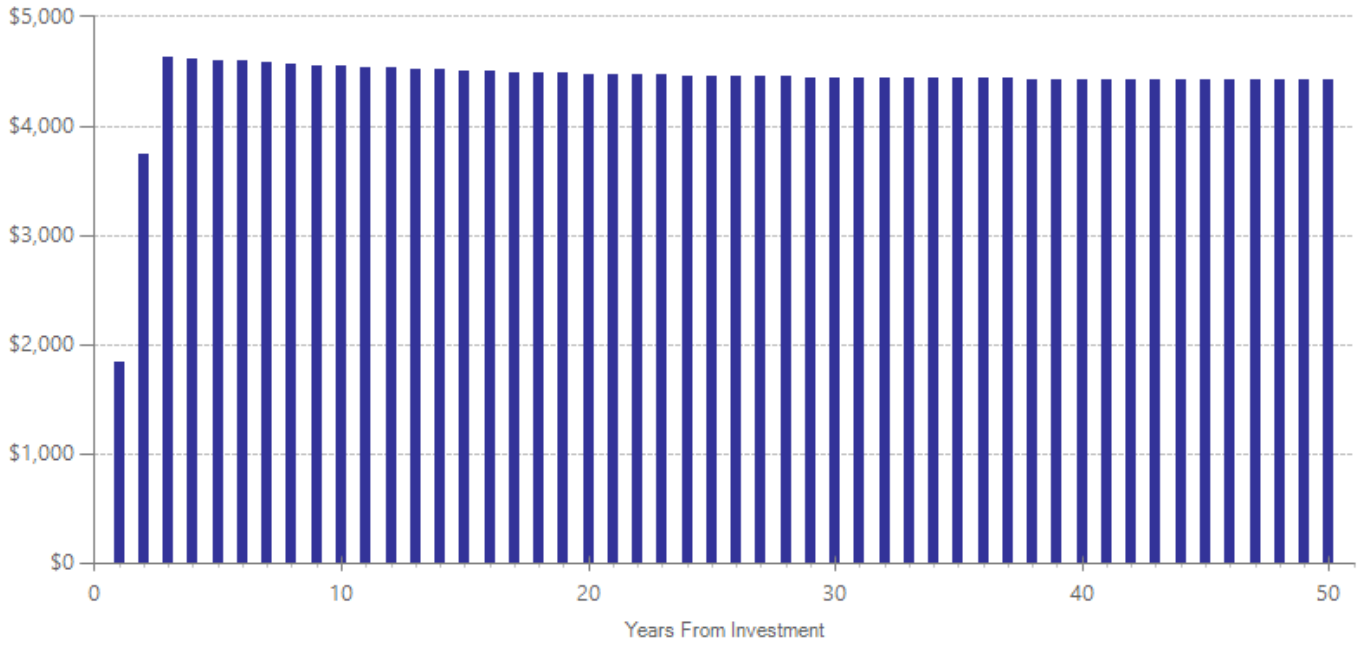
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$789	2013	Present value of net program costs (in 2018 dollars)	($842)
Comparison costs	$0	2013	Cost range (+ or -)	25 %

This program is typically administered over a three- to six-month period. The per-participant cost of treatment is the weighted average estimate of the additional group therapy sessions provided in the studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rate for outpatient group therapy multiplied by the weighted average of total hours of outpatient group therapy across the studies (averaging 40 total hours). The costs of the intervention are in addition to the costs of methadone treatment and standard counseling provided to both the treated and comparison groups in the reviewed studies.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Illicit drug use disorder	39	2	153	-0.311	0.144	39	0.000	0.187	42	-0.311	0.031
STD risky behavior^	39	2	153	-0.260	0.134	39	n/a	n/a	n/a	-0.260	0.053

^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.

Citations Used in the Meta-Analysis

Avants, S.K., Margolin, A., Usubiaga, M.H. & Doebrick, C. (2004). Targeting HIV-Related Outcomes With Intravenous Drug Users Maintained on Methadone: A Randomized Clinical Trial of a Harm Reduction Group Therapy. *Journal of Substance Abuse Treatment, 26*(2), 67-78.

Margolin, A., Avants, S.K., Warburton, L.A., Hawkins, K.A. & Shi, J. (2003). A Randomized Clinical Trial of a Manual-Guided Risk Reduction Intervention for HIV-Positive Injection Drug Users. *Health Psychology, 22*(2), 223-228.

Contingency management (lower cost) for opioid use disorder

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with opiate abuse or dependence who were also receiving medicated-assisted drug treatment (methadone, buprenorphine or naloxone) and counseling. Contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: (1) A voucher system where abstinence earned vouchers that were exchangeable for goods provided by the clinic or counseling center, (2) a prize or raffle system where clients who remained abstinent could earn the opportunity to draw from a prize bowl. Treatment in the included studies lasted between 1 and 6 months with a weighted average of 3.3 months of contingency management and reward opportunities occurring two to three times per week, on average. The value of contingencies in the programs reviewed ranged from $59-$253 per participant, with an average of $168 (in 2016 dollars).

Based on a statistical analysis of contingency management studies, we determined that programs with a maximum value of vouchers or prizes less than or equal to $500 (in 2012 dollars) represent lower-cost contingency management.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$668
Participants	$820
Others	$341
Indirect	$2,378
Total benefits	$4,206
Net program cost	($369)
Benefits minus cost	$3,837

Benefit to cost ratio	$11.39
Benefits minus costs	$3,837
Chance the program will produce benefits greater than the costs	60 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] **Benefits to:**

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with opioid drug abuse or dependence	$534	$227	$0	$0	$762
Health care associated with opioid drug abuse or dependence	$49	$340	$341	$170	$898
Mortality associated with opioids	$237	$101	$0	$2,393	$2,731
Adjustment for deadweight cost of program	$0	$0	$0	($185)	($185)
Totals	$820	$668	$341	$2,378	$4,206

[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.

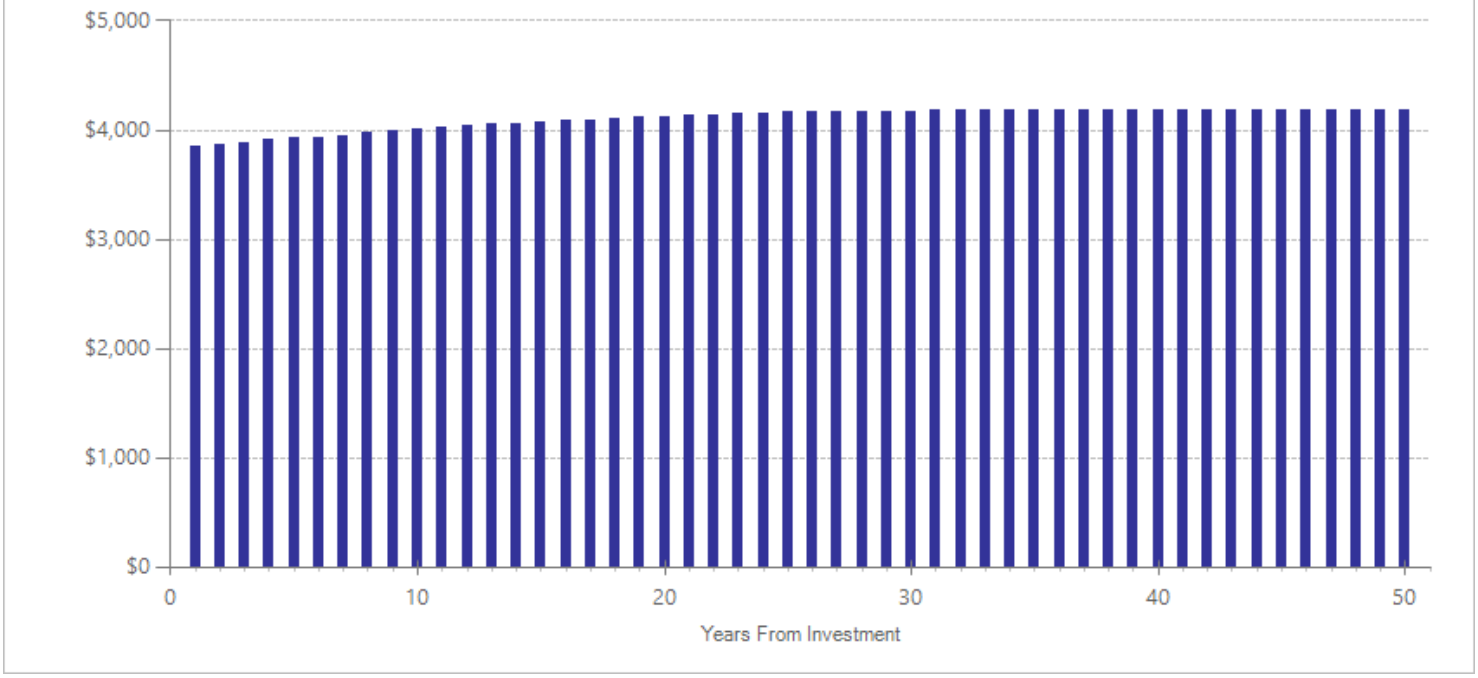
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,007	2016	Present value of net program costs (in 2018 dollars)	($369)
Comparison costs	$651	2016	Cost range (+ or -)	10 %

Program cost estimates reflect costs beyond treatment as usual. The per-participant cost of treatment is based on physician/therapist time, multiplied by Medicaid reimbursement rates, plus the average amount of incentive received by treatment participants. Reimbursement rates are based on individual or group treatment sessions for non-disabled adults in Mercer (2016) Mental Health and Substance Use Disorder Services Data Book for the State of Washington. Program and comparison group costs are weighted by treatment and comparison group samples. Costs were obtained from Carroll et al. (2001), Hser et al. (2011), Kidorf et al. (2013), Preston et al. (2000), and Preston et al. (2002).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Engagement/Retention^	38	7	433	0.314	0.145	38	n/a	n/a	n/a	0.314	0.031
Opioid use disorder	38	9	520	-0.291	0.068	38	0.000	0.075	39	-0.291	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.

Citations Used in the Meta-Analysis

Brooner, R.K., Kidorf, M.S., King, V.L., Stoller, K.B., Neufeld, K.J., & Kolodner, K. (2007). Comparing adaptive stepped care and monetary-based voucher interventions for opioid dependence. *Drug and Alcohol Dependence, 88,* S14-S23.

Carroll, K.M., Ball, S.A., Nich, C., O'Connor, P.G., Eagan, D.A., Frankforter, . . . Rounsaville, B.J. (2001). Targeting behavioral therapies to enhance naltrexone treatment of opioid dependence: efficacy of contingency management and significant other involvement. *Archives of General Psychiatry, 58*(8), 755-761.

Chen, W., Hong, Y., Zou, X., McLaughlin, M.M., Xia, Y., & Ling, L. (2013). Effectiveness of prize-based contingency management in a methadone maintenance program in China. *Drug and Alcohol Dependence, 133*(1), 270-274.

Hser, Y.I., Li, J., Jiang, H., Zhang, R., Du, J., Zhang, C., Zhang, B., . . . Zhao, M. (2011). Effects of a randomized contingency management intervention on opiate abstinence and retention in methadone maintenance treatment in China. *Addiction, 106*(10), 1801-1809.

Kidorf, M., Brooner, R.K., Gandotra, N., Antoine, D., King, V.L., Peirce, J., & Ghazarian, S. (2013). Reinforcing integrated psychiatric service attendance in an opioid-agonist program: A randomized and controlled trial. *Drug and Alcohol Dependence, 133*(1), 30-36.

Ling, W., Hillhouse, M., Ang, A., Jenkins, J., & Fahey, J. (2013). Comparison of behavioral treatment conditions in buprenorphine maintenance. *Addiction, 108*(10), 1788-1798.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2000). Methadone dose increase and abstinence reinforcement for treatment of continued heroin use during methadone maintenance. *Archives of General Psychiatry, 57*(4), 395-404.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2002). Abstinence reinforcement maintenance contingency and one-year follow-up. *Drug and Alcohol Dependence, 67*(2), 125-137.

Rowan-Szal, G.APD., Joe, GWED., Hiller, MLPD., & Simpson, DDPD. (1997). Increasing early engagement in methadone treatment. *Journal of Maintenance in the Addictions, 1*(1), 49-61.

Individual drug counseling approach for the treatment of cocaine addiction

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Individual drug counseling for the treatment of cocaine addiction is a manualized treatment that can be provided as a component of comprehensive outpatient therapy or as a standalone treatment. The manualized version was developed for use in the Collaborative Cocaine Treatment Study, where the individual counseling was provided in addition to group counseling. The individual drug counseling approach follows a 12-step philosophy and addresses the physical, emotional, spiritual, and interpersonal needs of the client. The model is generally applied in 36 individual sessions over six months with booster sessions as needed.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$622
Participants	$811
Others	$304
Indirect	$3,743
Total benefits	$5,480
Net program cost	($2,466)
Benefits minus cost	$3,014

Benefit to cost ratio	$2.22
Benefits minus costs	$3,014
Chance the program will produce benefits greater than the costs	54 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with illicit drug abuse or dependence	$626	$267	$0	$0	$893
Health care associated with illicit drug abuse or dependence	$47	$301	$310	$151	$809
Labor market earnings associated with anxiety disorder	($234)	($100)	$0	$0	($334)
Health care associated with anxiety disorder	($2)	($6)	($6)	($3)	($17)
Mortality associated with illicit drugs	$374	$159	$0	$4,828	$5,362
Adjustment for deadweight cost of program	$0	$0	$0	($1,233)	($1,233)
Totals	$811	$622	$304	$3,743	$5,480

[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.

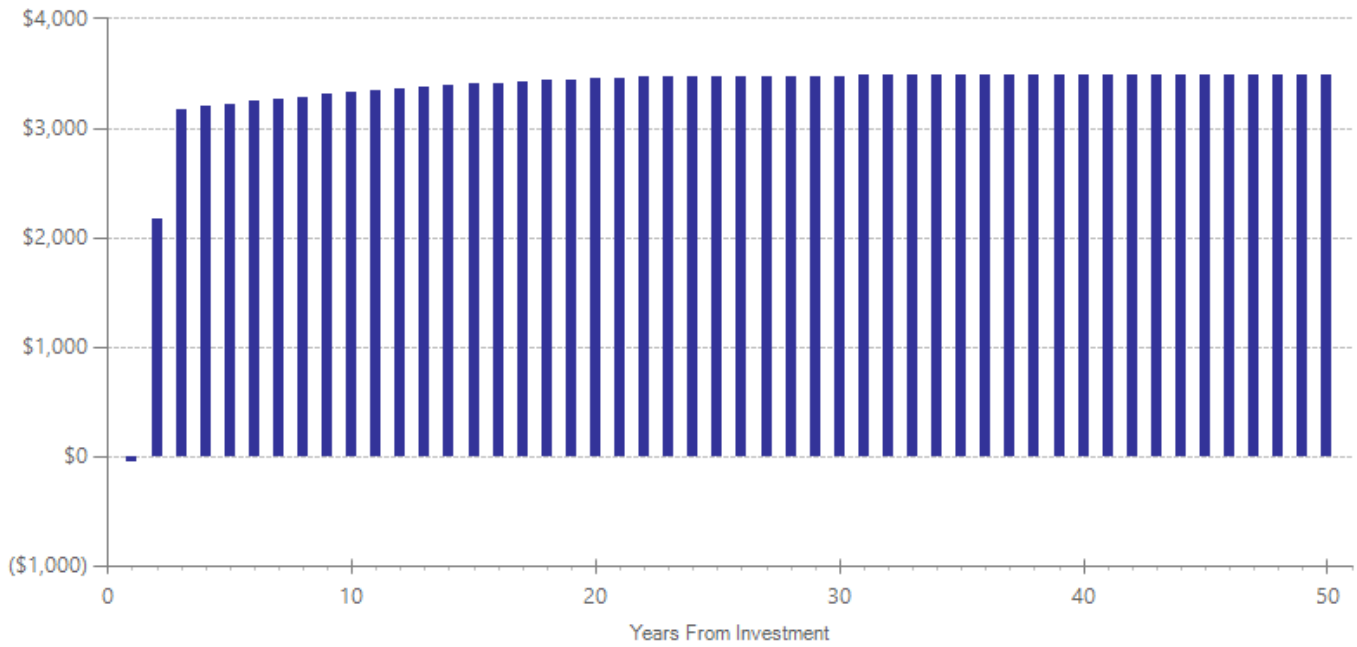
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$2,311	2013	Present value of net program costs (in 2018 dollars)	($2,466)
Comparison costs	$0	2013	Cost range (+ or -)	10 %

This program is typically delivered over a six-month period. The per-participant cost of treatment is based on the single study in the analysis and includes 36 individual 50-minute sessions estimated using Washington's Medicaid hourly reimbursement rate for individual treatment. The costs of this intervention are in addition to group therapy provided to both the treated and comparison groups.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Alcohol use^	45	1	92	0.208	0.169	45	n/a	n/a	n/a	0.208	0.218
Anxiety disorder	45	1	92	0.044	0.168	45	0.000	0.187	48	0.044	0.793
Illicit drug use disorder	45	1	121	-0.307	0.167	45	0.000	0.187	48	-0.307	0.066
Major depressive disorder	45	1	92	-0.093	0.169	45	0.000	0.187	48	-0.093	0.579
Psychiatric symptoms^	45	1	92	-0.274	0.169	45	n/a	n/a	n/a	-0.274	0.105

^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.

