Testing the Effectiveness of Healthy Families America in an Accredited Statewide System: Outcomes and Cost-Benefits of the Healthy Families Oregon Program
Final Project Report

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ABSTRACT

Objectives. This study was designed to achieve several specific objectives: (1) to conduct a **large-scale randomized study** of the impact of the Healthy Families Oregon (HFO) program, a home visitation program using the Healthy Families America model, on child welfare system involvement, access to self-sufficiency resources, and use of preventive and other medical services; (2) to conduct a comprehensive and detailed cost-benefit study of the HFO program; and (3) to develop and disseminate a web-based tool to support home visiting program managers, funders, and others to better understand and develop readiness for conducting program cost analysis and cost-benefit research.

Approach. 2,727 eligible first-time parents were randomly assigned to receive the HFO program or a community services-as-usual control group. The research team obtained 2 years of post-enrollment follow-up data on all study participants from Oregon's child welfare system, self-sufficiency services, and medical assistance programs. Additionally, a 1-year post-enrollment telephone interview was conducted with a random sample of 803 study participants (403 program, 400 control). Analyses were also conducted to examine whether program impacts varied for subgroups of families with different demographic and baseline risk characteristics, and to explore the relationship of program fidelity and dosage to outcomes. Finally, a detailed program cost analysis was conducted and administrative data outcomes were used in a cost-benefit analysis.

Results/Benefits. 1-year follow-up interviews with parents found that HFO families were significantly more likely (compared to controls) to read to their young children frequently, to provide developmentally supportive activities, and to report lower parenting-related stress as measured by the Parent Stress Inventory (PSI). These effects appeared to be strongest for families with four or more risk factors (two factors more than the threshold for "at risk"). Administrative data outcomes at 2 years post enrollment found that families were no more likely to have a founded child abuse report than were controls (6.3% vs. 6.0%), but were significantly more likely to have an unfounded report (9.7% vs. 7.9%). HFO families, compared to controls, were also significantly more likely to have been enrolled in TANF services for the first time, received more days of Supplemental Nutrition Assistance Program (SNAP), and were more likely to be enrolled in substance abuse treatment services. There were no significant differences between groups in terms of use of or access to publicly funded health insurance or health-related services. Consistent with other cost-benefit analyses of home visiting and early childhood programs, results of the cost-benefit analyses did not support short-term cost-savings associated with receipt of the HFO program. A web-based tool, The Home Visiting Cost Tool, was posted to the following web address: www.homevisitcosts.com.

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INTRODUCTION AND STUDY OVERVIEW

Program Description

In 1993, the Oregon Legislature created the Healthy Families Oregon (HFO) program (originally known as "Healthy Start") with a mandate to provide universal, voluntary services to all first-time parents in the State of Oregon (ORS-417.795). The HFO mission is to "promote and support positive parenting and healthy growth and development for all Oregon parents and their first-born children" (ORS-417.795). The long-term goals of HFO are to: 1) prevent child abuse and neglect among HFO families, and 2) improve the school readiness of children participating in HFO.

In June 2007, Oregon's HFO program was officially recognized as an accredited multi-site state system by Healthy Families America. Receipt of accreditation was the culmination of over 2 years of intensive work to develop and implement more than 200 research-based quality standards across all of Oregon's HFO program and the central administration office at the Oregon Commission for Children and Families (OCCF), now the Early Learning Division, Oregon Department of Education.

HFO builds on research that shows that home visiting is most effective when services are provided to families most at-risk for negative child outcomes and when high-quality home visiting services are provided to families for a period of several years. Using the Healthy Families America (HFA) home visitation model, HFO works with first-time parents during the critical early years of children's brain development. The program aims to reduce risk factors associated with increased incidence of child abuse and neglect and to promote the role of parents as the child's first teacher.

HFO programs are locally administered by a variety of community agencies, including county Health Departments and nonprofit child- and family-serving agencies. All programs provide screening and basic information about pre- and post-natal care to first-birth parents. Screening uses the research-based New Baby Questionnaire (NBQ), a 10-item tool designed to measure key risk factors associated with child maltreatment and other negative family and child outcomes. Families with two or more risk factors are eligible for home visiting services. Screening occurs in a variety of settings, including health clinics, doctor's offices, and hospitals. The NBQ is designed to be completed either by HFO staff or volunteers, or by parents themselves. The universal screening service provided by HFO is a unique feature of the Oregon model, and allows a non-intrusive opportunity to contact a large number of families to identify risks and provide information and referrals to available community resources.

Services Provided

Home visitors coach first-time parents to help them develop warm, sensitive, and responsive parenting styles that establish a foundation for positive child development and school readiness. Home visitors provide information to parents about age-appropriate expectations for children's development, dealing with developmental and behavioral challenges, effective discipline and positive guidance, and healthy lifestyles. Workers implement a variety of research-based home visiting curricula focused on supporting child development and facilitating strong parent-child attachment. "Parents as Teachers" is the primary curriculum used by most programs. Through home visitation, the program aims to reduce child abuse and neglect and avoid costly long-term foster care placements.

Intensive home visiting services are delivered on a schedule based on the HFA model that specifies that families should receive weekly visits from the Home Visitor for at least 6 months after enrollment, known as 'Level 1.' Following the initial 6-month period, service frequency is adjusted according to a structured system based on family needs. Families that are progressing well might move on to 'Level 2,' which requires home visits every other week, and subsequently to 'Level 3' (monthly) or 'Level 4' (bi-monthly) home visits. Families in need of greater support may remain on 'Level 1' even after the initial 6 months. Families are served starting within 90 days of the baby's birth, and may continue to participate through age 3 (until the child turns 4).

Purpose of the Study

The goal of this study was to address key gaps in the evidence base for early childhood prevention programs generally and for the Healthy Families America model specifically. First, while home visiting has become increasingly accepted as an effective strategy for supporting healthy development of infants and toddlers; improving parenting practices; and reducing family and child risk factors associated with child maltreatment, juvenile delinquency, and other negative outcomes (Peacock, Konrad, Watson, Nickel, & Muhajarine, 2013); empirical studies of home visiting programs repeatedly find modest and mixed evidence of effectiveness (Daro, 2006; Gomby, Culross, & Behrman, 1999; Howard & Brooks-Gunn, 2009). The Healthy Families America (HFA) program, although it is widely implemented nationally and one of 13 home visiting models identified as meeting federal criteria for "evidence based" home visitation services, has a history of inconsistent evaluation results, and poses particular challenges in terms of cross-study synthesis of findings. The model, by design, allows considerable local variability in terms of such key program components as target population and curriculum. This local variability is both a strength of the model, in that specific aspects of the program can be tailored to best meet individual community needs, as well as a challenge—in particular, that this local variability makes the synthesis and generalizability of outcomes from studies of HFA more difficult, and that outcome studies have had more inconsistent outcomes than those of more prescriptive models (Azzi-Lessing, 2011; LeCroy & Krysik, 2011). More research on this

widely disseminated and popular model that can better identify and specify how model variations may influence outcomes is needed.

Second, the study sought to address a call by scholars and policymakers for larger scale evaluations of existing "scaled up" home visiting programs, and even more specifically to utilize administrative data sources for understanding policy-relevant outcomes (Klevens & Whitaker, 2007; Reynolds, Mathieson, & Topitzes, 2009). Therefore, the primary outcomes for the proposed study included those that could be measured through administrative data sources such as child maltreatment reports, use of self-sufficiency and other state-governed services, and publicly funded health care access and utilization.

