



COST SAVINGS OF NURSE-FAMILY PARTNERSHIP IN CALIFORNIA

When Nurse-Family Partnership (NFP) serves a family in California, state, local, and Federal governments all benefit.

NFP saves governments money. NFP costs average \$12,311 per family served (present value at a 3% discount rate, \$12,075). As Figure 1 shows, the \$19,342 (\$7,267 net of program costs) in offsetting government savings includes savings in Medicaid, criminal justice, and special education plus transfers of spending from government to families who need less government assistance. NFP also improves quality of life of participating families. By the child's 18th birthday, state and local government savings total \$13,471 (present value \$10,754) (Table 1). Federal savings are large too: \$10,407 (present value \$8,588). Medicaid savings alone total \$10,276 per family served (Table 2).

If Medicaid fully funded NFP, each level of government would reap Medicaid savings that exceed its share of NFP costs before the child reached age 10. By the child's 18th birthday, Medicaid would recoup \$0.80 per dollar invested (undiscounted). Adding TANF, criminal justice, and other cost savings, State and local government would save 1.8 times the \$6,037 in state costs (computed from present values). Federal savings would be 1.4 times Federal costs of \$6,038. State and federal government each would fully recoup their costs before the child reached age 9. If Medicaid were braided with other NFP funding streams, governments would recoup their costs even faster and get a larger return on investment.

**Figure 1. Government Cost Savings per Family Served by NFP in California
Total \$19,342 (Present Value at a 3% Discount Rate)**

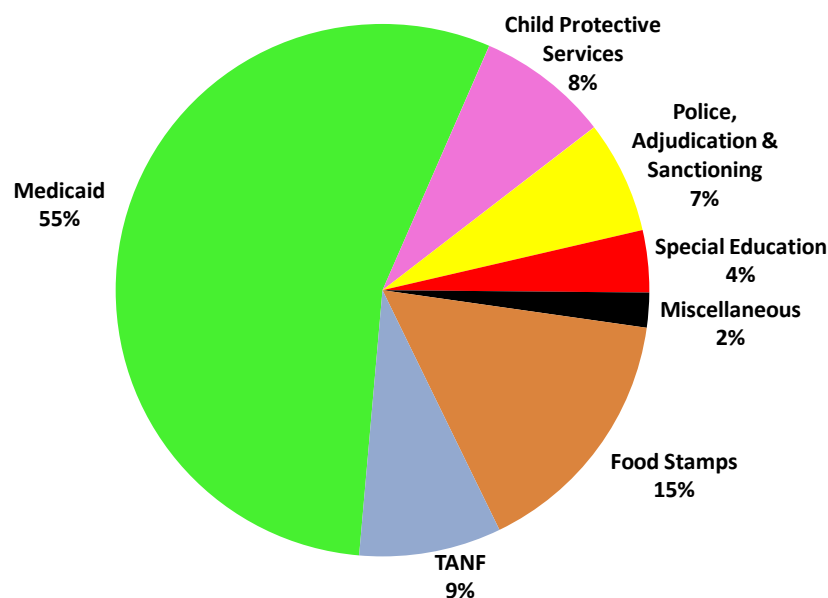


Table 1 Cost Savings to California within 18 Years of the Birth of a First Child Whose Mother Received Any Nurse-Family Partnership Services and Corresponding Savings to the Federal Government (in 2010 dollars) Offsetting NFP Costs Average \$12,311 (Present Value \$12,075) per Family Served in California

