RESOURCE | September 2020

Planning for a Pay for Outcomes Approach in Home Visiting

A Review of Research to Inform Maternal, Infant, and Early Childhood Home Visiting Outcome Selection, Projected Savings, and Pricing

Module 3: Economic Value of Outcomes in Non-Home Visiting Research – Study Profiles

OPRE Report 2020-90

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Module 3: Economic Value of Outcomes in Non-Home Visiting Research – Study Profiles

OPRE Report 2020-90

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Submitted to

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Office of Planning, Research, and Evaluation
Administration for Children and Families
U.S. Department of Health and Human Services
Contract Number: HHSP233201500133I

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Overview

Pay for outcomes (PFO) is a payment model that promotes innovative financing for social initiatives, connecting funding to outcomes and cost savings. The Bipartisan Budget Act of 2018 (Public Law 115–123, Section 50605) allows Maternal Infant and Early Childhood Home Visiting (MIECHV) Program awardees to pursue PFO arrangements. PFO can help awardees expand services, improve outcomes, reach new or underserved populations, and/or engage new stakeholders. This resource provides information to inform PFO feasibility studies and PFO project development, including outcome selection, outcome savings or outcome payment pricing, and financial agreements. Module 3 summarizes the economic value of related outcomes in fields other than home visiting. **Study profiles provide a snapshot of each study cited in Module 3.**

Module 3 Study Profile Overview

Every study has contextual characteristics awardees may consider when selecting PFO outcomes and determining per unit outcome costs. This document provides a snapshot of each study cited in Module 3. Key characteristics covered include the intervention program (if applicable), research design, target population, and study location. Profiles also detail specific outcomes monetized, per unit costs by outcome, economic data sources, and measures related to monetization (e.g., return on investment, average savings per child, program costs or cost-effectiveness ratios) for each program assessed. Awardees can navigate to a study profile by scrolling or using follow the links in the Contents to each profile in the table of contents.

How to Use Module 3

Module 3 summarize monetized outcome data from research beyond home visiting studies. Before reviewing Module 3, an awardee should (1) select potential outcomes for PFO as described in Module 1, (2) identify relevant local data, and (3) examine the per unit cost data used in home visiting return on investment (ROI) studies as described in Module 2. If local data are limited and an outcome has not yet been included in home visiting ROI studies, awardees can incorporate monetized outcome data from non-home visiting research. The studies reviewed in Module 3 contribute to the awardee's ability to predict the monetary value of improved outcomes.

Awardees can use this information to do the following:

Identify per unit costs for an outcome with limited data in home visiting. Module 3 provides information to estimate the costs associated with the outcomes of interest that have limited or no home visiting monetized outcome data. For example, health care costs associated with disruptive behavior disorder were reported in one study to be $1,817 per year in 2005 dollars. Awardees will need to consider location (e.g., local data will provide a more accurate reflection of costs); year of dollars; and other contextual factors in determining the per unit cost for their feasibility study.

Estimate future savings or cost avoidance and social benefit. As part of the feasibility study, awardees will calculate potential savings from the PFO outcome. Module 2 describes how to apply the per unit costs to the outcomes achieved in the past to estimate future savings. Awardees can use this approach to apply per unit costs from non-home visiting research to project future savings for outcomes reviewed in Module 3.

Analyses in Module 3

Benefit-cost analysis identifies the resources required to implement a program, provides a basis for understanding the cost of providing services, and assesses whether a program's monetary benefits exceed program costs.

Return on investment compares program net costs and outcomes in dollars and expresses the comparison as the percentage gained or lost. ROI can also translate into savings for each dollar invested in the program.

Cost-effectiveness analysis estimates the cost of achieving a change in specific outcomes. Cost-effectiveness ratio is often expressed as the cost per unit of improvement (e.g., cost per depression-free day).

Avruch & Cackley, 1995

Citation:	Avruch, S., & Cackley, A. P. (1995). Savings achieved by giving WIC benefits to women prenatally. *Public Health Reports, 110*, 27–34.
Program:	Special Supplemental Food Program for Women, Infants, and Children (WIC) – provides supplemental food, health care referrals, and nutrition education for low-income pregnant and postpartum women and children up 5 years of age
Research design:	Meta-analysis of 13 studies conducted between 1971 and 1988
Target population:	Pregnant women with family income at or below 185 percent of the federal poverty level and a low birth weight infant
Study location:	States included in meta-analysis not specified
Study-calculated program cost:	Cost of serving average WIC participant $44.35 in 1992; federal program investment of $389 million*
Findings:	*ROI.* For every federal dollar spent for prenatal WIC services, the federal Medicaid saved $0.93 in costs, state Medicaid saved $0.77, and private payers (hospitals, insurers, and individuals) saved $1.37; the total savings equaled $3.07 for every dollar. For general WIC evaluations, the savings was $1.36 per $1.00 spent; for Medicaid WIC, the savings was $3.89. *Average savings per participant.* Not provided *Cost savings.* First-year federal Medicaid savings was $364 million, state savings was $298 million, and averted expenditures totaled $1.19 billion. Federal investment was $389 million and total net savings was $805 million. Total net savings for Medicaid WIC evaluations was $1.12 billion and for general WIC evaluations was $139 million.

Limitations: Did not provide average savings per child or by very and moderately low birth weight (VLBW and MLBW) infants

*Note: Costs in 1992 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 1. Avruch & Cackley Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Initial hospitalization cost for low birth weight (above normal birth weight cost)	$37,997 for VLBW and $5,179 for MLBW	Maryland Hospital Cost Review Commission
Initial physician fees	$5,700 for VLBW and $777 for MLBW	Office of Technology Assessment
Outpatient costs above costs for normal birth weight infant	$5,318 for VLBW and $725 for MLBW	Medicaid Payment Ratio Health Care Financing Administration
Hospitalization	$880 per day	Maryland Hospital Cost Review Commission
Rehospitalization	$7,392 for VLBW and $3,256 for MLBW	Maryland Hospital Cost Review Commission

Note: Costs adjusted to 1992 dollars.

Unit costs for initial hospitalization for low birth weight, hospitalization, and rehospitalization were abstracted from Maryland hospital charge data and adjusted to represent a national estimate of hospital costs, presumably for both public and private payors. Initial physician fees were estimated using the midpoint (15 percent) of the Office of Technology Assessment's range of 10 to 20 percent of the total cost of the infant's initial hospitalization, presumably for both public and private payors. Outpatient costs were derived by calculating the average inpatient-outpatient Medicaid payment ratio using Health Care Financing Administration data and the average ratio of inpatient-outpatient Medicaid payment.

