Washington State Institute for Public Policy

Health Care 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.

Lifestyle interventions to prevent diabetes: Long-term, intensive, individual counseling programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: All lifestyle programs target individuals at high risk for developing type 2 diabetes, providing them with counseling and other support. Typical programs in this specific category include three years of active intervention with individual counseling sessions and supervised exercise classes.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$11,628
Participants	$11,435
Others	$3,055
Indirect	$2,753
Total benefits	$28,870
Net program cost	($3,742)
Benefits minus cost	$25,128

Benefit to cost ratio	$7.72
Benefits minus costs	$25,128
Chance the program will produce benefits greater than the costs	100 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 diabetes	$9,690	$4,400	$0	$941	$15,032
Health care associated with diabetes	$1,745	$7,227	$3,055	$3,680	$15,707
Adjustment for deadweight cost of program	$0	$0	$0	($1,869)	($1,869)
Totals	$11,435	$11,628	$3,055	$2,753	$28,870

[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.

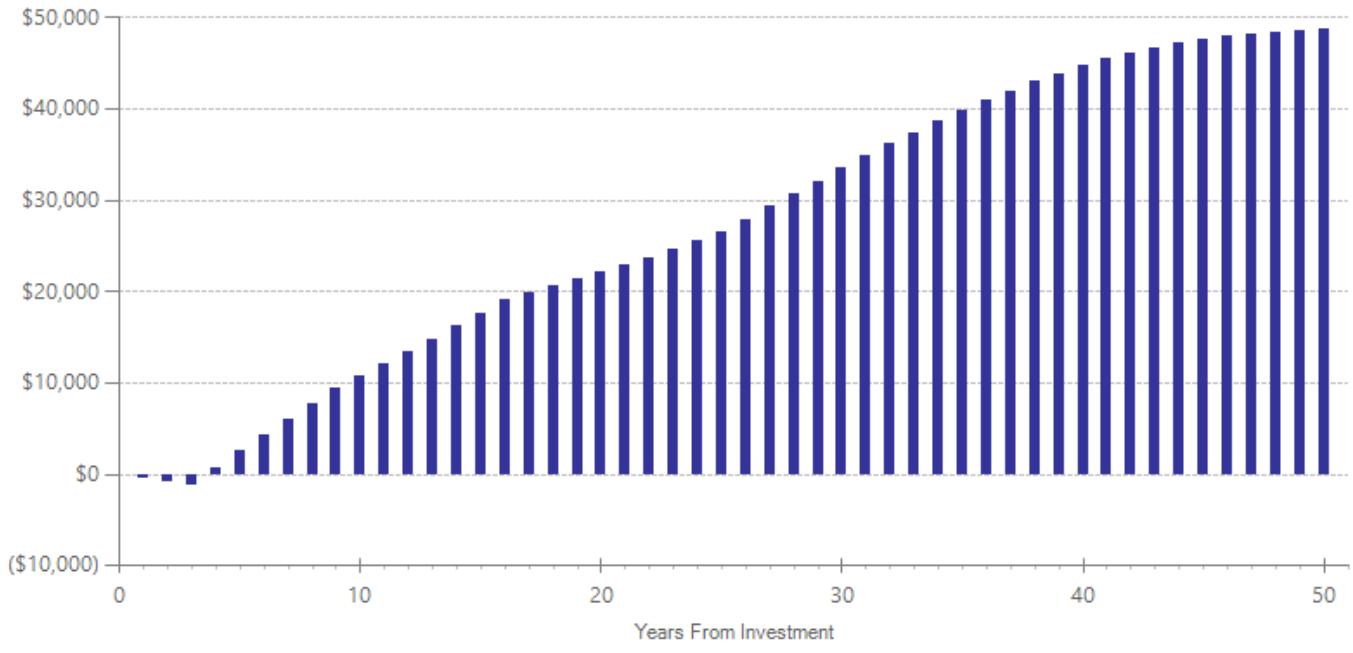
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,287	2014	Present value of net program costs (in 2015 dollars)	($3,742)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

These programs typically last for three years. Per-participant estimates are based on costs observed in the US Diabetes Prevention Program (DPP) trial. WSIPP averaged annual costs for treatment over control, inflated to 2014 dollars.

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	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
Diabetes incidence	2	1344	-0.533	0.098	53	-0.255	0.077	60	-0.533	0.001
Weight change	2	1344	-0.298	0.052	53	0.000	0.054	60	-0.298	0.001
Fasting glucose	2	1344	-0.453	0.053	50	n/a	n/a	n/a	-0.453	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

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Lifestyle interventions to prevent diabetes: Shorter-term programs with group-based counseling

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: All lifestyle diabetes prevention programs target individuals at high risk for developing type 2 diabetes, providing them with counseling and other support. Programs in this specific category are shorter-term, lower-cost, group-based counseling programs provided in community settings (e.g., YMCA's, churches).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$5,048
Participants	$6,378
Others	$1,447
Indirect	$1,304
Total benefits	$14,178
Net program cost	($441)
Benefits minus cost	$13,737

Benefit to cost ratio	$32.16
Benefits minus costs	$13,737
Chance the program will produce benefits greater than the costs	81 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 diabetes	$5,801	$2,634	$0	$341	$8,776
Health care associated with diabetes	$577	$2,414	$1,447	$1,182	$5,621
Adjustment for deadweight cost of program	$0	$0	$0	($219)	($219)
Totals	$6,378	$5,048	$1,447	$1,304	$14,178

[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.

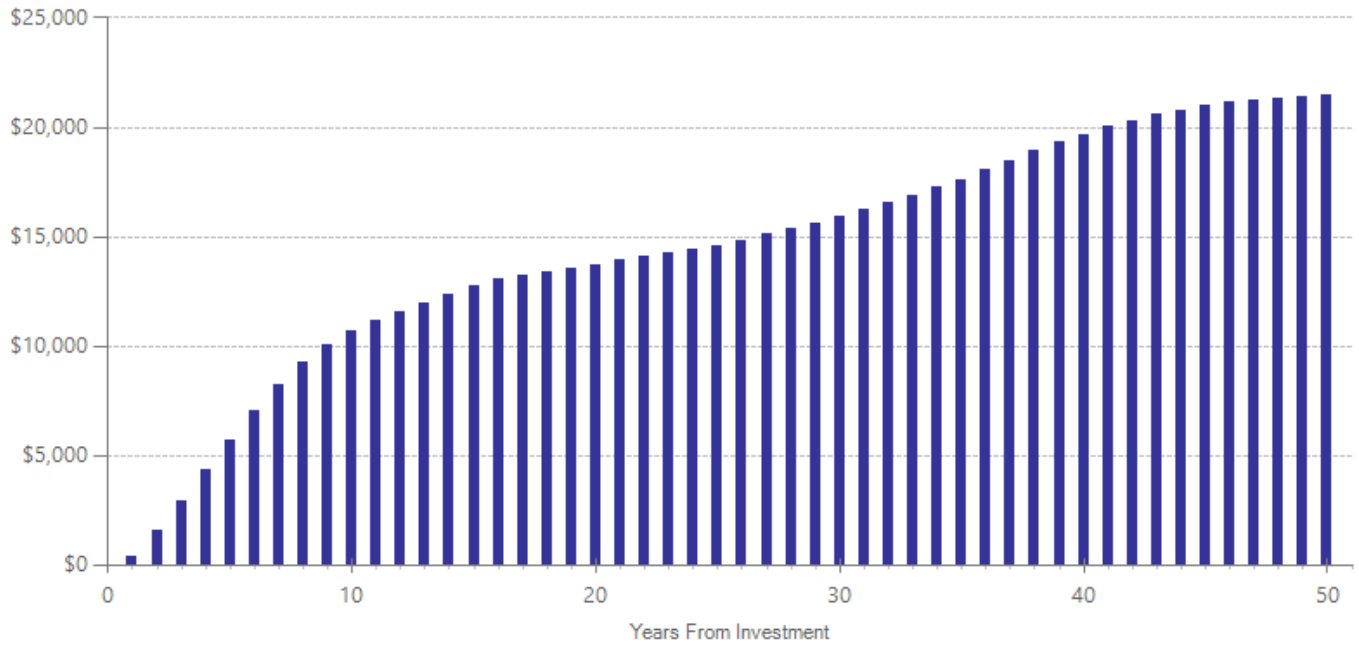
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$440	2014	Present value of net program costs (in 2015 dollars)	($441)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

These programs typically last for up to one year. Per-participant costs are based on a 2014 Washington Department of Health Diabetes Epidemic and Action Report (p. 133), accessed from: http://www.doh.wa.gov/Portals/1/Documents/Pubs/345-342-DiabetesEpidemicActionReport.pdf.

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	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
Weight change	6	547	-0.168	0.101	53	-0.052	0.101	60	-0.235	0.001
Fasting glucose	7	763	-0.292	0.074	50	n/a	n/a	n/a	-0.292	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

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Behavioral interventions to reduce obesity for adults: High-intensity, in-person programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Behavioral interventions for obesity include behavioral counseling, therapy, and educational components, and often include diet and exercise components as well. For this review of interventions for obese adults, we excluded studies that targeted diabetic populations as well as those aimed at preventing obesity.
Programs in this specific category are delivered to obese adults, and conducted face-to-face, with 12 or more sessions a year for 12 months or more.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$535	Benefit to cost ratio	$4.04
Participants	$928	Benefits minus costs	$1,877
Others	$311	Chance the program will produce benefits greater than the costs	61 %
Indirect	$720		
Total benefits	$2,494		
Net program cost	($617)		
Benefits minus cost	$1,877		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 obesity	$867	$394	$0	$958	$2,218
Health care associated with obesity	$61	$141	$311	$71	$584
Adjustment for deadweight cost of program	$0	$0	$0	($308)	($308)
Totals	$928	$535	$311	$720	$2,494

[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.

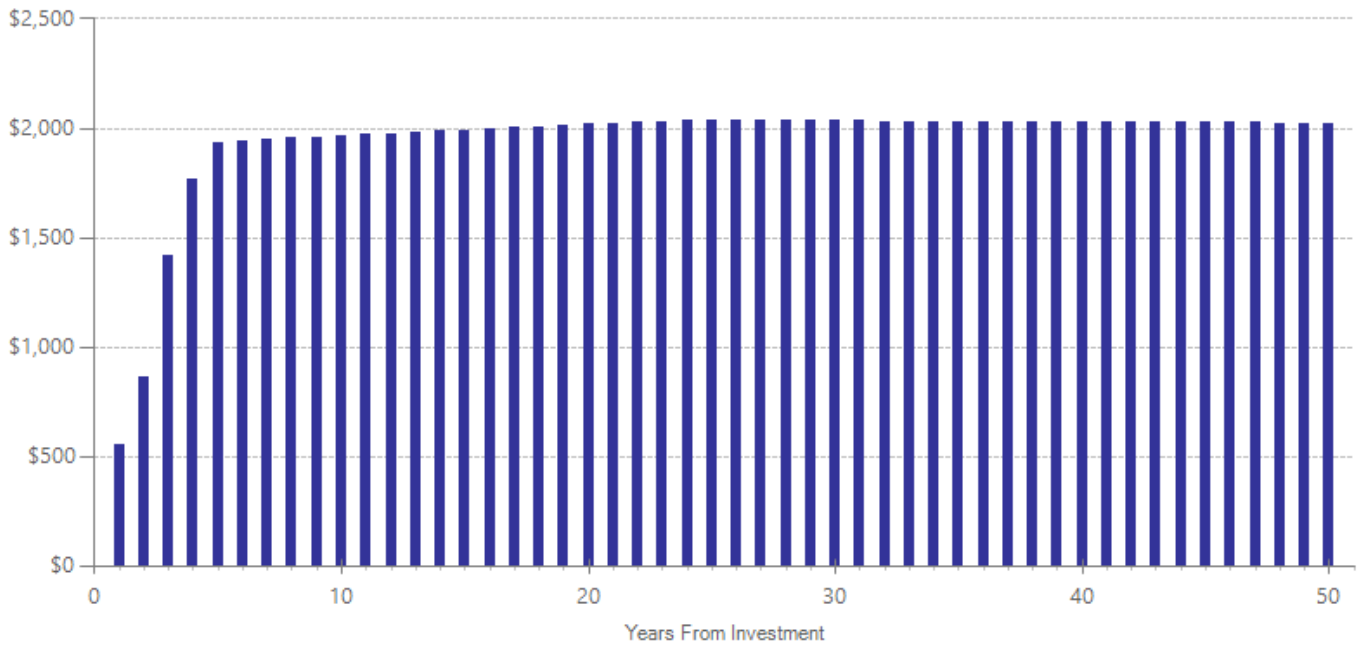
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$313	2014	Present value of net program costs (in 2015 dollars)	($617)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these programs provide approximately 52 contact hours over 24 months, including both group and individual sessions. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists).

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	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
Weight change	12	2070	-0.174	0.050	50	0.000	0.012	55	-0.174	0.001
Diastolic blood pressure	8	1641	-0.340	0.165	50	n/a	n/a	n/a	-0.340	0.040
Systolic blood pressure	8	1641	-0.123	0.047	50	n/a	n/a	n/a	-0.123	0.009
HDL cholesterol	7	986	0.049	0.051	50	n/a	n/a	n/a	0.049	0.343
LDL cholesterol	7	986	-0.011	0.051	50	n/a	n/a	n/a	-0.011	0.827
Obesity	9	1357	-0.238	0.087	50	0.000	0.086	55	-0.238	0.006

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.

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Behavioral interventions to reduce obesity for adults: Remotely-delivered programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Behavioral interventions for obesity include behavioral counseling, therapy, and educational components, and often include diet and exercise components as well. For this review of interventions for obese adults, we excluded studies that targeted diabetic populations as well as those aimed at preventing obesity.

Programs in this specific category are delivered to obese adults, and conducted remotely, usually via computer or phone.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$159
Participants	$291
Others	$94
Indirect	$278
Total benefits	$822
Net program cost	($94)
Benefits minus cost	$728

Benefit to cost ratio	$8.74
Benefits minus costs	$728
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 (2015). 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 obesity	$277	$126	$0	$309	$712
Health care associated with obesity	$14	$33	$94	$16	$157
Adjustment for deadweight cost of program	$0	$0	$0	($47)	($47)
Totals	$291	$159	$94	$278	$822

[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.

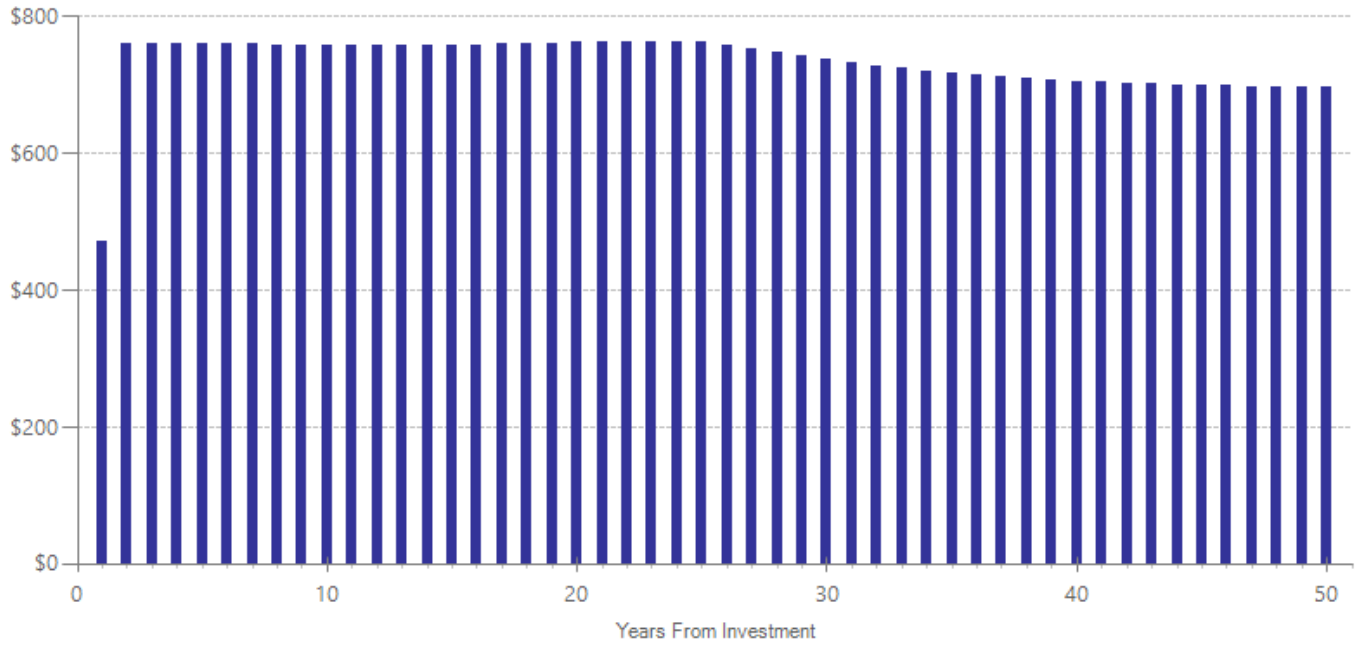
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$94	2014	Present value of net program costs (in 2015 dollars)	($94)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these interventions occur over approximately 18 months. For programs that require intervention staff time, participants received an average of approximately 2.5 contact hours. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists). For the remote programs with "eHealth" technology (web or computer programs, automated phone programs), we estimated costs from the calculations of Ritzwoller, D.P. et al., (2013). Economic analyses of the Be Fit Be Well Program: A weight loss program for community health centers. *Journal of General Internal Medicine, 28*(12), 1581-1588.