Third, the study sought to undertake a more detailed program cost analysis and to begin to "set the stage" for cost-benefit analysis by collecting detailed program cost information and conducting a short-term cost-benefit study. That child maltreatment has serious short- and long-term impacts on children is not disputed (English, 1998; Reynolds et al., 2009). Because of these serious consequences, which include increased rates of health problems, mental illness, substance abuse disorders, and criminality (English, 1998), researchers and policymakers have been interested in documenting both the total costs of incidents of maltreatment, as well as the potential cost-savings associated with preventing maltreatment from occurring (Conrad, 2006; Fromm, 2001; Lee, Aos, & Miller, 2008). At the same time, however, expectations for short-term cost benefits for home visiting programs that target high-risk families must balance the potential for surveillance effects, that is, the possibility that rates of maltreatment reporting may increase, rather than decrease, by virtue of having a mandated reporter (the home visitor) present in the lives of high-risk families who might otherwise remain "under the radar" of mandated reporting (Olds, Eckenrode, & Kitzman, 2005). Surveillance effects may have the short-term consequences of increasing costs related to maltreatment reporting, at least in the short term. In fact, several recent research studies have found little evidence for short-term reductions in child abuse reporting for early childhood intervention programs, but have found that reductions begin to become apparent after children reach age 5 (Easterbrooks et al., 2013; Green et al., 2014; Zielinski, Eckenrode, & Olds, 2009). These researchers have suggested two possible mechanisms for this finding, including early detection and supports being provided for the HFO group, resulting in fewer subsequent reports, coupled with increased reporting by school-based mandated reporters for control children after age 5 and entry into the school system. Finally, it is worth noting that another factor in considering the likelihood of short-term cost savings for these programs is their stated goal of connecting families with needed resources (e.g., self-sufficiency, medical services, and nutritional supports). To the extent that these goals are met, again, the short-term costs might reasonably be expected to increase for home-visited families.

The last objective of the current study was to address questions about "what works for whom" by exploring program and family characteristics that may contribute to the variability in

program outcomes in the home visiting literature (Azzi-Lessing, 2011; Howard & Brooks-Gunn, 2009; Kahn & Moore, 2010; Peacock et al., 2013). In particular, the study examined differences in outcomes related to family demographic and risk characteristics as well as to the level of program services received (fidelity and dosage).

Project Overview

The project includes four primary components. These are described briefly below, along with the key research questions for each component.

1. Randomized Administrative Data Outcome Study. The primary goal of the study was to conduct a large-scale randomized impact study using administrative data outcomes. This study addressed the following research questions:

RQ1A: Is the level of involvement in the child welfare system different for families randomly assigned to receive Healthy Families Oregon compared to families assigned to a control group?

RQ1B: Are the effects of HFO on child welfare system involvement different for subgroups of families with different baseline risk and demographic characteristics?

RQ1C: Is the level of utilization of self-sufficiency, health, and substance abuse treatment services different for families randomly assigned to receive Healthy Families Oregon compared to families assigned to a control group?

RQ1D: Are the effects of HFO on self-sufficiency, health, and substance abuse treatment services different for subgroups of families with different baseline risk and demographic characteristics?

RQ1E: How do differences in HFO program implementation and service delivery relate to child welfare outcomes for families in the HFO group?

2. Parent Interview Sub-Study. The research questions for the parent interview sub-study are described below. However, because the methodology and results of this component have been published (Green, Tarte, Harrison, Nygren, & Sanders, 2014), see Appendix A, and do not include the methodological descriptions or study results in the main body of this report. **Please see Appendix A for a description and results of the Parent Interview Sub-Study.**

RQ2A: What short-term program effects can be detected at children's 1-year birthday? In particular, compared to control families:

   a. *Do parents in the HFO group report more positive parenting behaviors and skills compared to families in the control group?*

   b. *Do parents in the HFO group report lower parenting stress, less depressive symptomatology, and more positive family functioning compared to families in the control group? and*

c. *Do children in the HFO group experience more supports for healthy development, specifically increased breastfeeding and increased rates of developmental screening?*

RQ2B: Are there outcome differences for key subgroups of families? In particular, do outcomes differ for: (a) prenatally vs. postnatally enrolled parents; (b) Hispanic/Latino vs. White parents; (c) teenage vs. older parents; (d) parents with depressive symptomatology vs. non-depressed parents; and (e) families with more vs. fewer total risk factors?

3. Cost-Benefit Analysis. The cost-benefit component of the study was designed to address the following research questions:

RQ3A: What are the costs to the taxpayer for HFO programs (investment costs)?

RQ3B: What are the costs to the taxpayer of each child abuse referral, substantiated report, and stay in foster care (outcome costs)? Specifically, what are the (1) child welfare system costs; (2) dependency/family court costs; and (3) associated service costs for each incident?

RQ3C: What are the short-term cost-benefits of the HFO program in child welfare cost savings?

RQ3D: What are the longer term (projected) benefits of the HFO program?

4. Web-Based Cost Tool. The final component of the study involved developing a web-based tool for program managers, policymakers, funders, and researchers to learn how to conduct cost analysis and cost-benefit analysis. The tool was designed as a "step by step" tutorial that reviews basic types of cost analysis, and the types of data that programs need to have to conduct program cost analysis and cost-benefit analysis. The tool allows program to enter and analyze actual program cost and related information to estimate the costs associated with various home visiting program transactions such as screening, training, supervision, home visiting, and travel, with results provided to the user in Excel, PDF, or email format. The tool leads programs through three examples related to estimating the cost-benefits that could accrue related to child abuse reports, foster care placements, and attainment of high school diplomas for home visiting program participants. The final tool is available and free to the public at www.homevisitcosts.com

METHODOLOGY

Sample

STUDY SITES

The study was conducted in seven of the 35 operational Healthy Families Oregon programs. These seven were selected because they met state and national performance standards showing at least adequate levels of model fidelity and had demonstrated a substantial number of 'unserved eligible' families who could not be served because of limits to program capacity (and therefore could support having a control group). Programs included four medium-sized programs (300–1,000 first births per county per calendar year) and three large programs (1,000+ first births). Three sites served primarily rural areas, and the remainder was considered urban or suburban.

RECRUITMENT AND RANDOM ASSIGNMENT PROCEDURES

Recruitment for the study was done by program staff who were trained by the researchers to explain study protocols and consent forms. All eligible HFO parents were first-time parents, with an infant under 90 days of age, and must have been identified as "at risk" using the New Baby Questionnaire (NBQ). This measure was adapted from the Hawaii Health Risk Indicators instrument developed by Duggan and colleagues (2000). Programs conduct screening at hospitals, health clinics, and doctor's offices; 92% are completed within the first 2 weeks of the baby's birth (Green & Tarte, 2015).

First-time parents were approached by HFO screening staff and asked if they were interested in learning more about the program. The screener then described the HFO program and the research and evaluation study. Parents were told that because program space is limited, not all eligible families could be enrolled, and that eligible families would be entered into a lottery to determine who could be offered home visiting services. Parents signed a consent form indicating that they were willing to complete the NBQ and participate in the larger administrative records study; specific consent for release of administrative data from Oregon departments of health, education, child welfare, and self-sufficiency was provided. All screened families received a "Welcome Baby" package with informational brochures related to parenting and child development, and small gifts such as books and videos. Parents (typically the parents) completed the NBQ in English or Spanish, which was then scored to determine program eligibility. Once screens were completed and consent forms signed, program staff used a web-based system for randomly assigning families to either receive home visiting (HFO group) or to receive a referral and information packet (controls). Parents' information was entered into the web-based system, which used a random-number generated to assign the parent to the HFO or control group.

To address ethical concerns about randomization, programs were able to request a "waiver" from the research team to bypass the random assignment process when staff was concerned with the safety of the infant. To obtain a waiver, programs completed a request form that was submitted to the research team, which then made a judgment about whether there appeared to be a safety concern. Overall, 113 families were exempted from randomization and therefore not included in the study (97% of requests; 4% of total eligible participants).