Category of Savings/ Child Age	Prenatal	0-11 Mos	12-23 Mos	24-35 Mos	36-47 Mos	48-59 Mos	60-71 Mos	72-83 Mos	84-95 Mos	96-107 Mos
State Savings by Category										
TANF Payments		\$142	\$301	\$218	\$555	\$208	\$376	\$418	\$499	\$345
Medicaid Graduation		\$150	\$101	\$87	\$118	\$103	\$83	\$38	\$56	\$35
Reduced Costs if on Medicaid	\$903	\$91	\$101	\$12	\$5	\$122	\$103	\$126	\$126	\$126
Fewer Subsequent Children on Medicaid			\$595	\$66	\$146	\$150	\$58	\$55	\$54	\$54
Child Care, 2nd Births			\$17	\$17	\$17	\$17				
Special Education			\$16	\$25	\$16	\$63	\$60	\$179	\$68	\$67
Confirmed Maltreatment *						\$105	\$105	\$127	\$127	\$127
Other Maltreatment						\$2	\$2	\$3	\$3	\$3
Youth Arrests										
Youth Crime										
Youth Substance Abuse										
State Savings by Year	\$903	\$383	\$1,131	\$425	\$857	\$770	\$787	\$946	\$933	\$757
Federal Savings by Year	\$903	\$241	\$909	\$467	\$551	\$979	\$862	\$902	\$548	\$574
Total Government Savings by Year	\$1,806	\$624	\$2,040	\$892	\$1,408	\$1,749	\$1,649	\$1,848	\$1,481	\$1,331
Cumulative Federal & State Medicaid Savings	\$1,806	\$2,288	\$3,882	\$4,213	\$4,751	\$5,500	\$5,988	\$6,425	\$6,896	\$7,325
Cumulative State Savings (Present Value)	\$903	\$1,280	\$2,362	\$2,757	\$3,530	\$4,204	\$4,873	\$5,653	\$6,400	\$6,988
Cumulative Federal Savings (Present Value)	\$903	\$1,140	\$2,010	\$2,444	\$2,941	\$3,798	\$4,531	\$5,275	\$5,714	\$6,160
Total Government Savings (Present Value)	\$1,806	\$2,420	\$4,372	\$5,201	\$6,471	\$8,002	\$9,404	\$10,928	\$12,114	\$13,148

* Confirmed maltreatment includes substantiated and other indicated maltreatment, i.e., cases child welfare investigations concluded involved maltreatment.

Category of Savings/ Child Age	108-119 Mos	120-131 Mos	132-143 Mos	144- 155 Mos	156– 167 Mos	168- 179 Mos	180- 191 Mos	192-203 Mos	204- 215 Mos	Total
State Savings by Category										
TANF Payments	\$244	\$167								\$3,473
Medicaid Graduation	\$68	\$96	\$48							\$983
Reduced Costs if on Medicaid	\$114	\$114	\$114	\$113	\$113	\$114	\$87	\$4	\$4	\$2,491
Fewer Subsequent Children on Medicaid	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$4	\$1,664
Child Care, 2nd Births										\$68
Special Education	\$62	\$62	\$62	\$61	\$61	\$61	\$50	\$14	\$14	\$941
Confirmed Maltreatment	\$115	\$115	\$115	\$113	\$113	\$113	\$87			\$1,362
Other Maltreatment	\$2	\$2		\$2	\$2	\$2	\$2			\$27
Youth Arrests			\$117	\$207	\$260	\$247	\$323	\$354	\$255	\$1,763
Youth Crime			\$46	\$82	\$103	\$98	\$128	\$140	\$101	\$698
Youth Substance Abuse				\$0.07	\$0.07	\$0.07	\$0.07			\$0.28
State Savings by Year	\$659	\$610	\$558	\$632	\$706	\$689	\$731	\$566	\$428	\$13,471
Federal Savings by Year	\$629	\$745	\$592	\$408	\$303	\$302	\$268	\$121	\$103	\$10,407
Total Government Savings by Year	\$1,288	\$1,355	\$1,150	\$1,040	\$1,009	\$991	\$999	\$687	\$531	\$23,878
Cumulative Federal & State Medicaid Savings	\$7,797	\$8,324	\$8,755	\$9,090	\$9,424	\$9,761	\$10,043	\$10,159	\$10,276	\$10,276
Cumulative State Savings (Present Value)	\$7,485	\$7,932	\$8,329	\$8,766	\$9,240	\$9,689	\$10,151	\$10,499	\$10,754	\$10,754
Cumulative Federal Savings (Present Value)	\$6,635	\$7,181	\$7,602	\$7,884	\$8,087	\$8,284	\$8,453	\$8,527	\$8,588	\$8,588
Total Government Savings (Present Value)	\$14,120	\$15,113	\$15,931	\$16,650	\$17,327	\$17,973	\$18,604	\$19,026	\$19,342	\$19,342

If Medicaid fully funded NFP, at current matching rates, state share would be \$6,037 and Federal share would be \$6,038.