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	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
Weight change	9	1092	-0.115	0.046	50	0.000	0.012	52	-0.115	0.013
Diastolic blood pressure	5	627	-0.069	0.056	50	n/a	n/a	n/a	-0.069	0.219
Systolic blood pressure	5	627	-0.101	0.056	50	n/a	n/a	n/a	-0.101	0.073
Obesity	5	608	-0.139	0.057	50	0.000	0.086	52	-0.139	0.015

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

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Cesarean section reduction programs: Multi-faceted hospital-based interventions (private pay population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These interventions encompass bundled reform packages adopted by hospitals in order to change physician decision-making in performing cesarean sections. While the specific components of these bundled reform packages vary, they typically include the adoption of physician best practices, especially guidelines on when cesarean sections should be performed, and the limitation of inductions before 39 weeks of gestation. Most reform packages also attempt to change physician behavior by publishing either their anonymous or identified cesarean section rates via a report card or by creating a physician review board that regularly audits the appropriateness of performed cesarean sections. These packages can also include the recruitment of physicians to serve as local opinion leaders or potentially other clinical or non-clinical interventions.

The benefits presented in the benefit-cost analysis are specific to the privately insured population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$116
Participants	$36
Others	$142
Indirect	$41
Total benefits	$335
Net program cost	($34)
Benefits minus cost	$301

Benefit to cost ratio	$9.86
Benefits minus costs	$301
Chance the program will produce benefits greater than the costs	100 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$5	$4	$2	$11
Health care associated with Cesarean sections	$36	$111	$138	$56	$341
Adjustment for deadweight cost of program	$0	$0	$0	($17)	($17)
Totals	$36	$116	$142	$41	$335

[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.

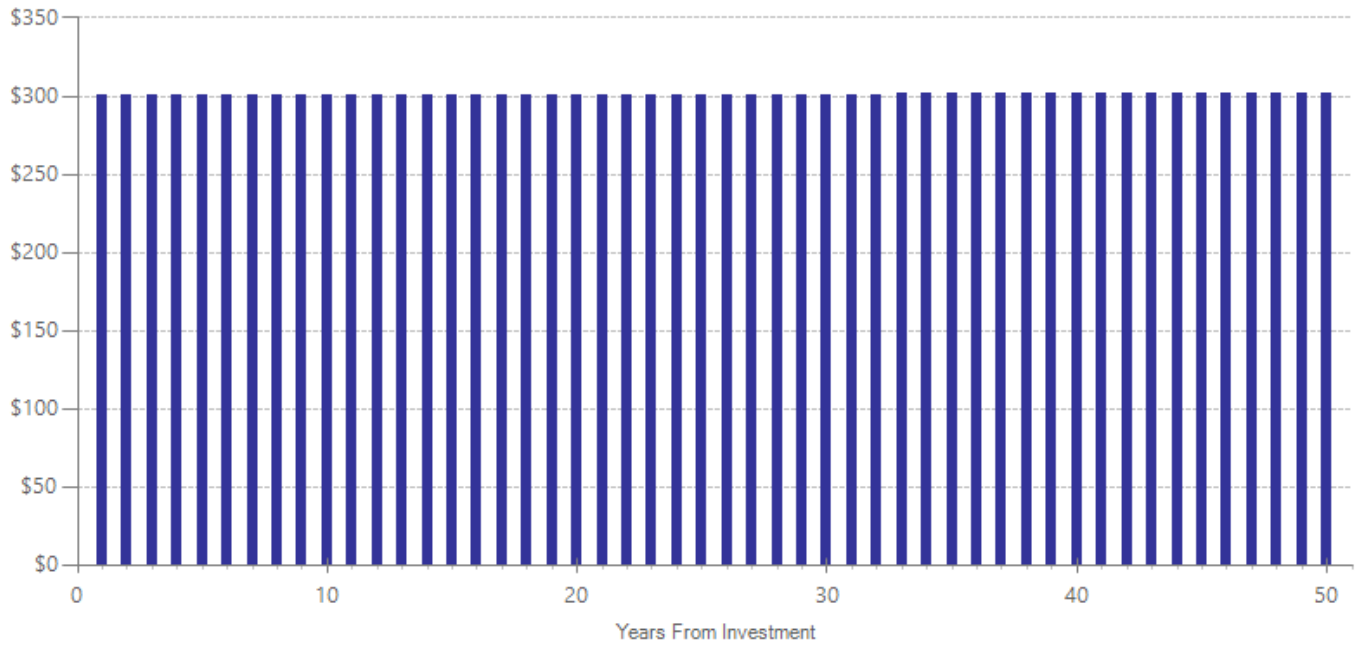
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$34	2014	Present value of net program costs (in 2015 dollars)	($34)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average per-participant cost of these programs was computed as the product of 80 hours per health care provider and average Washington State 2014 hourly wages of the appropriate professionals (typically obstetrician/gynecologists, general practitioners and nurse staff) for training in best practices, implementation of guidelines, and quarterly audit and review of hospital cesarean section rates. The estimate of the required staff hours were taken from Chaillet et al. (2015). A cluster-randomized trial to reduce cesarean delivery rates in Quebec. *New England Journal of Medicine, 372*(18), 1710-1721.

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	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
Cesarean sections	7	115838	-0.243	0.075	26	0.000	0.000	27	-0.243	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.

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Robson, M.S., Scudamore, I.W., & Walsh, S.M. (1996). Using the medical audit cycle to reduce cesarean section rates. American Journal of Obstetrics and Gynecology, 174(1), 199-205.

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Cesarean section reduction programs: Multi-faceted hospital-based interventions (Medicaid population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These interventions encompass bundled reform packages adopted by hospitals in order to change physician decision-making in performing cesarean sections. While the specific components of these bundled reform packages vary, they typically include the adoption of physician best practices, especially guidelines on when cesarean sections should be performed, and the limitation of inductions before 39 weeks of gestation. Most reform packages also attempt to change physician behavior by publishing either their anonymous or identified cesarean section rates via a report card or by creating a physician review board that regularly audits the appropriateness of performed cesarean sections. These packages can also include the recruitment of physicians to serve as local opinion leaders or potentially other clinical or non-clinical interventions.

The benefits presented in the benefit-cost analysis are specific to the Medicaid population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$82
Participants	$26
Others	$100
Indirect	$24
Total benefits	$232
Net program cost	($34)
Benefits minus cost	$198

Benefit to cost ratio	$6.81
Benefits minus costs	$198
Chance the program will produce benefits greater than the costs	100 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$4	$4	$2	$10
Health care associated with Cesarean sections	$25	$78	$96	$39	$239
Adjustment for deadweight cost of program	$0	$0	$0	($17)	($17)
Totals	$26	$82	$100	$24	$232

[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	$34	2014	Present value of net program costs (in 2015 dollars)	($34)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average per-participant cost of these programs was computed as the product of 80 hours per health care provider and average Washington State 2014 hourly wages of the appropriate professionals (typically obstetrician/gynecologists, general practitioners and nurse staff) for training in best practices, implementation of guidelines, and quarterly audit and review of hospital cesarean section rates. The estimate of the required staff hours were taken from Chaillet et al. (2015). A cluster-randomized trial to reduce cesarean delivery rates in Quebec. *New England Journal of Medicine, 372*(18), 1710-1721.

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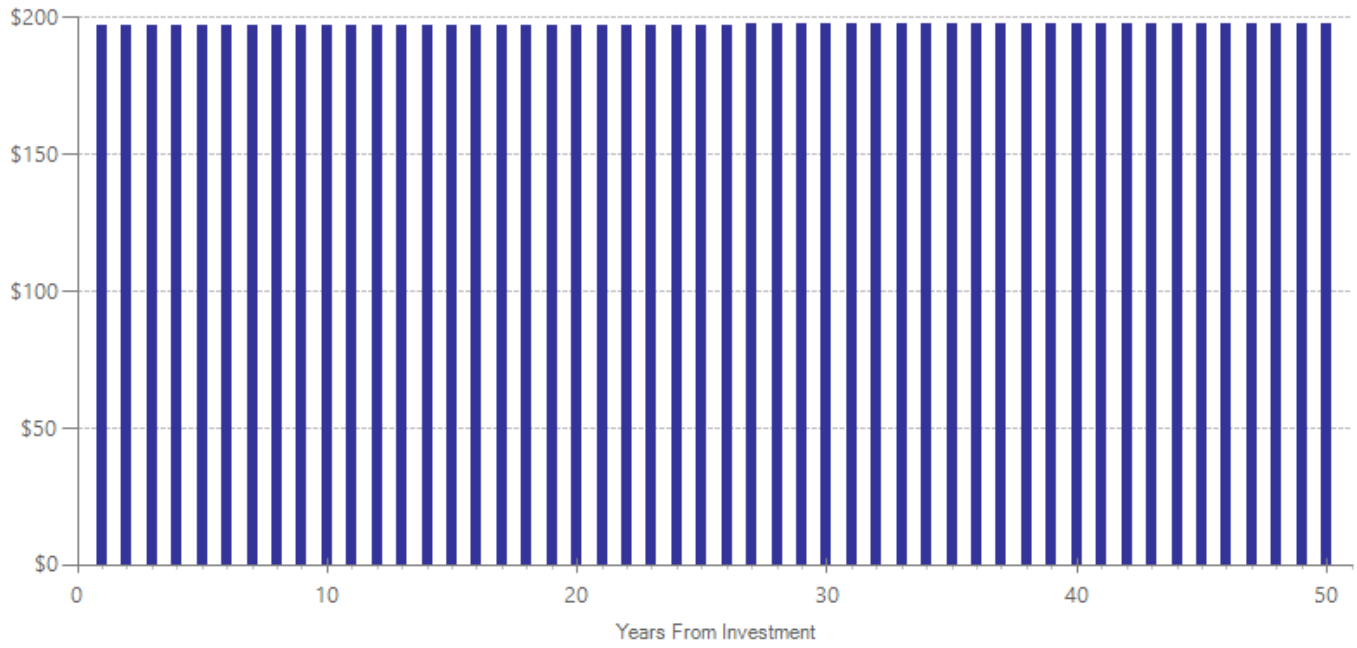
Detailed Annual Cost Estimates Per Participant



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	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
Cesarean sections	7	115838	-0.243	0.075	26	0.000	0.000	27	-0.243	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.

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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.

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Main, E.K. (1999). Reducing cesarean birth rates with data-driven quality improvement activities. Pediatrics, 103, 1, 374-83.

Myers, S.A., & Gleicher, N. (1993). The Mount Sinai cesarean section reduction program: an update after 6 years. Social Science & Medine, 3(10), 1219-22.

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Robson, M.S., Scudamore, I.W., & Walsh, S.M. (1996). Using the medical audit cycle to reduce cesarean section rates. American Journal of Obstetrics and Gynecology, 174(1), 199-205.

Sanchez-Ramos, L., Kaunitz, A.M., Peterson, H.B., Martinez-Schnell, B., & Thompson, R.J. (1990). Reducing cesarean sections at a teaching hospital. American Journal of Obstetrics and Gynecology, 163(3), 1081-7.

Cesarean section reduction programs: Audit and feedback (private pay population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: Audit and feedback is a physician-centered approach to reducing cesarean section rates by reviewing cesarean sections for their appropriateness according to pre-established guidelines. These interventions vary in the frequency with which the audits are performed and the feedback provided. There is also variation in whether information is provided anonymously or if physicians or departments are associated with their cesarean section rates.

The benefits presented in the benefit-cost analysis are specific to the privately insured population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$70
Participants	$22
Others	$86
Indirect	$21
Total benefits	$199
Net program cost	($27)
Benefits minus cost	$172

Benefit to cost ratio	$7.33
Benefits minus costs	$172
Chance the program will produce benefits greater than the costs	86 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$3	$2	$1	$7
Health care associated with Cesarean sections	$22	$67	$83	$34	$206
Adjustment for deadweight cost of program	$0	$0	$0	($14)	($14)
Totals	$22	$70	$86	$21	$199

[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	$27	2014	Present value of net program costs (in 2015 dollars)	($27)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average per-participant cost of these programs was computed as the product of hours and average Washington State 2014 hourly wages of the appropriate professionals (typically obstetrician/gynecologists, general practitioners and nurse staff) for a typical quarterly audit and review of hospital cesarean section rates.

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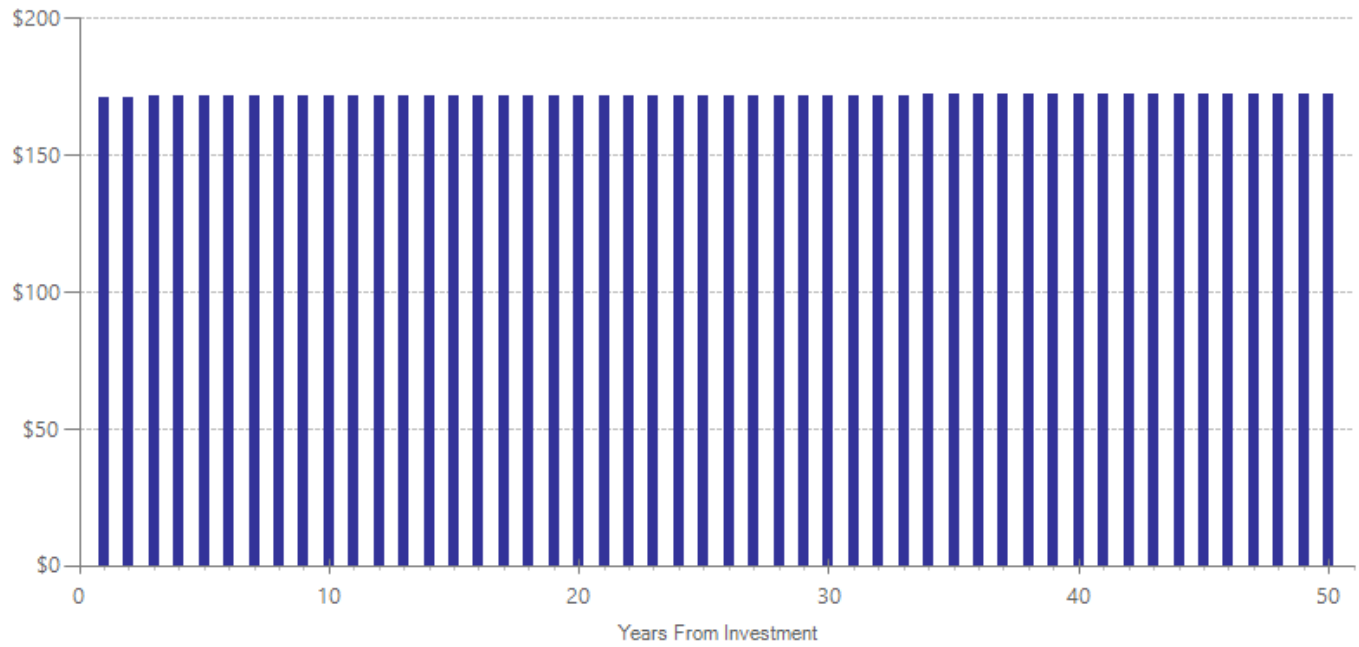
Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	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
Cesarean sections	3	2881	-0.142	0.109	26	0.000	0.000	27	-0.142	0.193

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

Lomas, J., Enkin, M., Anderson, G.M., Hannah, W.J., Vayda, E., & Singer, J. (1991). Opinion leaders vs audit and feedback to implement practice guidelines. Delivery after previous cesarean section. *Jama, 265*(17), 2202-7.

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van, D.J., Lim, F., & van, R.E. (2008). Introducing caesarean section audit in a regional teaching hospital in The Netherlands. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 139*(2), 151-156.

Cesarean section reduction programs: Audit and feedback (Medicaid population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

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The benefits presented in the benefit-cost analysis are specific to the Medicaid population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$51
Participants	$16
Others	$62
Indirect	$12
Total benefits	$141
Net program cost	($27)
Benefits minus cost	$114

Benefit to cost ratio	$5.17
Benefits minus costs	$114
Chance the program will produce benefits greater than the costs	83 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$3	$2	$1	$6
Health care associated with Cesarean sections	$16	$48	$60	$24	$148
Adjustment for deadweight cost of program	$0	$0	$0	($14)	($14)
Totals	$16	$51	$62	$12	$141

[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.

