**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 2: Economic Value of Home Visiting Outcomes – Study Profiles*

OPRE Report 2020-90

**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 2: Economic Value of Home Visiting Outcomes – Study Profiles*

OPRE Report 2020-90

**Authors**

Kimberly McCombs-Thornton, Chi Connie Park, Susan Higman, Ashley Kelley, and Patrice Cachat, James Bell Associates

**Submitted to**

Pooja Gupta Curtin and Nicole Denmark, Project Officers
Office of Planning, Research, and Evaluation
Administration for Children and Families
U.S. Department of Health and Human Services
Contract Number: HHSP233201500133I

**Prepared by**

James Bell Associates
3033 Wilson Boulevard, Suite 650
Arlington, VA 22201
(703) 528-3230
www.jbassoc.com

Susan Zaid
Project Director



**Disclaimer**

The views expressed in this publication do not necessarily reflect the views or policies of the Office of Planning, Research, and Evaluation, the Administration for Children and Families, or the U.S. Department of Health and Human Services. This report and other reports sponsored by the Office of Planning, Research, and Evaluation are available at www.acf.hhs.gov/opre.

# Contents

# Introduction

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, projected savings, and outcome payment pricing for financial agreements. Module 2 summarizes monetary values researchers have used to establish savings in home visiting return on investment analyses**. Study profiles provide a snapshot of each study cited in Module 2.**

## Module 2 Study Profile Overview

Every study has contextual characteristics awardees may consider when selecting PFO outcomes and determining per unit outcome costs. Study profiles provide a snapshot of each return on investment (ROI) study cited in Module 2. Key characteristics covered include the home visiting model, research design, target population, and study location. Profiles also detail specific outcomes monetized, per unit costs by outcome, economic data sources, and ROI for each program model assessed. Awardees can navigate to a study profile by scrolling or pressing the “Ctrl” button while clicking the link to a profile in the table of contents.

# How to Use Module 2 Study Profiles

Once an awardee identifies potential outcomes for PFO, the next step in a PFO feasibility study is to predict the monetary value of improved outcomes. Awardees may estimate potential value based on anticipated cost savings, cost avoidance, and/or social benefit. Awardees should use local cost data for these calculations. When local data are not available, awardees can consult prior research to fill the gap. Module 2 provides per unit cost data used in home visiting ROI studies to inform projected savings for PFO.

Awardees can use the study profiles to do the following:

**Understand study context.** Study design, location, target population, and year conducted are key factors influencing how an awardee interprets the per unit costs used and study results.

**Identify a per unit cost for the outcome used in prior research.** Researchers "monetize" outcomes by placing a dollar amount on the impacts associated with home visiting. Awardees can find the per unit costs for many home visiting outcomes in Module 2. These per unit costs can help awardees determine types of costs to identify in their own local data or serve as an estimate of per unit costs for awardees without local cost data. Tables in Module 2 will help awardees identify individual studies that monetized outcomes of interest. Each study has a separate study profile.

**Locate other sources for cost data.** Per unit costs from prior research may not accurately reflect costs for a particular state. Awardees should consider the cost data sources listed in the study profiles, seeking similar data sources for their own state or location to calculate per unit costs specific to their target area when possible.

*Awardees can work with an economist or use a Consumer Price Index-adjusted inflation calculator to convert per unit costs to current year dollars.*

### Example: Estimating Program Savings

A potential PFO project is considering *decrease in hospitalization* as a targeted outcome.

- The awardee consulted prior research and learned others had used state Medicaid reimbursement rates to estimate potential public savings. The awardee determined its state Medicaid payment rate for one night in the hospital is $1,610 per infant.
- The awardee's previous evaluation found that once discharged after birth, infants in home visiting were hospitalized an average of .1 nights in the first year of life, compared to .6 nights for the comparison group. Therefore, home visiting infants were hospitalized .5 fewer nights on average.
- The program is estimated to save $1,610 per night in hospital x .5 nights = $805 per infant receiving Medicaid in the first year for this outcome.

**Estimate future savings.** As part of the feasibility study, awardees will calculate potential savings from the PFO outcome. One approach is to apply the per unit costs to the outcomes they have achieved in the past to estimate future savings, as illustrated below. Awardees could also use the average savings or ROI for a particular model to gauge a rough estimate of savings. Note that studies including benefits to the program participant (such as higher wages or quality of life) often show higher savings or ROI than studies that solely consider savings for taxpayers.

# ROI Study Profile: Ammerman et al., 2017

| | |
|---|---|
| *Citation:* | Ammerman, R. T., Mallow, P. J., Rizzo, J. A., Putnam, F. W., & Van Ginkel, J. B. (2017). Cost-effectiveness of In-Home Cognitive Behavioral Therapy for low-income depressed mothers participating in early childhood prevention programs. *Journal of Affective Disorders*, *208*, 475–482. |
| *Models:* | Nurse-Family Partnership, Healthy Families America, and In-Home Cognitive Behavior Therapy |
| *Research design:* | Randomized controlled trial |
| *Target population:* | Mothers who were unmarried, low income, under 18 years of age, or had inadequate prenatal care |
| *Study location:* | Southwestern Ohio and Northern Kentucky |
| *Study-calculated program cost:* | Standard home visit cost $46 per visit; In-Home Cognitive Behavior Therapy cost $88 per visit* |
| *Findings:* | *ROI.* Not provided<br><br>*Average savings per participant.* Not provided<br><br>In-Home Cognitive Behavior Therapy found to be cost effective relative to standard home visiting alone, with an incremental cost-effectiveness ratio below $5,000 |
| *Limitations:* | The study enrolled a relatively small number of participants, limiting generalizability. The study had a limited follow-up period and relied on outcome probabilities found in published literature after initial treatment rather than from the clinical study. |

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

## Exhibit 1. Ammerman et al., 2017 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Cost data source |
|---|---|---|
| Medications | $80 (unit not provided) | Consumer Reports, 2013 |
| Hospitalization(s) resulting from depression | $5,371 per hospitalization | Stensland et al., 2012 |
| Office visits | $82 (unit not provided) | Ohio Department of Medicaid, 2014 |

**Note**: All costs in 2013 dollars. Unit costs for medications reflect private payor reimbursement rates. Unit cost for hospitalization is average reimbursement amount across Medicaid, private insurance, and uninsured patients in 418 community hospitals. Unit costs for office visits reflect public payor reimbursement rates.

**References**:

Consumer Reports. (2013). *Best buy drugs: Using antidepressants to treat depression*. http://www.consumerreports.org/health/resources/pdf/best-buy-drugs/Antidepressants_update.pdf

Ohio Department of Medicaid. (2014). *Appendix DD to Rule 5160-1–60*. http://medicaid.ohio.gov/Portals/0/Providers/FeeScheduleRates/App-DD.pdf

Stensland, M., Watson, P. R., & Grazier, K. L. (2012). An examination of costs, charges, and payments for inpatient psychiatric treatment in community hospitals. *Psychiatric Services, 63*, 666–671.

# ROI Study Profile: Dodge et al., 2014

| | |
|---|---|
| *Full citation:* | Dodge, K. A., Goodman, W. B., Murphy, R. A., O'Donnell, K., Sato, J., & Guptill, S. (2014). Implementation and randomized controlled trial evaluation of universal postnatal nurse home visiting. *American Journal of Public Health, 104*(S1), S136–S143. |
| *Model:* | Family Connects |
| *Research design:* | Randomized controlled trial |
| *Target population:* | All births in city from July 2009 through December 2010 |
| *Location:* | Durham, NC |
| *Study-calculated program cost:* | $700 per participating infant* |
| *Findings:* | *ROI.* For every $1 spent on Family Connects, save $3.02 in hospital costs for public and private insurers by time child is 6 months of age |
| | *Average savings per participant.* Not provided |
| *Limitations:* | There may be additional outcomes that produced cost savings beyond hospital costs. Hospital reimbursement rates used in the study may not reflect more current rates. |

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

## Exhibit 2. Dodge et al., 2014 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Cost data source |
|---|---|---|
| Hospital usage | $3722 per night per 6-month-old infant<br>$423 per emergency department outpatient visit per 6-month-old infant | Paul et al, 2004 |

**Note**: Dodge et al., 2014 used cost figures published in Paul et al., 2004. Costs reflect average reimbursement rates of nine insurers serving most patients at the Hershey Medical Center from January 2000 to December 2002. The actual year the rates reflect is not provided. Dodge et al., 2014 appear to have used the rates as published and did not recalculate them to reflect 2010 dollars. Unit costs represent average reimbursement rates across nine insurers covering 86 percent of births at the Hershey Medical Center. Medicaid covered 28 percent of newborns.

