Non-Medicaid enhanced prenatal care programs for adolescents

Health Care: Maternal and Infant Health

Benefit-cost estimates updated December 2018. Literature review updated December 2016.

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

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our Technical Documentation.

Program Description: Non-Medicaid enhanced prenatal care programs for pregnant adolescents include intensive case management, group classes, or both, provided by either a paraprofessional or team of health service providers. Adolescent women are eligible for these programs if they are 18 or under during their pregnancy. Participants typically receive services for four months during the prenatal period, with an average of 12 one-hour sessions. All women in treatment and comparison groups receive clinical prenatal care (treatment as usual).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$655
Participants	$263
Others	$0
Indirect	$2,173
Total benefits	$3,090
Net program cost	($521)
Benefits minus cost	$2,569

Benefit to cost ratio	$5.93
Benefits minus costs	$2,569
Chance the program will produce benefits greater than the costs	74 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2017). 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 preterm births	$0	$58	$0	$29	$87
Subtotals	$0	$58	$0	$29	$87
From secondary participant					
Infant mortality	$263	$119	$0	$2,167	$2,550
Health care associated with preterm births	$0	$477	$0	$236	$713
Subtotals	$263	$597	$0	$2,403	$3,262
Adjustment for deadweight cost of program	$0	$0	$0	($259)	($259)
Totals	$263	$655	$0	$2,173	$3,090

[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.

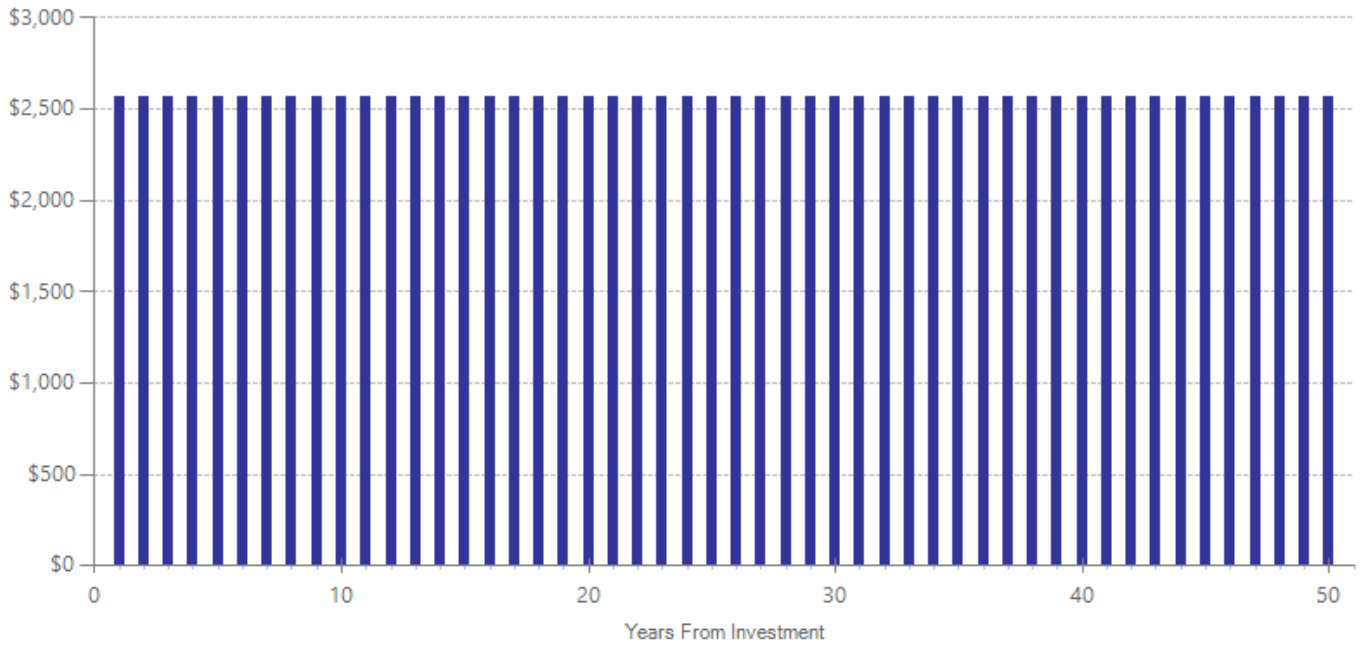
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,888	2014	Present value of net program costs (in 2017 dollars)	($521)
Comparison costs	$1,383	2014	Cost range (+ or -)	15 %

Per-participant program cost estimates are based on estimated costs for included studies. For each study, we estimate provider hours, apply the mean hourly wage estimate for Washington State reported by the Bureau of Labor Statistics (September 2016), and increase wages by a factor of 1.441 to account for the cost of employee benefits. Studies averaged 12 provider hours, and providers varied (paraprofessional, social workers, nurse, or multiple providers). Program participants also receive treatment as usual, so we include the average cost of prenatal care in Washington in the total program cost. The comparison costs include the cost of treatment as usual, per participant. The costs of treatment as usual are the average costs of usual prenatal care in Washington State (Washington State Department of Health, September 2016).

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

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	Primary or secondary participant	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
Low birthweight births (< 2500g)***	16	Primary	4	2556	-0.106	0.105	16	0.000	0.000	17	-0.155	0.185
Preterm birth (< 37 weeks)***	16	Primary	2	2004	-0.181	0.140	16	0.000	0.000	17	-0.216	0.041
Very low birthweight birth (< 1500g)***	16	Primary	1	744	-0.058	0.069	16	0.000	0.000	17	-0.162	0.019
Infant mortality	1	Secondary	1	744	-0.037	0.069	1	0.000	0.000	2	-0.102	0.141
Low birthweight births (< 2500g)***	1	Secondary	4	2556	-0.106	0.105	1	0.000	0.000	2	-0.155	0.185
Preterm birth (< 37 weeks)***	1	Secondary	2	2004	-0.181	0.140	1	0.000	0.000	2	-0.216	0.041
Very low birthweight birth (< 1500g)***	1	Secondary	1	744	-0.058	0.069	1	0.000	0.000	2	-0.162	0.019

***We report this outcome twice: once for mothers (designated as the primary participant) and once for infants (designated as the secondary participant). We do this because the outcome is associated with costs and benefits for both mothers and infants, and the amount of the cost or benefit is different for mothers than it is for infants.

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

Hardy, J.B., King, T.M., & Repke, J.T. (1987). The Johns Hopkins Adolescent Pregnancy Program: an evaluation. *Obstetrics and Gynecology, 69*(3), 300-6.

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Covington, D.L., Peoples-Sheps, M.D., Buescher, P.A., Bennett, T.A., & Paul, M.V. (1998). An Evaluation of an Adolescent Prenatal Education Program. *American Journal of Health Behavior, 22*(5), 323-33.

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Printed on 04-23-2019