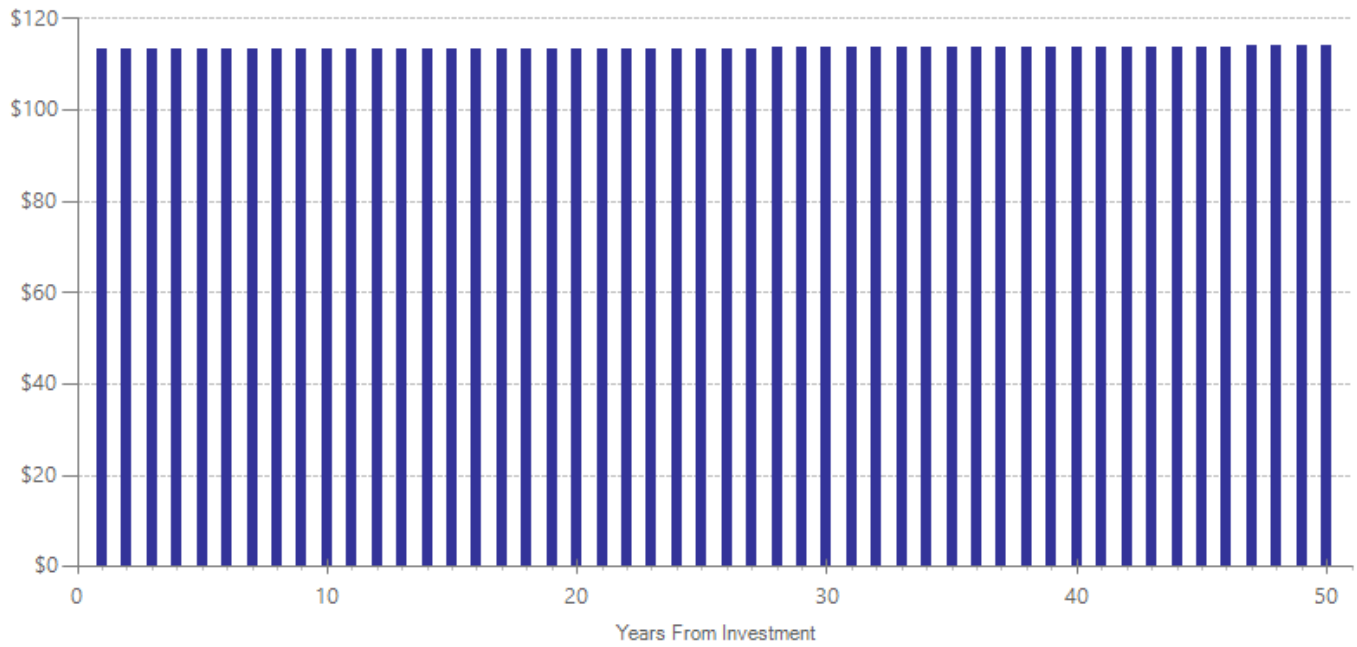
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$27	2014	Present value of net program costs (in 2015 dollars)	($27)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average per-participant cost of these programs was computed as the product of hours and average Washington State 2014 hourly wages of the appropriate professionals (typically obstetrician/gynecologists, general practitioners and nurse staff) for a typical quarterly audit and review of hospital cesarean section 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	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
Cesarean sections	3	2881	-0.142	0.109	26	0.000	0.000	27	-0.142	0.193

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

Lomas, J., Enkin, M., Anderson, G.M., Hannah, W.J., Vayda, E., & Singer, J. (1991). Opinion leaders vs audit and feedback to implement practice guidelines. Delivery after previous cesarean section. *Jama, 265*(17), 2202-7.

Scarella, A., Chamy, V., Sepulveda, M., & Belizan, J.M. (2011). Medical audit using the Ten Group Classification System and its impact on the cesarean section rate. *European Journal of Obstetrics and Gynecology, 154*(2), 136-140.

van, D.J., Lim, F., & van, R.E. (2008). Introducing caesarean section audit in a regional teaching hospital in The Netherlands. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 139*(2), 151-156.

Cesarean section reduction programs: Mandatory second opinion (private pay population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These programs require physicians to consult an additional physician for a second opinion before conducting a cesarean section.

The benefits presented in the benefit-cost analysis are specific to the privately insured population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$71
Participants	$22
Others	$87
Indirect	($3)
Total benefits	$177
Net program cost	($76)
Benefits minus cost	$101

Benefit to cost ratio	$2.32
Benefits minus costs	$101
Chance the program will produce benefits greater than the costs	100 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$3	$2	$1	$7
Health care associated with Cesarean sections	$22	$68	$84	$34	$208
Adjustment for deadweight cost of program	$0	$0	$0	($38)	($38)
Totals	$22	$71	$87	($3)	$177

[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

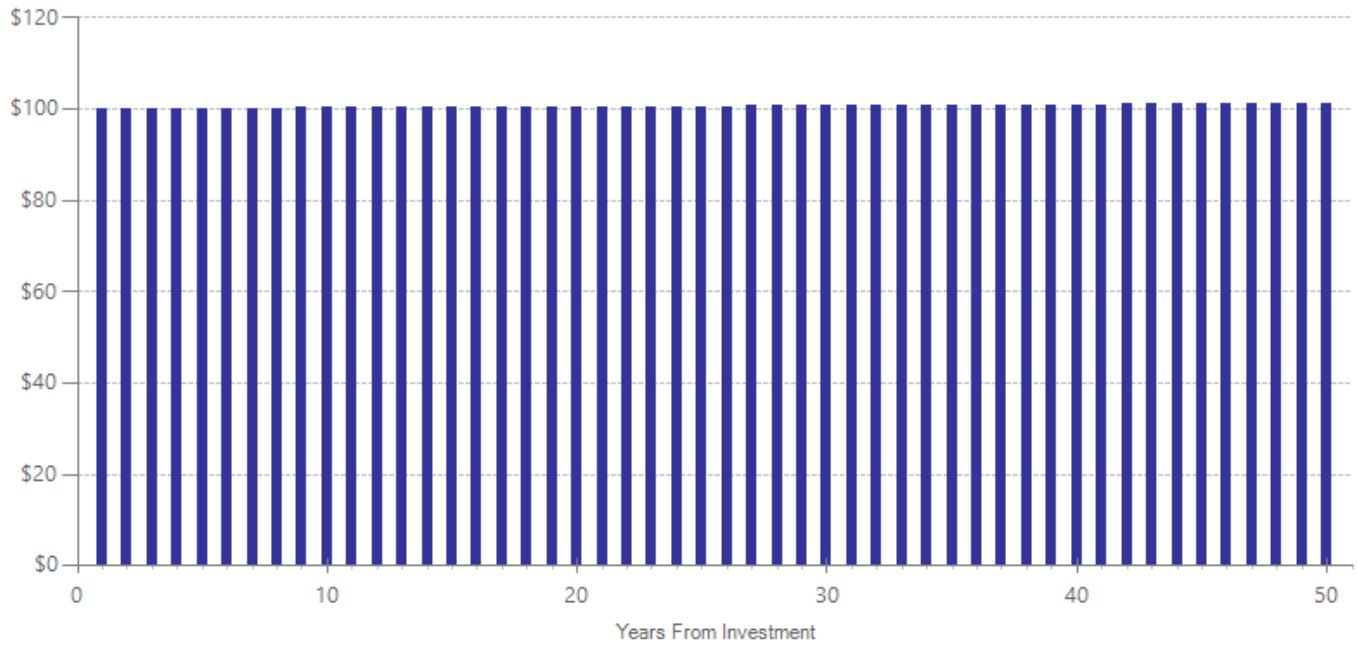
	Annual cost	Year dollars
Program costs	$76	2014
Comparison costs	$0	2014

Summary	
Present value of net program costs (in 2015 dollars)	($76)
Cost range (+ or -)	20 %

The average cost of these programs was computed as the product of 30 minutes of contact time and average Washington State 2014 hourly wages of a consulting obstetrician. This cost estimate does not account for the possibility of increased costs due to an increased requirement for the number of physicians on shift.

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	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
Cesarean sections	2	82761	-0.143	0.016	26	0.000	0.000	27	-0.143	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

Althabe, F., Belizán, J.M., Villar, J., Alexander, S., Bergel, E., Ramos, S., . . . Latin American Caesarean Section Study Group. (2004). Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: a cluster randomised controlled trial. *The Lancet, 363*(9425), 1934-1940.

Sloan, N.L., Pinto, E., Calle, A., Langer, A., Winikoff, B., & Fassihian, G. (2000). Reduction of the cesarean delivery rate in Ecuador. *International Journal of Gynecology & Obstetrics, 69*(3), 229-236.

Cesarean section reduction programs: Mandatory second opinion (Medicaid population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These programs require physicians to consult an additional physician for a second opinion before conducting a cesarean section.

The benefits presented in the benefit-cost analysis are specific to the Medicaid population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$51
Participants	$16
Others	$62
Indirect	($13)
Total benefits	$115
Net program cost	($76)
Benefits minus cost	$39

Benefit to cost ratio	$1.51
Benefits minus costs	$39
Chance the program will produce benefits greater than the costs	96 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$3	$2	$1	$6
Health care associated with Cesarean sections	$16	$48	$59	$24	$147
Adjustment for deadweight cost of program	$0	$0	$0	($38)	($38)
Totals	$16	$51	$62	($13)	$115

[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.

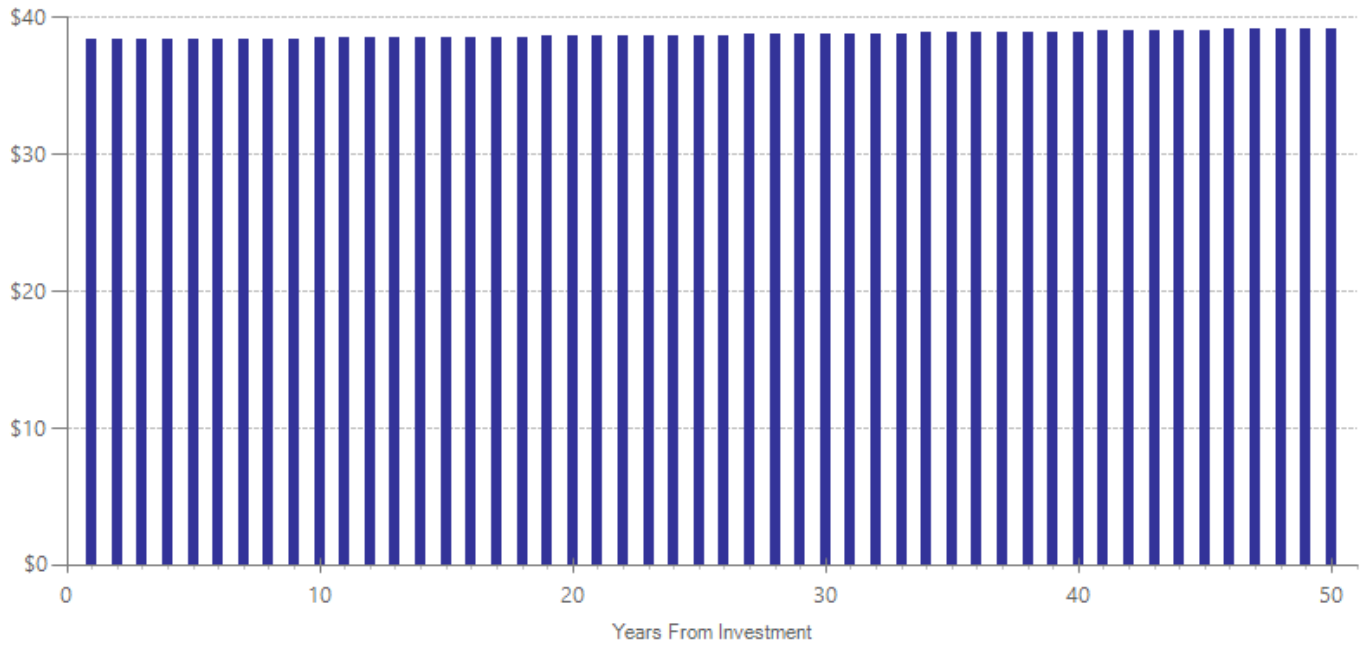
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$76	2014	Present value of net program costs (in 2015 dollars)	($76)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

The average cost of these programs was computed as the product of 30 minutes of contact time and average Washington State 2014 hourly wages of a consulting obstetrician. This cost estimate does not account for the possibility of increased costs due to an increased requirement for the number of physicians on shift.

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	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
Cesarean sections	2	82761	-0.143	0.016	26	0.000	0.000	27	-0.143	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

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Sloan, N.L., Pinto, E., Calle, A., Langer, A., Winikoff, B., & Fassihian, G. (2000). Reduction of the cesarean delivery rate in Ecuador. *International Journal of Gynecology & Obstetrics, 69*(3), 229-236.

Behavioral interventions to reduce obesity for children: Remotely-delivered programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The behavioral interventions included in this analysis target obese and overweight youth under age 18, providing them with counseling, education, and other supports to improve diet, increase physical activity, and reduce weight. The programs use techniques designed to promote and sustain behavioral changes, including goal setting, self-monitoring, stimulus control, and other strategies. The programs in this category provided were delivered remotely, usually via computer or phone.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$11
Participants	$6
Others	$26
Indirect	$2
Total benefits	$45
Net program cost	($64)
Benefits minus cost	($19)

Benefit to cost ratio	$0.70
Benefits minus costs	($19)
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 (2015). 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 obesity	$1	$0	$0	$29	$30
Health care associated with obesity	$5	$10	$26	$5	$47
Adjustment for deadweight cost of program	$0	$0	$0	($32)	($32)
Totals	$6	$11	$26	$2	$45

[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.

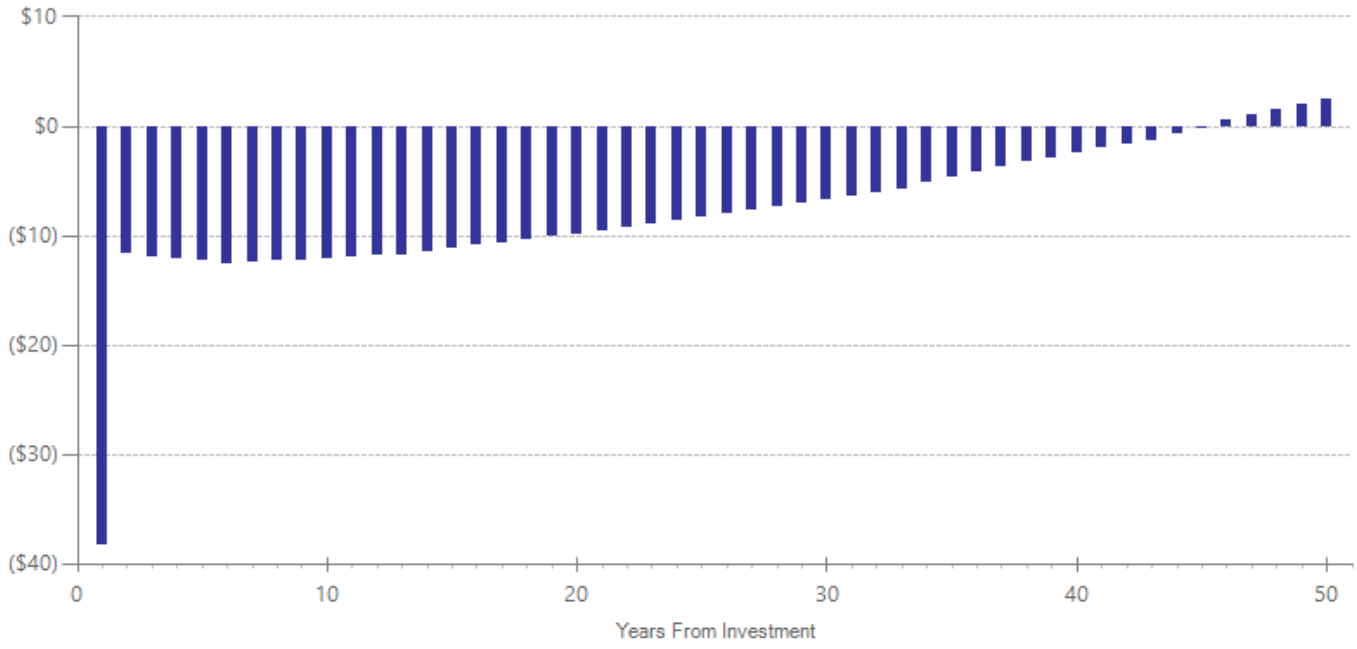
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$64	2014	Present value of net program costs (in 2015 dollars)	($64)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these interventions occur over approximately four months. For programs that require intervention staff time, participants received an average of approximately four contact hours. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists). For the remote programs with "eHealth" technology (web or computer programs, automated phone programs), we estimate costs from the calculations of Ritzwoller, D.P. et al., (2013). Economic analyses of the Be Fit Be Well Program: A weight loss program for community health centers. *Journal of General Internal Medicine, 28*(12), 1581-1588.

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	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
Weight change	3	74	-0.117	0.178	12	0.000	0.070	14	-0.117	0.510
Obesity	4	142	-0.151	0.131	12	0.000	0.101	14	-0.151	0.249

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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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

Doyle, A. C., Goldschmidt, A., Huang, C., Winzelberg, A. J., Taylor, C. B., & Wilfley, D. E. (2008). Reduction of Overweight and Eating Disorder Symptoms via the Internet in Adolescents: A Randomized Controlled Trial. *Journal of Adolescent Health, 43*(2), 172-179.

Estabrooks, P.A., Shoup, J.A., Gattshall, M., Dandamudi, P., Shetterly, S., & Xu, S. (2009). Automated telephone counseling for parents of overweight children: a randomized controlled trial. *American Journal of Preventive Medicine, 36*(1), 35-42.