Study enrollment took place from February 2010 through February 2012 (25 months), and enrolled a total of 2,727 families in the administrative data study, 1,438 were randomly assigned to the HFO program group (52.7%) and 1,289 to the control group (48.4%).

MEASURES & DATA COLLECTION

NEW BABY QUESTIONNAIRE

Information on family risk factors at enrollment was collected at screening using the New Baby Questionnaire (NBQ). The NBQ measures 10 risk factors: (1) *Teen parent status* (parents under age 19); (2) *Late prenatal care* (beginning after 12 weeks of pregnancy); (3) *Lack of comprehensive prenatal care* (five or fewer health care visits for the pregnancy); (4) *Single parent status (unmarried)*; (5) *Depression risk,* measured using Public Health Questionnaire-2 (PHQ-2) in which parents are asked whether, in the past month, they have "often been bothered by feeling (a) down, depressed or hopeless," and (b) "bothered by having little interest or pleasure in doing things" (PHQ-2; Kroenke, Spitzer, & Williams, 2003) [parents who answered yes to both were considered to be at risk for depression]; (6) *Low education* (less than a high school degree or GED); (7) *Drug abuse/issues*, specifically whether "you or your partner feel a need to cut down on drinking or drug use (or has someone asked you or your partner to)" (yes/no); (8) *Unemployment,* specifically if one (if single) or both (if partnered) parents were unemployed or only employed seasonally; (9) *Financial stress*, in which parents were asked how often they had trouble paying for basic living expenses (rent, food, etc.) never, some of the time, or most of the time; families were coded as high risk if they indicated "some" or "most" of the time; and (10) *Troubled family relationships,* specifically if families reporting having "some" or "serious" problems in their current family relationships. An additional question about social isolation was included but not considered in scoring; specifically*, "How many people do you know that you could talk to about problems, concerns, or things that are bothering you?"* Response choices were: 2 or more, 1, or 0. This item was dichotomized to create a social support indicator such that individuals with two or more supports were considered "high social support" and those with one or fewer were considered "low social support."

NBQ Scoring and Eligibility

To be eligible for HFO, parents had to score positively (*yes*) to any two of the NBQ risk items, or to be positive for either substance abuse or depression concerns. Total scores on the NBQ were created by summing the items (0 = no risk; 1 = risk indicated). Higher scores on the NBQ have been found to be strongly related to increased rates of family stress and to substantiated maltreatment (Green & Tarte, 2013; Green, Tarte, Lambarth, Snoddy, & Nuzzo, 2009; McGuigan, Katzev, & Pratt, 2003).

HOME VISITING PROGRAM SERVICES DATA

To answer questions related to both the level of program implementation fidelity, as well as the relationship of service delivery to outcomes, we obtained administrative program data from the statewide service database. Home visitors maintain records of services delivered to families, including dates of first and last home visits, and monthly records of the family service level, the

number of visits expected to be delivered per month, the number of visits actually delivered, program exit dates and reasons for program exit. These files are used for case management supervision and are updated on an ongoing basis throughout each month to record services delivered. Using this data file, we created the following variables related to program implementation for all families who received at least one home visit:

1. Early Engagement Indicators:

    a. Number of visits provided within the first 90 days of enrollment;

    b. Number of weeks on Creative Outreach (time when the program is trying to re-engage a family in services) within the first 90 days of enrollment

2. Duration Indicators:

    a. Months in the program as of 12 months post-randomization (at 12 months)

    b. Months in the program as of 24 months post-randomization (at 24 months)

3. Fidelity Indicators

    a. Whether the family received 75% or more of expected home visits (yes/no), during program enrollment

    b. Average % of expected home visits completed (per family)

    c. Whether the family received Level 1 services for at least 3 months (yes/no)

    d. Whether the family received Level 1 services for at least 6 months (yes/no)

4. Intensity of services:

    a. Average number of home visits provided per week of enrollment

    b. Total number of weeks on Level 1 services

    c. Total number of home visits received

5. Dis-Engagement Indicators

    a. Whether the family was ever on Creative Outreach (yes/no)

    b. Total number of days on Creative Outreach

Administrative Outcome Data

In order to access data related to self-sufficiency, substance abuse treatment, and use of publicly funded health care, data sharing agreements were established between the research team and the state agencies with oversight for these systems (Oregon Department of Human Services and Oregon Health Authority). The state manages a data warehouse that enables linking individuals across systems through common identifiers. However, since we did not have access to these identifiers, we provided a list of identified information, including child and

parent names, dates of birth, gender, and race/ethnicity to the state for matching. State agency staff then matched this list with identifiers maintained in the data warehouse. These state agency identifiers were then sent to the appropriate state agency for linking to administrative records. Matches were provided for parents (self-sufficiency, substance abuse treatment, and health care) and for children (child welfare, health care data). All data transfers were via secure FTP systems using encryption and other protocols to maintain confidentiality and information security. Of the 2,727 participants provided, matches were provided in at least one state data system (health care) for 2,284 adults (83.8%) and 2,251 children (82.5%). The level of detail that could be provided by each state agency system varied considerably, as described below. For child welfare records, children were newborn and parents were first-time parents at the start of the study so therefore historical records were not requested. For self-sufficiency data, we were able to obtain information about child and parent lifetime enrollment, so that we could examine first-time enrollments in these services. For all analyses, a 2-year follow-up window was examined, specifically services utilized between randomization date and 2 years post-randomization.[1]

CHILD WELFARE OUTCOMES

Of the 2,727 children[2] sent to DHS for matching, a total of 419 children (15.4%) had at least one record in the child welfare system. Data were requested for each child for the 2-year study period. We requested data related to all maltreatment reports (founded and unfounded), dates of reports, perpetrator type, abuse allegation (e.g., neglect, physical abuse, etc.) as well as foster care placement information (start/end date for foster care episodes; type of placement, and disposition of last placement).

The majority of child welfare outcome variables used for analysis were dichotomous, as very few children had more than one founded maltreatment report (2.4% of the HFO group and 3.8% of the control group, of those with any report) or out of home placement episode (4.0% vs. 3.4%) out of all study children. Further, allegation types were recoded to create two categories, reflecting (1) ever had a neglect report (including emotional abuse, threat of harm, failure to protect, and physical or other neglect) and (2) ever had either a physical or sexual abuse report. It should be noted that allegation types are only available for founded reports.

The following child welfare variables were created for each child: (1) ever had any maltreatment report (yes/no); (2) ever had any founded maltreatment report (yes/no); (3) ever had any unfounded maltreatment report (yes/no); (4) ever had any founded neglect report; (5) ever had any founded report of physical/sexual abuse; (6) ever had any out of home placement

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[1] The one exception to this criterion was substance abuse treatment services for which some families did not have a full 2-year window. Analysis was conducted only on the subset of families who had 2 years post-randomization data available in the treatment dataset.

[2] For the purpose of this study (and HFO service delivery), if twins are served, only one child is followed for evaluation purposes (to avoid duplicating of service counts to unique families).

(yes/no); (7) total number of days with an active child welfare case (full sample); total number of days with an active child welfare case (for those with an out of home placement only); and (8) total number of days in foster care (full sample); total number of days in foster care (for those with an out of home placement).

To examine surveillance effects, we also created a variable related to timing of first child welfare report and ran a survival analysis comparing the HFO group to the control group. One would expect that if a surveillance effect was occurring, more reports would occur sooner for the HFO group compared to controls. Similarly, we examined whether the child's age at first report differed significantly for families who received at least one home visit (compared to those who did not), controlling for the total number of family risk factors, and whether the number of months between randomization and first report differed significantly. Again, one would expect reports to occur earlier in the child's life for families who received a home visit compared to those who did not.