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Citations Used in the Meta-Analysis

Crits-Christoph, P., Siqueland, L., McCalmont, E., Frank, A., Blaine, J., Weiss, R.D., . . . , Thase, M.E. (2001). Impact of psychosocial treatments on associated problems of cocaine-dependent patients. *Journal of Consulting and Clinical Psychology, 69*(5), 825-830.

Crits-Christoph, P., Siqueland, L., Blaine, J., Frank, A., Luborsky, L., Onken, L.S., . . . , Beck, A.T. (1999). Psychosocial treatments for cocaine dependence: National Institute on Drug Abuse Collaborative Cocaine Treatment Study. *Archives of General Psychiatry, 56*(6), 493-502.

Contingency management (lower cost) for substance use disorders

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with drug and/or alcohol use disorder (excluding those with a primary diagnosis of marijuana use disorder) where contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: (1) A voucher system where abstinence earned vouchers that were exchangeable for goods provided by the clinic or counseling center, and (2) a prize or raffle system where clients who remained abstinent could earn the opportunity to draw from a prize bowl. Higher-cost contingency management was determined by maximum voucher or maximum expected value of prizes possible. Based on a statistical analysis of contingency management studies, we determined that programs with a maximum value of vouchers or prizes less than or equal to $500 (in 2012 dollars) represent lower-cost contingency management. Treatment in the included studies lasted between 1 and 12 months with a weighted average of 3.5 months of contingency management and reward opportunities occurring two to three times per week, on average.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$488
Participants	$643
Others	$237
Indirect	$1,624
Total benefits	$2,992
Net program cost	($260)
Benefits minus cost	$2,732

Benefit to cost ratio	$11.53
Benefits minus costs	$2,732
Chance the program will produce benefits greater than the costs	60 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$1
Property loss associated with alcohol abuse or dependence	$0	$0	$1	$0	$1
Labor market earnings associated with illicit drug abuse or dependence	$440	$187	$0	$0	$627
Health care associated with illicit drug abuse or dependence	$36	$230	$236	$115	$616
Mortality associated with illicit drugs	$167	$71	$0	$1,639	$1,876
Adjustment for deadweight cost of program	$0	$0	$0	($130)	($130)
Totals	$643	$488	$237	$1,624	$2,992

[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

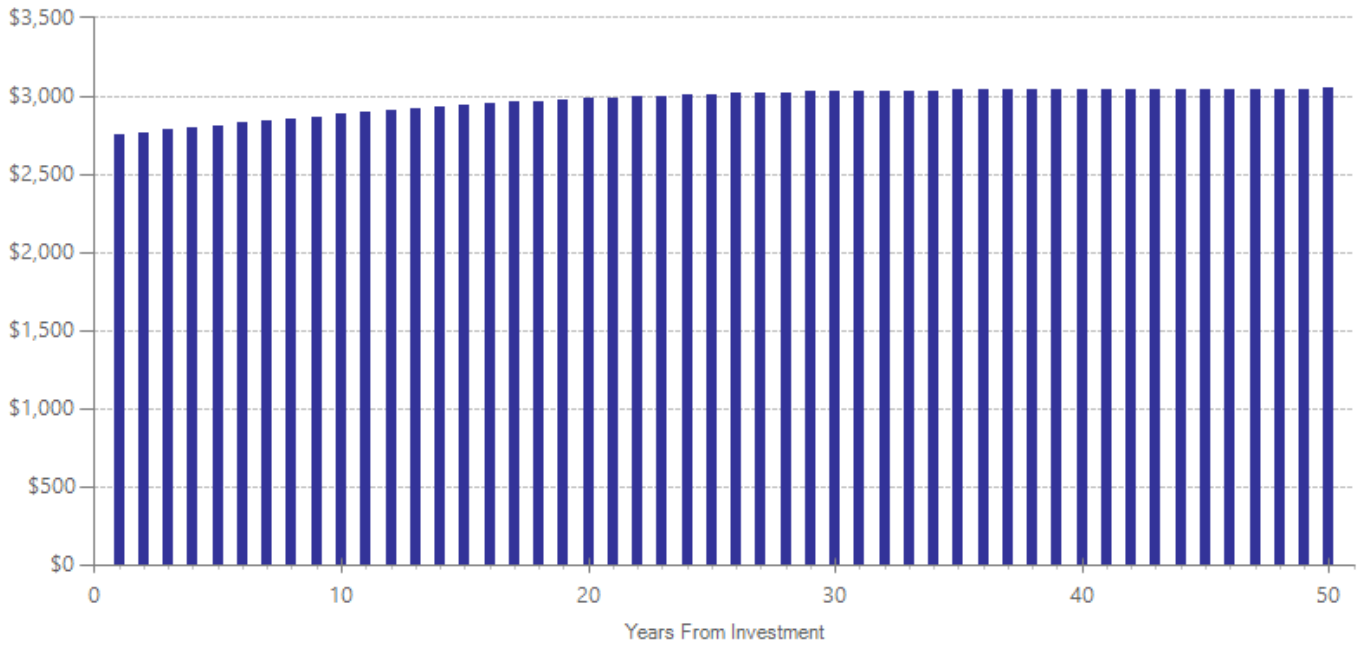
	Annual cost	Year dollars	Summary	
Program costs	$240	2012	Present value of net program costs (in 2018 dollars)	($260)
Comparison costs	$0	2012	Cost range (+ or -)	40 %

Contingency management is typically provided for a year or less. We calculated the weighted average of the per-participant treatment and comparison group variable costs across studies estimating the cost-effectiveness of an incentive program with an average cost of less than $500 in 2012 (Sindelar, Olmstead, & Peirce, 2007; Sindelar, Elbel, & Petry, 2006; Hartz et al., 1999). Costs of administering the incentive program include staff costs to inventory, shop for, and restock prizes; material cost of items; counseling session costs; and toxicology screens. All staff costs include salary, benefits, and overhead. All costs are calculated from the clinic perspective. Note that because treatment group participants have higher retention rates than the control group, costs also reflect the increased number of counseling sessions attended and urinalysis tests performed for the treated group.

Hartz, D.T., Meek, P., Piotrowski, N.A., Tusel, D.J., Henke, C.J., Delucchi, K., Sees, K., Hall, S.M. (1999). A cost-effectiveness and cost-benefit analysis of contingency contracting-enhanced methadone detoxification treatment. *The American Journal of Drug and Alcohol Abuse, 25*(2), 207-218. Sindelar, J., Elbel, B., & Petry, N.M. (2007). What do we get for our money? Cost-effectiveness of adding contingency management. *Addiction, 102*(2), 309-316.Sindelar, J.L., Olmstead, T.A., & Peirce, J.M. (2007). Cost effectiveness of prize-based contingency management in methadone maintenance treatment programs. *Addiction, 102*(9), 1463-1471.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	37	7	800	-0.196	0.116	37	0.000	0.075	38	-0.290	0.092
Cannabis use^	37	3	319	-0.049	0.118	37	n/a	n/a	n/a	-0.049	0.676
Illicit drug use disorder	37	29	1595	-0.278	0.049	37	0.000	0.075	38	-0.278	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.

Citations Used in the Meta-Analysis

Chen, W., Hong, Y., Zou, X., McLaughlin, M.M., Xia, Y., & Ling, L. (2013). Effectiveness of prize-based contingency management in a methadone maintenance program in China. *Drug and Alcohol Dependence, 133*(1), 270-274.

Groß, A., Marsch, L.A., Badger, G.J., & Bickel, W.K. (2006). A comparison between low-magnitude voucher and buprenorphine medication contingencies in promoting abstinence from opioids and cocaine. *Experimental and Clinical Psychopharmacology, 14*(2), 148-156.

Hagedorn, H.J., Noorbaloochi, S., Simon, A.B., Bangerter, A., Stitzer, M.L., Stetler, C.B., & Kivlahan, D. (2013). Rewarding early abstinence in Veterans Health Administration addiction clinics. *Journal of Substance Abuse Treatment, 45*(1), 109-117.

Hall, E.A., Prendergast, M.L., Warda, U., & Roll, J.M. (2009). Reinforcing abstinence and treatment participation among offenders in a drug diversion program: Are Vouchers Effective?. *Criminal Justice and Behavior, 36*(9), 935-953.

Hser, Y.I., Li, J., Jiang, H., Zhang, R., Du, J., Zhang, C., Zhang, B., ... Zhao, M. (2011). Effects of a randomized contingency management intervention on opiate abstinence and retention in methadone maintenance treatment in China. *Addiction, 106*(10), 1801-1809.

Iguchi, M.Y., Belding, M.A., Morral, A.R., Lamb, R.J., & Husband, S.D. (J1997). Reinforcing operants other than abstinence in drug abuse treatment: an effective alternative for reducing drug use. *Journal of Consulting and Clinical Psychology, 65*(3), 421-8.

Jones, H.E., Haug, N.A., Stitzer, M.L., & Svikis, D.S. (2000). Improving treatment outcomes for pregnant drug-dependent women using low-magnitude voucher incentives. *Addictive Behaviors, 25*(2), 263-267.

McCaul, M.E., Stitzer, M.L., Bigelow, G.E., & Liebson, I A. (1984). Contingency management interventions: effects on treatment outcome during methadone detoxification. *Journal of Applied Behavior Analysis, 17*(1), 35-43.

McDonell, M.G., Srebnik, D., Angelo, F., McPherson, S., Lowe, J.M., Sugar, A., Short, R.A., ... Ries, R.K. (2013). Randomized controlled trial of contingency management for stimulant use in community mental health patients with serious mental illness. *The American Journal of Psychiatry, 170*(1), 94-101.

Menza, T.W., Jameson, D.R., Hughes, J.P., Colfax, G.N., Shoptaw, S., & Golden, M.R. (2010). Contingency management to reduce methamphetamine use and sexual risk among men who have sex with men: a randomized controlled trial. *Bmc Public Health, 10*(1), 774.

Peirce, J.M., Petry, N.M., Stitzer, M.L., Blaine, J., Kellogg, S., Satterfield, F., Schwartz, M., ... Li, R. (2006). Effects of lower-cost incentives on stimulant abstinence in methadone maintenance treatment: a National Drug Abuse Treatment Clinical Trials Network study. *Archives of General Psychiatry, 63*(2), 201-208.

Petry, N.M., Martin, B., Cooney, J.L., & Kranzler, H.R. (2000). Give them prizes, and they will come: Contingency Management for treatment of alcohol dependence. *Journal of Consulting and Clinical Psychology, 68*(2), 250-257.

Petry, N. M., Tedford, J., Austin, M., Nich, C., Carroll, K. M., & Rounsaville, B. J. (2004). Prize reinforcement contingency management for treating cocaine users: how low can we go, and with whom?. *Addiction, 99*(3), 349-360.

Petry, N.M., Peirce, J.M., Stitzer, M.L., Blaine, J., Roll, J.M., Cohen, A., Obert, J., ... Li, R. (2005). Effect of prize-based incentives on outcomes in stimulant abusers in outpatient psychosocial treatment programs: a national drug abuse treatment clinical trials network study. *Archives of General Psychiatry, 62*(10), 1148-1156.

Petry, N.M., Alessi, S.M., Marx, J., Austing, M., Tardif, M. 2005. Vouchers versus prizes: Contingency management treatment of substance abusers in community settings. *Journal of Consulting and Clinical Psychology, 73*(6), 1005-1014

Petry, N.M., Weinstock, J., Alessi, S.M., Lewis, M.W., & Dieckhaus, K. (2010). Group-based randomized trial of contingencies for health and abstinence in HIV patients. *Journal of Consulting and Clinical Psychology, 78*(1), 89-97.

Petry, N.M., Weinstock, J., & Alessi, S.M. (2011). A randomized trial of contingency management delivered in the context of group counseling. *Journal of Consulting and Clinical Psychology, 79*(5), 686-96.

Petry, N.M., Alessi, S.M., & Ledgerwood, D.M. (2012). Contingency management delivered by community therapists in outpatient settings. *Drug and alcohol dependence, 122*(1), 86-92.

Petry, N.M., Alessi, S.M., & Rash, C.J. (2013). A randomized study of contingency management in cocaine-dependent patients with severe and persistent mental health disorders. *Drug and alcohol dependence, 130*(1), 234-237.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2002). Abstinence reinforcement maintenance contingency and one-year follow-up. *Drug and Alcohol Dependence, 67*(2), 125-137.

Roll, J.M., Chudzynski, J., Cameron, J.M., Howell, D.N., & McPherson, S. (2013). Duration effects in contingency management treatment of methamphetamine disorders. *Addictive Behaviors, 38*(9), 2455-2462.

Rowan-Szal, G.A.P.D., Joe, G.W.E.D., Hiller, M. L.P.D., & Simpson, D.D.P.D. (1997). Increasing Early Engagement in Methadone Treatment. *Journal of Maintenance in the Addictions, 1*(1), 49-61.

Rowan-Szal, G.A., Bartholomew, N.G., Chatham, L.R., & Simpson, D.D. (2005). A combined cognitive and behavioral intervention for cocaine-using methadone clients. *Journal of Psychoactive Drugs, 37*(1), 75-84.

Tracy, K., Babuscio, T., Nich, C., Kiluk, B., Carroll, K.M., Petry, N.M., & Rounsaville, B.J. (2007). Contingency Management to Reduce Substance Use in Individuals Who are Homeless with Co-Occurring Psychiatric Disorders. *The American Journal of Drug and Alcohol Abuse, 33*(2), 253-258.

Matrix Model Intensive Outpatient Treatment Program (IOP) for stimulant use disorders

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: The Matrix Intensive Outpatient Model (Matrix Model) is a manualized, standalone outpatient program for treating individuals with stimulant use disorders. The program includes individual, group, and family sessions and covers topics including skills training, relapse prevention, drug education, social support, and self-help groups. Treatment generally lasts four to six months and includes multiple individual and group sessions per week.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$753
Participants	$842
Others	$435
Indirect	$1,770
Total benefits	$3,799
Net program cost	($1,327)
Benefits minus cost	$2,472

Benefit to cost ratio	$2.86
Benefits minus costs	$2,472
Chance the program will produce benefits greater than the costs	52 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$2	$0	$4
Labor market earnings associated with alcohol abuse or dependence	($229)	($98)	$0	$0	($327)
Health care associated with alcohol abuse or dependence	$0	($2)	($3)	($1)	($7)
Property loss associated with alcohol abuse or dependence	$0	$0	($1)	$0	($1)
Labor market earnings associated with illicit drug abuse or dependence	$761	$324	$0	$0	$1,085
Health care associated with illicit drug abuse or dependence	$66	$424	$436	$212	$1,138
Mortality associated with illicit drugs	$245	$104	$0	$2,225	$2,574
Mortality associated with alcohol	$0	$0	$0	($2)	($3)
Adjustment for deadweight cost of program	$0	$0	$0	($664)	($664)
Totals	$842	$753	$435	$1,770	$3,799

[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.