Saelens, B.E., Sallis, J.F., Wilfley, D.E., Patrick, K., Cella, J.A., & Buchta, R. (2002). Behavioral weight control for overweight adolescents initiated in primary care.*Obesity Research, 10*(1), 22-32.

Wright, J.A., Phillips, B.D., Watson, B.L., Newby, P.K., Norman, G.J., & Adams, W.G. (2013). Randomized trial of a family-based, automated, conversational obesity treatment program for underserved populations. *Obesity, 21*(9), E369-E378.

Behavioral interventions to reduce obesity for adults: Low-intensity, in-person programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Behavioral interventions for obesity include behavioral counseling, therapy, and educational components—often including diet and exercise components. For this review of interventions for obese adults, we excluded studies that targeted diabetic populations as well as those aimed at preventing obesity.

Programs in this specific category are delivered to obese adults, and conducted face-to-face, with fewer than 12 sessions a year or for less than 12 months.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$49
Participants	$84
Others	$28
Indirect	$1
Total benefits	$161
Net program cost	($183)
Benefits minus cost	($21)

Benefit to cost ratio	$0.88
Benefits minus costs	($21)
Chance the program will produce benefits greater than the costs	47 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 obesity	$78	$35	$0	$86	$199
Health care associated with obesity	$6	$13	$28	$7	$54
Adjustment for deadweight cost of program	$0	$0	$0	($92)	($92)
Totals	$84	$49	$28	$1	$161

[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.

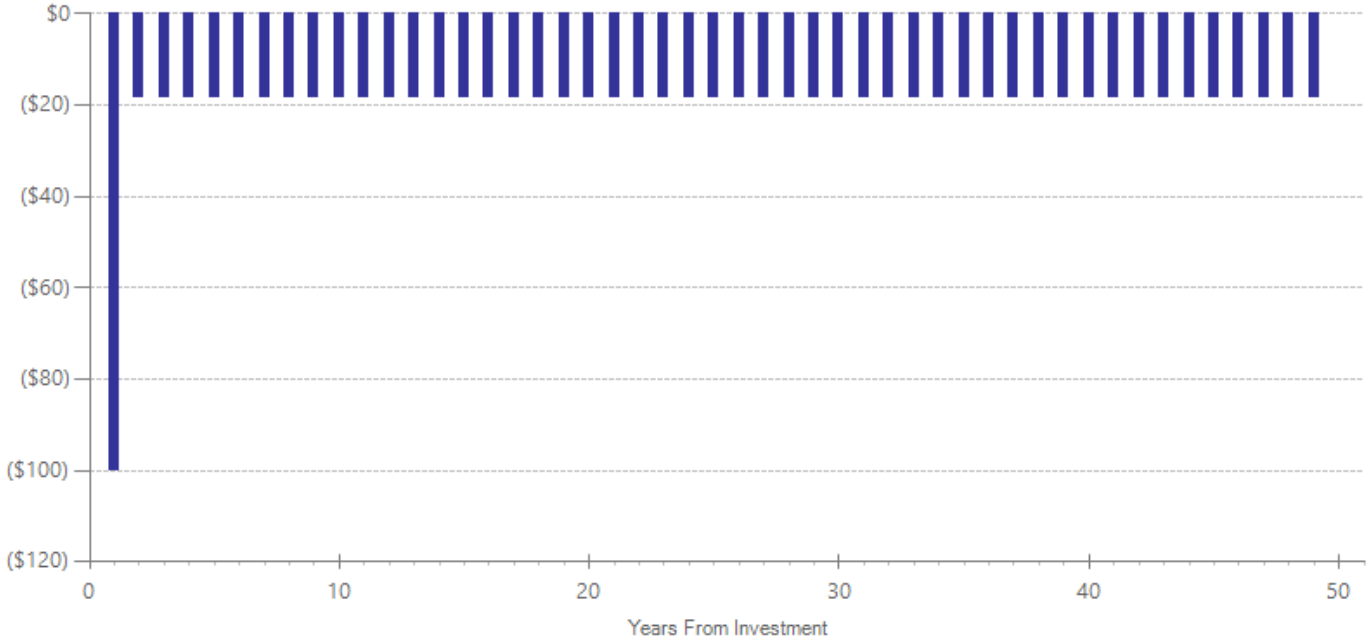
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$182	2014	Present value of net program costs (in 2015 dollars)	($183)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these programs provide approximately six contact hours over seven months, including both group and individual sessions. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists).

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	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
Weight change	10	1004	-0.084	0.057	51	0.000	0.012	53	-0.084	0.138
Diastolic blood pressure	6	697	-0.146	0.073	51	n/a	n/a	n/a	-0.146	0.047
Systolic blood pressure	6	697	-0.112	0.078	51	n/a	n/a	n/a	-0.112	0.154
HDL cholesterol	4	474	0.069	0.181	51	n/a	n/a	n/a	0.069	0.705
LDL cholesterol	4	474	-0.205	0.100	51	n/a	n/a	n/a	-0.205	0.041
Obesity	4	554	-0.040	0.079	51	0.000	0.086	53	-0.040	0.610

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.

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Behavioral interventions to reduce obesity for children: Low-intensity, in-person programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The behavioral interventions included in this analysis target obese and overweight youth under age 18, providing them with counseling, education, and other supports to improve diet, increase physical activity, and reduce weight. The programs use techniques designed to promote and sustain behavioral changes, including goal setting, self-monitoring, stimulus control, and other strategies.

The programs in this specific category provided less than 25 hours of face-to-face intervention.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$1	Benefit to cost ratio	($0.30)
Participants	($9)	Benefits minus costs	($211)
Others	$19	Chance the program will produce benefits greater than the costs	47 %
Indirect	($59)		
Total benefits	($49)		
Net program cost	($163)		
Benefits minus cost	($211)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 obesity	($12)	($6)	$0	$19	$2
Health care associated with obesity	$3	$6	$19	$3	$31
Adjustment for deadweight cost of program	$0	$0	$0	($81)	($81)
Totals	($9)	$1	$19	($59)	($49)

[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.

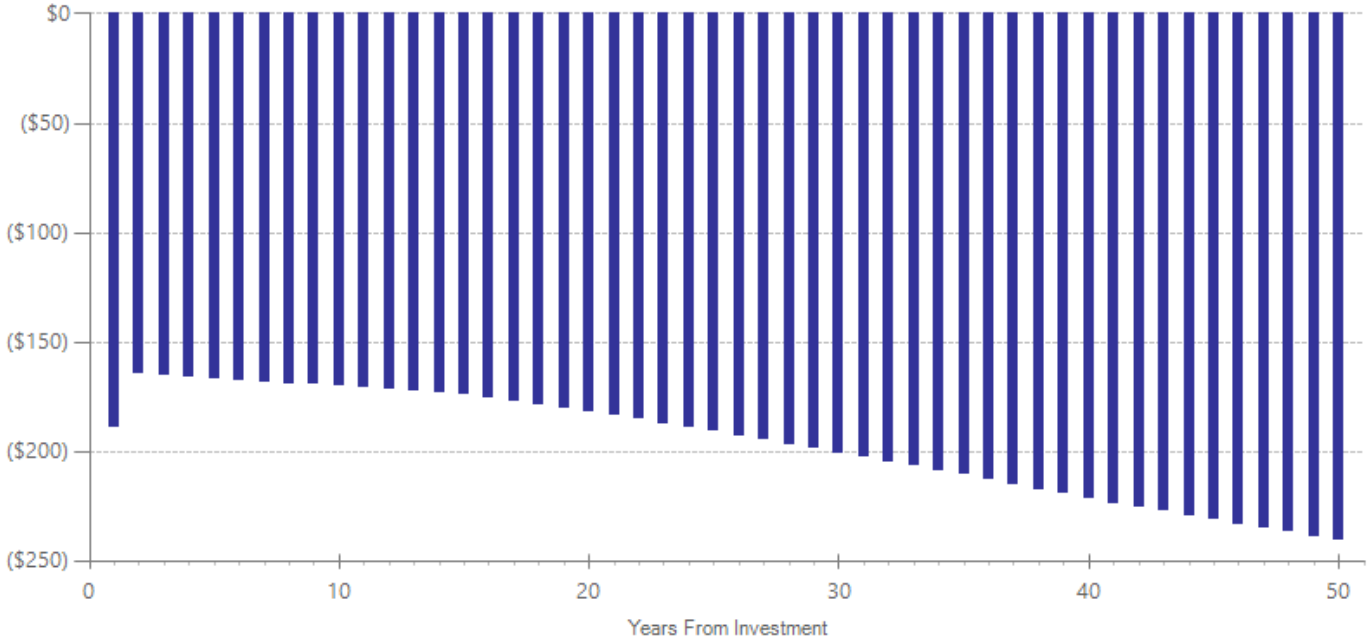
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$162	2014	Present value of net program costs (in 2015 dollars)	($163)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these programs provide approximately nine contact hours over six months, including both group and individual sessions. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists).

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	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
Weight change	4	94	-0.201	0.143	10	0.000	0.070	12	-0.201	0.160
Obesity	12	778	-0.148	0.054	10	0.000	0.101	12	-0.148	0.006

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Citations Used in the Meta-Analysis

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Cesarean section reduction programs: Continuous support (private pay population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These hospital-based interventions measure the influence of continuous emotional and physical support for women in labor in reducing medical interventions, specifically cesarean sections. The scope of the interventions varies, from solely intrapartum support to pre-natal education and post-partum care and lactation support. Similarly, the nature of the practitioner also varies, including nurses with additional training, doulas who are not included in hospital staff, or friends or family of the laboring mother who received additional training. Only studies that use a control group—women with a support person (e.g. partner or family member)—are included here to increase generalizability to Washington State's population.

The benefits presented in the benefit-cost analysis are specific to the privately insured population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$46
Participants	$15
Others	$57
Indirect	($106)
Total benefits	$11
Net program cost	($258)
Benefits minus cost	($247)

Benefit to cost ratio	$0.04
Benefits minus costs	($247)
Chance the program will produce benefits greater than the costs	4 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$2	$2	$1	$5
Health care associated with Cesarean sections	$14	$44	$55	$22	$136
Adjustment for deadweight cost of program	$0	$0	$0	($129)	($129)
Totals	$15	$46	$57	($106)	$11

[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.

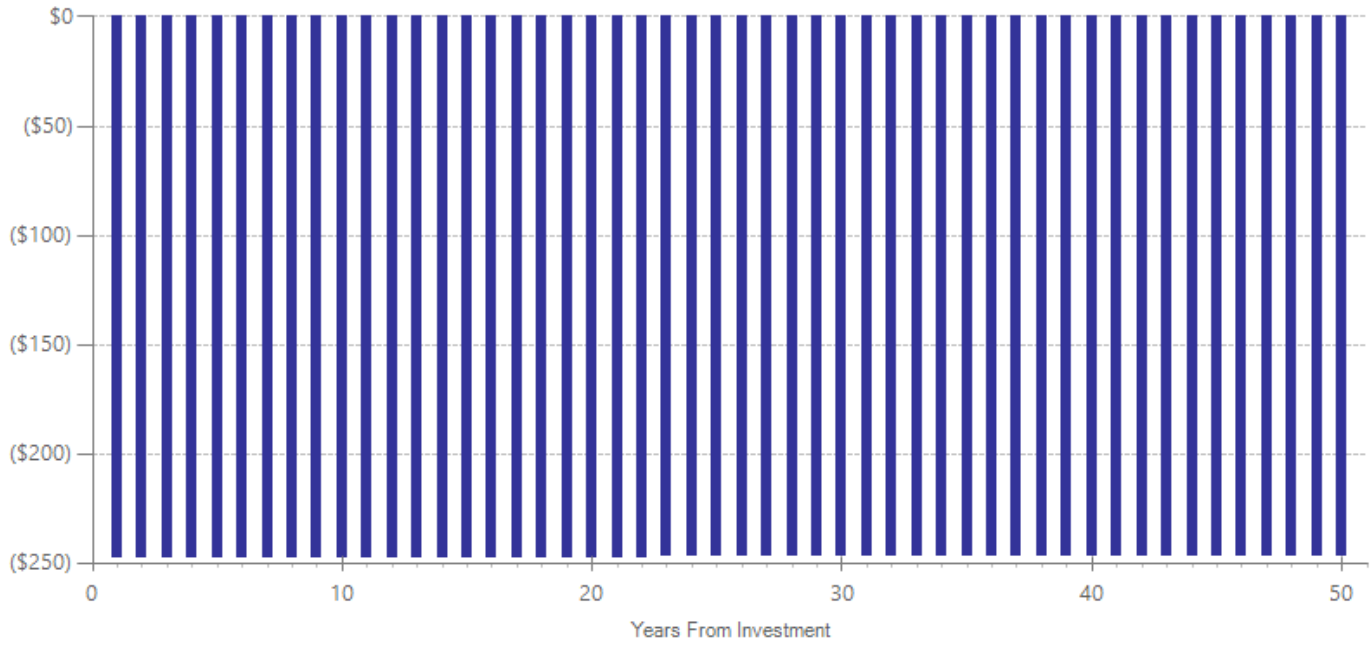
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$257	2014	Present value of net program costs (in 2015 dollars)	($258)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

Per-participant cost is the reimbursement rate from Minnesota Medicaid for the cost of a doula for a labor and delivery session. This does not include reimbursement for additional prenatal or postnatal education and/or counseling.

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	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
Cesarean sections	5	4327	-0.093	0.090	26	0.000	0.000	27	-0.093	0.304

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

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McGrath, S.K., & Kennell, J.H. (2008). A randomized controlled trial of continuous labor support for middle-class couples: Effect on cesarean delivery rates. *Birth, 35*(2), 92-97.

Cesarean section reduction programs: Continuous support (Medicaid population)

Benefit-cost estimates updated June 2016. Literature review updated November 2015.

Program Description: These hospital-based interventions measure the influence of continuous emotional and physical support for women in labor in reducing medical interventions, specifically cesarean sections. The scope of the interventions varies, from solely intrapartum support to pre-natal education and post-partum care and lactation support. Similarly, the nature of the practitioner also varies, including nurses with additional training, doulas who are not included in hospital staff, or friends or family of the laboring mother who have received additional training. Only studies that use a control group—women with a support person (e.g. partner or family member)—are included here to increase generalizability to Washington State's population.

The benefits presented in the benefit-cost analysis are specific to the Medicaid population.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$34	Benefit to cost ratio	($0.10)
Participants	$11	Benefits minus costs	($283)
Others	$41	Chance the program will produce benefits greater than the costs	0 %
Indirect	($111)		
Total benefits	($26)		
Net program cost	($258)		
Benefits minus cost	($283)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$0	$2	$1	$1	$4
Health care associated with Cesarean sections	$10	$32	$40	$16	$98
Adjustment for deadweight cost of program	$0	$0	$0	($128)	($128)
Totals	$11	$34	$41	($111)	($26)

[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.

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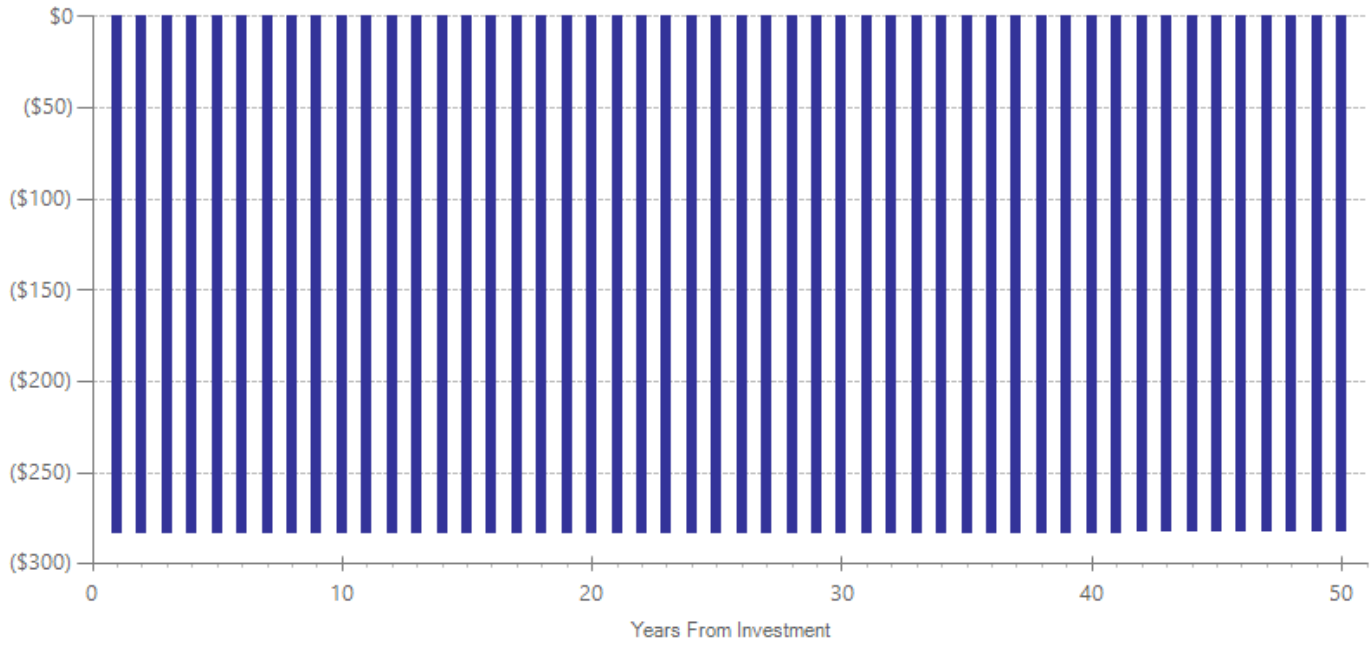
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$257	2014	Present value of net program costs (in 2015 dollars)	($258)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

Per-participant cost is the reimbursement rate from Minnesota Medicaid for the cost of a doula for a labor and delivery session. This does not include reimbursement for additional prenatal or postnatal education and/or counseling.