SELF-SUFFICIENCY SERVICES

Receipt of four categories of self-sufficiency services was examined: (1) Temporary Aid for Needy Families (TANF); (2) Supplemental Nutrition Assistance Program (SNAP); (3) Child Care Subsidies; and (4) Employment-related services provided through the Department of Human Services (primarily related to TANF enrollment). For all services, we were provided the dates of enrollment and exit from services, and calculated two primary outcome variables: (1) whether or not the participant ever received the service during the study window (yes/no) and (2) number of days the family received the service. For TANF and SNAP services, we also assessed whether the participant was enrolled for the first time after randomization to the study (yes/no).

HEALTH CARE SERVICES

The following information was provided for the parent and the focus child by the Oregon Health Authority, based on the Department of Medical Assistance Program (DMAP) data system. This system includes all publicly funded health insurance and related claims information. Data for the study period included: (1) enrollment start and end dates for publicly funded health insurance; (2) all claims information, including amounts paid to claimant, billing codes, type of healthcare service provided, emergency room visit indicator, and overnight admittance into healthcare facility.

Based on this information, we calculated the following outcome variables for the study period: (1) total number of days of health insurance coverage; (2) number of gaps greater than 1 day in health insurance coverage; (3) number of total health insurance claims; (4) number of emergency room visits (5) number of services related to key child health outcomes, specifically: well-baby checkups and immunizations. We also coded health services diagnostic codes (ICD-9 codes) that could possibly be attributed to child maltreatment, based on the coding scheme

developed by Schnitzer, Slusher, Kruse, and Tarleton (2011). A list of codes used is included in Appendix B.

Substance Abuse Treatment Services. Data were also provided about participants' receipt of state-funded substance abuse treatment services during the study period, specifically: start and end dates of treatment episodes and type of treatment (inpatient vs. outpatient). Because of the small number of participants who had received treatment services; however, we combined both inpatient and outpatient information, and calculated the following outcome variables: Whether or not the participant received substance abuse treatment services (yes/no); total number of days of substance abuse treatment for both inpatient and outpatient modalities (for the total sample) and total number of days in treatment (for the subgroup receiving treatment).

RESULTS

Analytic Approach

Missing data analyses were conducted to examine the extent of missingness in the NBQ data and demographic variables. Results indicated that for the NBQ, item level missing data were less than 2% across the entire sample with one exception; additionally, there were no differences in the amount of missing data for HFO vs. control parents. The only variable that was missing for more than 2% of cases was parent's race/ethnicity; 4.6% of the sample was missing information for that item. Because of the overall low levels of missing data, listwise deletion was used in the analysis.

Outcomes were examined using three approaches to creating a comparison group. First, an intent-to-treat (ITT) approach was used to examine overall impact retaining the full randomized study sample. Second, we used two approaches to examining the effects of treatment on the treated (TOT). This adjustment was done to address the fact that a significant proportion of those who were randomly assigned to the HFO program group never actually received home visiting services. Of 1,438 families randomly assigned to receive HFO services, only 636 actually received at least one home visit (44.2%). Of those who did not receive a first home visit, the majority could not be located following screening to schedule a home visit (325, 42.5%), either because family contact information was incorrect/out of date or because families did not respond to telephone and mail outreach efforts by program staff. Other reasons for not receiving a first home visit included: family was no longer interested in services (249, 32.2%); family could not be served because caseloads were full (23, 3.0%); family moved out of service area (22, 2.9%) or unknown reasons (152, 18.7%).

To create the first TOT group we used propensity score matching (PSM, Rosenbaum & Ruben, 1983) to create two matched groups: (1) those randomly assigned to receive HFO who received at least one home visit) and (2) those randomly assigned to be in the control group, excluding those with any indication of having received a home visit (n = 5 controls were identified through program records as having been served by the HFO programs). Propensity score matching is a quasi-experimental approach that allows identification of a matched group based on overall balance of key baseline characteristics that predict the likelihood of an outcome (in this case, the likeliness of receiving a home visit) across the groups. This study used one-to-one matching without replacement so that each individual is only used a single time within the process, with a caliper of .2 applied to ensure a robust match. All baseline NBQ risk factors as well as parent's race/ethnicity and county of residence at time of randomization were included in the matching process. Propensity score matching resulted in a considerably smaller sample of n = 505 HFO families and n = 505 matched controls. All analyses reported subsequently were re-analyzed comparing these two matched groups to determine whether outcomes varied for HFO families

who received home visiting compared to matched controls. We refer to this group as the Treatment on the Treated-Propensity Score Matched (TOT-PSM) group.

Finally, we create a second TOT group (TOT-HFO) to compare those families who had been randomly assigned to receive program services and did receive a visit ($n = 636$) to those who did not receive a visit ($n = 802$). This procedure allowed us to retain in the analysis all families who were served by HFO and a larger sample size than the TOT-PSM group. This analysis used a more standard approach to controlling for baseline differences between groups by including risk factors, county of residence, and race/ethnicity as covariates in the analyses.

Sample Characteristics & Baseline Equivalency

INTENT-TO-TREAT SAMPLE

To confirm that random assignment was successful in creating two groups that were equivalent at baseline, t-tests were conducted for all baseline risk variables, as well as demographic characteristics. Results are shown in Table 1, and support the success of the random assignment procedures in creating groups that were equivalent at baseline for all baseline information collected.

Table 1. Family Risk and Demographic Characteristics at Baseline, Intent-to-Treat Sample

	HFO Group ($n = 1,438$)	Control Group ($n = 1,289$)
Baseline Demographics & Risk		
Race/Ethnicity		
% White	57.3% (824)	60.4% (779)
% Hispanic/Latino	27.0% (388)	24.2% (312)
% Other race/ethnicity	15.7% (226)	15.4% (198)
Parent primary language English	78.4% (1,040)	79.4% (920)
Teen mom (<19 years)	30.6% (121)	30.4% (121)
Single (unmarried)	81% (1,155)	81.2% (1,039)
Late prenatal care	26.2% (368)	28.3% (359)
Lack of comprehensive prenatal care	2.9% (41)	2.0% (25)
Less than HS diploma/GED	33.2% (471)	31.3% (398)
Both parents unemployed	37.3% (528)	35.3% (445)
Difficulty paying expenses	79.9% (1,130)	79.0% (1,006)
Trouble in relationships	22.7% (318)	20.0% (251)
Depression indicated (PHQ-2)	17.1% (241)	19.7% (249)
1 or fewer social supports	8.3% (116)	7.9% (98)
Problem with substance use	3.7% (52)	5.2% (65)
Parents age (mean years)	21.9 (1,411)	22.0 (1,267)
Total number of baseline risk factors (mean)	3.2 (1,428)	3.1 (1,280)
% 2 or fewer risk factors	36.5% (521)	36.6% (469)
% 3 risk factors	29.0% (414)	28.9% (370)
% 4 or more risk factors	34.5% (492)	34.5% (441)

**p <.05 *** p <.01

TREATMENT-ON-TREATED (TOT): PROPENSITY SCORE MATCHED GROUPS

Analyses using this same set of dependent variables were also conducted to determine whether those parents included in the propensity score matched sample (i.e., received a home visit) differed significantly in baseline risk factors compared to the matched control sample (see Table 2). Results from t-tests (continuous variables) and Chi-Squared (categorical variables) comparing these two groups on each baseline risk factor showed that there were few significant differences, as would be expected given the matching procedures.