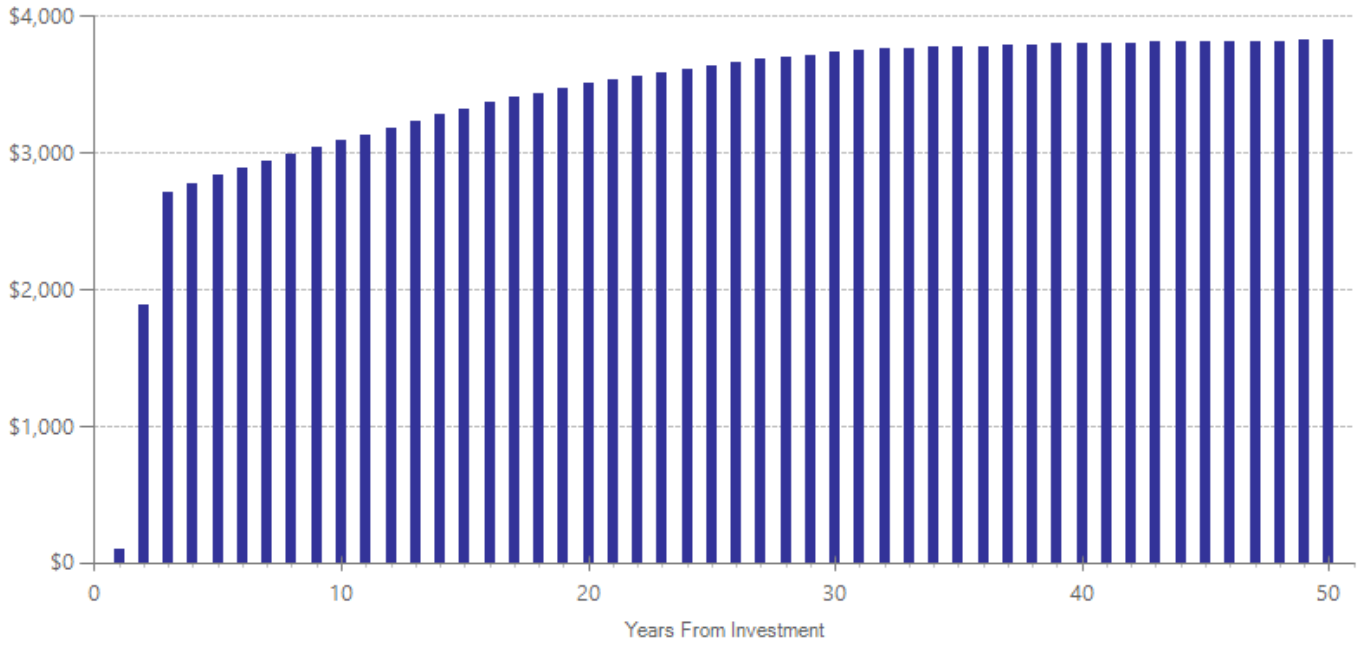
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$2,602	2013	Present value of net program costs (in 2018 dollars)	($1,327)
Comparison costs	$1,358	2013	Cost range (+ or -)	20 %

Matrix Model treatment is typically provided for four to six months. The per-participant cost estimate of treatment is the weighted average of the individual and group therapy sessions provided in the studies included in the analysis. We calculated this average cost using Washington's Medicaid hourly reimbursement rate for outpatient individual and group therapy multiplied by the weighted average of the total hours of these therapies across the studies (averaging 80 total hours). Comparison group costs are computed in a similar manner based on treatment received in the studies (standard intensive outpatient treatment, standard group therapy, or no treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	34	1	137	0.060	0.241	34	0.000	0.187	37	0.060	0.803
Employment^^	34	1	59	-0.146	0.382	34	n/a	n/a	n/a	-0.146	0.703
Homelessness^	34	1	59	-0.071	0.457	34	n/a	n/a	n/a	-0.071	0.877
Illicit drug use disorder	34	4	342	-0.235	0.156	34	0.000	0.187	37	-0.235	0.132

^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.

Citations Used in the Meta-Analysis

Rawson, R.A., Obert, J.L., McCann, M.J., & Mann, A.J. (1985). Cocaine Treatment Outcome: Cocaine Use Following Inpatient, Outpatient, and No Treatment. *NIDA Research Monograph,* 67, 271-277.

Rawson, R.A., Shoptaw, S.J., Obert, J.L., McCann, M.J., Hasson, A., & Marinelli-Casey, P.J. (1995). An Intensive Outpatient Approach for Cocaine Abuse Treatment: The Matrix Model. *Journal of Substance Abuse Treatment, 12*(2), 117-127.

Rawson, R.A., Marinelli-Casey, P., Anglin, M.D., Dickow, A., Frazier, Y., Gallagher, C., et al. (2004). A Multi-Site Comparison of Psychosocial Approaches for the Treatment of Methamphetamine Dependence. *Addiction, 99*(6), 708-717.

Rosenblum, A., Magura, S., Palij, M., Foote, J., Handelsman, L., & Stimmel, B. (1999). Enhanced treatment outcomes for cocaine-using methadone patients. *Drug and Alcohol Dependence, 54*(3), 207-218.

Node-link mapping

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Node-link mapping is a manualized supplement or tool that can be used during counseling sessions. “Maps” are used as a means of visually representing a client's needs, problems, and solutions and act as a communication tool that provides an alternative way to facilitate discussion between client and counselor. These maps can also directly illustrate cause-and-effect patterns of drug use to facilitate problem solving.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$282
Participants	$371
Others	$136
Indirect	$999
Total benefits	$1,788
Net program cost	$0
Benefits minus cost	$1,788

Benefit to cost ratio	n/a
Benefits minus costs	$1,788
Chance the program will produce benefits greater than the costs	52 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$1
Labor market earnings associated with illicit drug abuse or dependence	$256	$109	$0	$0	$365
Health care associated with illicit drug abuse or dependence	$20	$132	$136	$66	$355
Mortality associated with illicit drugs	$94	$40	$0	$933	$1,067
Totals	$371	$282	$136	$999	$1,788

[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.

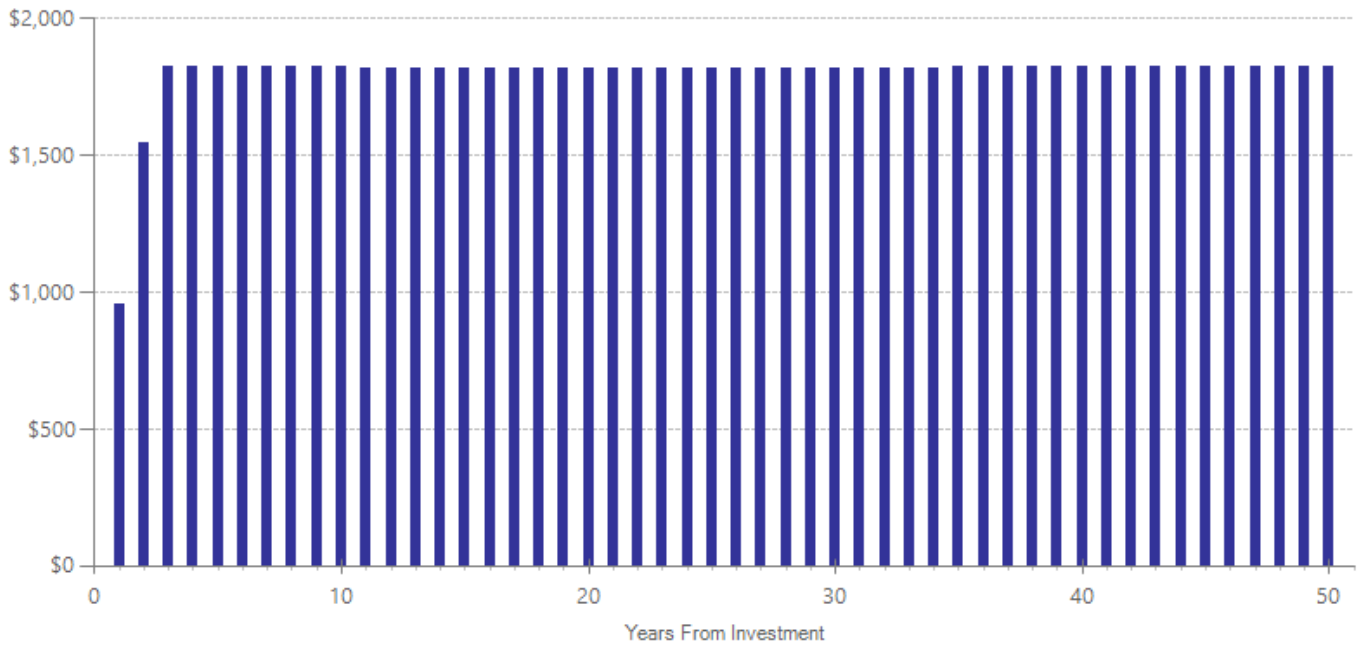
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$732	2013	Present value of net program costs (in 2018 dollars)	$0
Comparison costs	$732	2013	Cost range (+ or -)	10 %

Node-link maps are visual tools used during counseling. We estimate no additional cost beyond the cost of usual treatment. We estimate the average cost of usual treatment using Washington's 2013 Medicaid hourly reimbursement rate for outpatient individual and group therapy multiplied by the weighted average of the total hours of these therapies in the study.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Illicit drug use disorder	37	1	151	-0.078	0.140	37	0.000	0.187	40	-0.078	0.579

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.

Citations Used in the Meta-Analysis

Dansereau, D.F., Joe, G.W., & Simpson, D.D. (1995). Attentional difficulties and the effectiveness of a visual representation strategy for counseling drug-addicted clients. *The International Journal of the Addictions, 30*(4), 371-386.

Sober living houses

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated October 2016.

Program Description: Sober living houses (or recovery houses) are voluntary residential arrangements in which unrelated adults agree to live together under a set of shared rules. They are commonly utilized by persons with substance abuse history in their effort to maintain sobriety. They are resident-supported and not staffed by a caseworker or house manager.
This meta-analysis includes studies on Oxford Houses as well as other unspecified models of sober living houses and recovery houses. It includes studies on formerly incarcerated individuals as well as studies in which individuals may have had no prior criminal involvement. Individuals in these studies spent between three and eight months in sober living houses. They were compared to similar individuals who were not placed in sober living houses.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$325
Participants	$426
Others	$164
Indirect	$993
Total benefits	$1,907
Net program cost	($298)
Benefits minus cost	$1,609

Benefit to cost ratio	$6.40
Benefits minus costs	$1,609
Chance the program will produce benefits greater than the costs	53 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$3	$9	$2	$13
Labor market earnings associated with illicit drug abuse or dependence	$298	$127	$0	$0	$425
Health care associated with illicit drug abuse or dependence	$23	$151	$155	$76	$405
Mortality associated with illicit drugs	$105	$45	$0	$1,065	$1,214
Adjustment for deadweight cost of program	$0	$0	$0	($149)	($149)
Totals	$426	$325	$164	$993	$1,907

[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.

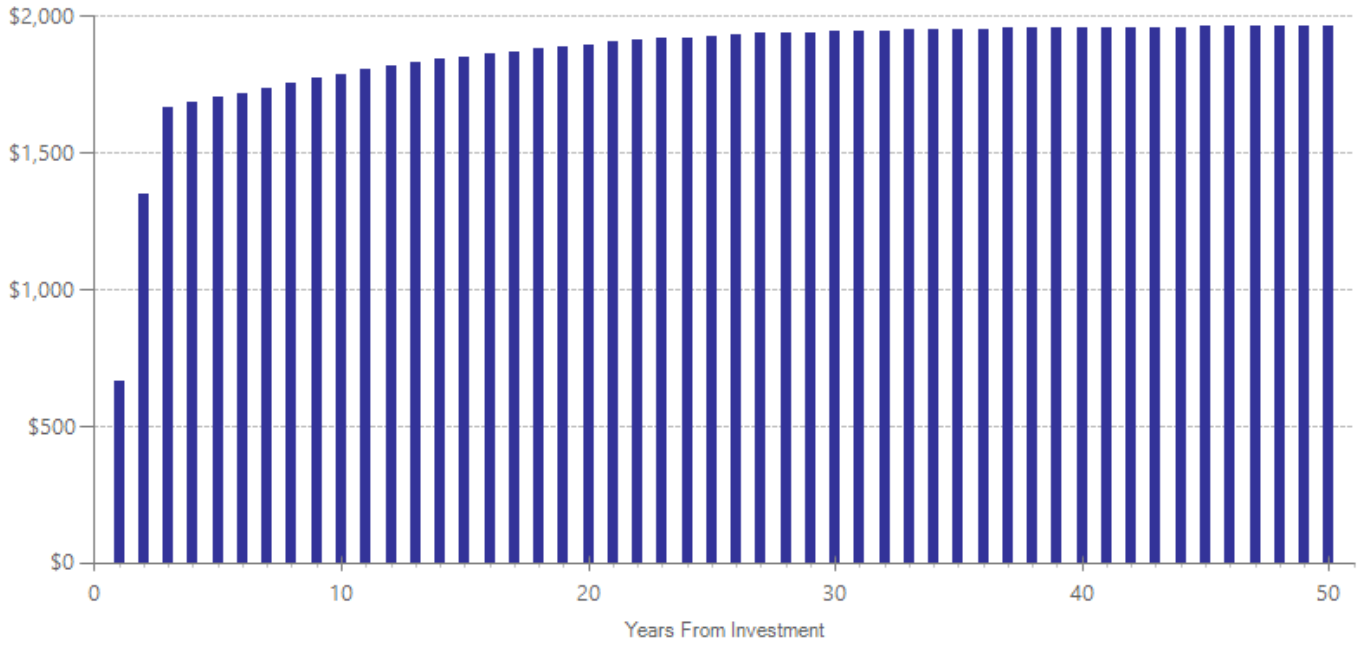
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$287	2016	Present value of net program costs (in 2018 dollars)	($298)
Comparison costs	$0	2016	Cost range (+ or -)	10 %

Costs were estimated based on the organizational costs of the Oxford House organization in fiscal year 2016 2016 (http://www.oxfordhouse.org/userfiles/file/finances.php). During that year Oxford House started 226 new houses and maintained 2,100 existing houses through outreach, publications, monitoring, organization of chapters and state associations, workshops and the annual convention. Per participant costs were based on a total of 2326 houses with an average of 10 residents each. The cost estimate does not include expenses paid by residents such as rent, utilities, and household items.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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	38	5	396	-0.048	0.087	39	0.000	0.187	49	-0.108	0.223
Employment^^	38	4	306	0.235	0.091	38	n/a	n/a	n/a	0.641	0.001
Hours worked^	38	1	90	0.140	0.149	40	n/a	n/a	n/a	0.383	0.011
Illicit drug use disorder	38	3	253	-0.094	0.131	38	0.000	0.187	41	-0.274	0.027
Substance use disorder^	38	2	143	-0.324	0.149	38	n/a	n/a	n/a	-0.886	0.001

^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.

Citations Used in the Meta-Analysis

Jason, L.A., & Ferrari, J.R. (2010). Oxford House recovery homes: Characteristics and effectiveness. *Psychological Services, 7*(2), 92-102.

Jason, L.A., Olson, B.D., Ferrari, J.R., & Lo Sasso, A.T. (2006). Communal housing settings enhance substance abuse recovery. *American Journal of Public Health, 96*(10), 1727.

Jason, L.A., Olson, B.D., & Harvey, R. (2015). Evaluating alternative aftercare models for ex-offenders. *Journal of Drug Issues, 45*(1), 53-68.

Lo Sasso. A.T., Byro, E., Jason, L.A., Ferrari, J.R., & Olson, B. (2012). Benefits and costs associated with mutual-help community-based recovery homes: The Oxford House model. *Evaluation and Program Planning, 35*(1), 47-53.

Tuten, M., Defulio, A., Jones, H.E., & Stitzer, M. (2012). Abstinence-contingent recovery housing and reinforcement-based treatment following opioid detoxification. *Addiction, 107*(5), 973-982.

Peer support for individuals with substance use disorder

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: This analysis examined interventions provided by a peer specialist to individuals with substance abuse disorders. One study was included in this analysis. This study examined the impact of a brief motivational intervention provided by a peer specialist for individuals using heroin and cocaine. The study participants were screened and identified at walk-in general health clinics.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$783
Participants	$1,033
Others	$378
Indirect	$1,307
Total benefits	$3,500
Net program cost	($2,920)
Benefits minus cost	$580

Benefit to cost ratio	$1.20
Benefits minus costs	$580
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 (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$2
Labor market earnings associated with illicit drug abuse or dependence	$723	$308	$0	$0	$1,030
Health care associated with illicit drug abuse or dependence	$57	$367	$377	$183	$983
Mortality associated with illicit drugs	$254	$108	$0	$2,583	$2,945
Adjustment for deadweight cost of program	$0	$0	$0	($1,460)	($1,460)
Totals	$1,033	$783	$378	$1,307	$3,500

[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.