**Reference**: Paul, I. M., Phillips, T. A., Widome, M. D., & Hollenbeak, C. S. (2004). Cost-effectiveness of postnatal home nursing visits for prevention of hospital care for jaundice and dehydration. *Pediatrics, 114*(4), 1015–1022.

# ROI Study Profile: DuMont et al., 2010

| | |
|---|---|
| *Full citation:* | DuMont, K., Kirkland, K., Mitchell-Herzfeld, S., Ehrhard-Dietzel, S., Rodriguez, M. L., Lee, E., Layne, C., & Greene, R. (2010). *A randomized trial of Healthy Families New York (HFNY): Does home visiting prevent child maltreatment?* New York State Office of Children & Family Services and The University of Albany, State University of New York. |
| *Model:* | Healthy Families America |
| *Research design:* | Randomized controlled trial |
| *Target population:* | Pregnant parents or those with an infant under 3 months of age and screened at risk for child abuse or neglect |
| *Location:* | Three sites in state of New York |
| *Study-calculated program cost:* | $3,074 average per family per year across the three sites* |
| *Findings:* | *ROI.* For mothers with at least one substantiated report with child protective services (CPS) prior to enrollment in Healthy Families New York (HFA), the program saved government $3.16 for every $1 spent by the child's 7th birthday. Returns were substantially less for mothers with no previous CPS involvement.<br><br>*Average savings per participant.* For mothers with at least one substantiated CPS report prior to HFA, government saved an average $12,395 per family, for a net cost savings of $8,475 in fiscal year (FY) 2000 dollars by the time the child turned 7 years of age (savings standard error = $7,247). |

For young first-time mothers who began the program prenatally, government saved an average $1,020 per family, compared to $4,126 government spent per family by the time the child turned 7 years of age in FY 2000 dollars (savings standard error = $3,731)

Among all participants, average $628 saved compared with $4,101 spent by the time the child turned 7 years of age in FY 2000 dollars (savings standard error = $1,613).

*Limitations:* Savings because of potential impact on special education were not included. Costs of services to which HFA families were referred were not included.

*Note: All costs in 2000 dollars May not account for variable costs to implement the program in other geographic areas.

## Exhibit 3. Dumont et al., 2010 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Cost data source |
|---|---|---|
| Foster care | $47.08 per day of out-of-home foster care placement, birth to 3 years of age<br>$45.53 per day of out-of-home foster care placement, 4 to 5 years of age | New York state age-adjusted foster care per diem rates |
| Child welfare prevention and support services | $3,865 per year, per family | New York State Child Care Review Services administrative database |
| Child Protective Service investigations | $1,762 per investigation | New York State Statewide Automated Child Welfare Information System, CONNECTIONS |
| Hospitalization for low birth weight (LBW) deliveries | $38,558 per delivery and hospitalization prior to initial discharge for LBW infants<br>$4,636 per delivery and hospitalization prior to initial discharge for non-LBW infants | Schmitt et al., 2006 |

| Outcome monetized | Unit cost | Cost data source |
|---|---|---|
| Food stamps | Not provided | New York State Office of Temporary and Disability Assistance |
| Public assistance | Not provided | New York State Office of Temporary and Disability Assistance |
| Tax revenue from earned income | Not provided | Tax revenue calculated based on parent income and federal tax tables. Mother's earned income gathered from baseline parent survey and follow-up interviews |

**Notes**: All costs in 2000 dollars. Dumont et al., 2010 describe births as Medicaid deliveries, though per unit hospitalization costs for low birth weight come from the California Office of Statewide Health Planning and Development for all births in the year 2000.

**Reference**: Schmitt, S. K., Sneed, L., & Phibbs, C. S. (2006). Costs of newborn care in California: A population-based study. *Pediatrics, 117*, 154–160.

# ROI Study Profile: Glazner et al., 2004

| | |
|---|---|
| *Full citation:* | Glazner, J., Bondy, J., Luckey, D., & Olds, D. (2004*). Effect of the Nurse Family Partnership on government expenditures for vulnerable first-time mothers and their children in Elmira, New York, Memphis, Tennessee, and Denver, Colorado*. Final report to the Administration for Children and Families (No. 90XP0017). University of Colorado Health Sciences Center. |
| *Model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant low-income women before 28 weeks gestation, who participate until their child's second birthday |
| *Location:* | Elmira, NY; Memphis, TN; and Denver, CO |
| *Study-calculated program cost:* | Elmira: $14,287 per family*<br>Memphis: $9,755 per family<br>Denver: $8,661 per family |
| *Findings:* | *ROI.* Elmira: The government regained 393 percent of the program costs by the time the child was 15 years old, mainly related to lower welfare, Medicaid, and food stamp usage.<br><br>Denver: The government recovered 29 percent of the program costs by the child's 4h birthday, largely because of lower net government expenditures and more tax revenue.<br><br>Memphis*:* The government recouped nearly 26 percent of the program costs by the time the child was 4½ years old, primarily because of less food stamp use and higher tax payments. |

*Average savings per participant.* The government saved an average of $47,808 per participating family in Elmira by the child's 15th birthday, $2,285 per participating family in Memphis by the time the child was 4½ years old, and $1,603 per participating family in Denver by the child's 4th birthday.

*Limitations:* Use of parent self-report for income might lead to an over- or underestimate. Administrative data sources were not named.

*Note: All figures in 2001 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 4. Glazner et al., 2004 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Medicaid/health care | Not provided | State Medicaid data and family survey |
| Child abuse and neglect | Not provided | State administrative data and family survey |
| Education | Not provided | State administrative data and family survey |
| Public assistance | Not provided | State administrative data and family survey |
| Changes in tax revenue resulting from shifts in earned income | Not provided | Annual Internal Revenue Service tax rates applied to parent-reported income for each year via family survey |

# ROI Study Profile: Green et al., 2016

| | |
|---|---|
| *Full citation:* | Green, B. L., Tarte, J., Sanders, M. B., & Waller, M. S. (2016). *Testing the effectiveness of Healthy Start—Healthy Families Oregon: Outcomes and cost-benefits*. Portland State University and NPC Research. http://pdxscholar.library.pdx.edu/childfamily_abuse/2 |
| *Model:* | Healthy Families America |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time parents with two or more risk factors |
| *Location:* | Seven Oregon sites, including three rural and four urban/suburban |
| *Study-calculated program cost:* | Average $3,767 per child each year, with range of $2,503 to $5,956* |
| *Findings:* | *ROI.* Not provided |
| | *Average savings per participant.* No savings after 2 years. The average cost to taxpayers per HFA family was $20,209.20 after 2 years, slightly more than the cost per control group family of $19,557.87. |
| *Limitations:* | Short follow-up period |

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

## Exhibit 5. Green et al., 2016 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Substantiated child abuse report | $579.19 per report | Oregon Department of Human Services (DHS); Staffing Survey Data; average salary and benefits reported by DHS staff |
| Foster care | $77.69 per day | Oregon Department of Human Services; Children and Families Foster Care Program staff; DHS website |
| Child abuse and neglect victimization | $187,159 per nonfatal incidence of child maltreatment, average lifetime cost | Fang et al., 2012 |
| Childcare subsidy | $17.50 per day | Oregon Department of Human Services, Licensed Rate Maximum |
| Supplemental Nutrition Assistance Program (SNAP/food stamps) | $7.76 per day, per household | Oregon Department of Human Services; SNAP Allotments |
| Temporary Assistance to Needy Families | $16.64 per day, per family of three | Oregon Department of Human Services, Annual Report to the Oregon Legislative Assembly; Kate Brown, Governor, Department of Human Services JOBS Plus Program |
| Employment assistance | $2,226 per participant | Oregon Department of Human Services, Annual Report to the Oregon Legislative Assembly; Kate Brown, Governor, Department of Human Services JOBS Plus Program |
| Interpersonal violence | $2,043 per case | Centers for Disease Control and Prevention, 2003 |
| High school diploma/GED attainment | $332,482 per person, average lifetime earnings and tax benefits | Belfield, 2007 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Homelessness | $8,513 per incidence, per household | Spellman et al., 2010 |
| Emergency department usage | No unit cost; used actual case data | Oregon Health Authority's Division of Medical Assistance Programs |
| Medical claims | No unit cost; used actual claims data | Oregon Health Authority's Division of Medical Assistance Programs |
| Publicly funded health insurance | $14.26 per day, per parent<br>$4.44 per day, per child | Oregon Health Plan website |
| Substance abuse treatment | $135 per day (detoxification)<br>$4.54 per day (methadone treatment)<br>$120 per day (residential treatment) | Oregon Health Plan's October 2015 Fee Schedule for Fee-for-Service Providers, Oregon Health Plan's website |
| Arrests | $223.04 per arrest | Carey & Waller, 2011 |
| Person crime victimizations | $43,024 per person, lifetime cost | Miller et al., 1996 |

**Note**: All costs in 2015 dollars. Unit costs for substance abuse treatment reflect Medicaid reimbursement rates provided on or after October 1, 2015, by the Oregon Health Authority. Oregon Health Plan provides health coverage for low-income residents of the state of Oregon.