Table 2. Family Risk and Demographic Characteristics at Baseline for Propensity Matched Sample (TOT-PSM)

	HFO-PSM Group (*n* = 555)	PSM Matched Control Group (*n* = 555)
Baseline Demographics & Risk		
Race		
% White	52.8% (293)	52.4% (291)
% Hispanic/Latino	32.1% (178)	31.7% (176)
% Other race/ethnicity	15.1% (84)	15.9% (88)
Parent primary language English	75.5% (379)	73.5% (363)
Teen mom (<19 years)	32.4% (68)	34.8% (64)
Single (unmarried)	79.6% (442)	80.5% (447)
Late prenatal care	24.3% (135)	25.4% (141)
Lack of comprehensive prenatal care	2.3% (13)	2.9% (16)
Less than HS diploma/GED	32.8% (182)	35.1% (195)
Both parents unemployed	37.5% (208)	35.3% (192)
Difficulty paying expenses	81.3% (451)	80.0% (444)
Trouble in relationships	22.7% (126)	19.5% (108)
Depression indicated (PHQ-2)	21.8% (121)	19.5% (108)
One or fewer social supports	9.3% (52)	9.4% (52)
Problem with substance use	2.7% (15)	1.4% (8)
Parents age (mean years)	21.8 (555)	22.0 (555)
Total number of baseline risk factors (mean)	3.2 (555)	3.1 (555)
% 2 or fewer risk factors	36.2% (201)	37.4% (207)
% 3 risk factors	28.1% (156)	28.1% (156)
% 4 or more risk factors	35.6% (198)	34.4% (192)

*= p < .1; **p <.05 *** p <.01. Note: none of the demographics were significantly different between the propensity matched samples.

TREATMENT-ON-TREATED HFO GROUPS

As might be expected, there were several significant differences between families assigned to HFO who did vs. did not receive a home visit (see Table 3). Specifically, compared to those who did not get visits, parents who did receive a first visit were more likely to be Hispanic/Latino, and less likely to be White; less likely to speak English at home; and more likely to score positive on the PHQ-9 depression screen.

Table 3. Family Risk and Demographic Characteristics at Baseline for TOT- HFO Visited vs. Not Visited Families (TOT- HFO)

	HFO Received at Least 1 HV (*n* = 636)	HFO, not Visited (*n* = 802)
Baseline Demographics & Risk		
Race		
% White	51.7%*** (329)	61.7% (495)
% Hispanic/Latino	32.7*** (208)	22.4% (180)
% Other race/ethnicity	15.6% (99)	15.8% (127)
Parent primary language English	74.2%** (428)	81.7% (612)
Teen mom (<19 years)	31.2% (74)	29.7% (47)
Single (unmarried)	79.8% (506)	81.9% (649)
Late prenatal care	24.6% (154)	27.4% (214)
Lack of comprehensive prenatal care	3.6% (22)	2.4% (19)
Less than HS diploma/GED	33.1% (210)	33.3% (261)
Both parents unemployed	36.9% (233)	37.7% (295)
Difficulty paying expenses	82.1%* (517)	78.1% (613)
Trouble in relationships	23.8% (148)	21.8% (170)
Depression indicated (PHQ-2)	22.6%*** (141)	12.8% (100)
One or fewer social supports	10% (62)	7.1% (54)
Problem with substance use	3.0% (19)	4.3% (33)
Parents age (mean years)	21.9 (624)	21.8 (787)
Total number of baseline risk factors (mean)	3.2 (634)	3.1 (793)
% 2 or fewer risk factors	35.2% (223)	37.6% (298)
% 3 risk factors	29.0% (184)	29.0% (230)
% 4 or more risk factors	35.9% (227)	33.4% (265)

*p <.10 **p <.05; ***p <.01*

Effects of HFO on Child Welfare Outcomes

Research Question 1A: Is the level of involvement in the child welfare system different for families randomly assigned to receive Healthy Families Oregon compared to families assigned to a control group?

To address this question, we conducted impact analyses using logistic regression for dichotomous outcome variables (e.g., ever had a maltreatment report, yes or no) and multiple linear regression for continuous outcomes (e.g., days in out of home placement).[3] The following covariates were used for all impact analyses: program site (dummy coded); parent's race/ethnicity (White, Hispanic/Latino or other, dummy coded); and total number of family risk factors at baseline. Results of these analyses are shown in Table 4 (note that means and percentages are presented as unadjusted for covariates).

Table 4. Key Child Welfare Outcomes at 2 Years Post Random Assignment, Intent-to-Treat Sample

	HFO Program (*n* = 1,427)	Control (*n* = 1,280)	
	%	%	Odds Ratio
Maltreatment Reports			
% with at least one report	14.4% (205)	12.5% (162)	O.R.=1.17 *p*=.17
% with at least one unfounded report	9.7%* (139)	7.9% (101)	O.R.=1.27 *p*=.08
% with at least one founded report	6.3% (90)	6.0% (77)	O.R.=1.05 *p*=.75
% with at least one founded neglect report	6.1% (87)	5.8% (74)	O.R.=1.06 *p*=.73
% with at least one founded physical or sexual abuse report	.5% (7)	.8% (10)	na[1]
Multiple reports/placements (% of those with at least one report, n = 368)			
% with more than one report	31.1% (64)	27.8% (45)	O.R.=.1.13 *p*=.60
% with more than one unfounded report	10.6% (39)	6.0% (22)	na[4]
% with more than one founded report	2.4% (9)	3.8% (14)	na[1]
Abuse type (% of those with at least one founded report, n = 178)			
% neglect	92.5% (87)	88.8% (74)	O.R.=1.06 *p*=.72
% physical abuse	8.5% (7)	11.9% (10)	na[1]

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[3] In cases where the dependent variables were highly skewed (skewness +/-2.0), analyses were also conducted using a negative binomial regression estimator; these results were consistent with what is presented here.

[4] *Descriptives only reported due to small sample size*

	HFO Program (*n* = 1,427)	Control (*n* = 1,280)	
	%	%	Odds Ratio
Out of Home Placements			
% with at least one out of home placement	4.0% (57)	3.4% (44)	O.R.=1.71 *p=.45*
Days in out of home care			
Number of days in out of home care (full sample)	15.21	12.74	F=.262 P=.430 *Eta²=.000*
Number of days in out of home care (of those with at least one placement	348.31 (57)	374.11 (43)	F=.624 P=.430 *Eta²=.000*
Placement settings (% of those at least one placement, n = 101)			
% with at least one kinship placement	75.4% (43)	61.4% (27)	O.R.=1.91 *p=.14*
% with at least one non-kinship placement	47.4%** (27)	68.2% (30)	O.R.=.41 *p=.04*
% with at least one trial home visit[5]	43.9% (25)	36.4% (16)	O.R.=1.35 *p=.48*
% reunified (of those with at least one placement)	47.4% (27)	36.4% (16)	O.R.=1.59 *p=.27*

*=p < .1; **p <.05 *** p <.01

Intent-to-Treat Outcomes. As can be seen in Table 4, results indicated that there were no significant differences between groups in the likelihood of having at least one maltreatment report (founded or unfounded) or in the likelihood of having a founded report of maltreatment or neglect. There was a marginally significant trend indicating a somewhat increased likelihood that HFO children had an unfounded report (9.7% vs. 7.9%, *p* = .08). There were no significant differences between the two groups in terms of the likelihood of having an out of home placement. If placed in out of home care, HFO children were significantly less likely to be placed in non-kinship (e.g., stranger) foster care, although these numbers are quite small. Further, there was no significant difference between the groups in terms of the likelihood of being reunified with parents at the close of the child welfare case. Overall, sample sizes for out of home placements and physical abuse reports were very small and results should be interpreted with care.

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[5] This visit occurs before a permanent reunification is finalized.

TOT-Propensity Score Matched Groups. Results from the TOT-PSM analyses largely mirrored those found for the intent-to-treat analysis (Table 5). HFO children were significantly more likely to have an unfounded maltreatment report (11.4% vs. 7.0%) but were no more or less likely to have a founded report. Similarly, there was a statistically significant difference for the TOT-PSM sample in terms of placement in kinship foster care, with HFO families more likely to be in kinship care (89.5% of those with a placement vs. 61.9%), and less likely to be placed in stranger foster care (36.8% vs. 76.2%). Additionally, there were two additional statistically significant findings for the TOT-PSM sample: HFO children spent significantly fewer days with an active child welfare case (285.3 days vs. 430.5 days) and were significantly more likely to be reunified with parents if they had been removed (68.4% vs. 28.6%). However, these sample sizes are very small and should be interpreted with caution. It is notable however that the pattern of findings mirrors those in the ITT analyses, with effects becoming more pronounced in the TOT-PSM analyses.