Table 2. Undiscounted and Present Value Medicaid Savings per Family Served by Source of Savings, Prenatal to Age 18

Source of Savings	Undiscounted	Present Value
Increased Child Graduation	\$1,966	\$1,703
Fewer Subsequent Children on Medicaid	\$3,328	\$2,801
Reduced Smoking While Pregnant	\$3	\$3
Reduced Preeclampsia	\$670	\$670
Reduced Prematurity	\$1,343	\$1,308
Fewer Injuries	\$250	\$243
Increased Immunization	\$109	\$101
Reduced child maltreatment	\$2,595	\$1,948
Reduced youth substance abuse	\$12	\$8
Total	\$10,276	\$8,785

This analysis is the first that separates savings to state and local versus Federal government. Prior cost-benefit analyses of the NFP model monetized savings to society or to government. Savings to society include government savings; costs paid by employers, insurers, and participating families; and the value of increased quality of life. Prior cost-benefit analyses also showed varied return on investment because they monetize different outcomes for different time periods. For example, studies by Washington State Institute for Public Policy (e.g., Aos et al. 2004) compared total program cost with state government and societal savings through age 15.

Our estimates, although robust, are based on conservative assumptions. They combine California cost data with effectiveness data derived from five randomized trials of NFP (Denver, Elmira, and Memphis trials by David Olds and small independent trials in Louisiana and Orange County CA) plus evaluations of NFP effectiveness when scaled up in New York City, Ohio, Oklahoma, and Pennsylvania.

Categories of savings per family served by a Nurse-Family Partnership home visitation program are described below. Table 2 details the calculations. It shows three columns of factors. Multiplying these factors together would yield estimated state government savings from a randomized trial in California. Because outcomes tend to be better in randomized trials than in replication, that estimate is multiplied times 73.1% to estimate savings for an operational program. This percentage mirrors the decrease in nurse visits per family in operational NFP programs from randomized trials.

- **Reduced TANF Payments:** Higher earnings and a reduced second birth rate reduce eligibility and payments per eligible mother. Savings continue through age 9. This estimate accounts for the downward shift in TANF participation following the 1996 overhaul of TANF. All TANF savings accrue to state government.
- **Reduced Food Stamp Payments:** Higher earnings and a reduced second-birth rate reduce eligibility and 100% federally funded food stamp payments per eligible mother. Savings continue at least through age 10.
- **Increased Medicaid Graduation:** Higher earnings and a reduced second birth rate increase Medicaid graduation of mothers and to a lesser extent, of first-born children (but the analysis recognizes that few children would fully graduate because Child Health

Insurance Program has higher income eligibility thresholds). Savings continue at least until age 12.

- **Lower Costs if on Medicaid:** NFP reduces smoking during pregnancy and related prematurity, pregnancy-associated preeclampsia, child injury in the first two years of life, medical and mental health spending on victims of child abuse and physical neglect, and adherence to immunization schedules, thus reducing Medicaid claims costs of mothers and first-born children. Some savings continue through age 15.
- **Fewer Second Babies on Medicaid:** NFP mothers have a reduced rate of second births within two years of first birth and a reduced rate of closely spaced births that pose high risks of costly complications. More than two years after first birth, NFP neither raises nor lowers the birth rate, so net decrease in family size attributable to NFP equals decrease within two years of first birth. Savings include both birth-related costs and costs of continuing Medicaid participation of these second babies. Savings continue through age 10.
- **Less Child Care, Second Births:** Had additional babies been born, some would have used subsidized child care funded by Child Care Development Block Grant.
- **Less Child Maltreatment:** NFP reduces maltreatment and thus costs of investigation and intervention including foster care and judicial expenses. Savings start at age 4 and continue at least until age 15.
- **Reduced Language Delay:** NFP improves language skills, thus reducing need for early language development services at age 6.
- **Lower Criminal Justice Costs:** Reduced offending by youth served by NFP begins at age 11 and extends through age 17, saving state and local government police investigation, adjudication, and sanctioning costs, as well as reducing Medicaid spending and tax losses associated with crime victim earnings loss.
- **Lower Youth Substance Abuse Costs:** Youth served by NFP use less alcohol, tobacco, and marijuana from age 12 until at least age 15.