Ball & Wright, 1999

Citation:	Ball, T. M., & Wright, A. L. (1999). Health care cost of formula-feeding in the first year of life. *Pediatrics, 103*(S1), 870–876.
Program:	Secondary data analysis of Tuscan Children's Respiratory Study (CRS) and the Dundee Community Study
Research design:	Tucson: longitudinal prospective study; Scotland: observational prospective study; cost analysis
Target population:	Infants hospitalized in first year of life using community-based samples
Location:	Tucson, AZ, United States; and Dundee, Scotland
Study-calculated program cost:	$886 per day for hospitalization; $66–$132 per pediatric/office visit*
Findings:	*ROI.* Not provided
	Average savings per child. Exclusively breastfed infants had $134 per child in office visits in the first year of life and $188 less in hospitalization costs; the total was $331 less in medical costs per child.
	Costs per child. In the first year of life, infants who were never breastfed had more office visits, hospitalizations, and prescription costs compared with infants who had been exclusively breastfed for at least 3 months. The increased costs for office visits was $134,000 per 1,000 never-breastfed infants, and for hospitalization expenses it was $187,866 per 1,000 never-breastfed infants. Total estimated excess costs were $331,051 per 1,000 never-breastfed infants ($331 per child), with upper-end estimates of $475 per never-breastfed infant for some health maintenance organizations (HMOs) and pharmacy costs.

Limitations: CRS data were collected in 1980–1984. The Scottish data were collected with a focus on gastrointestinal disease. Cost estimates were based on the direct medical costs during 1995 in a large managed care health care system.

*Note: Costs in 1995 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 2. Ball & Wright Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Antibiotics	$3.22–$36.51 per course	Thomas-Davis Medical Centers (TDMC)
Pediatric/office visits	$69–$132 per visit (depending on provider and insurance)	TDMC and Regional Health Plan Database
Hospitalization (lower respiratory tract illness or gastroenteritis)	$886.16 per day–$1,025 per day (depending on provider and insurance)	TDMC and Regional Health Plan Database

Note: All costs in 1995 dollars.

Cost estimates were based on the direct medical costs during 1995 within a large managed care health care system (TDMC). No reference was provided for this data source. Unit costs represent direct medical costs of the largest clinic of one HMO headquartered in Tucson, TDMC. TDMC was an integrated health care system that contracted with local hospital systems for inpatient care.

Bhandari & Nepal, 2014

Citation:	Bhandari, D., & Nepal, N. (2014). *The cost-benefit analysis of increasing breastfeeding rates in New Mexico* [Unpublished manuscript]. Bureau of Business and Economic Research, University of New Mexico.
Program:	Special Supplemental Food Program for Women, Infants, and Children (WIC) – provides supplemental food, health care referrals, and nutrition education for low-income pregnant and postpartum women and children up to 5 years of age
Research design:	Retrospective cohort study; benefit-cost analysis
Target population:	Low-income postpartum women and their infants in the first year of life
Location:	New Mexico
Study-calculated program cost:	$11.5 million for fiscal year 2014 food expenditures; $8.3 million if WIC infants were exclusively breastfed*
Findings:	*ROI.* Not provided *Average savings per mother-infant pair.* The monthly costs for the mother and infant packages range from $56–$102 per family for exclusive breastfeeding to $138–$196 for exclusive formula feeding. *Savings*. Compared with food expenditures ($11.5 million) for mother-infant pairs, exclusive breastfeeding of all WIC infants ($8.3 million cost) is estimated to save $3.26 million a year in New Mexico. Savings is higher than for other scenarios: partial breastfeeding saves $320 million, exclusive breastfeeding for 6 months followed by exclusive formula for 6 months saves $1.88 million, and exclusive formula is higher at $12.4 million.
Limitations:	Could not draw any conclusions regarding the cost savings for the New Mexico Medicaid program

*Note: Costs in 2014 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 3. Bhandari & Nepal Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Monthly WIC food packages for exclusive formula – infant	$166.44 for infants aged 0–6 months $137.85 for infants aged 6–12 months	New Mexico WIC office Bureau of Business & Economic Research
Monthly WIC food packages for exclusive formula – infant and mother	$196.06 for infants aged 0–6 months $137.85 for infants aged 6–12 months	New Mexico WIC office Bureau of Business & Economic Research
Monthly WIC food packages for exclusive breastfeeding – infant	$1.22 for infants aged 0–4 months $0.23 for infants aged 4–6 months $47.86 for infants aged 6–12 months	New Mexico WIC office Bureau of Business & Economic Research
Monthly WIC food packages for exclusive breastfeeding – infant + mother	$55.74 for infants aged 0–6 months $54.75 for infants aged 4–6 months $102.38 for infants 6–12 months	New Mexico WIC office Bureau of Business & Economic Research
WIC food expenditures	$11.5 million for current expenditures $12.4 million for exclusive formula $8.3 million for exclusive breastfeeding $11.2 million for partial breastfeeding $9.7 million for exclusive breastfeeding for 6 months + exclusive formula for 6 months	New Mexico WIC office Bureau of Business & Economic Research

Note: All costs in 2014 dollars.

French et al., 2018

Citation:	French, A. N., Yates, B. T., & Fowles, T. R. (2018). Cost-effectiveness of Parent-Child Interaction Therapy in clinics versus homes: Client, provider, administrator, and overall perspectives. *Journal of Child and Family Studies, 27*, 3329–3344.
Program:	Parent-Child Interactive Therapy (PCIT) – evidence-based treatment for children with disruptive behaviors using positive reinforcement and play and behavioral therapy to help parents learn new skills and techniques
Research design:	Quasi-experimental design comparing home and clinic delivery of PCIT services; cost-effectiveness ratios
Target population:	Parents with children aged 2–5 years assessed on the Eyberg Child Behavior Inventory
Study location:	Delaware
Study-calculated program cost:	Overall individual costs = $1,821 per child for clinic delivery and $3,913 per child for home delivery; overall program-level costs = $1,911 per child for clinic delivery and $3,890 per child for home delivery*
Findings:	*ROI.* Not provided *Average savings per child.* Not provided *Cost per unit improvement.* Individually, the overall cost for achieving a 1-point change to the intensity scale was lower for clinic versus home delivery ($39 vs. $77 per child); this was similar for a 1-point change to the problematic scales for clinic versus home delivery ($121 vs. $312 per child, respectively). The provider costs followed the same pattern ($23 vs. $66 per child for the intensity scale and $64 vs. $267 per child for the problematic scale).

Limitations: Costs were not tracked episodically or by treatment activity. Pre-study training, turnover, and differential rates for specialists/therapists/coaches were not itemized or included. The extent of missing data and need for imputation complicated data analysis and the interpretation of findings.