Table 5. Key Outcomes at 2 Years Post Random Assignment for the Treatment on Treated, Propensity Score Matched Group (TOT-PSM)

	HFO Program ($n = 505$)	PSM Matched Control ($n = 505$)	Logistic Regression
	%	%	Odds Ratio
Maltreatment Report Outcomes			
% with at least one report	15.1% (84)	11.9% (66)	O.R.=1.30 p=.15
% with at least one unfounded report	11.4%** (63)	7.0% (39)	O.R.=1.68 p=.02
% with at least one founded report	5.2% (29)	5.9% (33)	O.R.=.84 p=.52
% with at least one founded neglect report	5.0% (28)	5.6% (31)	O.R.=87 p=.61
% with at least one founded physical or sexual abuse report	0.5% (3)	1.1% (6)	O.R.=.50 p=.32
% with more than one report (of those with at least one report)	28.6% (24)	25.8% (17)	O.R.=1.17 p=.68
Foster Care Case and Out of Home Placement Outcomes			
Total days with active child welfare case (full PSM sample)	13.2 (555)	15.9 (554)	F=.38 P=.54 Eta^2=.00
Total days with active child welfare case (of those with at least one placement)	285.3* (19)	430.5 (20)	F=4.25 P=.05 Eta^2=.11

	HFO Program ($n = 505$)	PSM Matched Control ($n = 505$)	Logistic Regression
	%	%	Odds Ratio
% with more than one out of home placement episode (of those with at least one placement)	52.6% (10)	42.9% (9)	O.R.=.1.51 p=.53
% with at least one out of home placement	3.4% (19)	3.8% (21)	O.R.=.87 p=.68
Placement settings (% of those with at least one placement)			
% with at least one kinship placement	89.5%* (17)	61.9% (13)	O.R.=5.07 p=.07
% with at least one non-kinship placement	36.8%** (7)	76.2% (16)	O.R.=.17 p=.02
% with at least one trial home visit	57.9% (11)	38.1% (8)	O.R.=2.58 p=.16
Of those with placements, % reunified	68.4%** (13)	28.6% (6)	O.R.=5.77 p=.02
Descriptive Child Welfare Data			
Multiple reports/placements (% of those with at least one report)			
% with more than one report	28.6% (24)	25.8% (17)	O.R.=1.17 p=.68
% with more than one unfounded report	75.0%** (63)	59.1% (39)	O.R.=2.09 p=.04
% with more than one founded report	34.5%* (29)	50.0% (33)	O.R.=.52 p=.05
% with more than one out of home placement episode	22.6% (19)	28.8% (19)	O.R.=.71 p=.36
Abuse type (founded reports only)			
% Neglect	96.6% (28)	93.9% (31)	O.R.=1.75 p=.66
% Physical Abuse	10.3% (3)	18.2% (6)	O.R.=.54 p=.43

*$=p < .1$; **$p <.05$ ***$p <.01$

Table 6. Key Child Welfare Outcomes at 2 Years Post Random Assignment for Treatment on Treated Groups, HFO Visited vs. Not Visited (TOT-HFO)

	HFO Received HV (*n* = 636)	HFO Not Visited (*n* = 802)	
	%	%	Odds Ratio
Maltreatment Reports			
% with at least one report	15.5% (92)	15.2% (114)	O.R.=1.11 p=.51
% with at least one unfounded report	11.8%* (69)	9.9% (71)	O.R.=1.35 p=.09
% with at least one founded report	5.3% (34)	7.0% (57)	O.R.=.80 p=.33
% with at least one founded neglect report	5.2% (33%)	6.9% (55)	O.R.=.81 p=.36
% with at least one founded physical or sexual abuse report	.5% (3)	.5% (4)	O.R.=1.101 p=.89
Multiple reports/placements (of those with reports, n = 206)			
% with more than one report	30.4% (28)	31.6% (36)	na[1]
% of home visited with report while enrolled	74.2% (72)	na	--
Out of Home Placements			
% with at least one out of home placement	3.5% (22)	4.4% (35)	O.R.=.847 p=.56
% with more than one out of home placement episode (of those with at least one placement)	50% (11)	49.7 (27)	
Number of days in out of home care (full sample)	13.59	16.38	F=.10 P=.75 Eta^2=.56
Number of days in out of home care (of those with at least one placement_	306.00 (22)	374.91 (35)	na[1]
Placement settings (of those with placements)			
% with at least one kinship placement	91% (20)	66.7% (24)	O.R.=1.58 p=.368
% with at least one non-kinship placement	31.8% (7)	55.6% (20)	O.R.=.430 p=.12
% with at least one trial home visit	54.5% (12)	38.9% (14)	O.R.=1.93 p=.21
% reunified (of those with at least one placement)	60.0% (18)	38.1% (16)	O.R.=.2.35 p=.09

*=p < .1; **p <.05 *** p <.01

TOT-HFO Groups. For the visited vs. non-visited families (see Table 6, again, significantly more visited HFO families received unfounded reports compared to those who were not visited (11.8% vs. 9.9%). There were no other statistically significant differences in child welfare outcomes for visited vs. non-visited families, although there was a trend indicating that HFO families receiving home visits were somewhat more likely to be reunified with parents if they had been removed from their care.

Effects of HFO on Child Welfare Outcomes for Subgroups of Families

Research Question 1B: Are the effects of HFO on child welfare system involvement different for subgroups of families with different baseline risk and demographic characteristics?

Analyses for subgroup effects examined whether child welfare outcomes differed for families with different baseline characteristics. Based on prior research using a subset of the current sample (Green et al., 2014), we examined program impacts for the following subgroups: (1) parents who were screened prenatally vs. postnatally; (2) Hispanic/Latino vs. White parents; (3) adolescent parents, defined as those 19 or younger vs. older parents; (4) parents who screened positive for depression at screening (yes/no); (5) parents with two risk factors (lower risk[6]) vs. parents with three or more risk factors; (6) single vs. married parents; (7) parent(s) in household unemployed (yes/no); and (8) social support (low = 1 or fewer support persons vs. high = 2 or more support persons).

For regression models, dummy codes were created for each subgroup and interaction terms (dummy coded subgroup X program group). These variables were entered into regression analyses after entering covariates and main effects into each model. Covariates for the interaction terms were the same as used in the primary impact analyses. The exception to this process was that the associated risk factor was not used as a covariate in models assessing subgroup outcomes for that characteristic (e.g., race/ethnicity was not used as a covariate in models assessing differences for Hispanic/Latino vs. White parents). Because some outcomes were quite infrequent, only the following outcomes were included in tests for moderation: (1) any founded report of maltreatment or abuse; (2) any unfounded report of maltreatment or abuse; and (3) any founded report of neglect.

Results of these analyses for significant program group X subgroup interactions are shown in Table 7. Overall, there were very few significant moderators of the effects of HFO on key administrative outcomes. Hispanic/Latino parents who were in the HFO group were significantly less likely to have a founded report (any type), compared to non-Hispanic/Latino parents served in HFO. The difference between Hispanic/Latino and non-Hispanic/Latino parents in the control group was not significant for these outcomes. Parents who reported

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[6] Note, however, that no families were truly 'low risk' in that the program requires at least one, and typically two, risk factor for eligibility.

more relationship problems at baseline were significantly more likely to be reported to child welfare if they were in the HFO group, compared to parents in HFO; similarly, the HFO parents with relationship problems were more likely to have founded reports compared to those without relationships problems served by HFO. HFO parents who scored positive for depression were significantly more likely, compared to depressed controls, to have an unfounded report to the child welfare system. Finally, results suggest that while education is unrelated to the likelihood of being reported to child welfare for HFO families, within the control group, those with less than a high school education are more likely to have been reported.