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	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
Cesarean sections	5	4327	-0.093	0.090	26	0.000	0.000	27	-0.093	0.304

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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McGrath, S.K., & Kennell, J.H. (2008). A randomized controlled trial of continuous labor support for middle-class couples: Effect on cesarean delivery rates. *Birth, 35*(2), 92-97.

Behavioral interventions to reduce obesity for children: Moderate- to high-intensity, face-to-face programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The behavioral interventions included in this analysis target obese and overweight youth under age 18, providing them with counseling, education, and other supports to improve diet, increase physical activity, and reduce weight. The programs use techniques designed to promote and sustain behavioral changes, including goal setting, self-monitoring, stimulus control, and other strategies.

The programs in this specific category provided at least 25 hours of face-to-face intervention.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$27
Participants	$4
Others	$71
Indirect	($80)
Total benefits	$22
Net program cost	($328)
Benefits minus cost	($306)

Benefit to cost ratio	$0.07
Benefits minus costs	($306)
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 (2015). 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 obesity	($11)	($5)	$0	$70	$55
Health care associated with obesity	$14	$32	$71	$15	$132
Adjustment for deadweight cost of program	$0	$0	$0	($165)	($165)
Totals	$4	$27	$71	($80)	$22

[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.

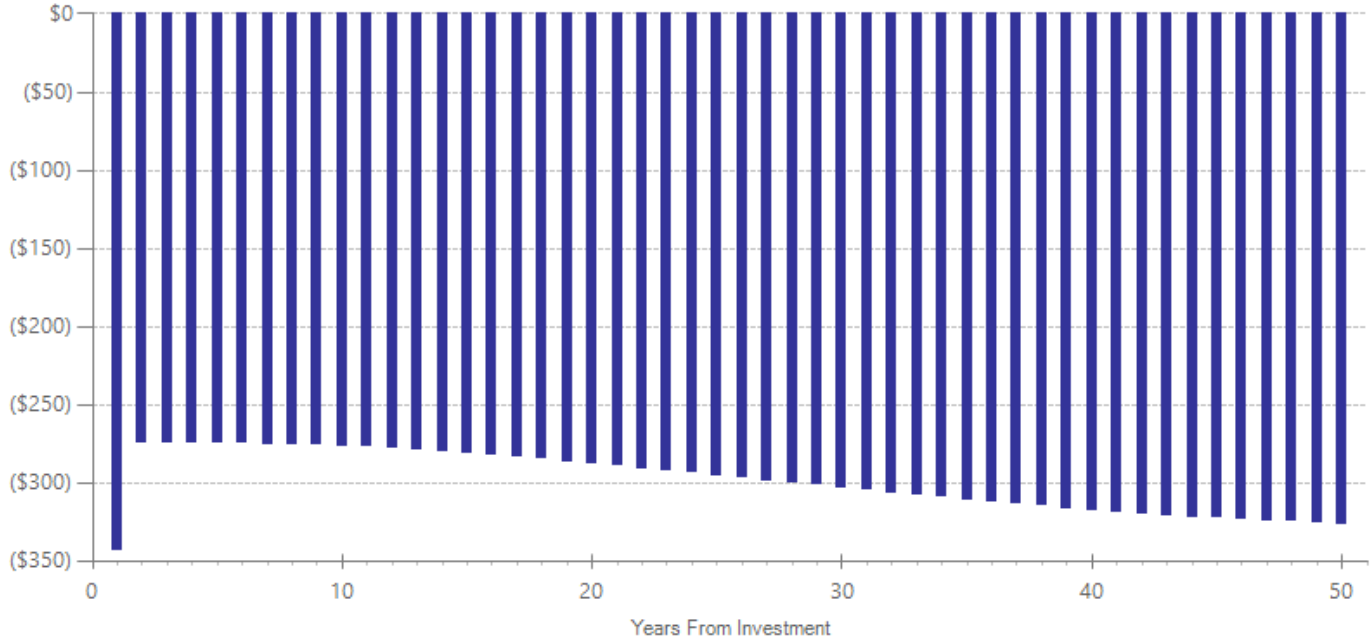
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$328	2014	Present value of net program costs (in 2015 dollars)	($328)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

On average, these programs provide approximately 48 contact hours over six months, including both group and individual sessions. The average per-participant cost of these programs was computed using contact hours and average Washington State 2014 hourly wages of the appropriate professionals who conducted the intervention (generally dietitians, nurses, general practitioners, or therapists).

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	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
Weight change	11	493	-0.206	0.070	12	0.000	0.070	14	-0.206	0.003
Obesity	14	638	-0.378	0.087	12	0.000	0.101	14	-0.378	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

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Transitional care programs to prevent hospital readmissions: Comprehensive programs

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Comprehensive transitional care programs focus on preventing future hospital readmissions after discharge. Interventions include pre-discharge assistance (e.g., a transition coach, enhanced discharge planning, and primary care provider communication), as well as post-discharge follow-up.

The effects in this analysis reflect the effects of comprehensive transitional care programs on high-risk patient populations.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$826	Benefit to cost ratio	$4.33
Participants	$47	Benefits minus costs	$1,377
Others	$712	Chance the program will produce benefits greater than the costs	100 %
Indirect	$206		
Total benefits	$1,790		
Net program cost	($413)		
Benefits minus cost	$1,377		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$47	$826	$712	$413	$1,997
Adjustment for deadweight cost of program	$0	$0	$0	($207)	($207)
Totals	$47	$826	$712	$206	$1,790

[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.

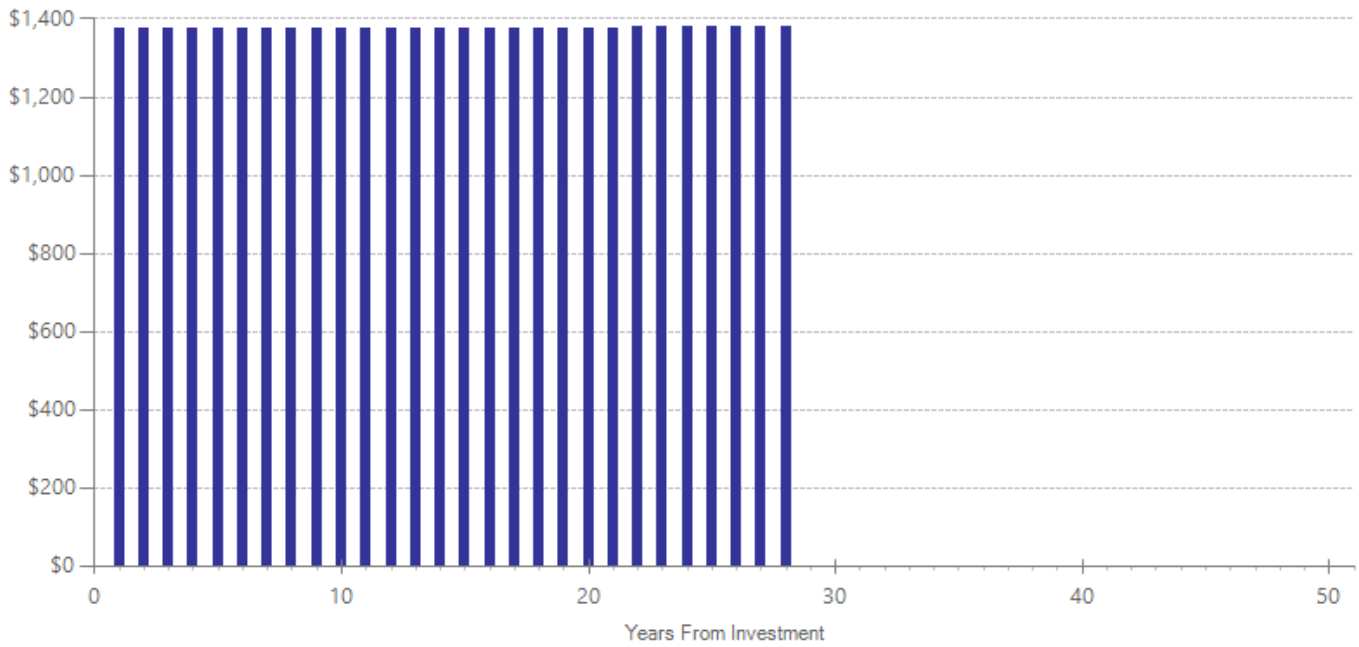
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$413	2014	Present value of net program costs (in 2015 dollars)	($413)
Comparison costs	$0	2014	Cost range (+ or -)	37 %

We estimated an average per-participant cost by computing an average of the typical costs reported in each study in our analysis. These costs include the salary of the nurse practitioner (main cost), cell phone and pager costs, mileage expenses, and costs for the reproduction of personal health record. When a study reported nursing staff hours, we estimated nursing costs by applying the most recent reported average wages reported in Washington State.

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	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
Hospital readmissions	11	1597	-0.289	0.061	72	0.000	0.000	73	-0.289	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

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Patient-centered medical homes with high-risk patients

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The patient-centered medical home (PCMH) model attempts to make health care more efficient by restructuring primary care. Definitions vary, but PCMHs typically provide health care with the following features: team-based (with team members having defined roles and shared accountability); comprehensive (with the majority of health care needs being addressed); coordinated (across primary care providers, specialists, hospitals, and community service providers); patient-centered (with shared decision-making and support for patient self-management); emphasis on quality and safety (with clinical decision-support tools and methods to track care); and enhanced access (with expanded office hours and shorter waiting times).

This category includes all PCMH programs we reviewed that focused on high-risk patients.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$271
Participants	$88
Others	$335
Indirect	($40)
Total benefits	$653
Net program cost	($81)
Benefits minus cost	$572

Benefit to cost ratio	$8.04
Benefits minus costs	$572
Chance the program will produce benefits greater than the costs	87 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care (total costs)	$88	$271	$335	$1	$694
Adjustment for deadweight cost of program	$0	$0	$0	($41)	($41)
Totals	$88	$271	$335	($40)	$653

[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.

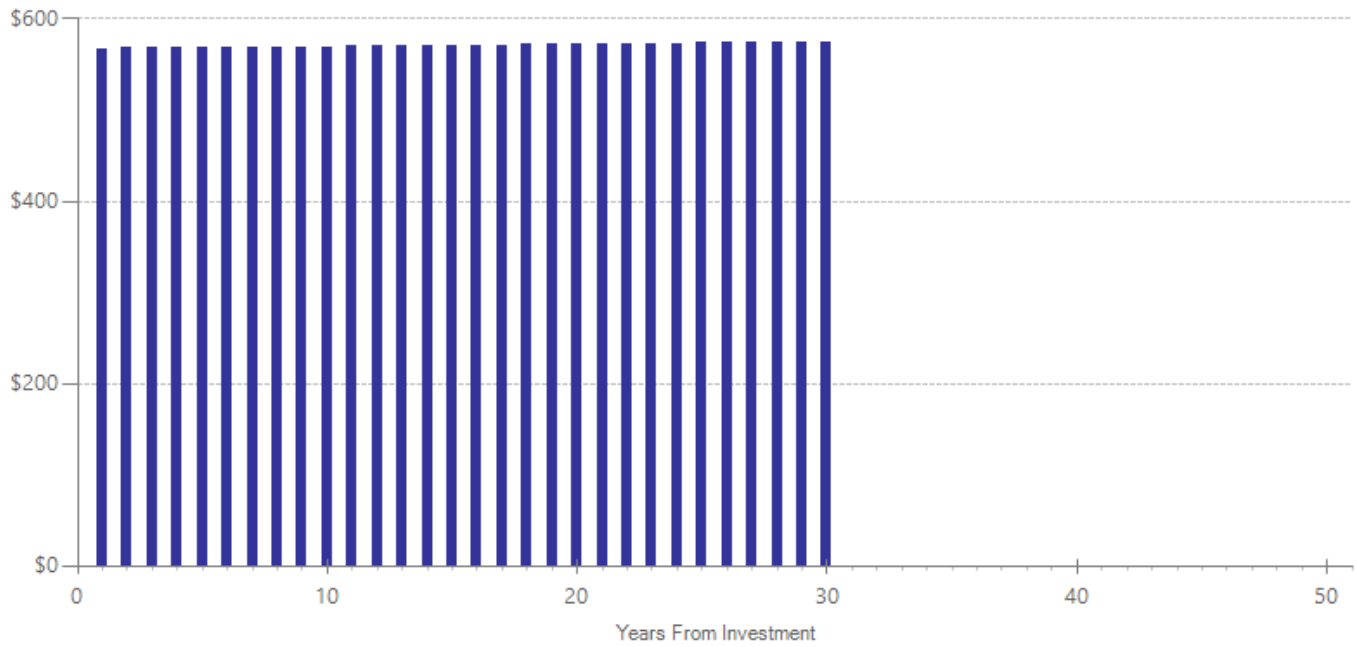
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$81	2014	Present value of net program costs (in 2015 dollars)	($81)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

We estimated an average per-participant cost based on the additional payments that insurers made to medical providers for implementing medical homes as reported in the studies. These additional payments were made to fund nurse care managers, to provide incentives for achieving patient-centered medical home recognition and quality-of-care targets, and to support other costs incurred in transforming practices.

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	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
Health care costs	3	12472	-0.040	0.029	70	0.000	0.000	71	-0.040	0.178

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

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Transitional care programs to prevent hospital readmissions: All programs, general patient populations

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Transitional care programs focus on preventing future hospital readmissions after discharge. The programs may include coaches, patient education, medication reconciliation, individualized discharge planning, enhanced provider communication, and patient follow-up after discharge.

The effects in this analysis reflect the effects of all reviewed transitional care programs on general patient populations.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$185
Participants	$11
Others	$160
Indirect	$68
Total benefits	$424
Net program cost	($51)
Benefits minus cost	$373

Benefit to cost ratio	$8.27
Benefits minus costs	$373
Chance the program will produce benefits greater than the costs	88 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with hospital readmissions	$11	$185	$160	$93	$449
Adjustment for deadweight cost of program	$0	$0	$0	($26)	($26)
Totals	$11	$185	$160	$68	$424

[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.

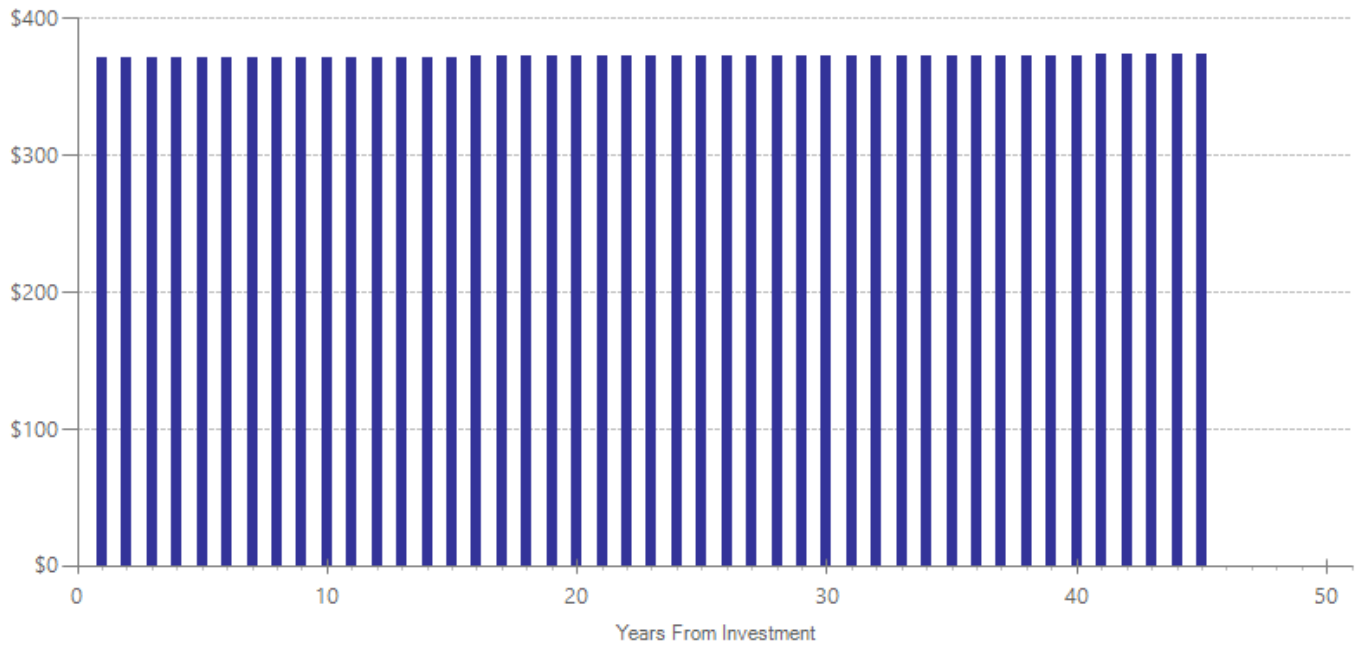
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$51	2014	Present value of net program costs (in 2015 dollars)	($51)
Comparison costs	$0	2014	Cost range (+ or -)	39 %

We estimated an average per-participant cost by computing an average of the typical costs reported in each study in our analysis. These costs include the salary of the nurse practitioner (main cost), cell phone and pager costs, mileage expenses, and costs for the reproduction of personal health record. When a study reported nursing staff hours, we estimated nursing costs by applying the most recent reported average wages reported in Washington State.