**References**:

Belfield, C. (2007). *The economic losses from high school dropouts in California. California dropout research project*. Teachers College, Columbia University.

Carey, S. M., & Waller, M. S. (March 2011). *Oregon drug court cost study—Statewide costs and promising practices: Final report*. NPC Research. https://npcresearch.com/wp-content/uploads/ORDC_BJA_Cost_and_Best_Practices_Final_Rerelease_03112.pdf

Centers for Disease Control and Prevention. (2003). *Costs of intimate partner violence against women in the United States*. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

Fang, X., Brown, D., Florence, C., & Mercy, J. (2012). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect, 36*(2), 156–165.

Miller, T. R., Cohen, M. A., & Wiersema, B. (1996). *Victim costs and consequences: A new look*. National Institute of Justice.

Spellman, B., Khadduri, J., Sokol, B., & Leopold, J. (2010*). Costs associated with first-time homelessness for families and individuals.* Abt Associates. http://www.huduser.org/publications/pdf/Costs_Homeless.pdf

# ROI Study Profile: Karoly, 2017

| | |
|---|---|
| *Full citation:* | Karoly, L. A. (2017). *The economic returns from investing in early childhood programs in the Granite State.* RAND Corporation.<br>Karoly, L. A. (2017). *Investing in the early years: The costs and benefits of investing in early childhood in New Hampshire technical appendix*. RAND Corporation. |
| *Model:* | Nurse-Family Partnership (NFP) |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | New Hampshire |
| *Study-calculated program cost:* | $4,947 per year per family or $7,929 per family for average enrollment of 1.7 years* |
| *Findings:* | *ROI.* The program is estimated to save $4 to $6 for every $1 spent for families receiving nurse home visiting. The time period for experiencing the savings is not provided.<br>*Average savings per participant.* Not provided |
| *Limitations:* | NFP agency start-up costs and state system-level costs are not included in study-calculated program cost. |

*Note: All costs in 2016 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 6. Karoly, 2017 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Emergency department visit | $814 per visit, per child under 5 years of age | Medical Expenditure Panel Survey |
| Child maltreatment | $64,652 average lifetime costs per nonfatal child maltreatment case (includes health care, child welfare, and criminal justice costs) | Fang et al., 2012 |
| Supplemental Nutrition Assistance Program (food stamps) | $357 maximum per month for family of one adult and one child in New Hampshire | Center on Budget and Policy Priorities, 2016 |
| Temporary Assistance to Needy Families | $606 maximum per month for family of one adult and one child in New Hampshire | Urban Institute, 2017 |
| Societal cost of crime | Not provided | McCollister et al., 2010 |

**Note**: All costs in 2016 dollars. Unit costs for emergency department visits 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**References**:

Center on Budget and Policy Priorities. (2016, September). *A Quick Guide to SNAP eligibility and benefits.* http://www.cbpp.org/sites/default/files/atoms/files/11-18-08fa.pdf

Fang, X., Brown, D., Florence, C., & Mercy, J. (2012). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect, 36*, 156–165.

McCollister, K. E., French, M. T., & Fang, H. (2010). The cost of crime to society: New crime-specific estimates for policy and program evaluation. *Drug and Alcohol Dependence, 108*(1), 98–109.

Urban Institute. (2017). *Welfare Rules Database*. http://wrd.urban.org/wrd/query/query.cfm

# ROI Study Profile: Karoly et al., 1998

| | |
|---|---|
| *Full citation:* | Karoly, L. A., Greenwood, P. W., Everingham, S. S., Houbé, J., Kilburn, M. R., Rydell, C. P., Sanders, M., & Chiesa, J. (1998). *Investing in our children: What we know and don't know about the costs and benefits of early childhood interventions*. Rand Corporation. |
| *Model:* | Elmira Prenatal/Early Infancy Project/Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant low-income women, who participate until their child's second birthday |
| *Location:* | Elmira, NY |
| *Study-calculated program cost:* | $6,083 per child* |
| *Findings:* | *ROI.* For higher risk families that included unmarried, low-income mothers, the program returned over $4 for each $1 spent over 15 years. Savings exceeded program costs after 3 years.<br><br>For lower risk families, the program recovered $0.62 for each $1 spent over 15 years.<br><br>*Average savings per participant.* For higher risk families, by the time the child turned 15 years of age, the total average savings per family were $24,694 and the average program cost per family was $6,083.<br><br>For lower risk families, the average savings per family were $3,775 over 15 years and the average program cost per family was $6,083. |
| *Limitations:* | This is an underestimate of savings, as other outcomes, such as savings resulting from reduced child abuse and neglect, are not included. |

*Note: All costs in 1996 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 7. Karoly et al., 1998 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Health care | $250 per emergency department visit per child aged 2–4 in 1996 dollars | Not provided |
| Public assistance | $608 per family for monthly public assistance in 1994 dollars (includes $378 for Aid to Families with Dependent Children, $71 for Food Stamps, and $104 for Medicaid plus an additional 10% for program administration) | U.S. Bureau of the Census, 1996, and Barnett, 1993 |
| Criminal justice | $1,924 per arrest in 1993 dollars (police and adjudication costs) | Greenwood et al., 1994 |
| | $27 per day in jail in 1993 dollars | Greenwood et al., 1994 |
| | $27,350 per adult criminal career in 1993 dollars (includes arrest, adjudication, jail, and prison) | Greenwood et al., 1996 |
| Changes in tax revenue resulting from shifts in earned income | $7 per hour in 1991 dollars (estimated pay) | Nightingale & Haveman, 1995 |
| | 35% tax rate of mother's pay, including employee and employer taxes | Barnett, 1993 |

**Note:** Karoly et al., 1998 do not indicate if unit cost for ER visits reflects reimbursement rates for Medicaid, private insurance, or a combination.

**References**:


Barnett, W. S. (1993). Benefit-cost analysis of preschool education: Findings from a 25-year follow-up. *American Journal of Orthopsychiatry, 63*(4), 500–508.

Greenwood, P. W., Model, K. E., Rydell, C. P., & Chiesa, J. (1996). *Diverting children from a life of crime: Measuring costs and benefits*. Rand Corporation.

Greenwood, P. W., Rydell, C. P., Abrahamse, A. F., Caulkins, J. P., Chiesa, J., Model, K. E., & Klein, S. P. (1994). *Three strikes and you're out: Estimated benefits and costs of California's new mandatory-sentencing law*. Rand Corporation.

Nightingale, D. S., & Haveman, R. H. (Eds.). (1995). *The work alternative: Welfare reform and the realities of the job market*. Urban Institute Press.

U.S. Bureau of the Census. (1996). *Statistical Abstract of the United States: 1996*. https://www.census.gov/library/publications/1996/compendia/statab/116ed.html.