*Note: Costs in 2015 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 4. French et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Client wages/salary	$18.83 per hour	U.S. Department of Labor, 2015a, 2015b U.S. General Services Administration, 2015
Clinician (counselors and psychologists) annual salary	$28.67 per hour	U.S. Department of Labor, 2015a, 2015b U.S. General Services Administration, 2015
Behavioral and mental health specialist salary	$25.20 per hour	U.S. Department of Labor, 2015a, 2015b U.S. General Services Administration, 2015
Transportation	$0.575 per mile	U.S. General Services Administration, 2015

Note: All data in 2015 dollars.

Goldfine et al., 2008

Citation:	Goldfine, M. E., Wagner, S. M., Branstetter, S. A., & McNeil, C. B. (2008). Parent-Child Interaction Therapy: An examination of cost-effectiveness. *Journal of Early and Intensive Behavior Intervention, 5*(1), 119–141.
Program:	Parent-Child Interaction Therapy (PCIT) – evidence-based treatment for children with disruptive behaviors using positive reinforcement and play and behavioral therapy to help parents learn new skills and techniques
Research design:	Cost-effectiveness study
Target population:	First-time pregnant, low-income women (until child turns 2 years of age)
Location:	Used published data
Study-calculated program cost:	$14,064 in initial equipment and training costs; $1,026 cost per child*
Findings:	*ROI.* Not provided
	Average savings per child. Not provided
	Cost-effectiveness ratios. A 1-point decrease on the Eyberg Child Behavior Inventory (ECBI) intensity scale was $22.07 and on the ECBI problematic scale was $87.15. A 1-point decrease on the Child Behavior Checklist was $100.56 and on the Parenting Stress Index was $26.47. Total per child program costs to sustain an effect size decrease of -0.01 was estimated at $7.83.
Limitations:	Data from previously completed studies were a limitation because of assumptions made on estimates of costs and expenses. Costs for some providers may have been overlooked or misjudged (e.g., a faculty member at a university

setting may have had fewer costs for office equipment but more costs for research assistants and graduate students).

*Note: Costs in 2007 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 5. Goldfine et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Benefit of completed PCIT treatment across crime, substance use, educational outcomes, teen pregnancy, teen suicide attempts, child abuse and neglect, and domestic violence	$4,724 per child	Aos et al., 2004
Conduct disorder costs per child aged 4–10 years, including costs to the school system and health care costs	$28,000 per child per year	Knapp et al, 2000
Savings resulting from treatment of disruptive behavior disorders, including averted costs for school dropout, future criminality, and substance use	$2 million per lifetime	Cohen, 1998
High school-related cost of conduct disorder above usual costs for unimpaired child	$11,700 per student per year for 4 years	Foster et al., 2005

Note: Costs in 2007 dollars. Goldfine et al. do not indicate if unit cost for conduct disorder reflects reimbursement rates for Medicaid, private insurance, or a combination.

References:

Aos, S., Lieb, R., Mayfield, J., Miller, M., & Pennucci, A. (2004). *Benefits and costs of prevention and early intervention programs for youth*. Washington State Institute for Public Policy.

Cohen, M. A. (1998). The monetary value of saving a high-risk youth. *Journal of Quantitative Criminology, 14*, 5–33.

Foster, E. M., Jones, D. E., & the Conduct Problems Prevention Research Group. (2005). The high costs of aggression: Public expenditures resulting from conduct disorder. *American Journal of Public Health, 95*(10), 1767–1772.

Knapp, M., Scott, S., & Davies, J. (1999). The cost of antisocial behaviour in young children. *Clinical Child Psychology and Psychiatry, 4*, 457–473.

Grote et al., 2017

Citation:	Grote, N. K., Simon, G. E., Russo, J., Lohr, M. J., Carson, K., & Katon, W. (2017). Incremental benefit-cost of MOMCare: Collaborative care for perinatal depression among economically disadvantaged women. *Psychiatric Services, 68*(11), 1164–1171.
Program:	MOMCare – 18-month collaborative depression care intervention using interpersonal psychotherapy or antidepressants for pregnant women with depression alone or depression and posttraumatic stress disorder (PTSD)
Research design:	Randomized controlled trial comparing MOMCare with Maternity Support Service–Plus usual care; benefit-cost analysis (BCA)
Target population:	Pregnant women between 12 and 32 weeks gestation from 10 county public health centers
Study location:	Seattle – King County
Study-calculated program cost:	$1,737 for depression; $2,088 for depression and PTSD*
Findings:	*ROI.* Not provided
	Average savings per mother. Not provided
	BCA. The incremental net benefit of MOMCare for depressed mothers with PTSD was positive ($1,360 for 68 depression-free days; $1,312 for depression costs = $48 per participant) and offered significant clinical benefit with moderate increase in health services cost. For depressed mothers, MOMCare net benefit was negative.
Limitations:	Self-report measures of mental health services may have overestimated costs. The study could not distinguish the effects of medication. The estimate of cost per depression-free day considers only the mother, not benefits to children.

*Note: Costs in 2013 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 6. Grote et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Maternity support services for mothers with major depression (above usual costs)	$570 per mother	Kaiser Family Foundation, 2015 Katon et al., 2005
Maternity support services for mothers with major depression + PTSD (above usual costs)	$776 per mother	Kaiser Family Foundation, 2015 Katon et al., 2005
Cost of depression care specialist	$80 per visit (45–60 minutes) $31 per telephone call (20–30 minutes)	Primary data collection (program staff)
Cost of depression-free day	$20 per day	Lave et al., 1998 Simon, Katon, et al., 2001 Simon, Manning, et al., 2001
Cost for caseload supervision and information support	$247 per patient	Primary data collection (program staff)

Note: All costs in 2013 dollars. The authors note the analysis of incremental costs took the perspective of the health plan or insurer, including Medicaid expansion. Unit costs from the Kaiser Family Foundation appear to include both public and private payor rates.

References:

Kaiser Family Foundation. (2015, September 15). *Health costs and budgets Indicators: Health expenditures by state of residence*. http://kff.org/state-category/health-costs-budgets

Katon, W. J., Schoenbaum, M., Fan, M. Y., Callahan, C. M., Williams, J., Hunkeler, E., Harpole, L., Zhou, X. H., Langston, C., & Unutzer, J. (2005). Cost-effectiveness of improving primary care treatment of late-life depression. *Archives of General Psychiatry, 62*(12), 1313–1320.

Lave, J. R., Frank, R. G., Schulberg, H. C., & Kamlet, M. S. (1998). Cost-effectiveness of treatments for major depression in primary care practice. *Archives of General Psychiatry, 55*(7), 645–651.