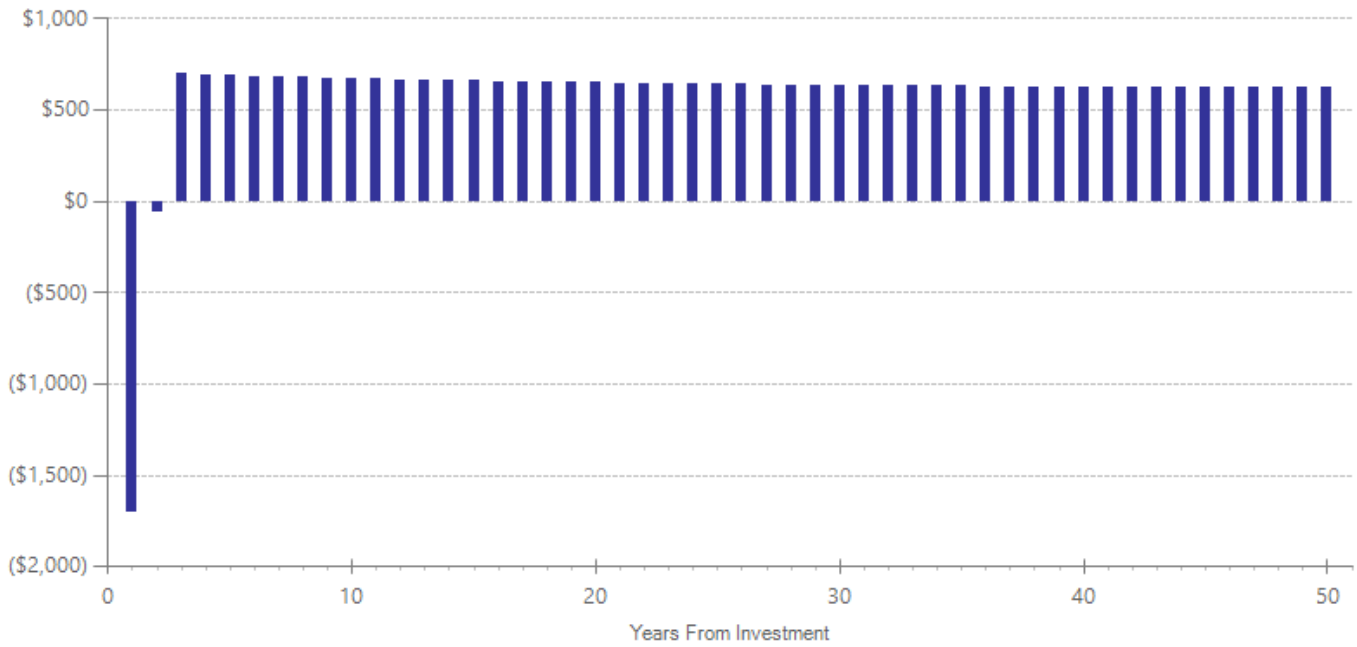
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$2,650	2011	Present value of net program costs (in 2018 dollars)	($2,920)
Comparison costs	$0	2011	Cost range (+ or -)	20 %

The per-participant cost of this brief intervention was estimated using the peer specialist reimbursement rate reported in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014 and included both the cost to provide the intervention to participants in the treatment arm and the cost to screen patients at the walk-in clinics.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Illicit drug use disorder	38	1	403	-0.245	0.122	38	0.000	0.187	41	-0.245	0.041

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.

Citations Used in the Meta-Analysis

Bernstein, J., Bernstein, E., Tassiopoulos, K., Heeren, T., Levenson, S., & Hingson, R. (2005). Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug and Alcohol Dependence, 77*(1), 49-59.

Contingency management (lower cost) for marijuana use

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with marijuana abuse or dependence where contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: (1) A voucher system where abstinence earned vouchers that were exchangeable for goods provided by the clinic or counseling center, and (2) a prize or raffle system where clients who remained abstinent could earn the opportunity to draw from a prize bowl. Higher-cost contingency management was determined by maximum voucher or maximum expected value of prizes possible. Based on a statistical analysis of contingency management studies, we determined that programs with a maximum value of vouchers or prizes less than or equal to $500 (in 2012 dollars) represent lower-cost contingency management. Treatment lasted two to three months and reward opportunities occurred two to three times per week.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$165
Participants	$356
Others	$16
Indirect	($123)
Total benefits	$413
Net program cost	($260)
Benefits minus cost	$154

Benefit to cost ratio	$1.59
Benefits minus costs	$154
Chance the program will produce benefits greater than the costs	51 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with cannabis abuse or dependence	$353	$150	$0	$0	$503
Health care associated with cannabis abuse or dependence	$3	$14	$16	$7	$40
Adjustment for deadweight cost of program	$0	$0	$0	($130)	($130)
Totals	$356	$165	$16	($123)	$413

[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

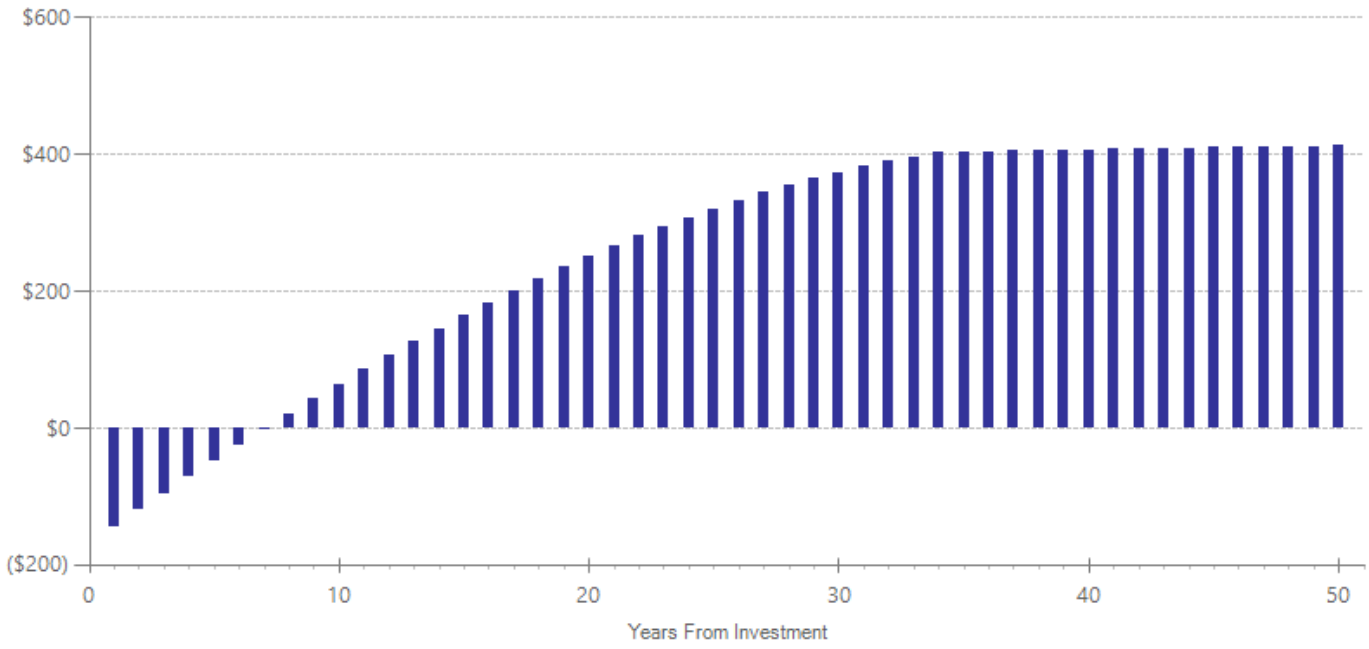
	Annual cost	Year dollars	Summary	
Program costs	$240	2012	Present value of net program costs (in 2018 dollars)	($260)
Comparison costs	$0	2012	Cost range (+ or -)	40 %

Contingency management is typically provided for less than a year. We calculated the weighted average of the variable per-participant treatment and comparison group costs across studies estimating the cost-effectiveness of an incentive program with an average cost of less than $500 in 2012 (Sindelar, Olmstead, & Peirce, 2007; Sindelar, Elbel, & Petry, 2006; Hartz et al., 1999). Costs of administering the incentive program include staff costs to inventory, shop for, and restock prizes; material cost of items; counseling session costs; and toxicology screens. All staff costs include salary, benefits, and overhead. All costs are calculated from the clinic perspective. Note that because treatment group participants have higher retention rates than the control group, costs also reflect the increased number of counseling sessions attended and urinalysis tests performed for the treated group.

Hartz, D.T., Meek, P., Piotrowski, N.A., Tusel, D. J., Henke, C.J., Delucchi, K., Sees, K., Hall, S.M. (1999). A cost-effectiveness and cost-benefit analysis of contingency contracting-enhanced methadone detoxification treatment. *The American Journal of Drug and Alcohol Abuse, 25*(2), 207-218. Sindelar, J., Elbel, B., & Petry, N.M. (2007). What do we get for our money? Cost-effectiveness of adding contingency management. *Addiction, 102*(2), 309-316. Sindelar, J.L., Olmstead, T.A., & Peirce, J.M. (2007). Cost-effectiveness of prize-based contingency management in methadone maintenance treatment programs. *Addiction, 102*(9), 1463-1471.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Cannabis use disorder	32	3	149	-0.086	0.191	32	-0.007	0.259	33	-0.086	0.673

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.

Citations Used in the Meta-Analysis

Carroll, K.M., Nich, C., Lapaglia, D.M., Peters, E.N., Easton, C.J., & Petry, N.M. (2012). Combining cognitive behavioral therapy and contingency management to enhance their effects in treating cannabis dependence: less can be more, more or less. *Addiction, 107*(9), 1650-1659.

Litt, M.D., Kadden, R.M., Kabela-Cormier, E., & Petry, N.M. (2008). Coping skills training and contingency management treatments for marijuana dependence: exploring mechanisms of behavior change. *Addiction, 103*(4), 638-648.

Cognitive-behavioral coping-skills therapy for opioid use disorder

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Cognitive-behavioral coping-skills therapy is a manualized, standalone treatment for alcohol and/or drug abuse or dependence. This intervention emphasizes identifying high-risk situations that could lead to relapse such as social situations, depression, etc. and developing skills to cope with those situations. Clients engage in problem solving, role playing, and homework practice. The intervention is often provided in an individual therapy format but can be conducted in groups as well. Treatment in the included studies occurred over an average of three months. Studies used in this analysis evaluated the program in a population of opiate users receiving medication-assisted treatment (methadone or buprenorphine).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	($31)
Participants	($38)
Others	($16)
Indirect	($396)
Total benefits	($480)
Net program cost	($559)
Benefits minus cost	($1,039)

Benefit to cost ratio	($0.86)
Benefits minus costs	($1,039)
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 (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with opioid drug abuse or dependence	($24)	($10)	$0	$0	($34)
Health care associated with opioid drug abuse or dependence	($2)	($16)	($16)	($8)	($42)
Mortality associated with opioids	($11)	($5)	$0	($109)	($125)
Adjustment for deadweight cost of program	$0	$0	$0	($279)	($279)
Totals	($38)	($31)	($16)	($396)	($480)

[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.

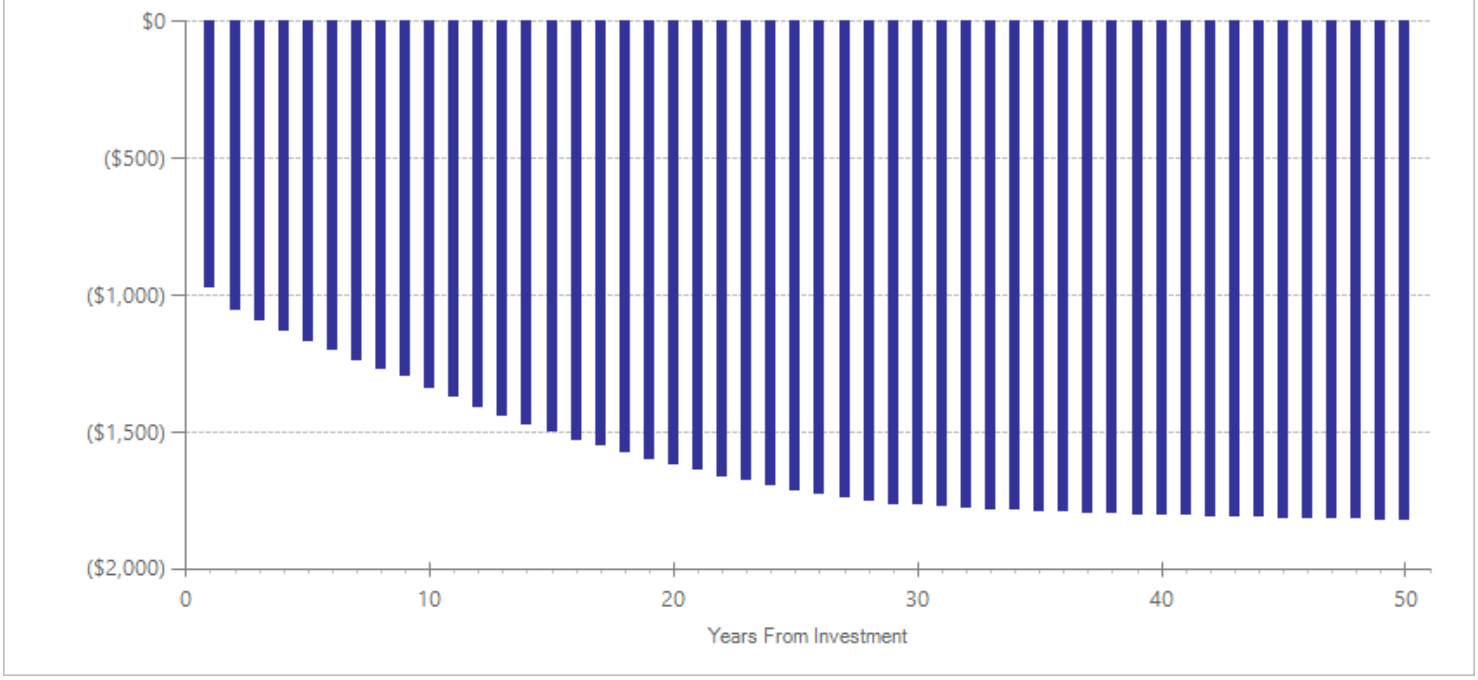
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,223	2016	Present value of net program costs (in 2018 dollars)	($559)
Comparison costs	$685	2016	Cost range (+ or -)	20 %

Program cost estimates reflect costs beyond treatment as usual. The per-participant cost of treatment is based on physician/therapist time, multiplied by reimbursement rates reported for non-disabled adults in Mercer (2016) Mental Health and Substance Use Disorder Services Data Book for the State of Washington. Program and comparison group costs are weighted by treatment and comparison group samples. Costs were obtained from Fiellin et al. (2013), Ling et al. (2013), and Moore et al. (2012).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Opioid use disorder	36	4	169	0.006	0.109	36	0.000	0.187	39	0.006	0.956

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.

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Citations Used in the Meta-Analysis

Fiellin, D.A., Barry, D.T., Sullivan, L.E., Cutter, C.J., Moore, B.A., O'Connor, P.G., & Schottenfeld, R.S. (2013). A randomized trial of Cognitive Behavioral Therapy in primary care-based buprenorphine. *The American Journal of Medicine, 126*(1).

Ling, W., Hillhouse, M., Ang, A., Jenkins, J., & Fahey, J. (2013). Comparison of behavioral treatment conditions in buprenorphine maintenance. *Addiction, 108*(10), 1788-1798.

Moore, B.A., Barry, D.T., Sullivan, L.E., O'Connor, P.G., Cutter, C.J., Schottenfeld, R.S., & Fiellin, D.A. (2012). Counseling and directly observed medication for primary care buprenorphine/naloxone maintenance. *Journal of Addiction Medicine,* 1.

Moore, B.A., Fazzino, T., Barry, D.T., Fiellin, D.A., Cutter, C.J., Schottenfeld, R.S., & Ball, S.A. (2013). The recovery line: A pilot trial of automated, telephone-based treatment for continued drug use in methadone maintenance. *Journal of Substance Abuse Treatment, 45*(1), 63-69.

Day treatment with abstinence contingencies and vouchers

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Day treatment with abstinence contingencies or vouchers is a standalone treatment that combines day treatment interventions with contingency management. This intervention was originally developed to treat homeless drug users. Day treatment consists of approximately five hours of primarily group activities including counseling, recreational activities, skills building, etc. as well as lunch. Treatment in the included study occurred five days per week during the first two months and two times per week for four months. Contingencies were provided dependent on negative urinalysis results. These contingencies included housing and minimum wage employment. Other programs might also offer subsidies for utilities or vouchers for items such as personal hygiene products.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$810
Participants	$1,062
Others	$394
Indirect	$64
Total benefits	$2,330
Net program cost	($5,612)
Benefits minus cost	($3,282)

Benefit to cost ratio	$0.42
Benefits minus costs	($3,282)
Chance the program will produce benefits greater than the costs	43 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] — Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$2	$0	$2
Labor market earnings associated with illicit drug abuse or dependence	$724	$308	$0	$0	$1,032
Health care associated with illicit drug abuse or dependence	$59	$382	$392	$191	$1,025
Mortality associated with illicit drugs	$280	$119	$0	$2,679	$3,078
Adjustment for deadweight cost of program	$0	$0	$0	($2,806)	($2,806)
Totals	$1,062	$810	$394	$64	$2,330

[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.