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	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
Hospital readmissions	4	972	-0.155	0.107	55	0.000	0.000	56	-0.115	0.147

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

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Patient-centered medical homes in integrated health systems

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The patient-centered medical home (PCMH) model attempts to make health care more efficient by restructuring primary care. Definitions vary, but PCMHs typically provide health care with the following features: team-based (with team members having defined roles and shared accountability); comprehensive (with the majority of health care needs being addressed); coordinated (across primary care providers, specialists, hospitals, and community service providers); patient-centered (with shared decision-making and support for patient self-management); emphasis on quality and safety (with clinical decision-support tools and methods to track care); and enhanced access (with expanded office hours and shorter waiting times).

This category includes only PCMH programs we reviewed that were implemented in integrated health systems.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$106
Participants	$34
Others	$131
Indirect	($40)
Total benefits	$231
Net program cost	($81)
Benefits minus cost	$150

Benefit to cost ratio	$2.85
Benefits minus costs	$150
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 (2015). 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
Health care (total costs)	$34	$106	$131	$1	$272
Adjustment for deadweight cost of program	$0	$0	$0	($41)	($41)
Totals	$34	$106	$131	($40)	$231

[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.

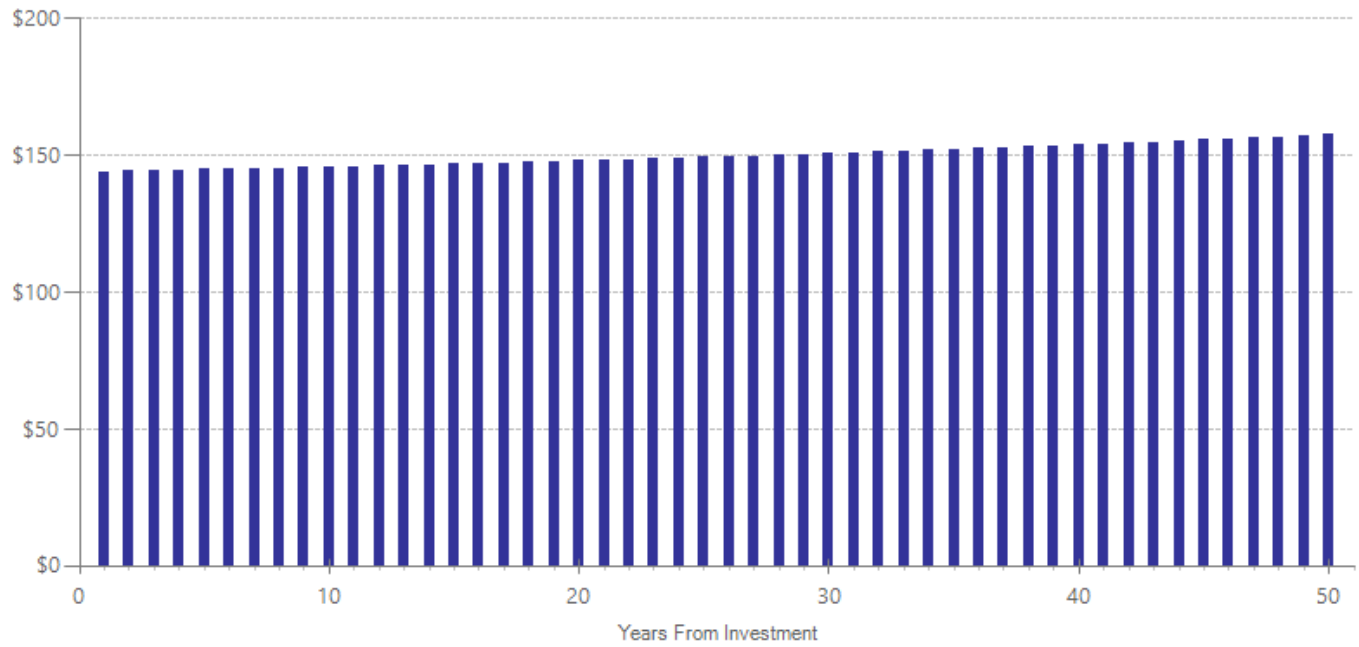
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$81	2014	Present value of net program costs (in 2015 dollars)	($81)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

We estimated an average per-participant cost based on the additional payments that insurers made to medical providers for implementing medical homes as reported in the studies. These additional payments were made to fund nurse care managers, to provide incentives for achieving patient-centered medical home recognition and quality-of-care targets, and to support other costs incurred in transforming practices.

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	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
Health care costs	2	15562	-0.019	0.071	50	0.000	0.000	51	-0.019	0.788

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

Gilfillan, R.J., Tomcavage, J., Rosenthal, M. B., Davis, D.E., Graham, J., Roy, J.A., Pierdon, S.B., ... Steele, G.D.J. (2010). Value and the medical home: effects of transformed primary care. *The American Journal of Managed Care, 16*(8), 607-14.

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Interventions to reduce unnecessary emergency department visits: General education on appropriate ED use

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The study included in this analysis evaluated the dissemination of a booklet to all members of a health insurance plan who received Medicaid benefits. The booklet explained when to use emergency services, offered assistance in finding a primary care physician, and described self-care for minor conditions.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$7
Participants	$1
Others	$8
Indirect	($2)
Total benefits	$14
Net program cost	($8)
Benefits minus cost	$6

Benefit to cost ratio	$1.81
Benefits minus costs	$6
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 (2015). 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
Health care associated with emergency department visits	$1	$7	$8	$2	$18
Adjustment for deadweight cost of program	$0	$0	$0	($4)	($4)
Totals	$1	$7	$8	($2)	$14

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

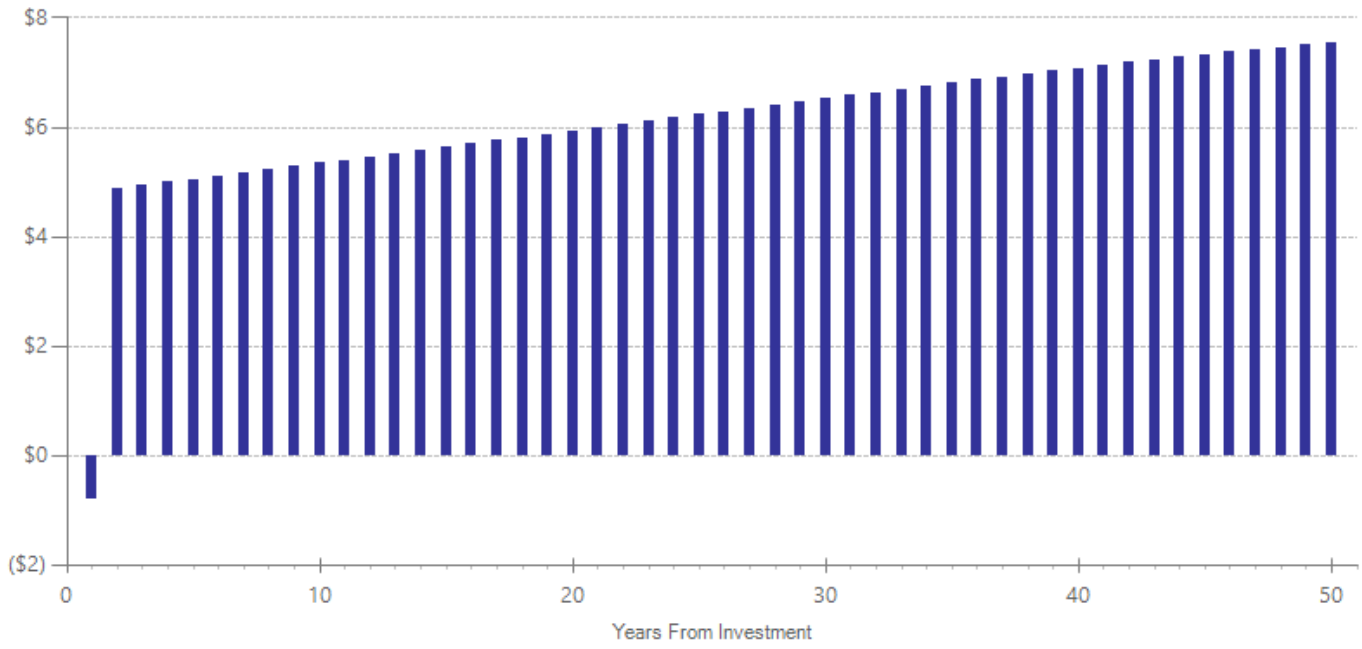
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$8	2014	Present value of net program costs (in 2015 dollars)	($8)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

The single study in this analysis evaluated the dissemination of a 44 page brochure to each household in the program. Each household in this population had an average of 2.75 individuals. The per-person cost of this program is estimated by dividing the cost for Washington State Department of Enterprise Services to print and mail a booklet by the number of individuals in each household. We also assumed that one full-time administrative staff member would be needed for content development and program administration.

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	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	1	9822	-0.032	0.021	18	0.000	0.086	20	-0.032	0.128

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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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

Rector, T.S., Venus, P.J., & Laine, A.J. (1999). Impact of mailing information about nonurgent care on emergency department visits by Medicaid beneficiaries enrolled in managed care. *The American Journal of Managed Care, 5*(12), 1505-1512.

Interventions to reduce unnecessary emergency department visits: Asthma self-management education for children

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: Asthma self-management education aims to manage asthma symptoms and avoid emergency department visits by teaching children to identify and avoid asthma triggers, recognize symptoms, and take appropriate action to manage symptoms. In the studies included in this analysis, asthma self-management education was typically delivered by a social worker, nurse, or computer program. We included interventions delivered to children or children and their families in an individuals or group setting. This analysis focuses on interventions initiated in the healthcare system.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$28
Participants	$5
Others	$31
Indirect	($22)
Total benefits	$41
Net program cost	($77)
Benefits minus cost	($36)

Benefit to cost ratio	$0.53
Benefits minus costs	($36)
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 (2015). 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
Health care associated with general hospitalization	$0	$5	$5	$4	$15
Health care associated with emergency department visits	$4	$22	$26	$12	$64
Adjustment for deadweight cost of program	$0	$0	$0	($39)	($39)
Totals	$5	$28	$31	($22)	$41

[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.

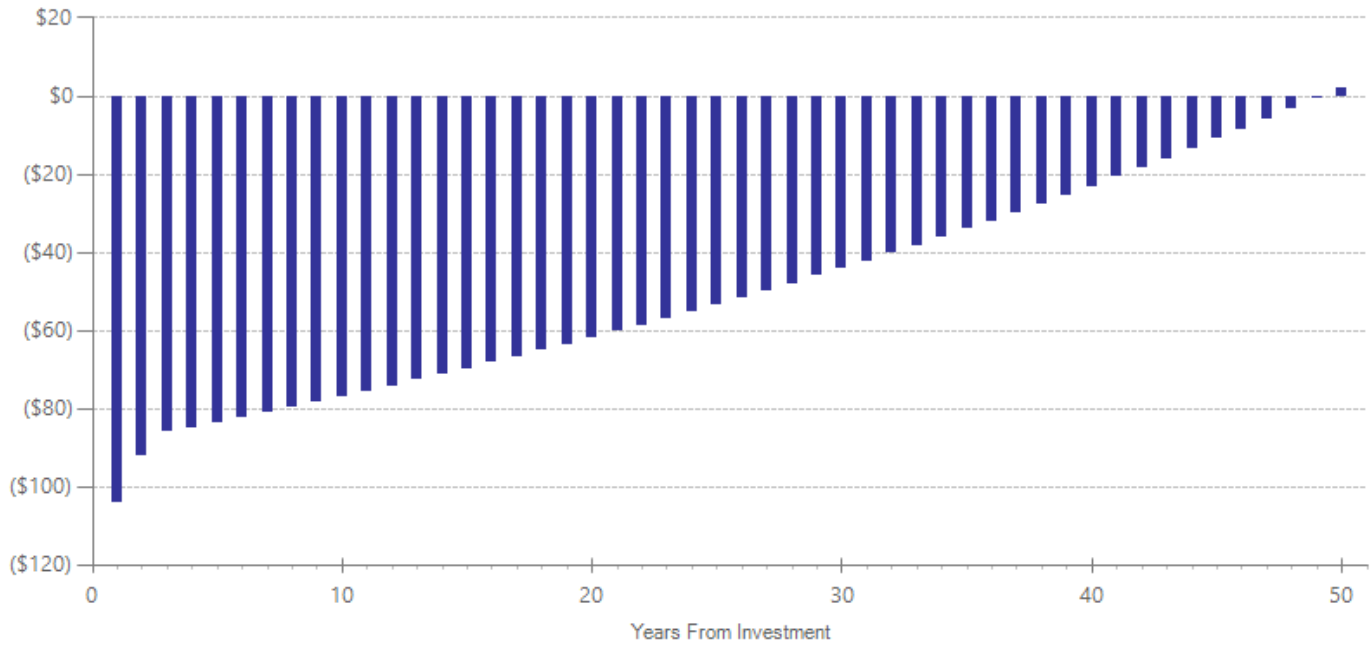
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$77	2014	Present value of net program costs (in 2015 dollars)	($77)
Comparison costs	$0	2014	Cost range (+ or -)	25 %

The asthma self-management education programs that we reviewed required an average of 1.14 hours of staff time per child. A nurse educator provided the self-management education in most of these programs. We estimated the cost of the program by multiplying the hours of staff time by the average registered nurse's hourly salary in Washington State (http://www.bls.gov/oes/current/oes_wa.htm#29-0000). This product is then multiplied by the ratio of total compensation to wages described in WSIPP's Technical Documentation.

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	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
Hospitalization	10	1342	0.015	0.101	8	0.000	0.086	10	0.153	0.475
Emergency department visits	7	688	-0.088	0.124	8	0.000	0.086	10	-0.088	0.475
School attendance	4	142	0.002	0.219	8	0.002	0.219	8	0.002	0.994

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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

Alexander, J.S., Younger, R.E., Cohen, R.M., & Crawford, L.V. (1988). Effectiveness of a nurse-managed program for children with chronic asthma. *Journal of Pediatric Nursing, 3*(5), 312-317.

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Patient-centered medical homes in physician-led practices

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: The patient-centered medical home (PCMH) model attempts to make health care more efficient by restructuring primary care. Definitions vary, but PCMHs typically provide health care with the following features: team-based (with team members having defined roles and shared accountability); comprehensive (with the majority of health care needs being addressed); coordinated (across primary care providers, specialists, hospitals, and community service providers); patient-centered (with shared decision-making and support for patient self-management); emphasis on quality and safety (with clinical decision-support tools and methods to track care); and enhanced access (with expanded office hours and shorter waiting times).

This category includes only PCMH programs we reviewed that were implemented in physician-led practices.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	($7)
Participants	($2)
Others	($9)
Indirect	($42)
Total benefits	($60)
Net program cost	($81)
Benefits minus cost	($141)

Benefit to cost ratio	($0.74)
Benefits minus costs	($141)
Chance the program will produce benefits greater than the costs	7 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care (total costs)	($2)	($7)	($9)	($1)	($20)
Adjustment for deadweight cost of program	$0	$0	$0	($41)	($41)
Totals	($2)	($7)	($9)	($42)	($60)

[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.