Simon, G. E., Katon, W. J., VonKorff, M., Unutzer, J., Lin, E., Walker, E. A., Bush, T., Rutter, C., & Ludman, E. (2001). Cost-effectiveness of a collaborative care program for primary care patients with persistent depression. *American Journal of Psychiatry, 158*, 1638–1644.

Simon, G. E., Manning, W. G., Katzelnick, D. J., Pearson, S. D., Henk, H. J., & Helstad, C. C. (2001). Cost-effectiveness of systematic depression treatment for high utilizers of general medical care. *Archives of General Psychiatry, 58*(2), 181–187.

Honeycutt et al., 2015

Citation:	Honeycutt, A. A., Khavjou, O. A., Jones, D. J., Cuellar, J., & Forehand, R.L. (2015). Helping the noncompliant child: An assessment of program costs and cost-effectiveness. *Journal of Child and Family Studies, 24*(2), 499–504.
Program:	Helping the Noncompliant Child – evidence-based behavioral parent training program to treat disruptive behavior disorders generally provided in 8 to 12 sessions in a clinic environment
Research design:	Pilot study; cost and cost-effectiveness study
Target population:	Families with children aged 3–8 years old who were living at 150 percent of poverty limit; children exhibited clinical-level disruptive behaviors assessed using the Eyberg Child Behavior Inventory (ECBI)
Study location:	North central North Carolina
Study-calculated program cost:	Cost per family to complete skills = $501; initial training = $5,000; optional follow-up training = $15,000*
Findings:	*ROI*. Not provided
	Average savings per child. Not provided
	Cost-effectiveness ratio. Cost of $13 per 1-point improvement in the ECBI intensity score. Costs to master the five program skills ranged from $57 to $127 per family, with a total cost of $501 per family to complete the skills.
Limitations:	The sample size was very small, including families not representative of a typical clinic-referred sample. The study did not estimate costs incurred by program participants (e.g., time spent practicing and mastering each skill) because it is from a payor perspective rather than a societal perspective. The pilot study had no comparison group in the cost analysis.

*Note: Costs in 2010 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 7. Honeycutt et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Therapist salary	Not provided	Bureau of Labor Statistics, 2010
Family cost (labor and other costs)	Not provided	Not provided

Note: Costs in 2010 dollars.

Lynch et al., 2017

Citation:	Lynch, F. L., Dickerson, J. F., Pears, K. C., & Fisher, P. A. (2017). Cost effectiveness of a school readiness intervention for foster children. *Children and Youth Services Review, 81*, 63–71.
Program:	Kids in Transition to School (KITS) – new program to address the complex needs of young children in foster care by increasing emotional and behavioral self-regulation, social skills, and academic skills to succeed in kindergarten
Research design:	Randomized controlled trial; cost-effectiveness over 12 months
Target population:	Foster care children entering kindergarten, assessed using Child Behavior Checklist
Study location:	Pacific Northwest
Study-calculated program cost:	Total costs for 1 year = $13,980 for 15 students (school readiness group, caregiver group for foster parents, and supervision and consultation costs) or $932 per student*
Findings:	*ROI.* Not provided
	Average savings per child. Not provided
	Cost-effectiveness ratio for internalizing-free day or externalizing-free day. The KITS group had 26 more internalizing-free days (IFD) and 27 more externalizing-free days (EFD) compared with the foster care control group. Average incremental cost-effectiveness was $64 per IFD and $63 per EFD.
Limitations:	The time period was limited to 12 months of follow-up, and savings may be higher if longer-term expenses were calculated. The study does not provide information on long-term cost-effectiveness or benefits beyond the internalizing and externalizing behavior outcomes. Small sample size, lack of diversity, and missing data are limiting.

*Note: Year of costs not provided. May not account for variable costs to implement the program in other geographic areas.

Exhibit 8. Lynch et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Health services for medical provider, emergency room, and mental health provider	$30.72–$147.99 per visit	Oregon Health Plan (OHP)
Other services (e.g., vocational assistance, case management, family therapist)	$15.01–$110.26 per hour	Bureau of Labor Statistics OHP Mental Health Fee Schedule OHP Medical-Dental Fee Schedule
Usual care services (medical, emergency, mental/behavioral, school based, social work) for the intervention and comparison groups	$5,125–$5,289 per family per year	Lynch et al., 2011, 2014
Usual family costs related to foster care or the intervention and comparison groups	$978–$1,007 per family per year	Lynch et al., 2011, 2014

Note: Year of costs not provided. The primary analysis was conducted from a public agency perspective, including costs to all public agencies serving this population (e.g., health, education).

References:

Lynch, F. L., Dickerson, J. F., Clarke, G., Vitiello, B., Porta, G., Wagner, K. D., & Brent, D. (2011). Incremental cost-effectiveness of combined therapy vs medication only for youth with selective serotonin reuptake inhibitor-resistant depression: Treatment of SSRI-resistant depression in adolescents trial findings. *Archives of General Psychiatry, 68*(3), 253–262.

Lynch, F. L., Dickerson, J. F., Saldana, L., & Fisher, P. A. (2014). Incremental net benefit of early intervention for preschool-aged children with emotional and behavioral problems in foster care. *Children and Youth Services Review, 36*, 213–219.

Noor & Caldwell, 2005

Citation:	Noor, I., & Caldwell, R. A. (2005). *The cost of child abuse vs. child abuse prevention: A multi-year follow-up in Michigan*. Michigan Children's Trust Fund and Michigan State University. https://www.michigan.gov/documents/ctf/cost2005_528033_7.pdf
Program:	Proposed hybrid prevention services program for Michigan families having their first child
Research design:	Cost-effectiveness analysis
Target population:	Michigan families
Location:	Michigan
Study-calculated program cost:	$43 million proposed for hybrid program in 1992; $49 million proposed for hybrid program in 2002*
Findings:	*ROI.* Not provided
	Average savings per child. Not provided
	Costs. The cost of child abuse in Michigan was estimated at $823 million in 1992 and at $1.8 billion in 2002. The cost savings of prevention programming ranged from 96 to 98 percent depending on the prevention model tested. Of these costs, $4,978,016 was for medical treatment of child maltreatment injuries in 1991 and $13,251,791 was the estimate in 2002. Costs were included for low birth weight births, loss of state tax income, special education, protective services, foster care, juvenile justice, adult criminality, and psychological treatment.
	In 2002, prevention, home visitor, and parent education programs were 1.8 to 3.6 percent of the $1.8 billion treatment costs. In 1992, a hybrid prevention program was estimated at $43.13 million (i.e., 5.24 percent of

the cost of abuse). In 2002 this hybrid program cost $48.87 million dollars annually (i.e., 2.7 percent of the cost of abuse).

Limitations: The study does not include details on the primary prevention programs or their outcomes.

