Group prenatal care (compared to standard prenatal care)

Health Care: Maternal and Infant Health

Benefit-cost estimates updated May 2017. 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: Traditionally, prenatal care visits are conducted by an obstetrician or midwife in a clinical setting. Group prenatal care is an alternative strategy to deliver prenatal education and conduct clinical assessments in a non-clinical and group setting. Groups are typically led by an obstetrician or midwife and may also include a registered nurse or medical assistant as a second staff member. Five out of six studies included in this analysis use the CenteringPregnancy model of prenatal care, which includes ten sessions of education and clinical assessments in a group setting. On average, sessions are two hours long with groups of six to twelve women. One study in this analysis provided prenatal education in groups of six to eight and taught pregnant teens to conduct routine clinical measurements on their peers. In this analysis, individuals received group prenatal care for about seven months.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$176	Benefit to cost ratio	n/a
Participants	$203	Benefits minus costs	$3,791
Others	$85	Chance the program will produce benefits greater than the costs	94 %
Indirect	$2,231		
Total benefits	$2,695		
Net program cost	$1,095		
Benefits minus cost	$3,791		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2016). 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 Cesarean sections	$1	$25	$25	$13	$64
Subtotals	$1	$25	$25	$13	$64
From secondary participant					
Infant mortality	$200	$91	$0	$1,639	$1,930
Health care associated with low birthweight births	$4	$93	$93	$47	$237
Health care associated with NICU admissions	($1)	($33)	($33)	($17)	($85)
Subtotals	$202	$151	$60	$1,669	$2,082
Adjustment for deadweight cost of program	$0	$0	$0	$550	$550
Totals	$203	$176	$85	$2,231	$2,695

[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.

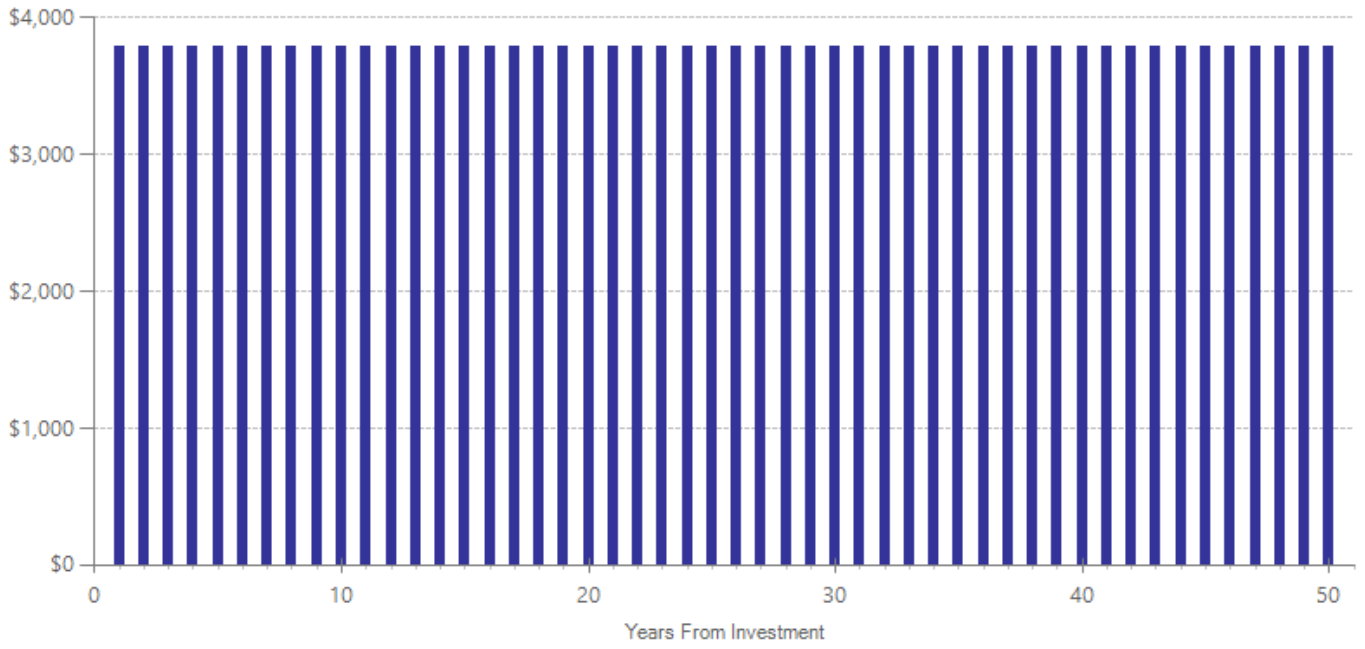
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$264	2015	Present value of net program costs (in 2016 dollars)	$1,095
Comparison costs	$1,348	2015	Cost range (+ or -)	20 %