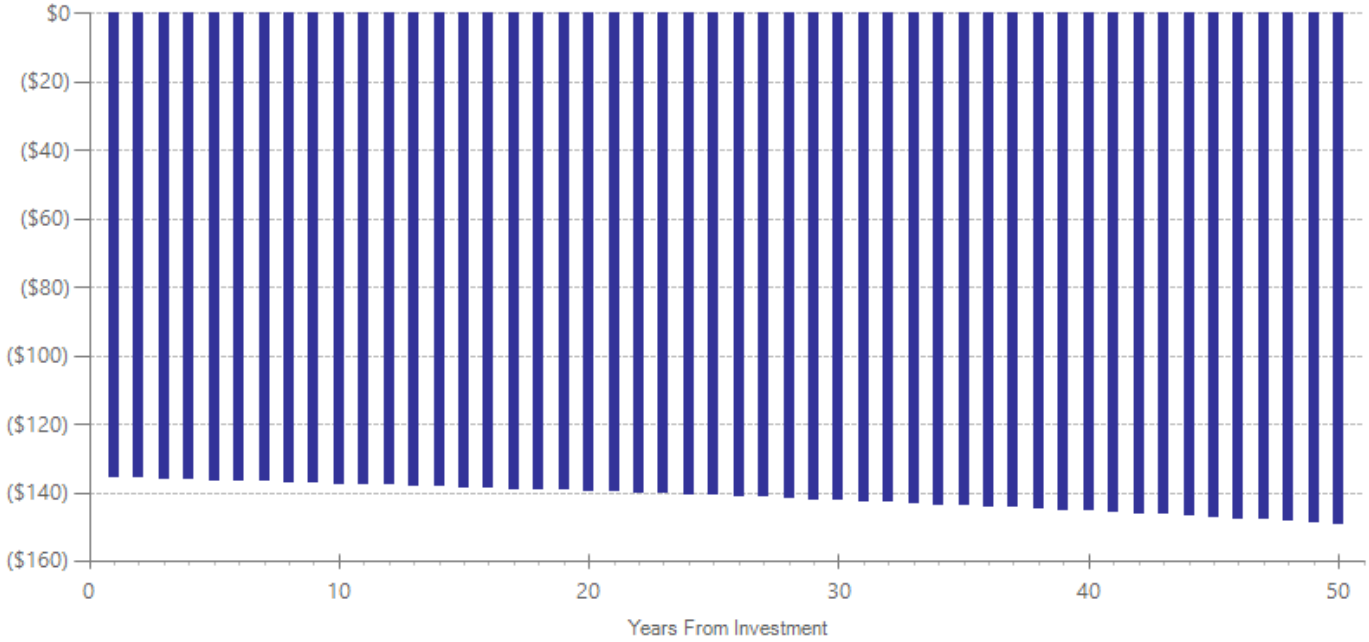
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$81	2014	Present value of net program costs (in 2015 dollars)	($81)
Comparison costs	$0	2014	Cost range (+ or -)	10 %

We estimated an average per-participant cost based on the additional payments that insurers made to medical providers for implementing medical homes as reported in the studies. These additional payments were made to fund nurse care managers, to provide incentives for achieving patient-centered medical home recognition and quality-of-care targets, and to support other costs incurred in transforming practices.

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	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
Health care costs	4	59980	0.001	0.006	50	0.000	0.000	51	0.001	0.830

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

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Interventions to reduce unnecessary emergency department visits: Intensive case management for frequent ED users

Benefit-cost estimates updated June 2016. Literature review updated December 2014.

Program Description: These interventions target the highest-frequency emergency department visitors, providing a case manager or clinical case management team to assist in accessing appropriate medical care and community resources with the aim of reducing unnecessary emergency department visits.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$3,391	Benefit to cost ratio	$0.42
Participants	$339	Benefits minus costs	($5,501)
Others	$3,251	Chance the program will produce benefits greater than the costs	45 %
Indirect	($3,013)		
Total benefits	$3,968		
Net program cost	($9,468)		
Benefits minus cost	($5,501)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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
Health care associated with general hospitalization	$131	$2,297	$1,982	$1,158	$5,567
Health care associated with emergency department visits	$208	$1,094	$1,269	$548	$3,118
Adjustment for deadweight cost of program	$0	$0	$0	($4,718)	($4,718)
Totals	$339	$3,391	$3,251	($3,013)	$3,968

[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.

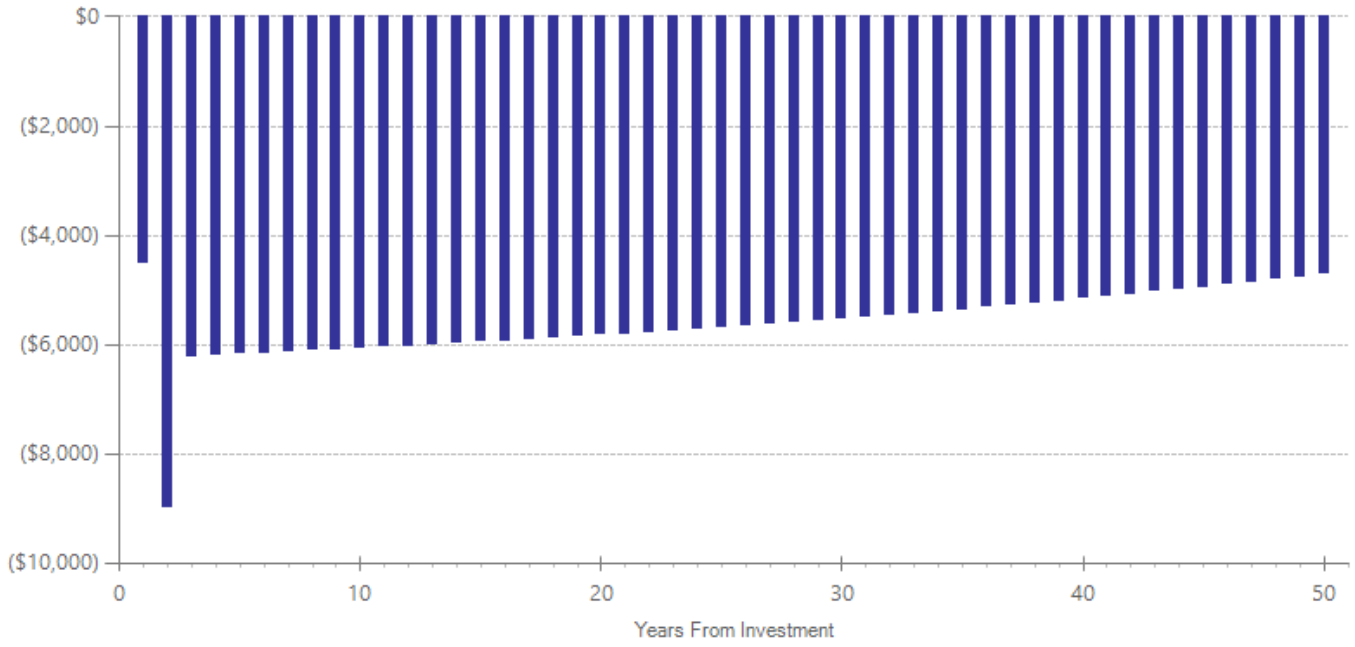
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$3,730	2001	Present value of net program costs (in 2015 dollars)	($9,468)
Comparison costs	$0	2001	Cost range (+ or -)	20 %

The costs for case management for frequent emergency department users was estimated using the average per client costs during the first two years of the clinical case management program at San Francisco General Hospital described in Shumway et al. (2008). Cost-effectiveness of clinical case management for ED frequent users: results of a randomized trial. *The American Journal of Emergency Medicine, 26*(2), 155-164. We estimated the per-client costs as the average the first and second year of the program ($4,270 and $3,190 respectively in 2001 dollars) (Martha Shumway, personal communication, May 18, 2015).

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	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
Hospitalization	2	252	-0.173	0.094	46	0.000	0.118	47	-0.173	0.067
Emergency department visits	2	252	-0.438	0.095	46	0.000	0.118	47	-0.438	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

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Oral health: Fluoride varnish treatment for permanent teeth

Literature review updated October 2014.

Program Description: Fluoride varnish is a form of fluoride that temporarily adheres to the tooth in order to maintain contact between the fluoride and the tooth for several hours. In the studies we reviewed, fluoride varnish was applied every three to six months over a 12- to 36-month time period.

The analysis presented here reflects the effect of fluoride varnish applied to permanent teeth.

Meta-Analysis of Program Effects

Outcomes measured	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
Tooth decay	14	3589	-0.267	0.086	8	n/a	n/a	n/a	-0.267	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.

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Citations Used in the Meta-Analysis

Bravo, M., Llodra, J.C., Baca, P., & Osorio, E. (1996). Effectiveness of visible light fissure sealant (Delton) versus fluoride varnish (Duraphat): 24-month clinical trial. *Community Dentistry and Oral Epidemiology, 24*(1), 42-46.

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Oral health: Fluoride varnish treatment for primary teeth

Literature review updated October 2014.

Program Description: Fluoride varnish is a form of fluoride that temporarily adheres to the tooth in order to maintain contact between the fluoride and the tooth for several hours. In the studies we reviewed, fluoride varnish was applied every three to six months over a 12- to 36-month time period.

The analysis presented here reflects the effect of fluoride varnish applied to primary teeth.

Meta-Analysis of Program Effects

Outcomes measured	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
Tooth decay	6	1042	-0.198	0.095	6	n/a	n/a	n/a	-0.198	0.036

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.

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Oral health: Resin sealants for molars

Literature review updated October 2014.

Program Description: Sealants are plastic films applied to the biting surfaces of molars to prevent decay. This analysis focuses on the effect of resin sealants compared to no treatment.

Meta-Analysis of Program Effects

Outcomes measured	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
Tooth decay	12	2978	-0.973	0.117	8	n/a	n/a	n/a	-0.973	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.

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Citations Used in the Meta-Analysis

Bravo, M., Llodra, J.C., Baca, P., & Osorio, E. (1996). Effectiveness of visible light fissure sealant (Delton) versus fluoride varnish (Duraphat): 24-month clinical trial. *Community Dentistry and Oral Epidemiology, 24*(1), 42-46.

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Smoking cessation programs in pregnancy (programs without significant face-to-face counseling)

Literature review updated December 2014.

Program Description: Smoking cessation counseling interventions tailored to pregnant smokers without the intensive face-to-face counseling. Most of these programs offer phone counseling.

Meta-Analysis of Program Effects

Outcomes measured	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
Regular smoking	9	1759	-0.235	0.094	26	n/a	n/a	n/a	-0.235	0.013

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

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Smoking cessation programs during pregnancy (all programs)

Literature review updated December 2014.

Program Description: This group of programs includes counseling cessation programs for pregnant smokers which typically involved face-to-face counseling, although four studies examined exclusively telephone counseling. Motivational interviewing is the most common type of counseling in these studies, and programs typically also offer self-help materials to encourage smoking cessation.

Meta-Analysis of Program Effects

Outcomes measured	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
Regular smoking	18	3186	-0.276	0.075	25	n/a	n/a	n/a	-0.276	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.

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Citations Used in the Meta-Analysis

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Smoking cessation programs in pregnancy (face-to-face counseling programs)

Literature review updated December 2014.

Program Description: This group of programs includes smoking cessation interventions tailored to pregnant smokers with intensive face-to-face counseling. Motivational interviewing is the most common type of counseling in these studies, and programs typically also offer self-help materials to encourage smoking cessation.

Meta-Analysis of Program Effects

Outcomes measured	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
Regular smoking	9	1427	-0.301	0.114	25	n/a	n/a	n/a	-0.301	0.008

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

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Secker-Walker, R.H., Solomon, L.J., Flynn, B.S., Skelly, J.M., & Mead, P.B. (1998). Reducing smoking during pregnancy and postpartum: physician's advice supported by individual counseling. *Preventive Medicine, 27*(3), 422-430.

Sexton, M., & Hebel, J.R. (1984). A clinical trial of change in maternal smoking and its effect on birth weight. *JAMA, 251*(7), 911-915.

Stotts, A.L., DeLaune, K.A., Schmitz, J.M., & Grabowski, J. (2004). Impact of a motivational intervention on mechanisms of change in low-income pregnant smokers. *Addictive Behaviors, 29*(8), 1649-1657.

Windsor, R.A., Lowe, J.B., Perkins, L.L., Smith-Yoder, D., Artz, L., Crawford, M., Amburgy, K., & Boyd, N.R.J. (1993). Health education for pregnant smokers: its behavioral impact and cost benefit. *American Journal of Public Health, 83*(2), 201-206.

Accountable Care Organizations: (a) Alternative Quality Contract

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

An Accountable Care Organization (ACO) is a provider group that is responsible for the cost and quality of medical care for a patient population. ACO contracts provide financial incentives for providers to reduce costs and improve the quality of care.

The Alternative Quality Contract (AQC) is an ACO model implemented in 2009 by Blue Cross Blue Shield (BCBS) of Massachusetts with providers in their commercial health plans. These ACOs cover general patient populations of children and adults under the age of 65.

Providers are paid a global budget (a fixed payment for expected patient costs), a share of savings relative to spending targets, and incentive payments for meeting quality thresholds. BCBS also provides technical support. Providers are required to absorb some of the costs if spending exceeds targets.

AQC contracts last for five years. Studies have examined provider performance during the first four contract years. The reductions in medical costs reported below do not represent net savings to BCBS. These estimates do not account for BCBS costs from shared savings payments, quality incentive payments, and other support costs.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	4	1348235	-0.075	0.013	34	n/a	n/a	n/a	-0.075	0.001
Emergency department visits*	1	380142	0.007	0.013	34	n/a	n/a	n/a	0.007	0.607
Prescription drug costs*	1	332624	-0.002	0.019	34	n/a	n/a	n/a	-0.002	0.923

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Afendulis, C.C., Fendrick, A.M., Song, Z., Landon, B.E., Safran, D.G., Mechanic, R.E., & Chernew, M.E. (2014). The impact of global budgets on pharmaceutical spending and utilization: early experience from the alternative quality contract. *Inquiry: a Journal of Medical Care Organization, Provision and Financing, 51*.

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Accountable Care Organizations: (b) Medicare Physician Group Practice Demonstration (PGPD)

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

An Accountable Care Organization (ACO) is a provider group that is responsible for the cost and quality of medical care for a patient population. ACO contracts provide financial incentives for providers to reduce costs and improve the quality of care.

The Centers for Medicare and Medicaid Services (CMS) implemented the Medicare Physician Group Practice Demonstration (PGPD) in 2005. Ten provider organizations entered five-year ACO contracts with Medicare. These organizations received up to 80% of savings relative to spending targets, if they demonstrated improvement on 32 quality measures. Providers were not responsible for costs above target (upside risk only), though they faced the financial risk of not covering the investments required to become an ACO (e.g., IT systems, additional staff).

The cost reduction reported below does not represent actual savings to Medicare. The estimate does not reflect cost sharing or performance bonus payments made by CMS.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	2	1213380	-0.019	0.002	71	n/a	n/a	n/a	-0.019	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

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Accountable Care Organizations: (c) Medicare Pioneer ACOs

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

An Accountable Care Organization (ACO) is a provider group that is responsible for the cost and quality of medical care for a patient population. ACO contracts provide financial incentives for providers to reduce costs and improve the quality of care. In contracts with "upside and downside" financial risk, providers are able to share in savings relative to a spending target but they are required to absorb some of the costs if spending exceeds the target. In contracts with "upside" risk only, providers are not responsible for costs above target. The Centers for Medicare and Medicaid Services have established both types of ACO contracts.

The Medicare Pioneer ACO program was implemented for providers willing to assume both upside and downside financial risk. Pioneer ACOs can receive up to 60% of estimated savings relative to a spending benchmark, contingent upon performance on quality measures.

Thirty-two organizations entered the Pioneer ACO program in 2012, though 13 subsequently withdrew from the program. Studies have examined performance over the first two contract years. The cost reductions presented below do not represent actual savings to Medicare. The estimates do not reflect cost-sharing payments made to providers.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	3	1683614	-0.021	0.010	71	n/a	n/a	n/a	-0.021	0.030
Hospital costs (inpatient)*	3	1683614	-0.025	0.009	71	n/a	n/a	n/a	-0.025	0.004
Hospital costs (outpatient)*	3	1683614	-0.027	0.016	71	n/a	n/a	n/a	-0.027	0.092
Skilled nursing facility costs*	3	1683614	-0.019	0.004	71	n/a	n/a	n/a	-0.019	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

McWilliams, J.M., Chernew, M.E., Landon, B.E., & Schwartz, A.L. (2015). Performance differences in year 1 of pioneer accountable care organizations. *The New England Journal of Medicine, 372*(20), 1927-36.

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Cost sharing: (I) Copays for nonemergent emergency department visits, Medicaid adult population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effect reported below is for implementation of modest copays (in the range of $3 to $15) for emergency department visits that are judged not to be emergent (in these cases, a hospital determines, after an appropriate medical screening, that the individual does not need emergency medical services). These copays have been implemented by some state Medicaid programs.

Meta-Analysis of Program Effects

Outcomes measured	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*	2	21074	0.031	0.064	40	n/a	n/a	n/a	0.031	0.630

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Mortensen, K. (2010). Copayments did not reduce medicaid enrollees' nonemergency use of emergency departments. *Health Affairs (project Hope), 29*(9), 1643-50.

Siddiqui, M., Roberts, E.T., & Pollack, C.E. (2015). The effect of emergency department copayments for Medicaid beneficiaries following the Deficit Reduction Act of 2005. *Jama Internal Medicine, 175*(3), 393-8.

Cost sharing: (n) Copays for prescription drugs, adults with a chronic illness

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effect reported below is for increases in prescription drug copays (ranging from $8 to $23) in employer-sponsored health plans. The estimate is for patients taking medications for hypertension and high cholesterol (ACE inhibitors and statins).

Meta-Analysis of Program Effects

Outcomes measured	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
Medication adherence	2	652	-0.602	0.118	30	n/a	n/a	n/a	-0.602	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

Huskamp, H.A., Deverka, P.A., Epstein, A.M., Epstein, R.S., McGuigan, K.A., & Frank, R.G. (2003). The effect of incentive-based formularies on prescription-drug utilization and spending. *The New England Journal of Medicine, 349*(23), 2224-32.