*Note: Costs in 1992 and 2002 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 9. Noor & Caldwell Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Hospitalization because of child abuse	1992: $5,498 per child 2002: $14,811 per child	Blue Cross/Blue Shield of Michigan Daro, 1988 Healthcare Cost and Utilization Project, 2000
Outpatient medical costs because of child abuse	1992: $172 per child 2002: $224 per child	Blue Cross/Blue Shield of Michigan, 1991
Cost of prevention programs	Family home visitor programs = $950 per family in 1991 and $1,238 in 2002 Parent education programs = $473 per family in 1991 and $617 in 2002	Michigan's Children's Trust Fund, 1991, 2004
Cost of low birth weight baby (above normally weighted child) because of child abuse and neglect	1992: $14,000–$30,000 per child 2002: $54,510 per child	Children's Defense Fund, 1990a Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project, 2000 Office of Technology Assessment, 1988
State income tax lost because of child death from preventable causes	1992: $26,940 per child 2002: $58,840 per child	Children's Defense Fund, 1990b Daro, 1988
Special education costs because of child abuse and neglect	1992: $655 per child per year 2002: $830 per child per year	Daro, 1988

Outcome monetized	Unit cost	Data source
Foster care costs because of child abuse and neglect	1992: $1,347 per child per month 2002: $1,758 per child per month	Daro, 1988 Michigan Department of Social Services, 1991
Juvenile incarceration because of child abuse	1992: $172 per child per day or $62,966 per year 2002: $225 per child per day or $82,156 per year	Michigan Department of Social Services, 1991
Adult criminality related to abuse	1992: $25,000 per person per year 2002: $32,619 per person per year	Not provided
Psychological treatment related to abuse (outpatient care)	1992: $1,500 per patient 2002: $1,960 per patient	Michigan Department of Mental Health, 1992
Psychological treatment related to abuse (inpatient care)	1992: $330 per patient per day 2002: $431 per patient per day	Michigan Department of Mental Health, 1992

Note: All costs in 1992 and 2002 dollars. The authors did not indicate if the unit costs for hospitalization and outpatient care resulting from child abuse reflect reimbursement rates for Medicaid, private insurance, or a combination. Unit costs for psychological treatment reflect reimbursement rates for state public mental health system.

References:

Children's Defense Fund (1990a). Child Abuse Prevention: Michigan's Experience Washington, DC: Children's Defense Fund.

Children's Defense Fund (1990b). Maternal and infant health: Key data. Washington, DC: Children's Defense Fund.

Daro, D. (1988). *Confronting child abuse: Research for effective program design*. Free Press.

Michigan Department of Social Services. (1991). *Foster care case management report, fiscal 1990* (DSS Publication No. 292). Data Reporting Section.

Office of Technology Assessment. (1988). *Healthy children: Investing in the future.* U.S. Government Printing Office.

Pugh et al., 2002

Citation:	Pugh, L. C., Milligan, R. A., Frick, K. D., Spatz, D., & Bronner, Y. (2002). Breastfeeding duration, costs, and benefits of a support program for low-income breastfeeding women. *Birth, 29*(2), 95–100.
Program:	Community health nurse/peer counselor intervention to increase the duration of breastfeeding among low-income, predominately minority women during the first 6 months of their infants' lives
Research design:	Randomized clinical trial; benefit-cost analysis
Target population:	Low-income, predominately minority women with full-term delivery (April 1999–February 2000)
Location:	Baltimore, MD
Study-calculated program cost:	Intervention program costs = $301 per mother; $795 per mother if include actual wages, supervision, and training of nurses and peer counselors*
Findings:	*ROI.* Not provided
	Average savings per child. Not provided
	Costs. The current project did not lead to a positive net cost benefit in the first 6 months. Average total cost for the intervention group (formula, intervention program, and mother's time feeding one's child) was $3,840 per mother. Average total costs for the usual care group (formula and mother's time feeding one's child) was $3,194 per mother. Average formula costs for the intervention group did not offset the direct intervention costs. Indirect costs (e.g., mother's time to feed her child according to her wages) were higher in the intervention group than in the usual care group.

Limitations: The indirect costs of breastfeeding were underestimated (e.g., time necessary for a mother who is breastfeeding while working to pump or to reach her infant). Small sample sizes were a limitation, as costs would normally be distributed over a larger number of mothers. The infants in the intervention group had fewer health care visits and prescriptions, but the study did not include medical costs in the calculations. Some mothers also received home visiting services, which may have reduced office visits and associated costs, that were not measured.

*Note: Costs in 1999 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 10. Pugh et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Estimated mother's income (cost of time to feed infant)	$3,101 per mother receiving the intervention $2,509 per mother receiving usual care	U.S. Department of Labor, 2000
Infant formula	$438 per mother receiving the intervention $685 per mother receiving usual care	Primary data collection

Note: All costs in 1999 dollars.

References:
U.S. Department of Labor. (2000, August). *National Compensation Survey: Occupational wages in the Middle Atlantic census division, 1998*. http://www.bls.gov/ncs/ocs/sp/ncsm0040.pdf

Salloum et al., 2014

Citation:	Salloum, A., Robst, J., Scheeringa, M. S., Cohen, J. A., Wang, W., Murphy, T. K., Tolin, D. F., & Storch, E. A. (2014). Step One within Stepped Care Trauma-Focused Cognitive Behavioral Therapy for young children. *Child Psychiatry and Human Development, 45*(1), 65–77.
Program:	Step One within Stepped Care Trauma-focused Cognitive Behavior Therapy – Step One of a stepped-care intervention for children experiencing childhood anxiety
Research design:	Nonrandomized pilot study without a comparison group; cost of intervention; cost-effectiveness
Target population:	Parent-child dyads; children aged 3–7 years, with at least one traumatic event after the age of 3 and five Diagnostic and Statistical Manual of Mental Disorders–4 posttraumatic stress symptoms (PTSS)
Study location:	Florida
Study-calculated program cost:	Total costs: $486 for intention-to-treat and $433 for responder sample*
Findings:	*ROI.* Not provided *Average savings per child.* Not provided *Cost-effectiveness ratio.* At the post-assessment, the cost-effectiveness ratio for PTSS ranged from $28.78 to $131.33 for responders and $37.04 to $218.51 for the intent-to-treat group. At 3-month follow-up, the cost-effectiveness ratios ranged from $27.65 to $131.33 for the responders and from $36.12 to $208.11 for the intent-to-treat sample. Instruments used included the following: Diagnostic Infant and Preschool Assessment posttraumatic stress symptoms; Trauma Symptom Checklist for Young Children posttraumatic stress symptom total; and Clinical Global Impression–Improvement scale.