# ROI Study Profile: Miller, 2013

| | |
|---|---|
| *Full citation:* | Miller, T. R. (2013). *Nurse-family partnership home visitation: Costs, outcomes, and return on investment*. Pacific Institute for Research and Evaluation. |
| *Model:* | Nurse-Family Partnership (NFP) |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | Various |
| *Study-calculated program cost:* | $8,580 per family* |
| *Findings:* | *ROI.* The program saved $9.50 on average for every $1 spent for families receiving nurse home visiting by the child's 18th birthday. The study authors base this estimate on a review of 30 NFP evaluations. This calculation takes a societal perspective and includes returns to the parent, such as increased earnings and increased quality of life. When considering government expenditures alone, the program recovers federal costs just after the child turns 7 years of age and state costs by 10 years of age. The program saved the government $3.50 for every $1 spent by the child's 18th birthday.<br><br>*Average savings per participant.* Total savings per mother receiving nurse home visiting averaged $81,656 after 18 years. The family experienced most savings as increased wages and quality of life. An average of $29,605 is accrued to the government as savings in use of resources and services by the child's 18th birthday. |
| *Limitations:* | The study underestimates savings since it does not include quality of life improvements resulting from improved birth outcomes. The study authors also omit standard errors. |

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

## Exhibit 8. Miller, 2013 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Smoking during pregnancy | $224 per birth | Adams & Melvin, 1998 |
| Pregnancy-induced hypertension | $10,678 per case | Preeclampsia Foundation, 2007 |
| Preterm birth | $35,388 per preterm birth (additional medical cost)<br>$3,744 per preterm birth (special education)<br>$13,477 per preterm birth (loss of productivity) | Institute of Medicine, 2006<br>Machlin & Rohde, 2007 |
| Infant deaths | $1,500 per infant funeral<br>$1,128,942 per death (loss of productivity)<br>$6,209,027 per death (loss of quality of life) | Miller et al., 2012 |
| Subsequent births | $6,376 per birth (medical cost) | Institute of Medicine, 2006<br>Machlin & Rohde, 2007 |
| Preterm second births within 15 months | See Preterm birth; multiplied by 0.12 (proportion of births preterm) and 0.29 (proportion of preterm births resulting from close spacing) | Institute of Medicine, 2006<br>Conde-Agudelo et al., 2006 |
| Child maltreatment | $88,557 per substantiated case (includes $37,792 for quality of life)<br>$39,910 per investigated case (includes $27,568 for quality of life) | Miller et al., 2012 |
| Nonfatal child injury | $6,646 per injury (includes $1,455 for quality of life) | Miller et al., 2012 |
| Remedial school services | $555 per child | Snell, 2009 |
| Youth crimes | $6,506 per crime (includes $5,206 for quality of life)<br>$11,037 per arrest | McCollister et al., 2010<br>Miller et al., 1996 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Youth substance abuse | $219 per substance-abusing youth | Miller et al., 2006 |
| Immunizations | $778 per immunized child (medical care savings in years 1–4) | Zhou et al., 2005 |

**Note**: All costs in 2010 dollars. Unit cost for birth complications as a result of smoking is based on data from the National Hospital Discharge Survey and claims data from a sample of large, self-insured employers. Miller, 2013 does not indicate if reimbursement reflects rates for Medicaid, private insurance, or a combination. Miller, 2013 does not indicate if per unit cost for preeclampsia reimbursement reflects rates for Medicaid, private insurance, or a combination. Unit costs for preterm and subsequent births are based on data from the Household Component of the Medical Expenditure Panel Survey to estimate medical expenditures in 2004 dollars associated with an uncomplicated pregnancy and in-hospital delivery. Medical expenditures include payments to hospitals, physicians, pharmacies, and other health care providers and include payments from Medicaid or other public insurance or private insurance, or individuals. Unit cost for immunizations is based on costs associated with disease from the Healthcare Cost and Utilization Project, a nationally representative sample of hospitals and hospital stays for patients covered by public, private, or no health insurance and the Marketscan database and other studies.

**References**:


Adams, E. K., & Melvin, C. L. (1998). Costs of maternal conditions attributable to smoking during pregnancy. *American Journal of Preventive Medicine, 15*(3), 212–219.

Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A. C. (2006). Birth spacing and risk of adverse perinatal outcomes: A meta-analysis. *Journal of the American Medical Association, 295*(15), 1809–1823.

Institute of Medicine. (2006). *Preterm birth: Causes, consequences, and prevention*. National Academies Press.

Machlin, S. R., & Rohde, F. (2007). *Health care expenses for uncomplicated pregnancies*. Agency for Healthcare Research and Quality. http://www.meps.ahrq.gov/data_files/publications/rf27/rf27.shtml

McCollister, K. E., French, M. T., & Fang, H. (2010). The cost of crime to society: New crime-specific estimates for policy and program evaluation. *Drug and Alcohol Dependence, 108*(1), 98–109.

Miller, T. R., Cohen, M. A., & Wiersema, B. (1996). *Victim costs and consequences: A new look*. National Institute of Justice.

Miller, T. R., Finkelstein, E., Zaloshnja, E., & Hendrie, D. (2012). The cost of child and adolescent injuries and the savings from prevention. In K. Liller (Ed.), *Injury prevention for children and adolescents: Research, practice, and advocacy* (2nd ed, pp. 21-82). American Public Health Association.

Miller, T. R., Levy, D. T., Spicer, R. S., & Taylor, D. M. (2006). Societal costs of underage drinking. *Journal of Studies on Alcohol, 67*(4), 519–528.

Preeclampsia Foundation. (2007). *Cost of preeclampsia in the USA*. Author.

Snell, L. (2009). *Weighted student formula yearbook*. Reason Foundation.

Zhou, F., Santoli, J., Messonnier, M. L., Yusuf, H. R., Shefer, A., Chu, S. Y., Rodewald, L., & Harpaz, R. (2005). Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. *Archives of Pediatric and Adolescent Medicine, 159*(12), 1136–1144.

# ROI Study Profile: Miller et al., 2011

| | |
|---|---|
| *Full citation:* | Miller, T. R., Olds, D., Knudtson, M., Luckey, D., Bondy, J., & Stevenson, A. (2011*). Return on investment: Nurse and paraprofessional home visitation. Final report to US Department of Justice*. Pacific Institute for Research and Evaluation. |
| *Model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | Denver, CO |
| *Study-calculated program cost:* | $10,503 per family* |
| *Findings:* | *ROI.* After 9 years, the program saved $3.05 for every $1 spent for families receiving nurse home visiting. This calculation takes a societal perspective and includes returns to the parent, such as increased earnings and increased quality of life for individual outcomes, calculated using quality-adjusted life years (QALYs).<br><br>*Average savings per participant.* Total savings per mother receiving nurse home visiting averaged $31,994 after 9 years. Most savings are experienced by the family as increased wages and quality of life, although $1,759 is accrued to the government. |
| *Limitations:* | Use of cost estimates from the literature includes assumptions or other limitations for which these calculations cannot account. |

*Note: All costs in 2005 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 9. Miller et al., 2011 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Birth complications as a result of smoking | $217 per birth | Adams & Melvin, 1998 |
| Maternal earnings | Not provided | Obama, 2009 |
| Domestic violence | $1,456 per episode (medical services, other resources) | Miller et al., 1996<br>Miller et al., 2006 |
| Maternal depression | $1,096 per year (medical costs)<br>$1,734 per year per worker (loss of productivity) | Arnow et al., 2009<br>Stewart et al., 2003 |
| Child attention deficit hyperactivity disorder | $1,400 per year (medical costs) | Swensen et al., 2003 |
| Grade retention | $7,315 per year per public school student | Karoly & Bigelow, 2005 |

**Note**: All costs in 2005 dollars. Unit cost for birth complications as a result of smoking is based on data from the National Hospital Discharge Survey and claims data from a sample of large, self-insured employers. Miller et al. does not indicate if reimbursement reflects rates for Medicaid, private insurance, or a combination. Unit cost for maternal depression is from the Cost Management Information System (CMIS) at Kaiser Permanente, a health maintenance organization in Northern California. The CMIS integrates the financial ledger with databases tracking utilization of clinic, hospital, and ancillary services. Miller et al., 2011 does not indicate if reimbursement reflects rates for Medicaid, private insurance, or a combination. Unit cost for child ADHD reflects private payor reimbursement rates.

**References**:


Adams, E. K., & Melvin, C. L. (1998). Costs of maternal conditions attributable to smoking during pregnancy. *American Journal of Preventive Medicine, 15*, 212–219.

Arnow, B. A., Blasey, C. M., Lee, J., Fireman, B., Hunkeler, E. M., Dea, R., Robinson, R., & Hayward, C. (2009). Relationships among depression, chronic pain, chronic disabling pain, and medical costs. *Psychiatric Services, 60*(3), 344–350.

Karoly, L. A., & Bigelow, J. H. (2005). *The economics of investing in universal preschool education in California*. RAND Corporation.