Cost sharing: (p) Copays for prescription drugs, low-income children (CHIP)

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effect reported below is for modest increases (e.g., $3 to $5) in prescription drug copays for low-income children enrolled in Alabama's Children's Health Insurance Program (CHIP).

Meta-Analysis of Program Effects

Outcomes measured	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
Prescription drug costs*	1	17200	-0.079	0.031	10	n/a	n/a	n/a	-0.079	0.009

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Sen, B., Blackburn, J., Morrisey, M., Becker, D., Kilgore, M., Caldwell, C., & Menachemi, N. (2014). Can increases in CHIP copayments reduce program expenditures on prescription drugs? *Medicare & Medicaid Research Review, 4,* 2.

Cost sharing: (q) Copays for prescription drugs, low-income children (CHIP) with a chronic illness

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effect reported below is for modest increases (e.g., $3 to $5) in prescription drug copays for low-income children with a chronic illness enrolled in Alabama's Children's Health Insurance Program (CHIP).

Meta-Analysis of Program Effects

Outcomes measured	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
Prescription drug costs*	1	4644	-0.036	0.014	10	n/a	n/a	n/a	-0.036	0.009

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Sen, B., Blackburn, J., Morrisey, M., Becker, D., Kilgore, M., Caldwell, C., & Menachemi, N. (2014). Can increases in CHIP copayments reduce program expenditures on prescription drugs? *Medicare & Medicaid Research Review, 4,* 2.

Cost sharing: (i) Copay increases across multiple services, low-income and chronically-ill population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effect reported below reflects changes in medical costs resulting from increases in patient copays for multiple services (prescription drugs, office visits, emergency department visits, and outpatient surgery). The effect size is the price elasticity for medical expenditures. Estimates are derived from data for low-income adults (< 300% Federal Poverty Line) with a chronic condition in a subsidized health plan.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs**	1	37961	-0.057	0.094	41	n/a	n/a	n/a	-0.057	0.545

** The “effect size” for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Chandra, A., Gruber, J., & McKnight, R. (2014). The impact of patient cost-sharing on low-income populations: evidence from Massachusetts. *Journal of Health Economics, 33,* 57-66.

Cost sharing: (j) Emergency department copays, general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effects reported below are for emergency department copays (ranging from $25 to $50 in 2014 dollars) versus no emergency department copays. The effects are for general patient populations.

Meta-Analysis of Program Effects

Outcomes measured	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*	2	1158999	-0.121	0.003	33	n/a	n/a	n/a	-0.121	0.001
Emergency department visits (higher-severity)*	1	30276	-0.058	0.095	33	n/a	n/a	n/a	-0.058	0.543
Emergency department vists (lower-severity)*	1	30276	-0.292	0.046	33	n/a	n/a	n/a	-0.292	0.001
Hospitalization*	2	1158999	-0.039	0.009	33	n/a	n/a	n/a	-0.039	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Hsu, J., Price, M., Brand, R., Ray, G.T., Fireman, B., Newhouse, J.P., & Selby, J.V. (2006). Cost-sharing for emergency care and unfavorable clinical events: Findings from the Safety and Financial Ramifications of ED Copayments Study. *Health Services Research, 41*(5), 1801-1820.

Selby, J.V., Fireman, B.H., & Swain, B.E. (1996). Effect of a copayment on use of the emergency department in a health maintenance organization. *The New England Journal of Medicine, 334*(10), 635-41.

Cost sharing: (k) Emergency department copays, low-income patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effects reported below are for emergency department copays (ranging from $25 to $50 in 2014 dollars) versus no emergency department copays. The effects are for low-income patients (living in census blocks with more than 20% of residents below the federal poverty line).

Meta-Analysis of Program Effects

Outcomes measured	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*	1	254431	-0.153	0.006	33	n/a	n/a	n/a	-0.153	0.001
Hospitalization*	1	254431	-0.053	0.019	33	n/a	n/a	n/a	-0.053	0.004

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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Citations Used in the Meta-Analysis

Hsu, J., Price, M., Brand, R., Ray, G.T., Fireman, B., Newhouse, J.P., & Selby, J.V. (2006). Cost-sharing for emergency care and unfavorable clinical events: Findings from the Safety and Financial Ramifications of ED Copayments Study. *Health Services Research, 41*(5), 1801-1820.

Cost sharing: (r) Copays for prescription drugs, Medicare beneficiaries

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effects reported below are for increases (ranging for $5 to $10) in prescription drug copays among Medicare beneficiaries in an HMO. Note that a $10 office visit copay was also implemented for this population.

Meta-Analysis of Program Effects

Outcomes measured	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
Hospital costs (inpatient)*	1	35456	0.054	0.019	70	n/a	n/a	n/a	0.054	0.005
Prescription drug costs*	1	35456	-0.320	0.026	70	n/a	n/a	n/a	-0.320	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Chandra, A., Gruber, J., & McKnight, R. (2010). Patient cost-sharing and hospitalization offsets in the elderly. *American Economic Review, 100*(1), 193-213.

Cost sharing: (m) Copays for prescription drugs, general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effects reported below are for moderate increases in prescription drug copays (ranging from $3 to $12) among general patient populations.

Meta-Analysis of Program Effects

Outcomes measured	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
Hospitalization	1	6881	0.000	0.015	31	n/a	n/a	n/a	0.000	1.000
Prescription drug costs**	1	16783	-0.041	0.009	41	n/a	n/a	n/a	-0.041	0.001

** The “effect size” for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Motheral, B., & Fairman, K.A. (2001). Effect of a three-tier prescription copay on pharmaceutical and other medical utilization. *Medical Care, 39*(12), 1293-304.

Gibson, T.B., McLaughlin, C.G., & Smith, D.G. (2005). A copayment increase for prescription drugs: the long-term and short-term effects on use and expenditures. *Inquiry: a Journal of Medical Care Organization, Provision and Financing, 42*(3), 293-310.

Cost sharing: (h) Copay increases across multiple services, low-income population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

The effects reported below reflect changes in medical costs resulting from increases in patient copays for multiple services (prescription drugs, office visits, emergency department visits, and outpatient surgery). The effect sizes are price elasticities for expenditures on selected services. Estimates are derived from data for low-income adults (< 300% Federal Poverty Line) in a subsidized health plan.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs**	1	122456	-0.158	0.064	41	n/a	n/a	n/a	-0.158	0.014
Emergency department costs**	1	122456	-0.207	0.152	41	n/a	n/a	n/a	-0.207	0.175
Hospital costs (inpatient)**	1	122456	-0.115	0.250	41	n/a	n/a	n/a	-0.115	0.646
Prescription drug costs**	1	122456	-0.131	0.074	41	n/a	n/a	n/a	-0.131	0.076

** The “effect size” for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Chandra, A., Gruber, J., & McKnight, R. (2014). The impact of patient cost-sharing on low-income populations: evidence from Massachusetts. *Journal of Health Economics, 33,* 57-66.

Cost sharing: (g) Coinsurance (25% rate or higher) versus no cost sharing, general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These estimates are from the RAND Health Insurance Experiment. Households were randomly assigned to different levels of cost sharing. The effect sizes reported below measure changes in medical costs, utilization, and health outcomes attributed to having a coinsurance rate of at least 25% versus free care.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	1	1137	-0.189	0.047	33	n/a	n/a	n/a	-0.189	0.001
Emergency department visits*	1	2296	-0.210	0.081	33	n/a	n/a	n/a	-0.210	0.010
Emergency department visits (higher-severity)*	1	5392	-0.230	0.059	33	n/a	n/a	n/a	-0.230	0.001
Emergency department vists (lower-severity)*	1	5392	-0.470	0.049	33	n/a	n/a	n/a	-0.470	0.001
Diastolic blood pressure	1	2339	0.079	0.036	33	n/a	n/a	n/a	0.079	0.027
Cholesterol	1	2262	-0.036	0.037	33	n/a	n/a	n/a	-0.036	0.327

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

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Citations Used in the Meta-Analysis

Brook, R.H., United States., Rand Corporation., & Rand Health Insurance Experiment. (1984). *The effect of coinsurance on the health of adults: Results from the Rand Health Insurance Experiment.* Santa Monica, Calif: Rand.

Manning, W.G., Rand Corporation., & Rand Health Insurance Study. (1987). *Health insurance and the demand for medical care: Evidence from a randomized experiment.* Santa Monica, CA: Rand.

O'Grady, K.F., Manning, W.G., Newhouse, J.P., & Brook, R.H. (1985). *The impact of cost sharing on emergency department use.* Santa Monica, CA: Rand Corporation.

Cost sharing: (f) High-Deductible Health Plans with higher deductibles (individual > $1000) and HSA accounts, general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These results are for High-Deductible Health Plans (HDHPs) versus traditional plans. In this case, the HDHPs have individual deductibles are at least $1000 and health savings accounts (HSA) are offered.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	2	14364	-0.238	0.057	33	n/a	n/a	n/a	-0.238	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

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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

Charlton, M.E., Levy, B.T., High, R.R., Schneider, J.E., & Brooks, J.M. (2011). Effects of health savings account-eligible plans on utilization and expenditures. *The American Journal of Managed Care, 17*(1), 79-86.

Haviland, A., Sood, N., McDevitt, R., Marquis, M. (2011). How Do Consumer-Directed Health Plans Affect Vulnerable Populations? *Forum for Health Economics & Policy, 14,* 2.

Cost sharing: (e) High-Deductible Health Plans with higher deductibles (individual > $1000) and HRA accounts, general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These results are for High-Deductible Health Plans (HDHPs) versus traditional plans. In this case, the HDHPs have individual deductibles of at least $1000 and health reimbursement arrangements (HRA) are provided.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	4	89701	-0.152	0.028	37	n/a	n/a	n/a	-0.152	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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Citations Used in the Meta-Analysis

Borah, B.J., Burns, M.E., & Shah, N.D. (2011). Assessing the impact of high deductible health plans on health-care utilization and cost: a changes-in-changes approach. *Health Economics, 20*(9), 1025-42.

Beeuwkes, B.M., Haviland, A.M., McDevitt, R., & Sood, N. (2011). Healthcare spending and preventive care in high-deductible and consumer-directed health plans. *The American Journal of Managed Care, 17*(3), 222-30.

Haviland, A., Sood, N., McDevitt, R., Marquis, M. (2011). How Do Consumer-Directed Health Plans Affect Vulnerable Populations? *Forum for Health Economics & Policy, 14,* 2.

Cost sharing: (d) High-Deductible Health Plans with higher deductibles (individual > $1000), general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These results are for High-Deductible Health Plans (HDHPs) versus traditional plans. In this case, the HDHPs have individual deductibles of at least $1000. These plans may or may not include health reimbursement arrangements (HRA) or a health savings account (HSA).

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	8	142933	-0.178	0.024	37	n/a	n/a	n/a	-0.178	0.001

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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Beeuwkes, B.M., Haviland, A.M., McDevitt, R., & Sood, N. (2011). Healthcare spending and preventive care in high-deductible and consumer-directed health plans. *The American Journal of Managed Care, 17*(3), 222-30.

Charlton, M.E., Levy, B.T., High, R.R., Schneider, J.E., & Brooks, J.M. (2011). Effects of health savings account-eligible plans on utilization and expenditures. *The American Journal of Managed Care, 17*(1), 79-86.

Haviland, A., Sood, N., McDevitt, R., Marquis, M. (2011). How Do Consumer-Directed Health Plans Affect Vulnerable Populations? *Forum for Health Economics & Policy, 14,* 2.

Cost sharing: (c) High-Deductible Health Plans with moderate deductibles (individual < $1000), general patient population

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These results are for High-Deductible Health Plans (HDHPs) versus traditional plans. In this case, the HDHPS have moderate deductibles (individual deductibles between $500 and $1000). These plans may or may not include health reimbursement arrangements (HRA) or a health savings account (HSA).

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	3	85731	-0.029	0.014	33	n/a	n/a	n/a	-0.029	0.044

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

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Beeuwkes, B.M., Haviland, A.M., McDevitt, R., & Sood, N. (2011). Healthcare spending and preventive care in high-deductible and consumer-directed health plans. *The American Journal of Managed Care, 17*(3), 222-30.

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Cost sharing: (o) Copay reductions for prescription drugs used to treat chronic conditions (Value Based Insurance Design), adults with chronic illnesses

Literature review updated November 2015.

Program Description: Evaluations of health care policies and programs often measure two broad types of outcomes: (1) those that reflect the health status of people (e.g., disease incidence) and (2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

These results are from value-based insurance designs where copays for drugs used to treat chronic conditions are reduced in order to encourage adherence to drug therapies. Conditions include diabetes, pre-diabetes, high blood pressure, and high cholesterol.

Meta-Analysis of Program Effects

Outcomes measured	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
Medication adherence	10	76223	0.045	0.005	52	n/a	n/a	n/a	0.045	0.001

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Citations Used in the Meta-Analysis

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Gibson, T.B., Mahoney, J., Ranghell, K., Cherney, B.J., & McElwee, N. (2011). Value-based insurance plus disease management increased medication use and produced savings. *Health Affairs (project Hope), 30*(1), 100-8.

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Cost sharing: (a) High-Deductible Health Plans (moderate to high deductibles, with and without HRAs or HSAs), general patient population

Literature review updated November 2015.

Program Description: These results are for High-Deductible Health Plans (HDHPs) versus traditional plans. These plans have moderate to high deductibles (at least a $500 individual deductible). They may or may not include health reimbursement arrangements (HRA) or a health savings account (HSA). Preventive services include cancer screening (breast, cervical, colorectal), preventive office visits, and preventive lab tests. The medication adherence effect size is for eight drug classes used to treat diabetes, high blood pressure, high cholesterol and other chronic conditions. The effect is for HDHPs where prescription drug costs are subject to the deductible.

Meta-Analysis of Program Effects

Outcomes measured	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
Health care costs*	10	5052573	-0.116	0.026	33	n/a	n/a	n/a	-0.116	0.001
Emergency department costs*	2	52058	-0.071	0.086	33	n/a	n/a	n/a	-0.071	0.407
Emergency department visits*	1	15847	-0.150	0.032	33	n/a	n/a	n/a	-0.150	0.001
Emergency department vists (lower-severity)*	1	15847	-0.196	0.047	33	n/a	n/a	n/a	-0.196	0.001
Emergency department visits (higher-severity)*	1	15847	-0.097	0.098	33	n/a	n/a	n/a	-0.097	0.323
Hospitalization*	1	15847	-0.118	0.091	33	n/a	n/a	n/a	-0.118	0.196
Prescription drug costs*	3	63193	-0.047	0.013	33	n/a	n/a	n/a	-0.047	0.001
Medication adherence	8	4865	-0.092	0.038	33	n/a	n/a	n/a	-0.092	0.016
Preventive services	11	152096	-0.046	0.010	33	n/a	n/a	n/a	-0.046	0.001
Primary care visits*	1	7953	-0.090	0.015	45	n/a	n/a	n/a	-0.090	0.001

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

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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

Borah, B.J., Burns, M.E., & Shah, N.D. (2011). Assessing the impact of high deductible health plans on health-care utilization and cost: a changes-in-changes approach. *Health Economics, 20*(9), 1025-42.

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Wharam, J.F., Graves, A.J., Zhang, F., Soumerai, S.B., Ross-Degnan, D., & Landon, B.E. (2012). Two-year trends in cancer screening among low socioeconomic status women in an HMO-based high-deductible health plan. *Journal of General Internal Medicine, 27*(9), 1112-9.

Cost sharing: (b) High-Deductible Health Plans (moderate to high deductible levels, with or without HSAs), low-income patient population

Literature review updated November 2015.

Program Description: These results are for low-income patients in High-Deductible Health Plans (HDHPs) versus those in traditional plans. In this case, the HDHPs have moderate- to high-deductibles (at least a $500 individual deductible). These plans may or may not include health reimbursement arrangements (HRA) or a health savings account (HSA). Preventive services refer to cancer screening (breast, cervical, colorectal). Low-income status is determined by residence in low-income areas.

Meta-Analysis of Program Effects

Outcomes measured	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*	1	5854	-0.046	0.046	33	n/a	n/a	n/a	-0.046	0.319
Emergency department visits (higher-severity)*	1	5854	-0.245	0.103	33	n/a	n/a	n/a	-0.245	0.017
Emergency department vists (lower-severity)*	1	5854	-0.037	0.051	33	n/a	n/a	n/a	-0.037	0.471
Preventive services	6	29449	-0.031	0.012	33	n/a	n/a	n/a	-0.031	0.008

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

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Haviland, A., Sood, N., McDevitt, R., Marquis, M. (2011). How Do Consumer-Directed Health Plans Affect Vulnerable Populations?. *Forum for Health Economics & Policy, 14,* 2.

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Transitional care programs to prevent hospital readmissions: Brief phone follow-up only

Literature review updated December 2014.

Program Description: Transitional care programs focus on preventing future hospital readmissions after discharge. Programs in this specific category include those providing post-discharge patient follow-up by telephone only, with no pre-discharge assistance.

Meta-Analysis of Program Effects

Outcomes measured	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
Hospital readmissions	5	750	-0.140	0.222	57	0.000	0.000	58	-0.143	0.107

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Citations Used in the Meta-Analysis

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

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