Limitations: The sample size was very small, which limits generalizability and analytics. Attrition was problematic—it was a small sample to begin with and cases were lost over time. Process data and child outcomes were limited.

*Note: Year of costs not provided. May not account for variable costs to implement the program in other geographic areas.

Exhibit 11. Salloum et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Parent opportunity costs (e.g., wages for time spent on therapy, phone support, parent-child meetings)	$18.06 per hour for college graduates $11.79 for high school graduates	Bureau of Labor Statistics, 2011
Improvement in depression outcome with cognitive behavior therapy	$285 per 10% improvement	Lynch et al., 2005

Note: Year of costs not provided.

References:

Lynch, F. L., Hornbrook, M., Clarke, G. N., Perrin, N., Polen, M. R., O'Connor, E., & Dickerson, J. (2005). Cost-effectiveness of an intervention to prevent depression in at-risk teens. *Archives of General Psychiatry, 62*(11), 1241–1248.

Bureau of Labor Statistics. (2011). *Highlights of women's earnings in 2010* (Report No. 103152). Washington, DC: U.S. Department of Labor

WSIPP, 2019 – Brief Strategic Family Therapy

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Brief Strategic Family Therapy.* *http://www.wsipp.wa.gov/BenefitCost/Program/91*
Program 1:	Brief Strategic Family Therapy
Research design:	Meta-analysis
Location:	Not provided
Target population:	Families of children aged 8–17 years with disruptive behavior problems, including delinquency and substance abuse.
Study-calculated program cost:	$2,595 per family per year; $1,743 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program saves $2.25. This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $3.28. Returns are estimated to cover costs by 9 years after the intervention. *Average savings per participant.* The program saves an estimated $1,119 to taxpayers and $3,777 to others over the participants' lives. The program experiences a loss of $820 to participants, while indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $163 per family.

Limitations: There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2015 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 12. WSIPP – Program 1 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program

Outcome monetized	Unit cost	Data source
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey (CPS)
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction
Labor market earnings associated with alcohol abuse or dependence	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey (CPS)
Property loss associated with alcohol abuse or dependence	$1,892 per alcohol-related traffic collision in 2000 dollars	Blincoe et al., 2002
Health care associated with disruptive behavior disorder	$1,817 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System

Outcome monetized	Unit cost	Data source
Mortality associated with alcohol	$7 million modal value of a statistical life in 2001 dollars $299,000 annual value of a statistical life in 2001 dollars	WSIPP calculation using values from Kneisner et al., 2010 (see WSIPP technical appendix for assumptions)

Note: Unit costs for health care associated with disruptive behavior disorder reflect costs across public and private payors from the Medical Expenditure Panel Survey (MEPS). MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Blincoe, L. J., Seay, A. G., Zaloshnja, E., Miller, T. R., Romano, E. O., Luchter, S., & Spicer, R. S. (2002). *The economic impact of motor vehicle crashes 2000.* U.S. Department of Transportation, National Highway Traffic Safety Administration.

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Kniesner, T. J., Viscusi, W. K., & Ziliak, J. P. (2010). Policy relevant heterogeneity in the value of a statistical life: New evidence from panel data quantile regressions. *Journal of Risk and Uncertainty, 40*(1), 15–31.

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Office of Superintendent of Public Instruction. (2017). *2016–2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

WSIPP, 2019 – Helping the Noncompliant Child

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Helping the Noncompliant Child.* http://www.wsipp.wa.gov/BenefitCost/Program/541
Program 2:	Helping the Noncompliant Child
Research design:	Meta-analysis
Target population:	Families of children diagnosed with disruptive behavior problems
Location:	Not provided
Study-calculated program cost:	$1,389 per family per year; $477 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program saves $1.35. This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $1.57. Returns are estimated to cover costs by 22 years after the intervention. *Average savings per participant.* The program saves an estimated $319 to taxpayers, $159 to participants, and $269 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $104 per family.
Limitations:	There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2015 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 13. WSIPP – Program 2 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey

Outcome monetized	Unit cost	Data source
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction
Health care associated with disruptive behavior disorder	$1,817 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System

Note: Unit costs for health care associated with disruptive behavior disorder reflect costs across public and private payors from the Medical Expenditure Panel Survey (MEPS). MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Office of Superintendent of Public Instruction. (2016). *Financial reporting summary: Washington State School Districts and Educational Service Districts (Fiscal Year September 1, 2014–August 31, 2015)*.

Office of Superintendent of Public Instruction. (2017). 2016–2017 *Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts*.

WSIPP, 2019 – Incredible Years: Parent and Child Training

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Incredible Years Parent Training with Incredible Years Child Training.* http://www.wsipp.wa.gov/BenefitCost/Program/117
Program 4:	Incredible Years Parent Training with Incredible Years Child Training
Target population:	Families of children with disruptive behavior problems
Research design:	Meta-analysis
Location:	Not provided
Study-calculated program cost:	$3,970 per family per year; $3,186 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program experiences a loss of $0.22 This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $0.24. Returns are not estimated to cover costs within 50 years after the intervention. *Average savings per participant.* The program saves an estimated $317 to taxpayers, $173 to participants, and $268 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $1,464 per family.

Limitations: There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2015 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 15. WSIPP–Program 4 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program

Outcome monetized	Unit cost	Data source
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction, 2017
Health care associated with disruptive behavior disorder	$1,817 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System

Note: Unit costs for health care associated with disruptive behavior disorder reflect costs across public and private payors from the Medical Expenditure Panel Survey (MEPS). MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Office of Superintendent of Public Instruction. (2016). *Financial reporting summary: Washington State School Districts and Educational Service Districts (Fiscal Year September 1, 2014–August 31, 2015).*

Office of Superintendent of Public Instruction. (2017). *2016–2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

WSIPP, 2019 – Incredible Years: Parent Training

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Incredible Years: Parent Training.* http://www.wsipp.wa.gov/BenefitCost/Program/158
Program 3:	Incredible Years: Parent Training
Target population:	Families of children with disruptive behavior problems
Research design:	Meta-analysis
Location:	Not provided
Study-calculated program cost:	$2,265 per family per year; $1,396 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program saves $5.65. This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $5.99. Returns are estimated to cover costs by 18 years after the intervention. *Average savings per participant.* The program saves an estimated $2,154 to taxpayers, $4,105 to participants, and $2,099 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $469 per family.
Limitations:	There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2015 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 14. WSIPP – Program 3 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with test scores	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey (CPS)

Outcome monetized	Unit cost	Data source
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction, 2017
Health care associated with disruptive behavior disorder	$1,817 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey (MEPS)
Labor market earnings associated with major depression	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the CPS
Health care associated with major depression	$1,763 per year in 2011 dollars	MEPS
Mortality associated with depression	$7 million modal value of a statistical life in 2001 dollars $299,000 annual value of a statistical life in 2001 dollars	WSIPP calculation using values from Kneisner et al., 2010 (see WSIPP technical appendix for assumptions)

Note: Unit costs for health care associated with disruptive behavior disorder and health care associated with major depression reflect costs across public and private payors from MEPS. MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Kniesner, T. J., Viscusi, W. K., & Ziliak, J. P. (2010). Policy relevant heterogeneity in the value of a statistical life: New evidence from panel data quantile regressions. *Journal of Risk and Uncertainty, 40*(1), 15–31.