Miller, T. R., Cohen, M. A., & Wiersema, B. (1996). *Victim costs and consequences: A new look*. National Institute of Justice.

Miller, T. R., Levy, D. M., Cohen, M. A., & Cox, K. C. (2006). The costs of alcohol and drug-involved crime. *Prevention Science, 7*(4), 333–342.

Obama, B. (2009). *Economic report of the president*. U.S. Government Printing Office.

Stewart, W. F., Ricci, J. A., Chee, E., Hahn, S. R., & Morganstein, D. (2003). Cost of lost productive work time among US workers with depression. *Journal of the American Medical Association, 289*(23), 3135–3144.

Swensen, A., Birnbaum, H. G., Secnik, K., Marynchenko, M., Greenberg, P., & Claxton, A. (2003). Attention-deficit/hyperactivity disorder: Increased costs for patients and their families. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(12), 1415–1423.

# ROI Study Profile: Olds et al., 1993

| | |
|---|---|
| *Full citation:* | Olds, D. L., Henderson, J. C., Phelps, C., Kitzman, H., & Hanks, C. (1993). Effect of prenatal and infancy nurse home visitation on government spending. *Medical Care, 31*(2), 155–174. |
| *Model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant low-income women, who participate until their child's second birthday |
| *Location:* | Elmira, NY |
| *Study-calculated program cost:* | $3,246 per family*<br>$3,133 per low-income family |
| *Findings:* | *ROI.* Not provided |
| | *Average savings per participant.* $1,664 saved 48 months after birth for all families and $3,313 saved 48 months after birth per low-income family in 1980 dollars |
| *Limitations:* | This study takes the perspective of governmental expenditures only and does not include other health or social outcomes. |

*Note: All costs in 1980 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 10. Olds et al., 1993 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Utilization of government services (welfare, Medicaid, food stamps, child protective services) | Not provided | Not provided |
| Other social services | Not provided | Agency cost estimates |

# ROI Study Profile: Olds et al., 2019

| | |
|---|---|
| *Full citation:* | Olds, D. L., Kitzman, H., Anson, E., Smith, J. A., Knudtson, M. D., Miller, T., Cole, R., Hopfer, C., & Conti, G. (2019). Prenatal and infancy nurse home visiting effects on mothers: 18-year follow-up of a randomized trial. *Pediatrics*, *144*(6), 1-10. |
| *Model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | Memphis, TN |
| *Study-calculated program cost:* | $12,578 per family* |
| *Findings:* | *ROI.* Not provided.<br><br>*Average savings per participant.* Government saved on average $17,310 per participating family in 2009 dollars by the child's 18th birthday. Savings are because of decreases in use of welfare, food stamps, and Medicaid. |
| *Limitations:* | Does not include costs and savings because of other outcomes, such as fewer disabilities for first-born children and decrease in low birth weight for subsequent-born children. |

*Note: All costs in 2009 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 11. Olds et al., 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Welfare | Not provided | Center for Business and Economic Research, University of Tennessee |
| Food stamps | Not provided | Center for Business and Economic Research, University of Tennessee |
| Medicaid | Not provided | TennCare |

# ROI Study Profile: Olds et al., 2010

| | |
|---|---|
| *Full citation:* | Olds, D. L., Kitzman, H. J., Cole, R. E., Hanks, C. A., Arcoleo, K. J., Anson, E. A., Luckey, D. W., Knudtson, M. D., Henderson, C. R., Bondy, J., & Stevenson, A. J. (2010). Enduring effects of prenatal and infancy home visiting by nurses on maternal life course and government spending: Follow-up of a randomized trial among children at age 12 years. *Archives of Pediatrics & Adolescent Medicine, 164*(5), 419–424. |
| *Model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | Memphis, TN |
| *Study-calculated program cost:* | $11,511 per family* |
| *Findings:* | *ROI.* Not provided |
| | *Average savings per participant.* Government saved on average $12,300 per participating family in 2006 dollars by the child's 12th birthday. Annual savings average $1,025 per family. Savings are because of decreases in use of welfare, food stamps, and Medicaid. |
| *Limitations:* | The study used family self-report on use of government benefits. The study authors were not able to corroborate with administrative data. |

*Note: All costs in 2006 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 12. Olds et al., 2010 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Welfare | Not provided | Not provided |
| Food stamps | Not provided | Not provided |
| Medicaid | Not provided | Not provided |

# ROI Study Profile: Peters et al., 2015

| | |
|---|---|
| *Full citation:* | Peters, C., McKane, P., & Meghea, C. (2015). *Cost savings to Medicaid from the Maternal Infant Health Program due to reduction in preterm birth rate* (ROI Fact Sheet Series Volume 1, Issue 1). Michigan Department of Community Health. https://www.michigan.gov/documents/mdch/ROI_fact_sheet_2015.3_final_486914_7.pdf |
| *Model:* | Maternal Infant Health Program (MIHP) |
| *Research design:* | Matched sample |
| *Target population:* | All MIHP-enrolled mothers who gave birth in 2010 |
| *Location:* | Michigan |
| *Study-calculated program cost:* | $517.58 per participating mother* |
| *Findings:* | *ROI.* For every $1 spent on prenatal services for MIHP participants, Medicaid saves $1.38 in hospital costs related to preterm births in the first month of life.<br><br>*Average savings per participant.* Government saved $713.77 per participating child in first month of life on average in 2010 because of reduction in preterm births. |
| *Limitations:* | There may be additional outcomes that produced cost savings beyond preterm births. |

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

## Exhibit 13. Peters et al., 2015 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Preterm birth rate | $24,612.94 average additional expense of a preterm birth in the child's first month of life | Healthcare Cost and Utilization Project State Inpatient Databases; Michigan Health & Hospital Association |

**Note**: All costs in 2010 dollars. Unit cost for preterm births reflects Medicaid payment rates.

# ROI Study Profile: Stankaitis et al., 2005

| | |
|---|---|
| *Full citation:* | Stankaitis, J. A., Brill, H. R., & Walker, D. M. (2005). Reduction in neonatal intensive care unit admission rates in a Medicaid managed care program. *American Journal of Managed Care, 11*(3), 166–172. |
| *Model:* | Healthy Beginnings*/BabyLove |
| *Research design:* | Longitudinal, descriptive study |
| *Target population:* | Moderate- to high-risk pregnant women |
| *Location:* | Rochester, NY |
| *Study-calculated program cost:* | $2,238 per birth with neonatal intensive care unit (NICU) admission** |
| *Findings:* | *ROI.* The program saved $2.03 for every $1 spent between 1998 and 2003. |
| | *Average savings per participant*. Not provided |
| *Limitations:* | Cost of service referrals not included |

*This Healthy Beginnings was a local adaptation of Baby Love and is not designated as evidence based by Home Visiting Evidence of Effectiveness (HomVEE) which assesses the quality of the research evidence for each home visiting model.

**Note: Fiscal year for dollars not provided. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 14. Stankaitis et al., 2005 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| NICU admission rate | $5,047–$10,214 per NICU admission between 1998 and 2003 | Monroe Plan for Medical Care administrative records |
| Birth administrative costs | $299.70 per birth in 2003 | Monroe Plan for Medical Care administrative records |

**Note:** Unit costs are for a Medicaid-managed care plan in Rochester, NY.

# ROI Study Profile: Washington State Institute for Public Policy (WSIPP) – Child First, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Child First.* https://www.wsipp.wa.gov/BenefitCost/Program/388 |
| *Model:* | Child First |
| *Research design:* | Meta-analysis |
| *Target population:* | Young children with social-emotional problems at risk for child maltreatment |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $9,000 per family per year; $9,188 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $0.87. 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 yields $1.29. Returns are estimated to cover costs by 30 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $3,929 to taxpayers, $6,774 to participants, and $1,158 to others over the lifetime for each participating family. Indirect costs |

related to change in value of a statistical life and deadweight costs of taxation average a loss of $3,834 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*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 15. WSIPP – Child First, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Labor market earnings associated with major depression | Not provided | WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey |
| Health care associated with major depression | $1,763 per year in 2011 dollars | Medical Expenditure Panel Survey (MEPS) |
| Mortality associated with depression | $7 million modal value of a statistical life in 2001 dollars<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |
| Crime | $1,120 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 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $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 Executive Management Information System (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 |
|---|---|---|
| Child abuse and neglect | $511 per investigation in 2016 dollars | WSIPP calculation using Washington State Washington State Department of Social and Health Services (DSHS), Children's Administration data |
| | $1,132 per case (police involvement) in 2016 dollars | WSIPP crime model |
| | $4,508 per case (court involvement) in 2016 dollars | WSIPP calculation using Administrative Office of the Courts (AOC) dockets |
| | $286 per case (in-home services) in 2016 dollars | WSIPP calculation using DSHS EMIS database |
| | $19,271 per case (new foster care placement) in 2016 dollars | WSIPP calculation using DSHS Children's Administration data |
| | $50,444 per case (adoption) in 2016 dollars | WSIPP calculation using DSHS data and Interstate Compact on the Placement of Children State Pages |
| | $4,607 per case (court involvement with termination case) | WSIPP calculation using AOC court dockets |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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 | Office of Superintendent of Public Instruction, 2016 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $22,285 per year of school per low-income student in special education in 2017 dollars | |
| Health care associated with externalizing behavior symptoms | $1,122 per year (medical costs) in 2005 dollars | MEPS |
| Labor market earnings associated with child abuse and neglect | Not provided | Not provided |
| Mortality associated with child abuse and neglect | $7 million modal value of a statistical life<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |

**Note**: Unit costs for health care associated with major depression and externalizing behavior symptoms 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**References:**

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Early Head Start, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Early Head Start.* https://www.wsipp.wa.gov/BenefitCost/Program/97 |
| *Model:* | Early Head Start |
| *Research design:* | Meta-analysis |
| *Target population:* | Low-income pregnant women and families with infants or toddlers up to 3 years of age |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $7,600 per family per year; $11,539 per family for full length of program* |
| *Findings:* | *ROI.* Calculated ROI for families receiving any type of Early Head Start, including center based, home based, or a mixed approach. For every $1 spent, the program returns $0.02. 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 yields $0.39. Returns are not estimated to cover costs by 50 years after the intervention. |

*Average savings per participant.* The program grosses an estimated $3,305 to taxpayers, $788 to participants, and $450 to others over the lifetime for each participating family. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $4,336 per family. Estimates are gross, prior to subtracting program costs.

*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 2010 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 – Early Head Start, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| 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) |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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<br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| Health care associated with externalizing behavior symptoms | $1,122 per year (medical costs) in 2005 dollars | Medical Expenditure Panel Survey (MEPS) |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| 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 |
| Public assistance | $407.80 monthly average per family (cash assistance) in 2018 dollars | Economic Services Administration, 2019 |
| Mortality associated with depression | $7 million modal value of a statistical life in 2001 dollars<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using Integrated Postsecondary Education Data System |

**Note**: Unit costs for health care associated with externalizing behavior symptoms and 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**References**:

Economic Services Administration. (2019, October 1). *TANF/SFA/Workfirst SFY 2018 ESA briefing book*. Washington State Department of Social and Human Services. https://www.dshs.wa.gov/sites/default/files/ESA/briefing-manual/2018TANF_WorkFirst.pdf.

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)*. Author.

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

# ROI Study Profile: WSIPP – Early Start, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Early Start.* https://www.wsipp.wa.gov/BenefitCost/Program/747 |
| *Model:* | Early Start |
| *Research design:* | Meta-analysis |
| *Target population:* | At-risk families enrolled shortly after birth and who receive services for 24 months |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $1,791 per family per year; $3,659 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program experiences an additional loss of $0.39. 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 recoups $0.11. Returns are not estimated to cover costs for the first 50 years beyond the initial investment in the intervention.<br><br>*Average savings per participant.* The program loses taxpayers an estimated $69 and grosses $250 to participants and $217 to others over the lifetime for each participating family. Indirect costs related to change in value of a |

statistical life and deadweight costs of taxation average a loss of $1,827 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*Note: Cost per year in 2016 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

### Exhibit 17. WSIPP – Early Start, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Public assistance | $407.80 monthly average per family (cash assistance) in 2018 dollars | Economic Services Administration, 2019 |
| Crime | $1,120 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 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $9,645 per case (juvenile state parole) in 2015 dollars | WSIPP calculation using data from Juvenile Rehabilitation Administration's Executive Management Information System 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<br>$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<br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| Health care associated with externalizing behavior symptoms | $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<br>$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 externalizing behavior symptoms 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**References**:

Economic Services Administration. (2019, October 1). *TANF/SFA/Workfirst SFY 2018 ESA briefing book*. Washington State Department of Social and Human Services. https://www.dshs.wa.gov/sites/default/files/ESA/briefing-manual/2018TANF_WorkFirst.pdf.

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Family Spirit, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Family Spirit.* https://www.wsipp.wa.gov/BenefitCost/Program/822 |
| *Model:* | Family Spirit |
| *Research design:* | Meta-analysis |
| *Target population:* | American Indian adolescents who are pregnant (<32 weeks) until 36 months after birth |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $619 per family per year; $785 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $2.18. 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 yields $2.39. Returns are estimated to cover costs by 20 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $659 to taxpayers, $850 to participants, and $365 to others over the lifetime for each participating family. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $162 per family. Estimates are gross, prior to subtracting program costs. |
| *Limitations:* | There may be additional outcomes that produced costs or savings. |

*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 – Family Spirit, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 Executive Management Information System 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 major depression | Not provided | WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey (CPS) |
| Health care associated with externalizing behavior symptoms | $1,122 per year (medical costs) in 2005 dollars | Medical Expenditure Panel Survey (MEPS) |
| Mortality associated with depression | $7 million modal value of a statistical life in 2001 dollars<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |
| Labor market earnings associated with high school graduation | Not provided | WSIPP calculation using U.S. Census Bureau's March Supplement to the CPS |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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<br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| Costs of higher education | $10,740 per year for 2-year institution in 2014 dollars | WSIPP calculation using Integrated Postsecondary Education Data System |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $22,961 per year for 4-year institution in 2014 dollars | |

**Note**: Unit costs for health care associated with externalizing behavior symptoms 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**References**:

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Healthy Families America, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Healthy Families America.* https://www.wsipp.wa.gov/BenefitCost/Program/119 |
| *Model:* | Healthy Families America (HFA) |
| *Research design:* | Meta-analysis |
| *Target population:* | Pregnant mothers until child turns 3 years of age |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $5,071 per family per year; $5,268 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $1.46. 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 yields $1.59. Returns are estimated to cover costs by 13 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $4,972 to taxpayers, $3,323 to participants, and $81 to others over the lifetime for each participating family. Indirect costs related to change in value of a |

statistical life and deadweight costs of taxation average a loss of $693 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*Note: Cost per year in 2016 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 19. WSIPP – HFA, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 Executive Management Information System (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 | |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $13,553 per year (adult state prison) in 2015 dollars<br><br>$3,296 per year (adult post-prison supervision) in 2015 dollars<br><br>$201–$152,378 per conviction (courts; range based on crime type) in 2009 dollars | WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program<br><br>Washington Department of Corrections<br><br>WSIPP calculation using data from Washington Legislative Evaluation and Accountability Program<br><br>WSIPP calculation using data from Washington State Auditor and the Washington State Administrative Office of the Courts |
| Labor market earnings | 0.0137 annual real growth rate in earnings | WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey and U.S. Implicit Price Deflator for Personal Consumption Expenditures from the U.S. Department of Commerce |
| Health care associated with major depression | $1,763 per year in 2011 dollars | Medical Expenditure Panel Survey (MEPS) |
| Public assistance | $407.80 monthly average per family (cash assistance) in 2018 dollars | Economic Services Administration, 2019 |
| Property loss associated with problem alcohol use | $1,892 per alcohol-related traffic collision in 2000 dollars | Blincoe et al., 2002 |
| Health care associated with emergency department visits | $1,555 per visit (general population) in 2015 dollars<br><br>$6,803 per visit (frequent emergency department user) in 2015 dollars | WSIPP calculation using 2015 MEPS |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Food assistance | $215.57 monthly average per family in 2018 dollars | Economic Services Administration, 2019 |
| Mortality associated with problem alcohol | $7 million modal value of a statistical life<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |
| Child abuse and neglect | $511 per investigation in 2016 dollars | WSIPP calculation using Washington State Department of Social and Human Services (DSHS) Children's Administration data |
| | $1,132 per case (police involvement) in 2016 dollars | WSIPP crime model |
| | $4,508 per case (court involvement) in 2016 dollars | WSIPP calculation using Administrative Office of the Courts (AOC) dockets |
| | $286 per case (in-home services) in 2016 dollars | WSIPP calculation using DSHS EMIS database |
| | $19,271 per case (new foster care placement) in 2016 dollars | WSIPP calculation using DSHS Children's Administration data |
| | $50,444 per case (adoption) in 2016 dollars | WSIPP calculation using DSHS data and Interstate Compact on the Placement of Children State Pages |
| | $4,607 per case (court involvement with termination case) | WSIPP calculation using AOC court dockets |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Out-of-home placement | $34,261 per case in 2016 dollars<br><br>$9,182 per child with serious emotional disturbance in 2016 dollars | Not provided<br><br>WSIPP calculation using DSHS Children's Administration EMIS reporting system |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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<br><br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| 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 externalizing behavior symptoms | $1,122 per year (medical costs) in 2005 dollars | MEPS |
| Labor market earnings associated with child abuse and neglect | Not provided | |
| Mortality associated with child abuse and neglect | $7 million modal value of a statistical life<br><br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |

**Note**: Unit costs for health care associated with major depression, emergency department visits, and externalizing behavior symptoms 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, and 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.