References. Please see the references fact sheet.

Ted R Miller, PhD, developed this fact sheet and the cost model underpinning it. His contact information is Pacific Institute for Research & Evaluation, 11720 Beltsville Drive, Calverton MD 20705; e-mail miller@pire.org. This calculator was funded in part by NIDA grant 1-R01 DA021624. The views expressed are those of the author and do not necessarily reflect the funder's views.

Table 3. Source of Factors That When Multiplied Together and Then Multiplied Times the 73.1% Replication Effectiveness Factor Yield Estimated Cost Savings of Nurse-Family Partnership Services to California (in 2010 dollars) *

Category of Savings	Factor A	Factor B	Factor C
1. Reduced TANF	Mean \$ saved by year, Memphis NFP (Olds et al. 2010) times payments per recipient California/ Tennessee, 1996	% change in payments per California recipient family, 1996 to 2009 (Schott & Finch 2010)	% decrease in TANF recipients in California, 1996 to 2009 (Schott & Finch 2010)
2. Increased Medicaid Graduation	Mean \$ saved by year, Memphis NFP (Olds et al. 2010)	Medicaid costs/child enrollee, California/ Tennessee (Henry J Kaiser Family Foundation 2011)	California Medicaid matching %age (Assistant Secretary for Planning and Evaluation 2012)
3. Lower Costs if on Medicaid	Multiply each of components 3 a to 3 f times	ACCRA (2010) medical price adjuster, California/US multiplied times	California Medicaid matching %age
3 a. Reduced Smoking/Birth Complications	31% less cotinine (Denver, Olds et al. 2002) (28% less cigarettes in Elmira, Olds et al. 1986)	% of California births to unmarried mothers that involved smoking in the last trimester of pregnancy in 2007 (C-PONDER (2011))	\$224/case (Adams & Melvin 1998)
3 b. Reduced Pregnancy-Induced Hypertension (PIH)	35% reduction in PIH, Memphis, Kitzman et al. (1997)(42% reduction in hypertensive disorders of pregnancy in Elmira, but not statistically significant, Olds et al. 1986)	22% of first-time low-income births in NYC prior to NFP involved PIH; 20% in the Memphis trial (35% times 22% = 7.7 %age point reduction; reduction in Memphis was 7 %age points)	\$10,678/case, Preeclampsia Foundation (2007)
3 c. Reduced Preterm Births	30% fewer preterm births among NFP mothers (NFP National Services Office 2012) relative to an age matched national cohort (48% reduction in Orange County, Nguyen 2003; 37%-45% reduction in central Ohio, Allen et al. 2010; 29% reduction among unmarried mothers in Oklahoma, Carabin et al. 2005))	13.3% preterm in the age-matched national cohort (Health Data interactive 2011) multiplied times ratio of % of births that are preterm in California versus nationally (Henry J Kaiser Family Foundation 2009)	\$35,388 excess medical cost per preterm birth (Institute of Medicine 2006)
3 d. Fewer Injuries	50% reduction in injuries [56% reduction in ED visits for injury in Elmira (& a 32% reduction in all ED use in year 2); 39% reduction in medically attended injuries in Memphis; 50% reduction in all ED use thru age 15 months in Louisiana]	35% incidence over 2 years, Finkelstein et al. (2006) multiplied times 95.83% still on Medicaid when the injury occurs	\$1,450 medical cost/injury, ages 0-4, Finkelstein et al. (2006)
3 e. Reduced Child Maltreatment	39.7% reduction at ages 4-15, Elmira (Eckenrode et al. 2000) times % of low income children maltreated (Sedlack et al. 2010)	Ratio of CPS investigation rates in 2010 for New York and nationwide (Children's Bureau 2011)	\$3,416 in mental health care costs per victim + \$8,774 per victim for medical (Fang et al. 2012, Miller et al. 1996)
3 f. More Immunization	20.5% increase in full immunization at age 2 (NFP National Services Office 2011; Senter 2010)	\$778 net medical care savings in years 1-4 (Zhou et al. 2005)	95.83% still on Medicaid when ill