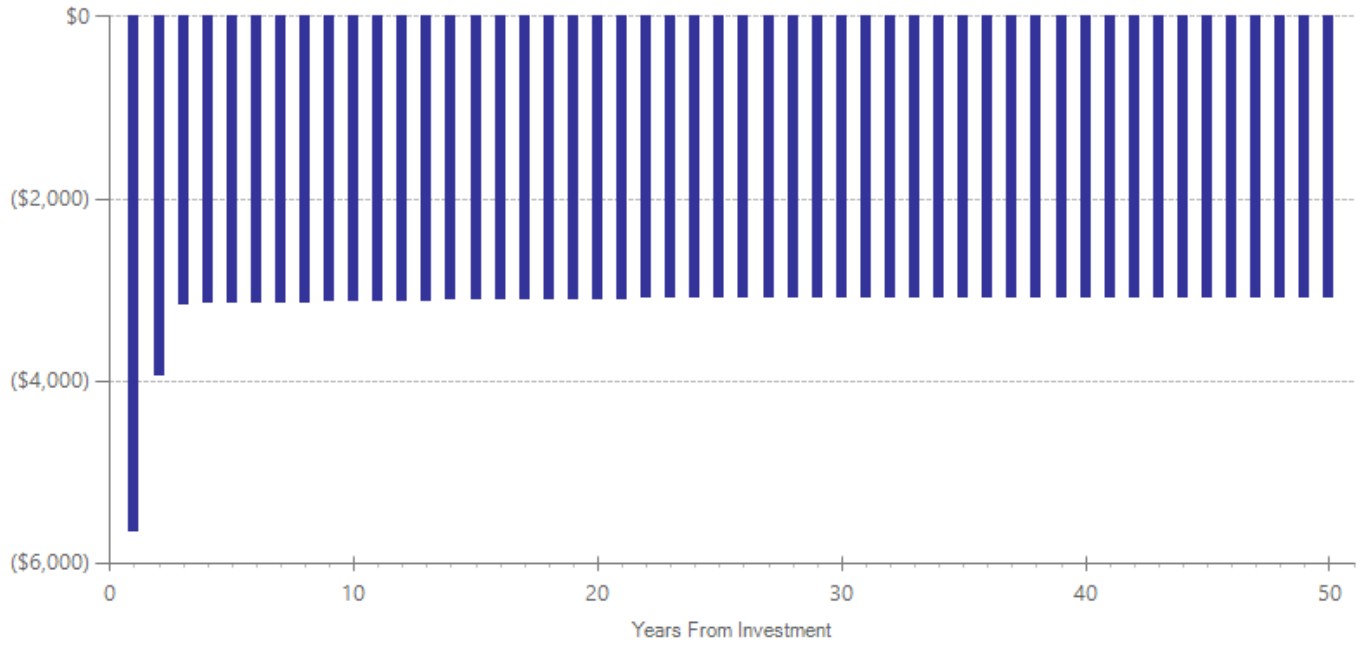
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$7,571	2013	Present value of net program costs (in 2018 dollars)	($5,612)
Comparison costs	$2,312	2013	Cost range (+ or -)	10 %

This program was provided over six months. The per-participant treatment cost estimate is the weighted average of the group therapy sessions provided in the study included in the analysis plus the expected average cost of the abstinence contingency. We calculate the average cost of the group therapy using Washington's Medicaid hourly reimbursement rate for outpatient group therapy, multiplied by the total hours of these therapies in the study (averaging 296 total hours). Comparison group costs are computed as a weighted average of group and individual therapies based on treatment received in the study (standard intensive outpatient treatment or standard group therapy).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the "break-even" point from a budgeting perspective. 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.

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
Illicit drug use disorder	36	1	69	-0.231	0.213	36	0.000	0.187	39	-0.231	0.279

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.

Citations Used in the Meta-Analysis

Milby, J.B., Schumacher, J.E., Raczynski, J.M., Caldwell, E., Engle, M., Michael, M., Carr, J. (1996). Sufficient Conditions for Effective Treatment of Substance Abusing Homeless Persons. *Drug and Alcohol Dependence, 43*(1), 39-47.

Behavioral self-control training (BSCT)

Substance Use Disorders: Treatment for Adults

Benefit-cost estimates updated December 2019. Literature review updated May 2014.

Program Description: Behavioral self-control training is a standalone treatment approach often used to pursue a goal of moderate or non-problematic drinking rather than complete abstinence, although abstinence goals are also permissible. This approach teaches self-monitoring, managing drinking speed and duration, identifying high-risk situations, goal setting, rewards for goal attainment, and coping skills. When used with a goal of moderate or controlled drinking, behavioral self-control training is contra-indicated for pregnant women, women trying to become pregnant, clients with medical or psychological problems worsened by drinking, clients who are mandated to remain abstinent, or in other situations where there is strong pressure for abstinence. Treatment in the included studies occurred over one to three months.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	($3,339)
Participants	($7,614)
Others	($145)
Indirect	($1,900)
Total benefits	($12,998)
Net program cost	($164)
Benefits minus cost	($13,162)

Benefit to cost ratio	($79.39)
Benefits minus costs	($13,162)
Chance the program will produce benefits greater than the costs	24 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	($2)	($4)	($1)	($7)
Labor market earnings associated with alcohol abuse or dependence	($7,499)	($3,192)	$0	$0	($10,691)
Health care associated with alcohol abuse or dependence	($20)	($109)	($120)	($54)	($304)
Property loss associated with alcohol abuse or dependence	($11)	$0	($20)	$0	($31)
Mortality associated with alcohol	($85)	($36)	$0	($1,763)	($1,884)
Adjustment for deadweight cost of program	$0	$0	$0	($82)	($82)
Totals	($7,614)	($3,339)	($145)	($1,900)	($12,998)

[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.

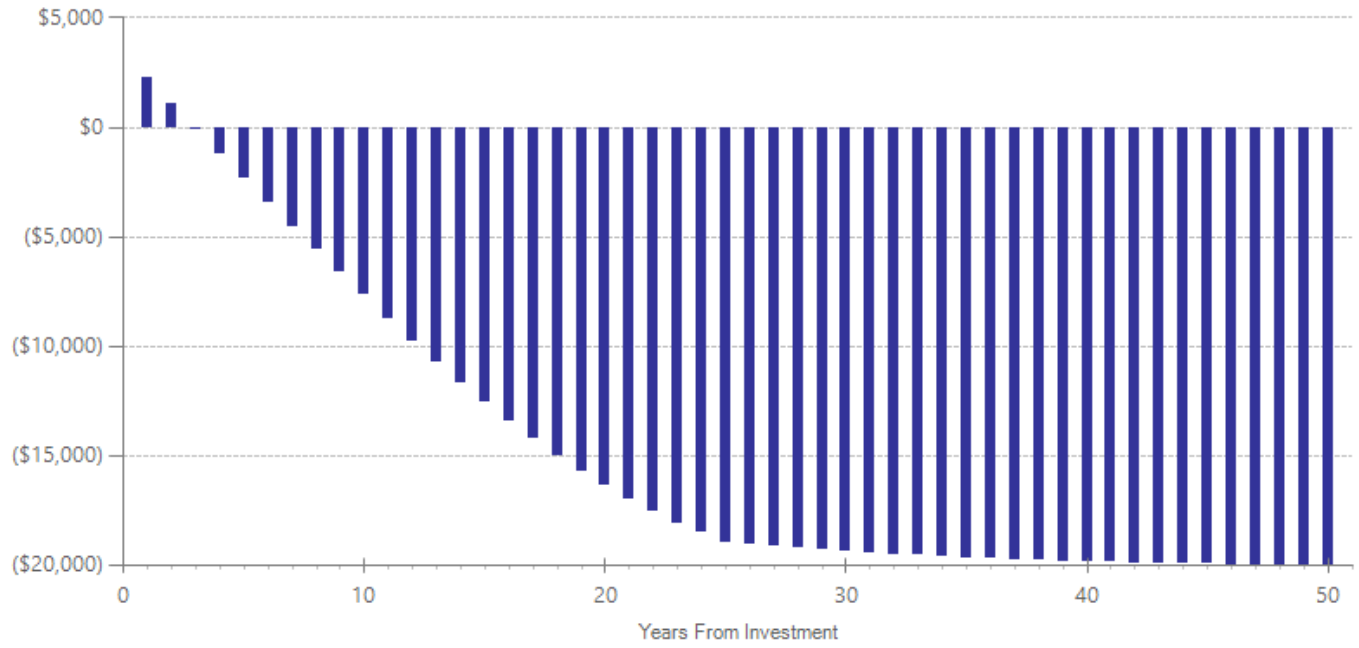
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$957	2013	Present value of net program costs (in 2018 dollars)	($164)
Comparison costs	$804	2013	Cost range (+ or -)	10 %

In the studies included in our meta-analysis, treatment took place over a one- to three-month period. The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculated this average estimate using Washington's Medicaid hourly reimbursement rates for individual or group therapy multiplied by the weighted average of total hours of these therapies across the studies (averaging 12 total hours). Comparison group costs are computed in a similar manner based on treatment received in the studies (individual or group treatment as usual or no treatment).

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use disorder	41	12	333	-0.393	0.161	41	0.165	0.181	42	-0.393	0.001
Drinking and driving^	41	1	20	-1.048	0.337	41	n/a	n/a	n/a	-1.048	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.

Citations Used in the Meta-Analysis

Alden, L. (1988). Behavioral self-management controlled-drinking strategies in a context of secondary prevention. *Journal of Consulting and Clinical Psychology, 56*(2), 280-286.

Baker, T.B., Udin, H., Vogler, R. The Effects of Videotaped Modeling and Self-Confrontation on the Drinking Behavior of Alcoholics. *The International Journal of the Addictions, 10*(5), 779-793.

Brown, R.A. (1980). Conventional education and controlled drinking education courses with convicted drunken drivers. *Behavior Therapy, 11*(5), 632-642.

Caddy, G.R. & Lovibond, S.H. (1976). Self-regulation and discriminated aversive conditioning in the modification of alcoholics drinking behavior. *Behavior Therapy, 7*(2), 223-230.

Foy, D.W., Nunn, B.L., & Rychtarik, R.G. (1984). Broad-spectrum behavioral treatment for chronic alcoholics: Effects of training controlled drinking skills. *Journal of Consulting and Clinical Psychology, 52*(2), 218-230.

Graber, R.A., Miller, W.R. (1988). Abstinence or Controlled Drinking Goals for Problem Drinkers: A Randomized Clinical Trial. *Psychology of Addictive Behaviors, 2*(1), 20-33.

Harris, K.B. and W.R. Miller. (1990). Behavioral Self-Control Training for Problem Drinkers: Components of Efficacy. *Psychology of Addictive Behaviors 4*(2), 82-90.

Heather, N., Whitton, B., & Robertson, I. (1986). Evaluation of a self-help manual for media-recruited problem drinkers: Six-month follow-up results. *The British Journal of Clinical Psychology*, 25, 19-34.

Hester, R.K. & Delaney, H.D. (1997). Behavioral self-control program for windows: Results of a controlled clinical trial. *Journal of Consulting and Clinical Psychology, 65*(4), 686-693.

Sanchez-Craig, M. (1980). Random assignment to abstinence or controlled drinking in a cognitive-behavioral program: Short-term effects on drinking behavior. *Addictive Behaviors, 5*(1), 35-39.

Sanchez-Craig, M., Annis, H.M., Bornet, A.R., & MacDonald, K.R. (1984). Random assignment to abstinence and controlled drinking: Evaluation of a cognitive-behavioral program for problem drinkers. *Journal of Consulting and Clinical Psychology, 52*(3), 390-403.

Vogler, R.E., Compton, J.V., & Weissbach, T.A. (1975). Integrated behavior change techniques for alcoholics. *Journal of Consulting and Clinical Psychology, 43*(2), 233-243.

Methadone maintenance for opioid use disorder

Substance Use Disorders: Medication-assisted Treatment

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Methadone is an opiate substitution treatment used to treat opioid dependence. It is a synthetic opioid that blocks the effects of opiates, reduces withdrawal symptoms, and relieves cravings. Methadone is a daily medication dispensed in outpatient clinics that specialize in methadone treatment and is often used in conjunction with behavioral counseling approaches. The studies included in our analysis evaluated methadone maintenance rather than short-term detoxification or stabilization. We excluded studies with treatment dosages below standard guidances (< 50 mg/day).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,662
Participants	$2,034
Others	$852
Indirect	$4,440
Total benefits	$8,989
Net program cost	($3,907)
Benefits minus cost	$5,081

Benefit to cost ratio	$2.30
Benefits minus costs	$5,081
Chance the program will produce benefits greater than the costs	82 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$1	$3	$1	$4
Labor market earnings associated with opioid drug abuse or dependence	$1,306	$556	$0	$0	$1,862
Health care associated with opioid drug abuse or dependence	$121	$847	$849	$423	$2,241
Mortality associated with opioids	$607	$258	$0	$5,969	$6,835
Adjustment for deadweight cost of program	$0	$0	$0	($1,954)	($1,954)
Totals	$2,034	$1,662	$852	$4,440	$8,989

[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.

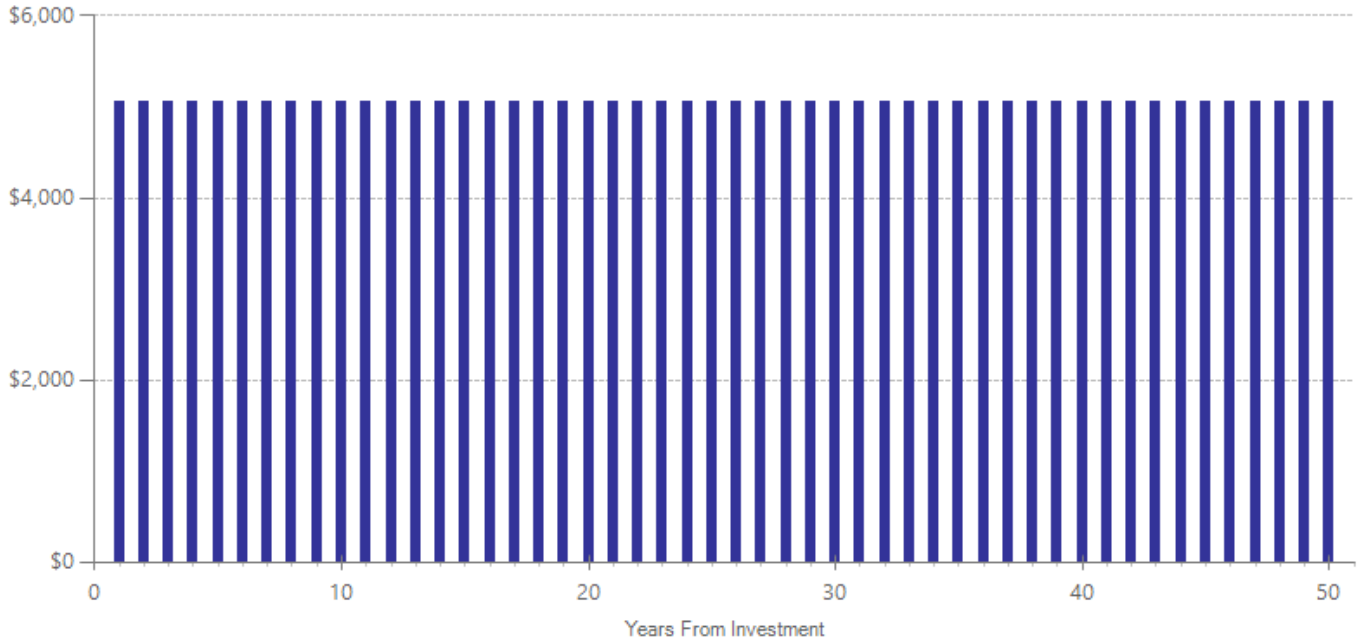
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$3,613	2012	Present value of net program costs (in 2018 dollars)	($3,907)
Comparison costs	$0	2012	Cost range (+ or -)	20 %

We estimate the per-participant costs of providing methadone in addition to standard substance abuse treatment for 12 months. Costs reflect the average of costs reported in numerous cost-effectiveness studies (Rosenhack and Kosten, 2001; Jones et al., 2009; Nordlund et al., 2004; Masson et al, 2004). Costs included vary by study but generally include costs of medication, dispensing, toxicology screens, medical care related to methadone treatment, and when available, costs of equipment, administration, and clinic space. Treatment as usual in this case may include counseling or other services.
Jones, E.S., Moore, B.A., Sindelar, J.L., O'Connor, P.G., Schottenfeld, R.S., & Fiellin, D.A. (2009). Cost analysis of clinic and office-based treatment of opioid dependence: Results with methadone and buprenorphine in clinically stable patients. Drug and Alcohol Dependence, 99(1), 132-140. Masson, C.L., Barnett, P.G., Sees, K.L., Delucchi, K.L., Rosen, A., Wong, W., & Hall, S.M. (2004). Cost and cost-effectiveness of standard methadone maintenance treatment compared to enriched 180-day methadone detoxification. Addiction, 99(6), 718-726. Nordlund, D.J., Estee, S., Mancuso, D., & Felver, B. (2004). Methadone treatment for opiate addiction lowers health care costs and reduces arrests and convictions. Olympia, Wash.: Washington State Dept. of Social and Health Services, Research and Data Analysis Division. Rosenheck, R., & Kosten, T. (2001). Buprenorphine for opiate addiction: potential economic impact. Drug and Alcohol Dependence, 63(3), 253-262.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Alcohol use^	37	2	223	-0.281	0.250	37	n/a	n/a	n/a	-0.281	0.261
Crime	37	3	259	-0.672	0.112	37	0.000	0.000	38	-0.672	0.001
Death	37	3	137	-0.236	0.261	37	0.000	0.000	38	-0.236	0.365
Hospitalization^^	37	3	286	0.242	0.464	37	n/a	n/a	n/a	0.242	0.602
Opioid use disorder	37	8	623	-0.945	0.304	37	0.000	0.000	38	-0.945	0.002
STD risky behavior^	37	3	492	-0.559	0.242	37	n/a	n/a	n/a	-0.559	0.021

^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.