Office of Superintendent of Public Instruction. (2016). *Financial reporting summary: Washington State School Districts and Educational Service Districts (Fiscal Year September 1, 2014–August 31, 2015).*

Office of Superintendent of Public Instruction. (2017). *2016–2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

WSIPP, 2019 – PCIT

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Parent–Child Interaction Therapy for Children with Disruptive Behavior*. http://www.wsipp.wa.gov/BenefitCost/Program/76
Program 5:	Parent-Child Interaction Therapy (PCIT) for Children with Disruptive Behavior
Research design:	Meta-analysis
Target population:	Families with children with disruptive behavior problems
Location:	Not provided
Study-calculated program cost:	$2,993 per family per year; $2,075 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program saves $0.55 This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $0.89. Returns are not estimated to cover costs within 41 years after the intervention. *Average savings per participant.* The program saves an estimated $788 to taxpayers, $392 to participants, and $664 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $706 per family.

Limitations: There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2017 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 16. WSIPP – Program 5 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program

Outcome monetized	Unit cost	Data source
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction, 2017
Health care associated with disruptive behavior disorder	$1,817 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System

Note: Unit costs for health care associated with disruptive behavior disorder reflect costs across public and private payors from the Medical Expenditure Panel Survey (MEPS). MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Office of Superintendent of Public Instruction. (2016). *Financial reporting summary: Washington State School Districts and Educational Service Districts (Fiscal Year September 1, 2014–August 31, 2015).*

Office of Superintendent of Public Instruction. (2017). *2016–2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

WSIPP, 2019 – Triple–P – Group

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Triple-P Level 4, Group*. http://www.wsipp.wa.gov/BenefitCost/Program/81
Program 6:	Triple-P Level 4, Group
Research design:	Meta-analysis
Target population:	Families of children with disruptive behavior problems
Location:	Not provided
Study-calculated program cost:	$449 per family per year; $522 per family for full length of program*
Findings:	*ROI.* Removing the indirect costs of net change and deadweight costs of taxation, for every $1 spent, the program saves $4.56. Returns are estimated to cover costs in the first year after the intervention. *Average savings per participant.* The program saves an estimated $1,022 to taxpayers, $523 to participants, and $837 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a savings of $684 per family.
Limitations:	There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2017 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement program in other geographic areas.

Exhibit 17. WSIPP – Program 6 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey

Outcome monetized	Unit cost	Data source
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction
Health care associated with disruptive behavior disorder	$1,122 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System

Note: Unit costs for health care associated with disruptive behavior disorder reflect costs across public and private payors from the Medical Expenditure Panel Survey (MEPS). MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Office of Superintendent of Public Instruction. (2016). *Financial reporting summary: Washington State School Districts and Educational Service Districts (Fiscal Year September 1, 2014–August 31, 2015).*

Office of Superintendent of Public Instruction. (2017). *2016–-2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

WSIPP, 2019 – Triple P – Individual

Citation:	Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Triple-P Level 4, Individual.* http://www.wsipp.wa.gov/BenefitCost/Program/80
Program 7:	Triple-P Level 4, Individual
Research design:	Meta-analysis
Target population:	Families of children with disruptive behavior problems
Location:	Not provided
Study-calculated program cost:	$1,730 per family per year; $785 per family for full length of program*
Findings:	*ROI.* For every $1 spent, the program saves $7.11. This calculation includes indirect costs of net change in the value of a statistical life and deadweight costs of taxation. These costs have not been included in other ROI studies summarized here. Removing these indirect costs, for every $1 spent, the program saves $7.20. Returns are estimated to cover costs by 3 years after the intervention. *Average savings per participant.* The program saves an estimated $1,914 to taxpayers, $3,094 to participants, and $641 to others over the participants' lives. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $63 per family.
Limitations:	There may be additional outcomes that produced costs or savings, such as increased likelihood a child victim of maltreatment becomes an adult perpetrator.

*Note: Cost per year in 2017 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 18. WSIPP – Program 7 Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Crime	$1,772 per arrest (police) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and U.S. Department of Justice
	$51,147 per year (juvenile local detention) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Washington State Governor's Juvenile Justice Advisory Committee
	$2,262 per year (juvenile local supervision) in 2015 dollars	WSIPP calculation using data from Washington State Auditor and Administrative Office of the Courts
	$44,558 per year (juvenile state institution) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program and Washington State Caseload Forecast Council for Fiscal Years 1997 to 2015
	$9,645 per case (juvenile state parole) in 2015 dollars	WSIPP calculation using data from Juvenile Rehabilitation Administration's EMIS data system
	$16,776 per year (adult jail) in 2015 dollars	WSIPP calculation using data from Washington State Auditor
	$3,296 per year (adult local supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$13,553 per year (adult state prison) in 2015 dollars	Washington Department of Corrections
	$3,296 per year (adult post-prison supervision) in 2015 dollars	WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program
	$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars	WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts

Outcome monetized	Unit cost	Data source
Labor market earnings associated with high school graduation	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey (CPS)
K-12 grade repetition	$9,585 per year of school per student in 2017 dollars $11,299 per year of school per low-income student in 2017 dollars	Office of Superintendent of Public Instruction, 2017
K-12 special education	$20,571 per year of school per student in special education in 2017 dollars $22,285 per year of school per low-income student in special education in 2017 dollars	Office of Superintendent of Public Instruction, 2016 Office of Superintendent of Public Instruction, 2017
Health care associated with disruptive behavior disorder	$1,122 per year (medical costs) in 2005 dollars	Medical Expenditure Panel Survey (MEPS)
Costs of higher education	$10,740 per year for 2-year institution in 2014 dollars $22,961 per year for 4-year institution in 2014 dollars	WSIPP calculation using Integrated Postsecondary Education Data System
Health care associated with major depression	$1,763 per year in 2011 dollars	MEPS
Labor market earnings associated with anxiety disorder	Not provided	WSIPP calculation using U.S. Census Bureau's March Supplement to the CPS

Outcome monetized	Unit cost	Data source
Mortality associated with depression	$7 million modal value of a statistical life in 2001 dollars $299,000 annual value of a statistical life in 2001 dollars (see WSIPP technical appendix for assumptions)	WSIPP calculation using values from Kneisner et al., 2010

Note: Unit costs for health care associated with disruptive behavior disorder and health care associated with major depression reflect costs across public and private payors from MEPS. MEPS is a set of large-scale surveys of families and individuals, their medical providers (e.g., doctors, hospitals, pharmacies), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, along with data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

References:

Federal Bureau of Investigation. *Uniform crime reporting program data [United States]: County-level detailed arrest and offense data [by year]*. Inter-university Consortium for Political and Social Research. Washington, DC: U.S. Department of Justice.