Economic Services Administration. (2019, October 1). *TANF/SFA/Workfirst SFY 2018 ESA briefing book*. Washington State Department of Social and Human Services. https://www.dshs.wa.gov/sites/default/files/ESA/briefing-manual/2018TANF_WorkFirst.pdf.

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Home Instruction for Parents of Preschool Youngsters, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Home Instruction for Parents of Preschool Youngsters.* https://www.wsipp.wa.gov/BenefitCost/Program/748 |
| *Model:* | Home Instruction for Parents of Preschool Youngsters (HIPPY) |
| *Research design:* | Meta-analysis |
| *Target population:* | Parents with children aged 3–5 |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $2,050 per family per year; $4,188 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $1.38. 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 yields $1.81. Returns are estimated to cover costs by 31 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $1,925 to taxpayers, $3,289 to |

participants, and $2,362 to others over the lifetime for each participating family. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a loss of $1,801 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*Note: Cost per year in 2016 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

## Exhibit 20. WSIPP – HIPPY, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 Executive Management Information System data system |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $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 |
| Health care associated with externalizing behavior symptoms | $1,122 per year (medical costs) in 2005 dollars | Medical Expenditure Panel Survey (MEPS) |

**Note**: Unit costs for health care associated with externalizing behavior symptoms 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

**Reference**: U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Nurse-Family Partnership, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Nurse-Family Partnership.* https://www.wsipp.wa.gov/BenefitCost/Program/35 |
| *Model:* | Nurse-Family Partnership (NFP) |
| *Research design:* | Meta-analysis |
| *Target population:* | Pregnant mothers and the first 2 years after their child's birth |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $5,944 per family per year; $12,265 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $1.38. 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 yields $1.27. Returns are estimated to cover costs by 29 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $4,255 to taxpayers, $10,432 to participants, and $865 to others over the lifetime for each participating family. Indirect costs related to change in value of a |

statistical life and deadweight costs of taxation average a savings of $1,335 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*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 21. WSIPP – NFP, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 Executive Management Information System (EMIS) data system |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $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 | 0.0137 annual real growth rate earnings | WSIPP calculation using U.S. Census Bureau's March Supplement to the Current Population Survey and U.S. Implicit Price Deflator for Personal Consumption Expenditures from the U.S. Department of Commerce |
| Health care associated with major depression | $1,763 per year in 2011 dollars | Medical Expenditure Panel Survey (MEPS) |
| Public assistance | $407.80 monthly average per family (cash assistance) in 2018 dollars | Economic Services Administration, 2019 |
| Health care associated with anxiety disorder | $553 per year in 2011dollars (medical costs) | MEPS |
| Food assistance | $215.57 monthly average per family in 2018 dollars | Economic Services Administration, 2019 |
| Child abuse and neglect | $511 per investigation in 2016 dollars | WSIPP calculation using Washington State Department of Social and Health Services (DSHS) Children's Administration data |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $1,132 per case (police involvement) in 2016 dollars | WSIPP crime model |
| | $4,508 per case (court involvement) in 2016 dollars | WSIPP calculation using Administrative Office of the Courts (AOC) dockets |
| | $286 per case (in-home services) in 2016 dollars | WSIPP calculation using DSHS EMIS database |
| | $19,271 per case (new foster care placement) in 2016 dollars | WSIPP calculation using DSHS Children's Administration data |
| | $50,444 per case (adoption) in 2016 dollars | WSIPP calculation using DSHS data and Interstate Compact on the Placement of Children State Pages |
| | $4,607 per case (court involvement with termination case) | WSIPP calculation using AOC court dockets |
| Out-of-home placement | $34,261 per case in 2016 dollars | Not provided |
| | $9,182 per child with serious emotional disturbance in 2016 dollars | WSIPP calculation using DSHS Children's Administration EMIS reporting system |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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<br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Property loss associated with alcohol abuse or dependence | $1,892 per alcohol-related traffic collision in 2000 dollars | Blincoe et al., 2002 |
| Labor market earnings associated with child abuse and neglect | Not provided | Not provided |
| Infant mortality | $7 million modal value of a statistical life in 2001 dollars<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |
| Health care associated with low birth weight births | $3,522 additional cost per mother in year following birth in 2014 dollars<br>$31,299 additional cost per child in year following birth in 2014 dollars | Washington State hospital data |
| Health care associated with very low birth weight births | $8,592 additional cost per mother in year following birth in 2014 dollars<br>$145,410 additional cost per child in year following birth in 2014 dollars | Washington State hospital data |

**Note**: Unit costs for health care associated with major depression and anxiety disorder 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, and data on the cost, scope, and breadth of health insurance held by and available to U.S. workers. Unit costs for health care associated with low birth weight and very low birth weight births represent average costs across all singleton births in Washington, including those covered by Medicaid or private insurance and the uninsured. WSIPP also provides average costs by type of payor in Estimating Effects of Birth Indicators on Health Care Utilization Costs and Infant Mortality: Technical Appendix: http://www.wsipp.wa.gov/ReportFile/1666.

**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.

Economic Services Administration. (2019, October 1). *TANF/SFA/Workfirst SFY 2018 ESA briefing book*. Washington State Department of Social and Human Services. https://www.dshs.wa.gov/sites/default/files/ESA/briefing-manual/2018TANF_WorkFirst.pdf.

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – Parents as Teachers, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost Parents as Teachers.* https://www.wsipp.wa.gov/BenefitCost/Program/118 |
| *Model:* | Parents as Teachers (PAT) |
| *Research design:* | Meta-analysis |
| *Target population:* | Pregnant mothers until their child turns 5 years of age |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $1,780 per family per year; $4,637 per family for full length of program* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $0.18. 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 yields $0.64. Returns are estimated to cover costs by 47 years after the intervention.<br><br>*Average savings per participant.* The program grosses an estimated $977 to taxpayers, $1,790 to participants, and $189 to others over the lifetime for each participating family. Indirect costs related to change in value of a statistical |

life and deadweight costs of taxation average a loss of $2,130 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

*Note: Cost per year in 2016 dollars. Costs for full program in 2018 dollars. May not account for variable costs to implement the program in other geographic areas.

### Exhibit 22. WSIPP – PAT, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 Executive Management Information System (EMIS) data system |
| | $16,776 per year (adult jail) in 2015 dollars | WSIPP calculation using data from Washington State Auditor |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $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 |
| Child abuse and neglect | $511 per investigation in 2016 dollars | WSIPP calculation using Washington State Department of Social and Health Services (DSHS) Children's Administration data |
| | $1,132 per case (police involvement) in 2016 dollars | WSIPP crime model |
| | $4,508 per case (court involvement) in 2016 dollars | WSIPP calculation using Administrative Office of the Courts (AOC) dockets |
| | $286 per case (in-home services) in 2016 dollars | WSIPP calculation using DSHS EMIS database |
| | $19,271 per case (new foster care placement) in 2016 dollars | WSIPP calculation using DSHS Children's Administration data |
| | $50,444 per case (adoption) in 2016 dollars | WSIPP calculation using DSHS data and Interstate Compact on the Placement of Children State Pages |
| | $4,607 per case (court involvement with termination case) | WSIPP calculation using AOC court dockets |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars | Office of Superintendent of Public Instruction, 2017 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $11,299 per year of school per low-income student in 2017 dollars | |
| K-12 special education | $20,571 per year of school per student in special education in 2017 dollars<br><br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| Health care associated with post-traumatic stress disorder | $1,817 per year (medical costs) in 2005 dollars | Ivanova et al., 2011 |
| Labor market earnings associated with child abuse and neglect | Not provided | Not provided |
| Mortality associated with child abuse and neglect | $7 million modal value of a statistical life in 2001 dollars<br><br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br><br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |

**Note**: Unit cost for health care associated with PTSD represents average costs for patients covered by Medicaid or private insurance.