Citations Used in the Meta-Analysis

Bale, R.N., Van, S.W.W., Kuldau, J.M., Engelsing, T.M., Elashoff, R.M., & Zarcone, V.P.J. (1980). Therapeutic communities vs methadone maintenance. A prospective controlled study of narcotic addiction treatment: design and one-year follow-up. *Archives of General Psychiatry, 37,* 2, 179-193.

Dolan, K.A., Shearer, J., MacDonald, M., Mattick, R.P., Hall, W., & Wodak, A.D. (2003). A randomised controlled trial of methadone maintenance treatment versus wait list control in an Australian prison system. *Drug and Alcohol Dependence, 72*(1), 59-65.

Gronbladh, L. & Gunne, L. (1989). Methadone-assisted rehabilitation of Swedish heroin addicts. *Drug and Alcohol Dependence, 24*(1), 31-37.

Gruber, V.A., Delucchi, K.L., Kielstein, A., & Batki, S.L. (2008). A randomized trial of 6-month methadone maintenance with standard or minimal counseling versus 21-day methadone detoxification. *Drug and Alcohol Dependence, 94,* 1, 199-206.

Kinlock, T., Gordon, M., Schwartz, R., O'Grady, K., Fitzgerald, T., & Wilson, M. (2007). A randomized clinical trial of methadone maintenance for prisoners: Results at 1-month post-release. *Drug and Alcohol Dependence, 91*(2-3), 220-227.

Newman, R., & Whitehill, W. (1979). Double-blind comparison of methadone and placebo maintenance treatments of narcotic addicts in Hong Kong. *The Lancet*, *314*(8141), 485-488.

Schwartz, R.P., Highfield, D.A., Jaffe, J.H., Brady, J.V., Butler, C.B., Rouse, C.O., Callaman, J.M., ... Battjes, R.J. (2006). A randomized controlled trial of interim methadone maintenance. *Archives of General Psychiatry,* 63(1), 102-9.

Schwartz, R.P., Jaffe, J.H., Highfield, D.A., Callaman, J.M., & O'Grady, K.E. (2007). A randomized controlled trial of interim methadone maintenance: 10-Month follow-up. *Drug and Alcohol Dependence, 86*(1), 30-36.

Strain, E.C., Stitzer, M. L., Liebson, I.A., & Bigelow, G.E. (1993). Dose-response effects of methadone in the treatment of opioid dependence. *Annals of Internal Medicine*, *119*(1), 23-27.

Vanichseni, S., Wongsuwan, B., Choopanya, K., & Wongpanich, K. (1991). A controlled trial of methadone maintenance in a population of intravenous drug users in Bangkok: Implications for prevention of HIV. *International Journal of the Addictions, 26*(12), 1.

Wilson, M.E., Schwartz, R.P., O'Grady, K.E., & Jaffe, J.H. (2010). Impact of interim methadone maintenance on HIV risk behaviors. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 87*(4), 586-591.

Buprenorphine (or buprenorphine/naloxone) maintenance treatment for opioid use disorder

Substance Use Disorders: Medication-assisted Treatment

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Buprenorphine/buprenorphine/naloxone is an opiate substitution treatment for opioid dependence. It is a daily medication generally provided in addition to counseling therapies. Buprenorphine/buprenorphine/naloxone is a partial agonist that suppresses withdrawal symptoms and blocks the effects of opioids. Two versions of buprenorphine are used in the treatment of opioid dependence. Subutex consists of buprenorphine only while Suboxone is a version of buprenorphine that combines buprenorphine and naloxone. The addition of naloxone reduces the probability of overdose and reduces misuse by producing severe withdrawal effects if taken any way except sublingually. Suboxone is generally given during the maintenance phase and many clinics will only provide take-home doses of Suboxone. Buprenorphine and buprenorphine/naloxone are alternatives to methadone treatments and, unlike methadone, can be prescribed in office-based settings by physicians that have completed a special training. We reviewed studies that evaluated the effectiveness of buprenorphine maintenance therapy. We excluded studies with treatment dosages below current guidance (< 8 mg/day).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,658
Participants	$2,029
Others	$848
Indirect	$3,982
Total benefits	$8,517
Net program cost	($4,792)
Benefits minus cost	$3,725

Benefit to cost ratio	$1.78
Benefits minus costs	$3,725
Chance the program will produce benefits greater than the costs	78 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$1	$0	$1
Labor market earnings associated with opioid drug abuse or dependence	$1,303	$555	$0	$0	$1,858
Health care associated with opioid drug abuse or dependence	$121	$845	$847	$422	$2,235
Mortality associated with opioids	$606	$258	$0	$5,955	$6,819
Adjustment for deadweight cost of program	$0	$0	$0	($2,396)	($2,396)
Totals	$2,029	$1,658	$848	$3,982	$8,517

[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.

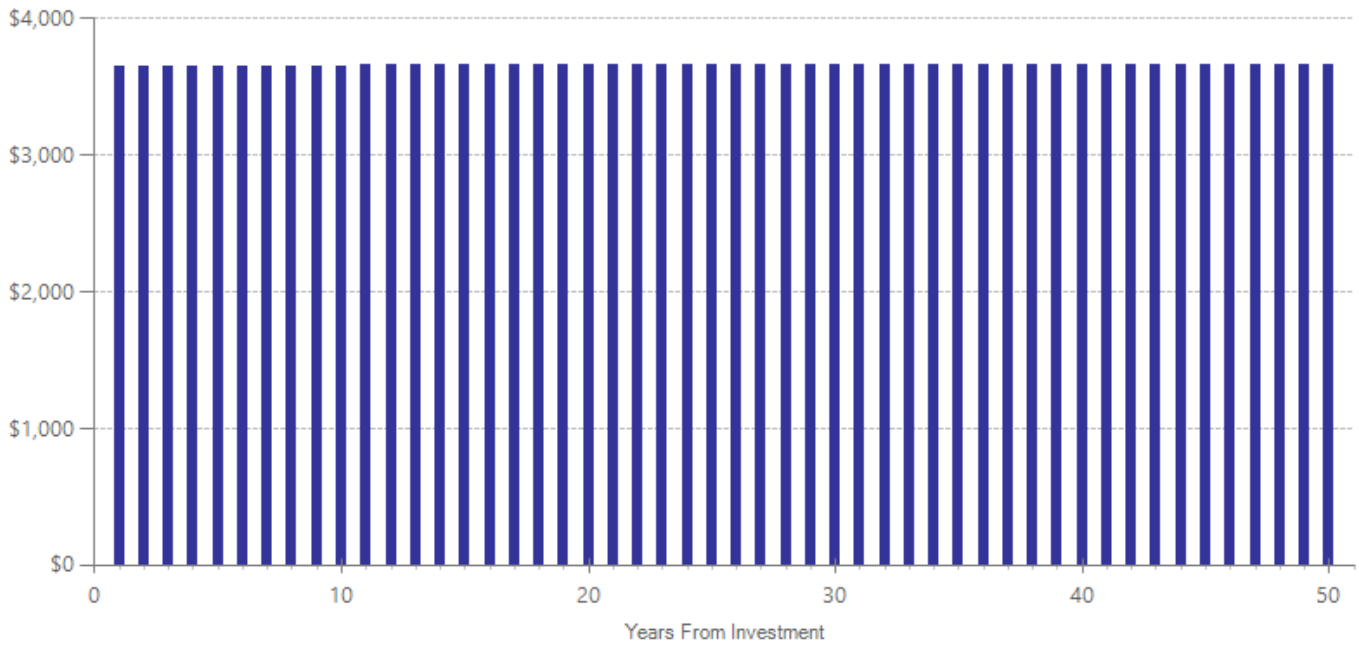
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$4,431	2012	Present value of net program costs (in 2018 dollars)	($4,792)
Comparison costs	$0	2012	Cost range (+ or -)	30 %

We estimated the per-participant costs of providing buprenorphine/buprenorphine/naloxone in addition to standard substance abuse treatment for 12 months. Costs reflect the average of costs reported in numerous cost-effectiveness studies (Polsky et al., 2010; Rosenheck and Kosten, 2001; Schackman et al., 2012). Costs included vary by study but generally include costs of medication, dispensing, toxicology screens, and when available, costs of medical care related to methadone treatment, equipment, administration, and clinic space. The figures shown are estimates of the costs to implement programs in Washington. Comparison group participants may have recieved counseling and other services.
Polsky, D., Glick, H.A., Yang, J., Subramaniam, G.A., Poole, S.A., & Woody, G.E. (2010). Cost-effectiveness of extended buprenorphine-naloxone treatment for opioid-dependent youth: data from a randomized trial. Addiction, 105(9), 1616-1624. Rosenheck, R., & Kosten, T. (2001). Buprenorphine for opiate addiction: potential economic impact. Drug and Alcohol Dependence, 63(3), 253-262. Schackman, B.R., Leff, J.A., Moore, B.A., Moore, B.A., & Fiellin, D.A. (2012). Cost-effectiveness of long-term outpatient buprenorphine-naloxone treatment for opioid dependence in primary care. Journal of General Internal Medicine, 27(6), 669-676. Polsky, D., Glick, H.A., Yang, J., Subramaniam, G.A., Poole, S.A., & Woody, G.E. (2010). Cost-effectiveness of extended buprenorphine-naloxone treatment for opioid-dependent youth: data from a randomized trial. Addiction, 105(9), 1616-1624. Rosenheck, R., & Kosten, T. (2001). Buprenorphine for opiate addiction: potential economic impact. Drug and Alcohol Dependence, 63(3), 253-262. Schackman, B.R., Leff, J.A., Moore, B.A., Moore, B.A., & Fiellin, D.A. (2012). Cost-effectiveness of long-term outpatient buprenorphine-naloxone treatment for opioid dependence in primary care. Journal of General Internal Medicine, 27(6), 669-676.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Emergency department visits^^	37	1	46	-0.026	0.263	37	n/a	n/a	n/a	-0.026	0.920
Opioid use disorder	37	9	793	-0.941	0.181	37	0.000	0.000	38	-0.941	0.001
Psychiatric symptoms^	37	1	51	-0.156	0.201	37	n/a	n/a	n/a	-0.156	0.437

^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.

Citations Used in the Meta-Analysis

Cropsey, K.L., Lane, P.S., Hale, G.J., Jackson, D.O., Clark, C.B., Ingersoll, K.S., Islam, M.A., Stitzer, M.L. (2011). Results of a pilot randomized controlled trial of buprenorphine for opioid dependent women in the criminal justice system. *Drug and Alcohol Dependence, 119*(3), 172-178.

Fudala, P.J., Bridge, T.P., Herbert, S., Williford, W.O., Chiang, C.N., Jones, K., . . . Tusel, D. (2003). Office-based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. *The New England Journal of Medicine, 349*(10), 949-958.

Kakko, J., Svanborg, K.D., Kreek, M.J., & Heilig, M. (2003). 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: A randomised, placebo-controlled trial. *Lancet, 361*(9358), 662-668.

Krook, A.L., Brørs, O., Dahlberg, J., Grouff, K., Magnus, P., Røysamb, E., & Waal, H. (2002). A placebo-controlled study of high dose buprenorphine in opiate dependents waiting for medication-assisted rehabilitation in Oslo, Norway. *Addiction,* 97(5), 533-542.

Liebschutz, J.M., Crooks, D., Herman, D., Anderson, B., Tsui, J., Meshesha, L.Z., Dossabhoy, S., Stein, M. (2014). Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *Jama Internal Medicine, 174*(8), 1369-76.

Ling, W., Charuvastra, C., Collins, J.F., Batki, S., Brown, L.S., Kintaudi, P., . . . Segal, D. (1998). Buprenorphine maintenance treatment of opiate dependence: A multicenter, randomized clinical trial. *Addiction, 93*(4), 475.

Lucas, G. M., Chaudhry, A., Hsu, J., Woodson, T., Lau, B., Olsen, Y., Keruly, J. C., ... Moore, R. D. (2010). Clinic-based treatment of opioid-dependent HIV-infected patients versus referral to an opioid treatment program: A randomized trial. *Annals of Internal Medicine, 152,* 11, 704-711.

Rosenthal, R.N., Ling, W., Casadonte, P., Vocci, F., Bailey, G.L., Kampman, K., ... & Beebe, K.L. (2013). Buprenorphine implants for treatment of opioid dependence: Randomized comparison to placebo and sublingual buprenorphine/naloxone. *Addiction, 108*(12), 2141-2149.

Injectable naltrexone for opiates (for individuals in the criminal justice system)

Substance Use Disorders: Medication-assisted Treatment

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Long-acting injectable naltrexone is used as an alcohol or opiate antagonist to treat alcohol or opiate dependence. Naltrexone is an antagonist that blocks the euphoric effects of alcohol or opiates, and patients do not develop tolerance or experience withdrawal symptoms when they stop taking the drug. It is intended to reduce cravings and prevent relapse. Patients also receive counseling therapies such as cognitive behavioral treatment or motivational enhancement therapy. Injections are typically administered monthly for one to six months. Our benefit-cost estimates assume one full year of treatment and one corresponding full year of effectiveness.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,724
Participants	$1,127
Others	$2,163
Indirect	($4,698)
Total benefits	$316
Net program cost	($17,166)
Benefits minus cost	($16,849)

Benefit to cost ratio	$0.02
Benefits minus costs	($16,849)
Chance the program will produce benefits greater than the costs	1 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$800	$1,688	$400	$2,888
Labor market earnings associated with opioid drug abuse or dependence	$794	$338	$0	$0	$1,132
Health care associated with opioid drug abuse or dependence	$68	$474	$475	$237	$1,254
Mortality associated with opioids	$265	$113	$0	$3,248	$3,626
Adjustment for deadweight cost of program	$0	$0	$0	($8,583)	($8,583)
Totals	$1,127	$1,724	$2,163	($4,698)	$316

[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.

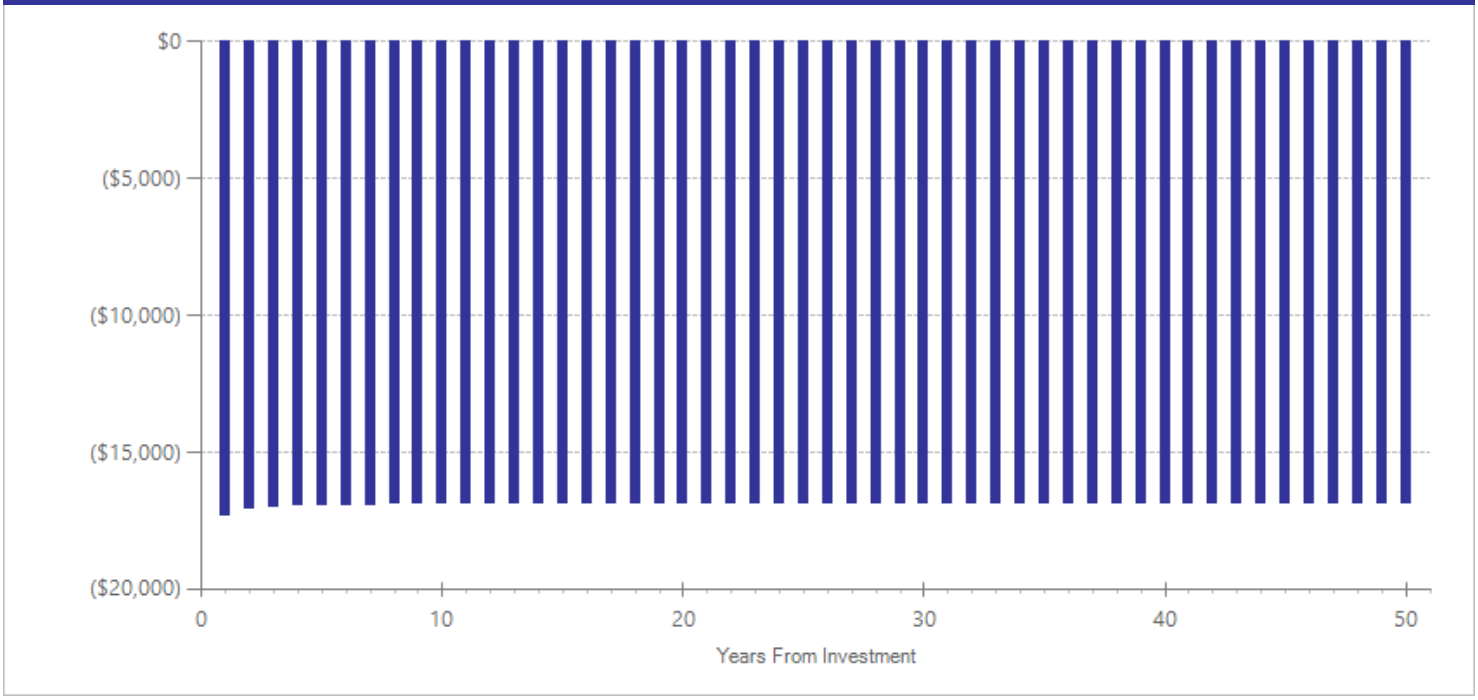
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$16,356	2015	Present value of net program costs (in 2018 dollars)	($17,166)
Comparison costs	$0	2015	Cost range (+ or -)	10 %

From January to June of 2015, Medicaid in Washington State spent an average of $1,363.03 per patient per month on injectable naltrexone treatment for alcohol and opiate dependence. We assume an average treatment period of about 12 months. This information is based on personal communication with Donna Sullivan at Washington Health Care Authority.