Category of Savings	Factor A	Factor B	Factor C
4. Fewer Second Babies			
4 a. Fewer Infants Enrolled in Medicaid due to Fewer Pregnancies	Repeat teen birth rate in California (Ikramullah et al. 2011) multiplied times 39% reduction in pooled data from the Elmira, Memphis & Denver trials (Olds et al. 1986, Kitzman et al. 1997, Olds et al. 2002)	Medicaid cost/child/year in California (Henry J Kaiser Family Foundation 2011)	California Medicaid matching %age
4 b. Fewer Deliveries of Medicaid Babies	Multiply components 4 b i and ii times ACCRA (2010) medical price adjuster, California/US	Medicaid birth cost = .78 of average birth cost (Machlin & Rohde 2007) times	California Medicaid matching %age
4 b i. Fewer Second Births within 24 Months	39.9% reduction in pooled data from the Elmira, Memphis & Denver trials (Olds et al. 1986, Kitzman et al. 1997, Olds et al. 2002); (33% reduction in Louisiana from an unstated base, Sonnier 2007)	Repeat teen birth rate in California (Ikramullah et al. 2011)	\$8,174 cost/live birth (IOM 2006)
4 b ii. Fewer Preterm Second and Subsequent Births	% of births preterm in California in 2009 (Henry J Kaiser Family Foundation 2009) multiplied times adjuster for higher expected preterm rate in the largely unmarried NFP population (based on the odds ratio of 1.46 in Shah et al. 2011)	10 percentage point increase in Memphis over 4.5 years (Kitzman et al 2000) (30% reduction for second births in Denver, Olds et al. 2000) multiplied times portion of preterm births attributable to close spacing(0.4/1.4; Conde-Agueldo 2006)	\$35,388 extra medical cost/preterm birth (IOM 2006)
5. Less Subsidized Child Care, Second Births	39.9% fewer second births within 24 months (see 4 b i) multiplied times 2% of Medicaid mothers use child care subsidized by Child Care Development Block Grant (NYC)	Cost/child served in California (Office of Child Care 2010)	California matching fund percentage (Office of Child Care 2010)
6. Reduced Language Delay	50% reduction in Denver (Olds et al. 2002) (language development at age 6 also improved in Memphis, Olds et al. 2004b)	\$7,000 cost per case from New York City adjusted to state prices using ACCRA (2010) all-item price index	70% state and local
7. Less Child Maltreatment	39.7% reduction, Elmira (Eckenrode et al. 2000) multiplied times % of low income children maltreated (Sedlack et al. 2010)	Ratio of CPS investigation rates in 2010 for California and nationwide (Children's Bureau 2011)	CPS cost/case multiplied times % non-Federal in California (DeVooght et al. 2008)
8. Less Youth Crime	59% reduction, ages 11-17, Elmira (Eckenrode et al., 2010)	Arrests per 1000 youth in California (Federal Bureau of Investigation 2010) multiplied times crimes per arrest (Miller 2012, Table 10)	Cost/crime (Miller 2012, Table 9) multiplied times price indices for California by cost category
9. Less Youth Substance Abuse	68% reduction, ages 12-15 – average of 67% reduction, ages 12-15, Elmira (Olds et al. 1998); 69% reduction, Memphis, age 12 (Kitzman et al. 2010)	Medical cost/abuser (from the societal cost estimates above) multiplied times ACCRA (2010) medical price index for California	California Medicaid matching %age

* Factors across a row are multiplied together. Computing some costs requires multiplying factors across two rows as indicated. Each calculation incorporates an estimate of percentage of government savings that accrues to state government. Savings to Federal government are computed as total government savings minus state government savings. State government gets all TANF savings. Federal government gets all food stamp savings.