**References**:

Ivanova, J., Birnbaum, H. G., Chen, L., Duhig, A. M., Dayoub, B., Kantor, E. D., Schiller, B. A., & Phillips, G. (2011) Cost of post-traumatic stress disorder vs major depressive disorder among patients covered by Medicaid or private insurance. *American Journal of Managed Care, 17*(8), e314–e323.

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: WSIPP – SafeCare, 2019

| | |
|---|---|
| *Full citation:* | Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation*. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf<br><br>Washington State Institute for Public Policy. (2020, February 26). *Washington State Institute for Public Policy benefit-cost SafeCare.* https://www.wsipp.wa.gov/BenefitCost/Program/160 |
| *Program model:* | SafeCare |
| *Research design:* | Meta-analysis |
| *Target population:* | Parents who are at risk or have been reported for child maltreatment |
| *Location:* | Not provided |
| *Study-calculated program cost:* | $1,950 per family per year; cost per family for full length of program $1,950* |
| *Findings:* | *ROI.* For every $1 spent, the program returns $20.80 relative to a comparison group that received home visiting without the SafeCare curriculum, materials, and fidelity monitoring. 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 yields $19.39. Returns are estimated to cover costs by 2 years after the intervention. Note: Unlike other programs in this resource, SafeCare ROI calculations use only the additional program cost for SafeCare ($192) relative to the comparison group rather than the full cost of SafeCare. Also note that WSIPP calculated ROI for families receiving standard SafeCare, not SafeCare Augmented. Only SafeCare Augmented is designated by HomVEE as evidenced based. |

*Average savings per participant.* The program grosses an estimated $1,533 to taxpayers, $1,983 to participants, and $207 to others over the lifetime for each participating family. Indirect costs related to change in value of a statistical life and deadweight costs of taxation average a savings of $273 per family. Estimates are gross, prior to subtracting program costs.

*Limitations:* There may be additional outcomes that produced costs or savings.

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

## Exhibit 23. WSIPP – SafeCare, 2019 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Crime | $1,120 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 |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | | Executive Management Information System (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 |
| Child abuse and neglect | $511 per investigation in 2016 dollars | WSIPP calculation using Washington State Department of Social and Health Services (DSHS) Children's Administration data |
| | $1,132 per case (police involvement) in 2016 dollars | WSIPP crime model |
| | $4,508 per case (court involvement) in 2016 dollars | WSIPP calculation using Administrative Office of the Courts (AOC) dockets |
| | $286 per case (in-home services) in 2016 dollars | WSIPP calculation using DSHS EMIS database |

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| | $19,271 per case (new foster care placement) in 2016 dollars | WSIPP calculation using DSHS Children's Administration data |
| | $50,444 per case (adoption) in 2016 dollars | WSIPP calculation using DSHS data and Interstate Compact on the Placement of Children State Pages |
| | $4,607 per case (court involvement with termination case) | WSIPP calculation using AOC court dockets |
| K-12 grade repetition | $9,585 per year of school per student in 2017 dollars<br>$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<br>$22,285 per year of school per low-income student in special education in 2017 dollars | Office of Superintendent of Public Instruction, 2016 |
| Health care associated with post-traumatic stress disorder | $1,817 per year (medical costs) in 2005 dollars | Ivanova et al., 2011 |
| Labor market earnings associated with child abuse and neglect | Not provided | Not provided |
| Mortality associated with child abuse and neglect | $7 million modal value of a statistical life<br>$299,000 annual value of a statistical life for 18 to 62 years of age in 2001 dollars<br>(see WSIPP technical appendix for assumptions) | WSIPP calculation using values from Kniesner et al., 2010 |

**Note**: Unit cost for health care associated with PTSD represents average costs for patients covered by Medicaid or private insurance.

**References:**

Ivanova, J., Birnbaum, H. G., Chen, L., Duhig, A. M., Dayoub, B., Kantor, E. D., Schiller, B. A., & Phillips, G. (2011). Cost of post-traumatic stress disorder vs major depressive disorder among patients covered by Medicaid or private insurance. *American Journal of Managed Care, 17*(8), e314–e323.

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).* Author.

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

U.S. Department of Justice, 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.

# ROI Study Profile: Wu et al., 2017

| | |
|---|---|
| *Full citation:* | Wu, J., Dean, K. S., Rosen, Z., & Muennig, P. A. (2017). The cost-effectiveness analysis of Nurse-Family Partnership in the United States. *Journal of Health Care for the Poor and Underserved*, *28*(4), 1578–1597. |
| *Program model:* | Nurse-Family Partnership |
| *Research design:* | Randomized controlled trial |
| *Target population:* | First-time pregnant, low-income women (until child turns 2) |
| *Location:* | Elmira, NY; Memphis, TN; Denver, CO; Cincinnati, OH; and Oklahoma state |
| *Study-calculated program cost:* | $9,641 per family and $301 per visit average across sites* |
| *Findings:* | *ROI.* Not provided. |
| | *Average savings per participant.* Total net benefit per high-risk child receiving nurse home visiting estimated at $2,764 over his or her lifetime. This increases to $9,617 when considering improved earnings. For the general population, the program costs an additional $1,021 per child over hi or /her lifetime, rather than producing a net savings. |
| *Limitations:* | The study did not include all potential outcomes, such as reduced health costs for future generations. Some maternal outcomes are also omitted. |

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

## Exhibit 24. Wu et al., 2017 Study Outcomes Monetized, Unit Cost, and Data Sources

| Outcome monetized | Unit cost | Data source |
|---|---|---|
| Childhood maltreatment | Not provided | Fang et al., 2012<br>Jonson-Reid et al., 2004 |
| Preterm delivery | $19,406 additional hospital cost per preterm birth | Russell et al., 2007 |
| Youth crime | $1,490 per crime | Miller, 2013 |
| Temporary Assistance for Needy Families | $394 per month, per family | Congressional Budget Office, 2015 |
| Supplemental Nutrition Assistance Program | $146 per month, per family | Center on Budget and Policy Priorities, 2015 |
| Child's future earnings | $506 additional annual earnings per child (starting at 20 years of age) | Brooks-Gunn et al., 2009 |

**Note**: All costs in 2015 dollars. Unit cost for preterm delivery is from the Nationwide Inpatient Sample from the Healthcare Cost and Utilization Project, a nationally representative sample of hospitals and hospital stays for patients covered by public, private, or no health insurance.

**References**:


Brooks-Gunn, J., Magnuson, K., & Waldfogel, J. (2009). *Long-run economic effects of early childhood programs on adult earnings*. Partnership for America's Economic Success.

Center on Budget and Policy Priorities. (2015). *A quick guide to SNAP eligibility and benefits*. https://www.cbpp.org/research/food-assistance/a-quick-guide-to-snap-eligibility-and-benefits

Congressional Budget Office. (2015). *Temporary assistance for needy families: Spending and policy options*. https://www.cbo.gov/publication/49887.

Fang, X., Brown, D. , Florence, C. , & Mercy, J. (2012). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect, 36*(2), 156–65.

Jonson-Reid, M., Drake, B., Kim, J., Porterfield, S., & Han, L. (2004). A prospective analysis of the relationship between reported child maltreatment and special education eligibility among poor children. *Child Maltreatment, 9*(4), 382–394.

Miller, T. R. (2013). *Nurse-Family Partnership home visitation: Costs, outcomes, and return on investment: Executive summary*. Pacific Institute for Research and Evaluation.

Russell, R. B., Green, N. S., Steiner, C. A., Meikle, S., Howse, J. L., Poschman, K., Dias, T., Potetz, L., Davidoff, M. J., Damus, K., & Petrini, J. R. (2007). Cost of hospitalization for preterm and low birth weight infants in the United States. *Pediatrics, 120*(1), e1–e9.