Table 7. HFO Program X Subgroup Interaction Results for Maltreatment Outcomes

	Any Report?		Ever Unfounded Report?		Ever Founded Report?		Ever Founded Neglect?	
	HFO	Control	HFO	Control	HFO	Control	HFO	Control
Race/Ethnicity								
Hispanic/Latino (*n* = 700)					.9% [a] (6)	1.4% (10)	.9% (6) [a]	1.4% (10)
Non-Hispanic/Latino (*n* = 2,027)					4.2% [a] (85)	3.3% (67)	4% (82)[a]	3.2% (64)
					B=-.921, OR=.402, *p*=.087		B=-.921, OR=.398, *p*=.089	
Freq. Relationship Problems								
Yes (*n* = 569)	12% [a] (68)	6.3% (63)			10.4% [a,b] (32)	8.4% (21)		
No (*n* = 2084)	6.5% [a] (136)	5.9% (123)			5.4% [a] (58)	5.4% [b] (54)		
	B=.461, OR=1.58, *p*=.080				B=-.624, OR=.535, *p*=.058			
Depression Risk								
Yes (*n* = 490)			11.6% [a] (28)	5.6% [a] (14)				
No (*n* = 2183)			9.3% (109)	8.3% (84)				
			B=.662, OR=1.94, *p*=.067					
Education								
No HS/GED (*n* = 869)	3.8% (33)	4.3% [a] (37)			6.0% (57)	4.5% (39)	3.5% (68)	4.1% [a] (36)
At Least HS/GED (*n* = 1820)	3.1% (57)	2.1% [a] (39)			7.0% (33)	9.3% (37)	3.1% (57)	2.0% [a] (37)
	B=-.421, OR=.656, *p*=.069				B=-.624, OR=.535, *p*=.058		B=-.624, OR=.535, *p*=.058	

[a,b] *Note: Cells that share the same superscript within each subgroup row are significantly different from each other. Only significant results are reported in this table.*

Effects of HFO on Self-Sufficiency, Health, and Substance Abuse Service Utilization

Research Question 1C: Is the level of utilization of self-sufficiency, health, and substance abuse treatment services different for families randomly assigned to receive Healthy Families Oregon compared to families assigned to a control group?

To address this question, we conducted impact analyses using logistic regression for dichotomous outcome variables (e.g., receipt of services, yes or no) and multiple linear regression for continuous outcomes (e.g., days in service). The following covariates were used for all impact analyses: parent's race/ethnicity (White, Hispanic/Latino or other); and total number of risks as reported on the HFO New Baby Questionnaire. Results of these analyses are shown in Tables 8, 9 and 10 (note that means and percentages are presented as unadjusted for covariates and significance is based on the impact model with inclusion of the covariates).

Using the Intent-to-Treat (ITT) sample, as can be seen in Table 8, families randomly assigned to the HFO group were significantly more likely to be enrolled in TANF for the first time following randomization, and were somewhat more likely to have been enrolled in SNAP (food stamp) benefits, compared to controls. There were no differences between groups in any of the health-related services, except for a marginally significant trend indicating that HFO families were somewhat more likely to have received substance abuse treatment services, compared to controls (although these numbers were small).

Table 8. Key Service Utilization Outcomes at 2 Years Post Random Assignment: Full Randomized Sample (ITT sample)

	HFO Program **($n = 1,427$)[1]**		**Control** **($n = 1,280$)**		
	Mean /Proportion	*sd*	Mean /Proportion	*sd*	Partial Eta^2/Odds Ratio
Self-Sufficiency					
Ever received TANF?	41.7% (595)		40.8% (522)		O.R.=1.04 p=.60
Received 1st TANF post randomization (of those receiving TANF)	45.2%** (269)		39.1% (204)		O.R.=.78 p=.04
# of days on TANF	176.1 (1,427)	254.2	169.6 (1,280)	253.0	E^2=.00 p=.63
# of days on TANF (of those receiving TANF)	422.4 (595)	225.8	415.9 (522)	233.6	E^2=.00 p=.59
Ever received supplemental nutrition assistance (SNAP)?	84.6%* (1,207)		82.3% (1,053)		O.R.=1.20 p=.08

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	HFO Program (n = 1,427)[1]		Control (n = 1,280)		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
Received SNAP 1st time post randomization (of those receiving food stamps)	17.7% (214)		18.3% (193)		O.R.=1.12 p=.32
# of days on SNAP	475.1 (1,427)	273.9	461.2 (1,280)	283.7	E^2=.00 p=.17
# of days on SNAP (of those receiving food stamps)	561.7 (1,207)	200.0	560.6 (1,053)	205.1	E^2=1.00 p=.96
Ever received child care subsidy/benefit?	10.7% (152)		11.3% (145)		O.R.=.94 p=.59
Received child care subsidy 1st time post randomization (of those receiving child care)	79.6% (121)		82.8% (120)		O.R.=1.20 p=.53
# of days with child care subsidy	19.5 (1,427)	77.6	19.8 (1,280)	75.2	E^2=.00 p=.96
# of days with child care subsidy (of those receiving child care subsidy)	182.9 (152)	163.9	174.9 (145)	151.2	E^2=.00 p=.60
Ever received employment services?	30.6% (436)		30.2% (386)		O.R.=1.03 p=.72
Received employment services 1st time post randomization (of those receiving employment services)	53.9% (235)		54.7% (211)		O.R.=1.04 p=.78
# of days with employment services	98.9 (1,427)	191.5	94.4 (1,280)	181.1	E^2=.00 p=.42
# of days with employment services (of those receiving employment services)	323.6 (436)	217.4	313.1 (386)	200.8	E^2=.00 p=.50
Health Insurance Coverage (OHP)					
% parents ever enrolled in public insurance	84.2% (1,201)		83.6% (1,070)		O.R.=1.03 p=.77
% children ever enrolled in public insurance	82.7% (1,180)		82.7% (1,058)		O.R.=1.01 p=.93
Avg. total days enrolled (parents)	381.4 (1,427)	293.2	380.1 (1,280)	292.7	E^2=.00 p=.99
Avg. total days enrolled (children)	519.2 (1,427)	279.1	524.8 (1,280)	275.4	E^2=.00 p=.61
# of gaps in enrollment for those with at least some coverage (parents)	.66 (856)	.82	.70 (779)	.85	E^2=.00 p=.24

	HFO Program (n = 1,427)[1]		Control (n = 1,280)		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
# of gaps in enrollment for those with at least some coverage (children)	.26 (1,108)	.51	.26 (1,009)	.50	E^2=.00 p=.73
Health Insurance Claims (for those with at least some OHP coverage)					
Total # claims (parents)	25.2 (1,201)	39.1	23.1 (1,070)	32.3	E^2=.00 p=.12
Total # claims (children)	28.5 (1,180)	25.7	28.6 (1,058)	27.9	E^2=.00 p=.86
Total cost of claims (parents)	$903.10 (1,201)	$2,528.7	$782.84 (1,070)	$4,564.9	E^2=.00 p=.52
Total cost of claims (children)	$920.05 (1,180)	$5,863.3	$838.11 (1,058)	$4,560.1	E^2=.00 p=.84
# claims for emergency room services (parents)	.09 (1,201)	.37	.10 (1,070)	.38	E^2=.00 p=.37
# claims for emergency room services (children)	.09 (1,180)	.37	.10 (1,058)	.37	E^2=.00 p=.74
# claims for well baby checkups (children)	6.2 (1,180)	2.4	6.3 (1,058)	2.4	E^2=.00 p=.38
# claims for immunizations for children with at least 1 immunization (children)	3.5 (627)	2.0	3.5 (565)	2.1	E^2=.00 p=.67
# possible maltreatment - related medical claims (children)	.55 (1,180)	3.7	.55 (1,058)	3.4	E^2=.00 p=.95
Substance Abuse Treatment during study period					
Ever received treatment?	4.9%* (47)		3.2% (27)		O.R.=1.57 p=.07
Total days in treatment (all participants)	4.5 (960)	28.8	3.8 (847)	28.3	E^2=.00 p=.58
Total days in treatment (of those receiving tx)	92.4 (47)	94.7	104.5 (27)	100.0	E^2=.01 p=.54

*=p < .1; **p <.05 *** p <.01

[1] The sample size represents the total study sample; however, sample size varies across outcomes due to missing data, truncated timeframes available from the administrative data source, or analyses specific to subsets of participants meeting criteria, e.g., OHP coverage gaps only for participants receiving at least some OHP coverage within the study window. To account for sample size fluctuation, the n has been reported alongside each outcome calculation throughout the table. Additionally, n = 20 participants were missing the total number of NBQ risk factors so were not included in these analysis.