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.

Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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	44	2	169	-0.218	0.208	44	0.000	0.000	45	-0.218	0.294
Opioid use disorder	44	2	169	-0.594	0.248	44	0.000	0.000	45	-0.594	0.017

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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.

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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.

Citations Used in the Meta-Analysis

Lee, J.D., McDonald, R., Grossman, E., McNeely, J., Laska, E., Rotrosen, J., & Gourevitch, M.N. (2015). Opioid treatment at release from jail using extended-release naltrexone: A pilot proof-of-concept randomized effectiveness trial. *Addiction, 110*(6), 1008-1014.

Lee, J.D., Friedmann, P.D., Kinlock, T.W., Nunes, E.V., Boney, T.Y., Hoskinson, R.A., . . . O'Brien, C.P. (2016). Extended-release naltrexone to prevent opioid relapse in criminal justice offenders. *New England Journal of Medicine, 374*(13), 1232-1242.

Injectable naltrexone for opiates

Substance Use Disorders: Medication-assisted Treatment

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Long-acting injectable naltrexone is used as an alcohol or opiate antagonist to treat alcohol or opiate dependence. Naltrexone is an antagonist that blocks the euphoric effects of alcohol or opiates, and patients do not develop tolerance or experience withdrawal symptoms when they stop taking the drug. It is intended to reduce cravings and prevent relapse. Patients also receive counseling therapies such as cognitive behavioral treatment or motivational enhancement therapy. Injections are typically administered monthly for one to six months. Our benefit-cost estimates assume one full year of treatment and one corresponding full year of effectiveness.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1,148
Participants	$1,409
Others	$586
Indirect	($4,176)
Total benefits	($1,032)
Net program cost	($17,166)
Benefits minus cost	($18,197)

Benefit to cost ratio	($0.06)
Benefits minus costs	($18,197)
Chance the program will produce benefits greater than the costs	0 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$1
Property loss associated with problem alcohol use	$0	$0	$0	$0	$0
Labor market earnings associated with opioid drug abuse or dependence	$919	$391	$0	$0	$1,310
Health care associated with opioid drug abuse or dependence	$83	$584	$586	$292	$1,545
Mortality associated with opioids	$407	$173	$0	$4,115	$4,696
Adjustment for deadweight cost of program	$0	$0	$0	($8,583)	($8,583)
Totals	$1,409	$1,148	$586	($4,176)	($1,032)

[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.

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[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	$16,356	2015	Present value of net program costs (in 2018 dollars)	($17,166)
Comparison costs	$0	2015	Cost range (+ or -)	10 %

From January to June of 2015, Medicaid in Washington State spent an average of $1,363.03 per patient per month on injectable naltrexone treatment for alcohol and opiate dependence. We assume an average treatment period of 12 months. This information is based on personal communication with Donna Sullivan at Washington Health Care Authority.

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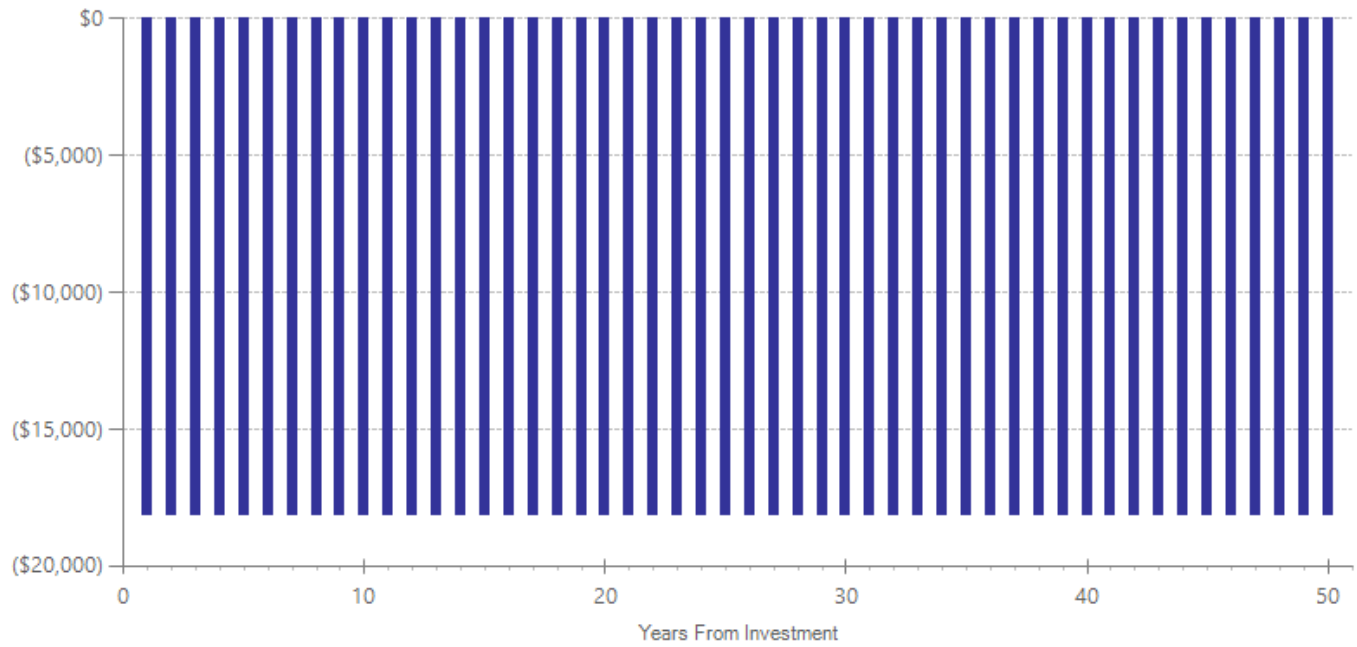
Detailed Annual Cost Estimates Per Participant



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 non-discounted dollars to simplify the “break-even” point from a budgeting perspective. 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.

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
Opioid use disorder	38	5	337	-0.566	0.152	38	0.000	0.000	39	-0.566	0.001
Problem alcohol use	38	1	153	-0.049	0.364	38	0.000	0.000	39	-0.049	0.893

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.

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Citations Used in the Meta-Analysis

Comer, S.D., Sullivan, M.A., Yu, E., Rothenberg, J.L., Kleber, H.D., Kampman, K., . . . O'Brien, C.P. (2006). Injectable, sustained-release naltrexone for the treatment of opioid use disorder: A randomized, placebo-controlled trial. *Archives of General Psychiatry, 63*(2), 210-218.

Krupitsky, E., Nunes, E.V., Ling, W., Illeperuma, A., Gastfriend, D.R., & Silverman, B.L. (2011). Injectable extended-release naltrexone for opioid use disorder: A double-blind, placebo-controlled, multicentre randomised trial. *Lancet, 377*(9776), 1506-1513.

Lee, J.D., McDonald, R., Grossman, E., McNeely, J., Laska, E., Rotrosen, J., & Gourevitch, M.N. (2015). Opioid treatment at release from jail using extended-release naltrexone: A pilot proof-of-concept randomized effectiveness trial. *Addiction, 110*(6), 1008-1014.

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Injectable naltrexone for alcohol

Substance Use Disorders: Medication-assisted Treatment

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Long-acting injectable naltrexone is used as an alcohol or opiate antagonist to treat alcohol or opiate dependence. Naltrexone is an antagonist that blocks the euphoric effects of alcohol or opiates, and patients do not develop tolerance or experience withdrawal symptoms when they stop taking the drug. It is intended to reduce cravings and prevent relapse. Patients also receive counseling therapies such as cognitive behavioral treatment or motivational enhancement therapy. Injections are typically administered monthly for one to six months. Our benefit-cost estimates assume one full year of treatment and one corresponding full year of effectiveness.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$243
Participants	$560
Others	$7
Indirect	($8,516)
Total benefits	($7,706)
Net program cost	($17,166)
Benefits minus cost	($24,872)

Benefit to cost ratio	($0.45)
Benefits minus costs	($24,872)
Chance the program will produce benefits greater than the costs	0 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). 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.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1] Benefits to:

	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with alcohol abuse or dependence	$553	$235	$0	$0	$788
Health care associated with alcohol abuse or dependence	$1	$5	$6	$3	$14
Property loss associated with alcohol abuse or dependence	$1	$0	$1	$0	$2
Mortality associated with alcohol	$5	$2	$0	$65	$72
Adjustment for deadweight cost of program	$0	$0	$0	($8,583)	($8,583)
Totals	$560	$243	$7	($8,516)	($7,706)

[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.

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Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$16,356	2015	Present value of net program costs (in 2018 dollars)	($17,166)
Comparison costs	$0	2015	Cost range (+ or -)	10 %

From January to June of 2015, Medicaid in Washington State spent an average of $1,363.03 per patient per month on injectable naltrexone treatment for alcohol and opiate dependence. We assume an average treatment period of 12 months. This information is based on personal communication with Donna Sullivan at Washington Health Care Authority.

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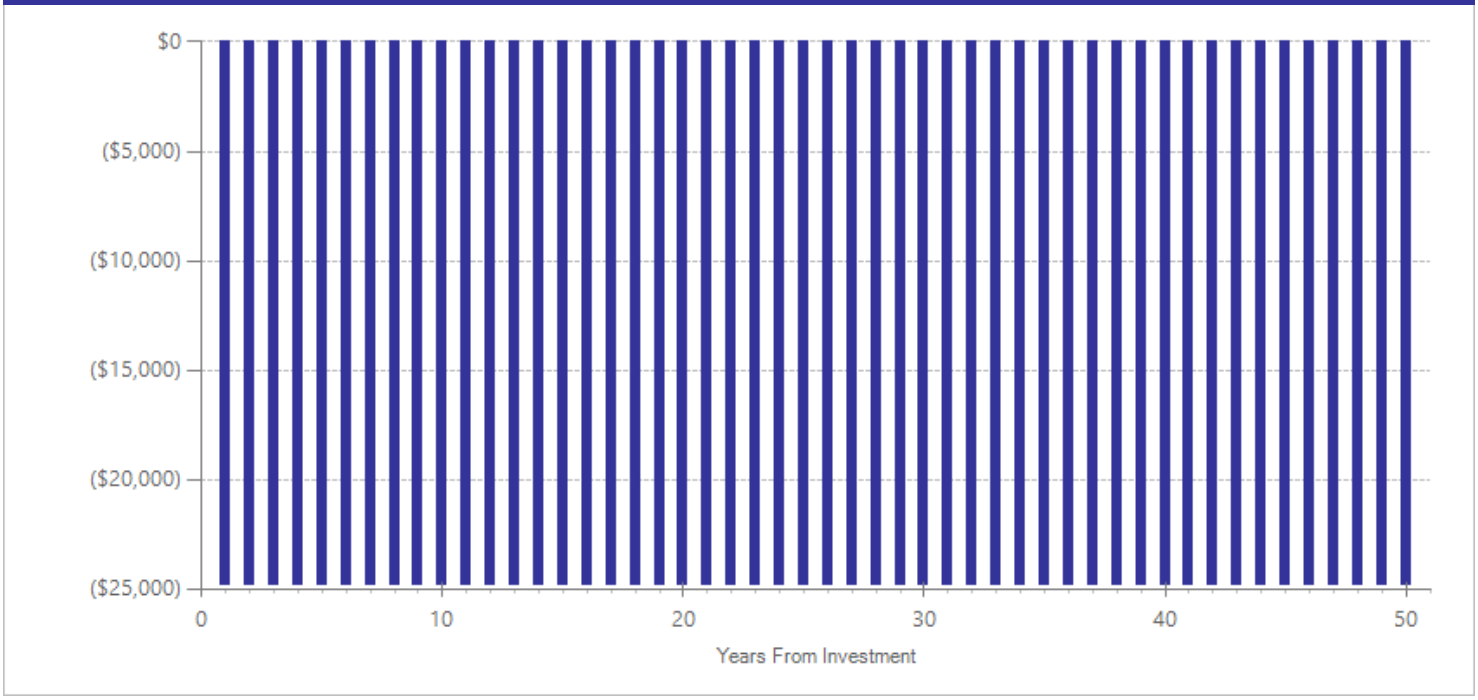
Detailed Annual Cost Estimates Per Participant



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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
Alcohol use disorder	45	5	627	-0.133	0.044	45	0.000	0.000	46	-0.133	0.003

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.

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Citations Used in the Meta-Analysis

Finigan, M.W., Perkins, T., Zold-Kilbourn, P., Parks, J., & Stringer, M. (2011). Preliminary evaluation of extended-release naltrexone in Michigan and Missouri drug courts. *Journal of Substance Abuse Treatment, 41*(3), 288-293.

Garbutt, J.C., Kranzler, H.R., O'Malley, S.S., Gastfriend, D.R., Pettinati, H.M., Silverman, B.L., . . . Erich, E.W. (2005). Efficacy and tolerability of long-acting injectable naltrexone for alcohol use disorder: A randomized controlled trial. *JAMA, 293*(13), 1617-1625.

Kranzler, H.R., Wesson, D.R., & Billot, L. (2004). Naltrexone depot for treatment of alcohol use disorder: A multicenter, randomized, placebo-controlled clinical trial. *Alcoholism: Clinical and Experimental Research, 28*(7), 1051-1059.

Kranzler, H.R., Modesto-Lowe, V., & Nuwayser, E.S. (1998). Sustained-release naltrexone for alcoholism treatment: A preliminary study. *Alcoholism: Clinical and Experimental Research, 22*(5), 1074-1079.

Pettinati, H.M., Kampman, K.M., Lynch, K.G., Dundon, W.D., Mahoney, E.M., Wierzbicki, M.R., & O'Brien, C.P. (2014). A pilot trial of injectable, extended-release naltrexone for the treatment of co-occurring cocaine and alcohol use disorder. *The American Journal on Addictions, 23*(6), 591-597.

Adolescent Community Reinforcement Approach (A-CRA)

Substance Use Disorders: Treatment for Youth

Literature review updated September 2018.

Program Description: Adolescent Community Reinforcement Approach (A-CRA) is a behavioral intervention that aims to support recovery from substance use disorders. A-CRA targets youth aged 12 to 25 years old with clinical diagnosis of a substance use disorder. The A-CRA model has guidelines for three types of sessions: adolescents alone, caregivers alone, and adolescents and caregivers together. A participant's specific needs are determined and then inform which among the 17 A-CRA components a youth would receive. These components encourage problem-solving skills to cope with stressors, communication skills, and participation in positive social and recreational activities.

In the included study, participants were homeless youth who received 12 weekly individual sessions with a trained provider. The comparison youth were referred to usual services found in a community drop-in center.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Crime	1	81	-0.275	0.193	19	-0.275	0.154
Externalizing behavior symptoms	1	81	-0.097	0.193	19	-0.097	0.615
Internalizing symptoms	1	81	-0.362	0.194	19	-0.362	0.062
Major depressive disorder	1	81	-0.405	0.194	19	-0.405	0.037
Substance use disorder	1	81	-0.396	0.226	19	-0.396	0.080

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Citations Used in the Meta-Analysis

Slesnick, N., Prestopnik, J.L., Meyers, R.J., & Glassman, M. (2007). Treatment outcome for street-living, homeless youth. *Addictive Behaviors, 32*(6), 1237-1251.

MET/CBT-5 for youth marijuana use

Substance Use Disorders: Treatment for Youth

Literature review updated February 2015.