Treatment cost estimates for this program reflect costs compared to treatment as usual. Costs are based on a weighted average of per-participant costs from included studies with sufficient staffing and programming information. The per-participant cost for the intervention group was calculated by multiplying the average staff hours per participant by the staffing costs from each study. We estimated average staffing hours from Fausett (2014), Ickovics et al. (2016), and Kennedy et al. (2011). We estimated staff salaries using the mean hourly wage estimate for Washington State reported by the Bureau of Labor Statistics, and multiplied the hourly wage by 1.441 to account for employee benefits. Comparison group costs were estimated in a similar way, assuming women received twelve prenatal care visits (the recommended number of visits for an uncomplicated pregnancy of 39 weeks), and that visits were either staffed by an obstetrician or midwife (Guidelines for Perinatal Care. The American Academy of Pediatrics and the American College of Obstetrics and Gynecologists. 2012).

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

Detailed Annual Cost Estimates Per Participant



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

Meta-Analysis of Program Effects

Outcomes measured	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
Cesarean sections	Primary	1	162	-0.048	0.150	20	0.000	0.000	21	-0.048	0.750
Low birthweight births***	Primary	4	1523	-0.084	0.070	20	0.000	0.000	21	-0.084	0.229
Postpartum depression^	Primary	2	785	0.000	0.057	20	0.000	0.000	21	0.000	1.000
Preterm birth (< 37 weeks)***	Primary	4	1989	-0.054	0.072	20	0.000	0.000	21	-0.054	0.453
Small for gestational age (SGA)***	Primary	2	1196	-0.176	0.080	20	0.000	0.000	21	-0.176	0.028
Low birthweight births***	Secondary	4	1523	-0.084	0.070	1	0.000	0.000	2	-0.084	0.229
NICU admission	Secondary	3	1358	0.016	0.085	1	0.000	0.000	2	0.016	0.853
Preterm birth (< 37 weeks)***	Secondary	4	1989	-0.054	0.072	1	0.000	0.000	2	-0.054	0.453
Small for gestational age (SGA)***	Secondary	2	1196	-0.176	0.080	1	0.000	0.000	2	-0.176	0.028

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

***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

Fausett, M.B. (2014). *Centering Pregnancy (CP): A Longitudinal Correlational Study Designed to Evaluate Maternal and Fetal Outcomes After Participation in CP.*

Ford, K., Weglicki, L., Kershaw, T., Schram, C., Hoyer, P.J., & Jacobson, M.L. (2002). Effects of a prenatal care intervention for adolescent mothers on birth weight, repeat pregnancy, and educational outcomes at one year postpartum. *The Journal of Perinatal Education, 11*(1), 35-38.

Ickovics, J.R. (2007). Group prenatal care and perinatal outcomes: A randomized controlled trial. *Obstetrics and Gynecology, 111*(4), 993-994.

Ickovics, J.R., Earnshaw, V., Lewis, J.B., Kershaw, T.S., Magriples, U., Stasko, E., . . . Tobin, J.N. (2016). Cluster randomized controlled trial of group prenatal care: perinatal outcomes among adolescents in New York City health centers. *American Journal of Public Health, 106*(2), 359-365.

Ickovics, J.R., Reed, E., Magriples, U., Westdahl, C., Schindler, R.S., & Kershaw, T.S. (2011). Effects of group prenatal care on psychosocial risk in pregnancy: Results from a randomised controlled trial. *Psychology & Health, 26*(2), 235-250.

Kennedy, H.P., Farrell, T., Paden, R., Hill, S., Jolivet, R.R., Cooper, B.A., & Rising, S.S. (2011). A randomized clinical trial of group prenatal care in two military settings. *Military Medicine, 176*(10), 1169-77.

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

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