Kniesner, T. J., Viscusi, W. K., & Ziliak, J. P. (2010). Policy relevant heterogeneity in the value of a statistical life: New evidence from panel data quantile regressions. *Journal of Risk and Uncertainty, 40*(1), 15–31.

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Office of Superintendent of Public Instruction. (2017). *2016-2017 Financial reporting summary: Washington State School Districts, Charter, Tribal Schools, and Educational Service Districts.*

Wilkinson et al., 2017

Citation:	Wilkinson, A., Anderson, S., & Wheeler, S. B. (2017). Screening for and treating postpartum depression and psychosis: A cost-effectiveness analysis. *Maternal and Child Health Journal, 21*(4), 903–914.
Program:	Cost-effectiveness of compensating physicians for screening for and treating postpartum depression
Research design:	Hypothetical cohort study of 2 years postpartum; cost-effectiveness analysis; 2-year time horizon
Target population:	1,000 women aged 18–49 years who gave birth in the past year; Edinburgh Postnatal Depression Scale
Study location:	North Carolina data used
Study-calculated program cost:	$943 per woman*
Findings:	*ROI*. Not provided
	Average savings per participant. Not provided
	Cost-effectiveness ratio. Screening for and treating postpartum depression and psychosis predicted 29 healthier women. The incremental cost-effectiveness ratios of the intervention versus usual care were $13,857 per quality-adjusted life year (QALY) gained (willingness-to-pay threshold of $50,000/QALY) and $10,182 per remission achieved. Routine screening for postpartum depression yields 21.43 QALYs. Screening for and treating postpartum depression is cost-effective.
Limitations:	The Medicaid payor perspective is challenging because many women lost Medicaid coverage before the study's 2-year time horizon. Adverse events other than suicide or ideation could change the cost-effectiveness ratios, but data were not available. Some input estimates were from European populations because of limited U.S. data.

*Note: Costs in 2014 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 19. Wilkinson et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Screening for postpartum depression	$10–$11 per year for drug costs	Medicaid, 2013
	$5,156 per year for psychiatrist (weekly check-in)	North Carolina Department of Health and Human Services, 2013
	$28 per year for doctor's time (two screenings)	North Carolina Department of Health and Human Services, 2012
	$978–$1,060 per year for doctor's time (interpersonal therapy)	
	$4,846–$5,287 per year for postpartum treatment	Qui et al., 2009
Usual care	$8.50–$11 per year for drug costs	Medicaid, 2013
	$126 per year for psychiatrist (diagnosis)	North Carolina Department of Health and Human Services, 2014
	$2,742–$3,561 per year for psychiatrist (interpersonal therapy)	
	$3,965–$5,287 per year for postpartum treatment	Guo et al., 2007

Note: All costs in 2014 dollars. The authors used a Medicaid payor perspective because they cover approximately 50 percent of births in the United States. Medicaid fee schedules for North Carolina were utilized and the authors assumed all women in the cohort would be covered by Medicaid until 2 years postpartum.

References:

Guo, J., Keck, P., Li, H., & Patel, N. (2007). Bipolar-related and comorbidity treatment costs for patients with bipolar disorder in Medicaid. *Psychiatric Services, 58*(8),1073–1078.

Qiu, Y., Christensen, D., Fu, A., & Liu, G. (2009). Cost analysis in a Medicaid program for patients with bipolar disorder who initiated atypical antipsychotic monotherapy. *Current Medical Research and Opinion, 25*(2), 351–361.

Windsor et al., 1993

Citation:	Windsor, R. A., Lowe, J. B., Perkins, L. L., Smith-Yoder, D., Artz, L., Crawford, M., Amburgy, K., & Boyd, N. R. (1993). Health education for pregnant smokers: Its behavioral impact and cost benefit. *American Journal of Public Health, 83*(2), 201–206.
Program:	Health education intervention – counselor, clinic reinforcement of messages, social support (buddy)
Research design:	Prospective randomized pretest-posttest study (*n* = 994); cost-effectiveness analysis; 1986–1991
Target population:	Pregnant smokers using one of the four highest use Jefferson County Health Department maternity clinics (according to the census) between 1986 and 1991
Location:	Birmingham, AL
Study-calculated program cost:	$4.50–$6.00 per patient; for all 4,800 smokers eligible to receive the intervention = $21,600 per year*
Findings:	*ROI.* Not provided
	Average savings per participant. Not provided
	Cost-effectiveness. The study estimated the excess health care costs for low birth weight babies to range from $12,104 (low estimate) to $30,935 (high estimate) per child and calculated that 32 fewer infants would have had smoking-attributable low birth weight. The net benefit of the intervention ranged from $365,728 (low estimate) to $968,320 (high estimate). The cost-benefit ratio for the state using the low estimate is $1:$17.93 and using the high estimate is $1:$45.83. Adjusting to increase the intervention and prevention methods, the cost-benefit ratios are $1:$6.72 and $1:$17.18.

Limitations: Impact estimates reflect only a small part of the economic, health, and emotional benefit to women, infants, and families. The agency perspective did not include patient time, facilities costs, and intervention development costs.

*Note: Costs in 1990 dollars. May not account for variable costs to implement the program in other geographic areas.

Exhibit 20. Windsor et al. Study Outcomes Monetized, Unit Cost, and Data Sources

Outcome monetized	Unit cost	Data source
Excess health care costs—hospitalization and physician at birth, rehospitalization in first year, long-term health care costs—for a low birth weight infant that exceed the costs for a normal birth weight infant	$12,104–$30,935 per birth	Office of Technology Assessment, 1988

Note: All costs in 1990 dollars. The unit costs for health care for low birth weight infants represent findings from a cost-effectiveness analysis conducted by the Office of Technology Assessment to determine how costs to the U.S. health care system (not just to Medicaid) would be affected by a policy of universal eligibility for Medicaid of all pregnant women in poverty.

Reference:

U.S. Congress, Office of Technology Assessment. (1988, February). *Healthy children: Investing in the future* (OTA-H-345).