Program Description: This is a five-session treatment composed of two individual sessions of Motivational Enhancement Therapy (MET) and three weekly group sessions of Cognitive-Behavioral Therapy (CBT) for youth who misuse substances. The MET sessions focus on increasing their motivation and commitment to change. In the CBT sessions, participants learn skills to cope with problems and meet needs in ways that do not involve turning to marijuana or alcohol.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Crime	1	174	-0.295	0.198	17	-0.295	0.136
Substance use disorder	1	174	-0.171	0.198	17	-0.171	0.388

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Citations Used in the Meta-Analysis

Ramchand, R., Griffin, B.A., Suttorp, M., Harris, K.M., & Morral, A. (2011). Using a cross-study design to assess the efficacy of motivational enhancement therapy-cognitive behavioral therapy 5 (MET/CBT5) in treating adolescents with cannabis-related disorders. *Journal of Studies on Alcohol and Drugs, 72*(3), 380-9.

Community Reinforcement and Family Training (CRAFT) for engaging clients in treatment

Substance Use Disorders: Treatment for Adults

Literature review updated September 2016.

Program Description: Community Reinforcement and Family Training (CRAFT) is a program for significant others and family members of those with substance abuse or dependence. In 12 to 14 ndividual sessions, family and friends are taught effective strategies for helping their loved one to change, to enroll in treatment, to feel better themselves.

Meta-Analysis of Program Effects

Outcomes measured	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
				ES	SE	Age	ES	p-value
Engagement/Retention	Primary	5	138	1.223	0.324	40	1.223	0.001
Illicit drug use disorder	Primary	1	16	0.000	0.000	40	0.000	1.000
Major depressive disorder	Secondary	1	45	-0.068	0.254	40	-0.068	0.788

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Citations Used in the Meta-Analysis

Bischof, G., Iwen, J., Freyer-Adam, J., & Rumpf, H.J. (2016). Efficacy of the Community Reinforcement and Family Training for concerned significant others of treatment-refusing individuals with alcohol dependence: A randomized controlled trial. *Drug and Alcohol Dependence, 163,* 179-85.

Brigham, G.S., Slesnick, N., Winhusen, T.M., Lewis, D.F., Guo, X., & Somoza, E. (2014). A randomized pilot clinical trial to evaluate the efficacy of Community Reinforcement and Family Training for Treatment Retention (CRAFT-T) for improving outcomes for patients completing opioid detoxification. *Drug and Alcohol Dependence, 138,* 240-243.

Kirby, K.C., Marlowe, D.B., Festinger, D.S., Garvey, K.A., & LaMonaca, V. (1999). Community reinforcement training for family and significant others of drug abusers: a unilateral intervention to increase treatment entry of drug users. *Drug and Alcohol Dependence, 56*(1), 85-96.

Miller, W.R., Meyers, R.J., & Tonigan, J.S. (1999). Engaging the unmotivated in treatment for alcohol problems: A comparison of three intervention strategies for intervention through family members. *Journal of Consulting and Clinical Psychology, 67*(5), 688-697.

Sisson, R.W., & Azrin, N.H. (1986). Family-member involvement to initiate and promote treatment of problem drinkers. *Journal of Behavior Therapy and Experimental Psychiatry, 17*(1), 15-21.

Dialectical behavior therapy (DBT) for co-morbid substance use disorder and serious mental illness

Substance Use Disorders: Treatment for Adults

Literature review updated May 2014.

Program Description: Dialectical behavior therapy (DBT) is a cognitive-behavioral treatment originally developed by Marsha Linehan at the University of Washington to treat those with severe mental disorders including chronically suicidal individuals often suffering from borderline personality disorder. DBT for substance abusers was developed by Dr. Linehan and colleagues to treat individuals with co-occurring substance use disorders and borderline personality disorder. DBT for substance abusers focuses on the following five main objectives: (1) motivating patients to change dysfunctional behaviors, (2) enhancing patient skills, (3) ensuring the new skills are used in daily life, (4) structuring the client's environment, and (5) training and consultation to improve the counselor's skills. For substance abusers, the primary target of the intervention is the substance abuse and specific goals include reducing abuse, alleviating withdrawal symptoms, reducing cravings, avoiding opportunities and triggers for substance abuse, and creating a healthy environment and community. Treatment generally includes 90 minute sessions twice per week for 12 months.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Alcohol use disorder	1	27	0.149	0.264	34	0.149	0.573
Cannabis use	1	27	-0.090	0.263	34	-0.090	0.732
Illicit drug use disorder	2	39	-0.024	0.348	34	-0.024	0.946
Psychiatric symptoms	1	27	-0.596	0.270	34	-0.596	0.027

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Citations Used in the Meta-Analysis

Linehan, M.M., Schmidt, H., Dimeoff, L.A., Craft, J.C., Kanter, J. & Comtois, K.A. (1999). Dialectical Behavior Therapy for Patients With Borderline Personality Disorder and Drug-Dependence. *American Journal on Addictions, 8*(4), 279-292.

van den Bosch, L., Koeter, M., Stijnen, T., Verheul, R., & van den Brink, W. (2005). Sustained efficacy of dialectical behaviour therapy for borderline personality disorder. *Behaviour Research and Therapy, 43*(9), 1231-1241.

van den Bosch, L.M.C., Verheul, R., Schippers, G.M., & van den Brink, W. (2002). Dialectical Behavior Therapy of Borderline Patients With and Without Substance Use Problems: Implementation and Long-Term Effects. *Addictive Behaviors, 27*(6), 911-923.

Family Behavior Therapy (FBT)

Substance Use Disorders: Treatment for Adults

Literature review updated May 2014.

Program Description: Family Behavior Therapy is a standalone behavioral treatment based on the Community Reinforcement Approach aimed at reducing substance use. Participants attend sessions with at least one family member, typically a parent or cohabitating partner. The treatment consists of several parts including behavioral contracting, skills to reduce interaction with individuals and situations related to drug use, impulse and urge control, communication skills, and vocational or educational training. Treatment in the included studies occurred over a 6- to 12-month period. Our findings reflect only adults treated in the program and exclude results for adolescents.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Illicit drug use disorder	1	38	-0.670	0.251	30	-0.670	0.008

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Citations Used in the Meta-Analysis

Azrin, N.H., McMahon, P.T., Donahue, B., Besalel, V., Lapinski, K.J., Kogan, E.S., Acierno, R.E., & Galloway, E. (1994). Behavior Therapy for Drug Abuse: A Controlled Treatment Outcome Study. *Behavioral Research and Therapy, 32*(8), 857-866.

Motivational Enhancement Therapy (MET) (problem drinkers)

Substance Use Disorders: Treatment for Adults

Literature review updated May 2014.

Program Description: Motivational Enhancement Therapy was designed as a stand-alone intervention, delivered in four individual sessions over six weeks. MET seeks to build motivation to change, strengthen the commitment to change, develop a plan for change, and review of progress and motivation.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Alcohol use disorder	1	42	-0.449	0.353	38	-0.449	0.203

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Citations Used in the Meta-Analysis

Sellman, J.D., Sullivan, P.F., Dore, G.M., Adamson, S.J., & MacEwan, I. (2001). A randomized controlled trial of motivational enhancement therapy (MET) for mild to moderate alcohol dependence. *Journal of Studies on Alcohol, 62*(3), 389-396.

Early initiation of methadone treatment for opioid use disorder (compared to referral to treatment only)

Substance Use Disorders: Treatment for Adults

Literature review updated December 2016.

Program Description: Studies in this analysis compared early initiation of methadone therapy to simply referring patients to treatment. Three studies examined the effect of initiating methadone treatment in prison prior to release, while one study examined the effect of providing "interim" methadone treatment to people on waitlists for community programs. The studies measured subsequent entry into community-based opioid treatment within a brief follow-up period.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Engagement/Retention	4	404	1.185	0.306	39	1.185	0.001

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Citations Used in the Meta-Analysis

Kinlock, T., Gordon, M., Schwartz, R., O'Grady, K., Fitzgerald, T., & Wilson, M. (2007). A randomized clinical trial of methadone maintenance for prisoners: Results at 1-month post-release. *Drug and Alcohol Dependence, 91*(2-3), 220-227.

McKenzie, M., Zaller, N., Dickman, S., Green, T., Parihk, A., Friedman, P., & Rich, J. (2012). A Randomized Trial of Methadone Initiation Prior to Release from Incarceration. *Substance Abuse, 33*(1), 19-29.

Rich, J.D., McKenzie, M., Larney, S., Wong, J.B., Tran, L., Clarke, J., . . . Zaller, N. (2015). Methadone continuation versus forced withdrawal on incarceration in a combined US prison and jail: a randomised, open-label trial. *Lancet (london, England), 386*(9991), 350-9.

Schwartz, R.P., Highfield, D.A., Jaffe, J.H., Brady, J.V., Butler, C.B., Rouse, C.O., . . . Battjes, R.J. (2006). A randomized controlled trial of interim methadone maintenance. *Archives of General Psychiatry, 63*(1), 102-9.

Early initiation of buprenorphine treatment for opioid use disorder (compared to referral to treatment only)

Substance Use Disorders: Treatment for Adults

Literature review updated December 2016.

Program Description: Studies included in this analysis compared early initiation of buprenorphine treatment to simply referring patients to treatment. The interventions provided temporary, early treatment initiation at a university HIV clinic, an emergency department, a hospital, and a prison. The studies measured subsequent entry into community-based opioid treatment within a short follow-up period.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Engagement/Retention	4	336	0.994	0.292	38	0.994	0.001

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Citations Used in the Meta-Analysis

D'Onofrio, G., Pantalon, M.V., Owens, P.H., Bernstein, S.L., O'Connor, P.G., Fiellin, D.A., . . . & Fiellin, D.A. (2015). Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: A randomized clinical trial. *JAMA, 313*(16), 1636-1644.

Gordon, M.S., Kinlock, T.W., Schwartz, R.P., Fitzgerald, T.T., O'Grady, K.E., & Vocci, F.J. (2014). A randomized controlled trial of prison-initiated buprenorphine: prison outcomes and community treatment entry. *Drug and Alcohol Dependence, 142*, 33-40.

Liebschutz, J.M., Crooks, D., Herman, D., Anderson, B., Tsui, J., Meshesha, L.Z., . . . Stein, M. (2014). Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *Jama Internal Medicine, 174*(8), 1369-76.

Lucas, G.M., Chaudhry, A., Hsu, J., Woodson, T., Lau, B., Olsen, Y., . . . Moore, R.D. (2010). Clinic-based treatment of opioid-dependent HIV-infected patients versus referral to an opioid treatment program: A randomized trial. *Annals of Internal Medicine, 152(11),* 704-711.

Parent-Child Assistance Program

Substance Use Disorders: Treatment for Adults

Literature review updated August 2017.

Program Description: The Parent-Child Assistance Program provides home visits to new mothers of drug- or alcohol-exposed infants. Visitors are paraprofessional client advocates with similar adverse life experiences as the mothers. Visits are weekly for the first six weeks after birth, then bi-weekly or more frequently as needed for up to three years.
More information on this program is available at:
http://depts.washington.edu/pcapuw/inhouse/PCAP_Manual_3_23_15.pdf.

Meta-Analysis of Program Effects

Outcomes measured	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
				ES	SE	Age	ES	p-value
Repeat birth	Primary	1	54	0.000	0.331	30	0.000	1.000
Repeat pregnancy	Primary	1	54	0.035	0.297	30	0.096	0.747
Substance use disorder	Primary	1	23	-0.046	0.245	30	-0.091	0.698
Out-of-home placement	Secondary	1	54	0.371	0.310	3	0.371	0.231
Preschool test scores	Secondary	1	23	0.047	0.289	3	0.130	0.654
Well-child visits	Secondary	1	54	0.067	0.556	3	0.186	0.746

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Citations Used in the Meta-Analysis

Ernst, CC., Grant, T.M., Streissguth, A.P., & Sampson, P.D. (1999). Intervention with high-risk alcohol and drug-abusing mothers: II. Three-year findings from the Seattle Model of Paraprofessional Advocacy. *Journal of Community Psychology, 27*(1), 19-38.

Kartin, D., Grant, T.M., Streissguth, A.P., Sampson, P.D., & Ernst, C.C. (2002). Three-year developmental outcomes in children with prenatal alcohol and drug exposure. *Pediatric Physical Therapy : the Official Publication of the Section on Pediatrics of the American Physical Therapy Association, 14*(3), 145-53.

Wraparound services for pregnant/postpartum women in treatment for substance use disorders

Substance Use Disorders: Treatment for Adults

Literature review updated September 2016.

Program Description: Wraparound was originally developed as an intensive, individualized care planning and management process for children with complex emotional and behavioral needs. The single study in the analysis applied the same approach to pregnant women in in treatment for substance use disorders. During the wraparound process, a team of people who are relevant to the life of the woman collaboratively develop an individualized plan of care, implement this plan, monitor the efficacy of the plan, and work towards success over time. The wraparound plan typically includes formal services and interventions, together with community services and interpersonal support and assistance provided by friends, kin, and other people drawn from the family's social networks. After the initial plan is developed, the team continues to meet to monitor progress and revise interventions and strategies when needed.

Meta-Analysis of Program Effects

Outcomes measured	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
				ES	SE	Age	ES	p-value
Post-traumatic stress	Primary	1	35	0.122	0.251	28	0.122	0.628
Substance use disorder	Primary	1	43	0.072	0.218	28	0.072	0.742
Child abuse and neglect	Secondary	1	35	-0.030	0.310	1	-0.030	0.923
Out-of-home placement	Secondary	1	35	0.124	0.335	1	0.124	0.711

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Citations Used in the Meta-Analysis

Teel, M.K, Rosenberg, S.A., Taylor, J.A., Rinehart, D.J., Blumhage, R. Weitzenkamp, D. (n.d.) *Improving mental health and family outcomes through high fidelity wraparound with mothers in early recovery.* Unpublished manuscript.

Buprehorphine implants

Substance Use Disorders: Medication-assisted Treatment

Literature review updated December 2016.

Program Description:

Meta-Analysis of Program Effects							
Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Opioid use disorder	2	222	-0.538	0.156	36	-0.538	0.001

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Citations Used in the Meta-Analysis

Ling, W., Casadonte, P., Bigelow, G., Kampman, K.M., Patkar, A., Bailey, G.L., . . . Beebe, K.L. (2010). Buprenorphine implants for treatment of opioid use disorder: a randomized controlled trial. *JAMA, 304*(14), 1576-1583.

Rosenthal, R.N., Ling, W., Casadonte, P., Vocci, F., Bailey, G.L., Kampman, K., . . . Beebe, K.L. (2013). Buprenorphine implants for treatment of opioid use disorder: Randomized comparison to placebo and sublingual buprenorphine/naloxone. *Addiction, 108*(12), 2141-2149.

Naltrexone implants

Substance Use Disorders: Medication-assisted Treatment

Literature review updated December 2016.

Program Description: Implantable naltrexone is an opioid antagonist that blocks the effects of opiates for opioid-dependent patients. Implants are inserted subcutaneously every six months. Patients do not develop tolerance or experience withdrawal symptoms when they stop taking the drug. Patients also receive drug counseling while using implants.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Opioid use disorder	4	247	-0.734	0.046	23	-0.734	0.001

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.

Citations Used in the Meta-Analysis

Krupitsky, E., Zvartau, E., Blokhina, E., Verbitskaya, E., Wahlgren, V., Tsoy-Podosenin, M., . . . Woody, G.E. (2012). Randomized trial of long-acting sustained-release naltrexone implant vs oral naltrexone or placebo for preventing relapse to opioid use disorder. *Archives of General Psychiatry, 69*(9), 973-981.

Kunøe, N., Lobmaier, P., Vederhus, J.K., Hjerkinn, B., Hegstad, S., Gossop, M., . . . Waal, H. (2009). Naltrexone implants after in-patient treatment for opioid use disorder: randomised controlled trial. *The British Journal of Psychiatry, 194*(6), 541-546.

Tiihonen, J., Krupitsky, E., Verbitskaya, E., Blokhina, E., Mamontova, O., Fohr, J., . . . Zwartau, E. (2012). Naltrexone implant for the treatment of polydrug use disorder: A randomized controlled trial. *The American Journal of Psychiatry, 169*(5), 531-536.

Tiurina, A., Krupitsky, E., Zvartau, E., & Woody, G. (2010). Long acting naltrexone implants for heroin use disorder. *European Neuropsychopharmacology, 20*(S1), S79-S80.

Injectable bromocriptine for alcohol

Substance Use Disorders: Medication-assisted Treatment

Literature review updated December 2016.

Program Description: Long-acting injectable bromocriptine is an agonist that treats alcohol dependence. Bromocriptine is intended to alleviate withdrawal symptoms by activating dopamine receptors in the brain. Brief psychosocial interventions for alcohol are permitted, but not standardized between centers. Injections are administered monthly for six months.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Alcohol use disorder	2	212	0.077	0.181	42	0.077	0.672

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.

Citations Used in the Meta-Analysis

Naranjo, C.A., Dongier, M., & Bremner, K.E. (1997). Long-acting injectable bromocriptine does not reduce relapse in alcoholics. *Addiction, 92*(8), 969-978.

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

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