Table 9 shows the results for the TOT-PSM sample. These results were very similar to the ITT findings. Specifically, these analyses indicated increased access to TANF such that HFO families were more likely to have received TANF benefits for longer, compared to controls. However, TOT-PSM results did not find that HFO families were significantly more likely to be enrolled in TANF for the first time (means were similar but the reduced sample size may have led to insufficient power to detect this difference). Consistent with ITT results, HFO families were somewhat more likely to have received substance abuse treatment services, compared to controls.

Table 9. Key Service Utilization Outcomes at 2 Years Post Random Assignment for the Propensity Score Matched Home Visit Group (TOT-PSM)

	HFO Program $(n =555)^1$		**Control** $(n = 555)$		
	Mean /Proportion	*sd*	Mean /Proportion	*sd*	Partial Eta^2/Odds Ratio
Self-Sufficiency					
Ever received TANF?	43.6% (242)		38.6% (214)		O.R.=1.22 *P*=.10
Received 1st TANF post randomization (of those receiving TANF)	45.9% (111)		42.5% (91)		O.R.=.86 *P*=.43
# of days on TANF	192.8** (555)	264.1	153.9 (555)	243.3	E^2=.01 *P*=.01
# of days on TANF (of those receiving TANF)	442.2* (242)	222.6	339.0 (214)	236.1	E^2=.01 *P*=.05
Ever received SNAP?	85.0% (472)		82.2% (456)		O.R.=1.22 *P*=.21
Received SNAP 1st time post randomization (of those receiving food stamps)	19.1% (90)		20.6% (94)		O.R.=1.11 *P*=.55
# of days on SNAP	487.1** (555)	273.9	449.6 (555)	283.7	E^2=.00 *P*=.03
# of days on SNAP (of those receiving food stamps)	572.8* (472)	200.0	547.2 (456)	205.1	E^2=.00 *P*=.07
Ever received child care subsidy?	11.0% (61)		10.6% (59)		O.R.=1.02 *P*=.91

	HFO Program (n =555)[1]		Control (n = 555)		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
Received child care 1st time post randomization (of those receiving child care)	85.2% (52)		79.7% (47)		O.R.=.61 P=.33
# of days with child care subsidy	20.6 (555)	82.1	19.0 (555)	73.9	E^2=.00 P=.74
# of days with child care subsidy (of those receiving child care)	187.4 (61)	174.6	178.3 (59)	152.4	E^2=.00 P=.67
Ever received employment services?	32.3% (179)		29.2% (162)		O.R.=1.14 P=.32
Received employment services 1st time post randomization (of those receiving employment services)	51.4% (92)		56.2% (91)		O.R.=1.20 P=.41
# of days with employment services	112.2 (555)	210.1	90.9 (555)	178.1	E^2=.01 P=.15
# of days with employment services (of those receiving employment services)	348.0 (179)	234.4	311.4 (162)	200.0	E^2=.00 P=.50
Health Insurance Coverage					
% parents ever enrolled in public insurance	85.9% (477)		85.0% (472)		O.R.=1.06 P=.75
% children ever enrolled in public insurance	83.6% (464)		82.5% (458)		O.R.=1.07 P=.66
Avg total days enrolled (parents)	408.0 (555)	293.2	388.1 (555)	288.8	E^2=.00 P=.34
Avg. total days enrolled (children)	532.1 (555)	273.9	527.8 (555)	275.0	E^2=.00 P=.83
# of gaps in enrollment for those with at least some coverage (parents)	.60** (353)	.78	.74 (343)	.86	E^2=.01 P=.03
# of gaps in enrollment for those with at least some coverage (children)	.25 (439)	.51	.26 (439)	.51	E^2=.00 P=.64

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	HFO Program (n =555)[1]		Control (n = 555)		
	Mean /Proportion	*sd*	Mean /Proportion	*sd*	Partial Eta^2/Odds Ratio
Health Insurance Claims for those with at least some OHP coverage					
Total # claims (parents)	28.0*** (477)	49.5	22.7 (472)	29.5	E^2=.00 P=.06
Total # claims (children)	31.9 (464)	25.8	31.0 (458)	35.0	E^2=.00 P=.68
Total cost of claims (parents)	$1,082.60 (477)	$2,993.1	$998.05 (472)	$6,542.0	E^2=.00 P=.64
Total cost of claims (children)	$928.47 (464)	$3,090.8	$1,064.74 (458)	$7,749.5	E^2=.00 P=.64
# emergency room services (parents)	.08 (477)	.36	.09 (472)	.34	E^2=.00 P=.31
# emergency room services (children)	.10 (464)	.35	.12 (458)	.42	E^2=.00 P=.58
# well baby checkups (children)	6.3 (464)	2.3	6.4 (458)	2.6	E^2=.00 P=.34
# immunizations for children with at least 1 immunization (children)	3.4 (246)	2.2	3.7 (250)	2.1	E^2=.01 P=.11
# maltreatment-related medical claims (children)	.50 (464)	2.7	.63 (458)	3.5	E^2=.00 P=.47
Substance Abuse Treatment					
Ever received treatment?	4.7% (344)		2.8% (361)		O.R.=1.65 P=.23
Total days in treatment (all)	4.4 (344)	27.0	2.9 (361)	25.2	E^2=.00 P=.50
Total days in treatment (those receiving treatment)	93.6 (16)	88.1	103.2 (10)	118.0	E^2=.01 P=.72

[1] The sample size represents the total matched sample; however, sample size varies across outcomes due to missing data, truncated timeframes available from the administrative data source, or analyses specific to subsets of participants meeting criteria, e.g., OHP coverage gaps only for participants receiving at least some OHP coverage within the study window. To account for sample size fluctuation, the n has been reported alongside each outcome calculation throughout the table.

Results comparing those HFO families who received a first home visit to those who did not (Table 10) showed similar patterns in terms of somewhat higher access to and utilization of SNAP and TANF services for visited families. In addition, HFO home-visited families were more likely to enroll in child care subsidy services for the first time (87.1%) compared to those who did not receive home visits (73.2%) and received significantly more days of employment services compared to non-visited families. HFO home-visited parents had more days of OHP enrollment, more medical claims processed, and were somewhat less likely to have been arrested, compared to non-visited parents. HFO visited children, similarly, had more days of OHP coverage and somewhat more claims related to well-baby checkups, compared to non-visited families. However, given the selection factors that may be at work in terms of which families received (vs. not receiving) a first home visit, these results should be interpreted with caution.

Table 10. Key Service Utilization Outcomes at 2 Years Post Random Assignment for TOT- HFO Visited vs. Not Visited Families (TOT- HFO)

	Received at Least 1 HV $(n = 636)^1$		Received No HVs $(n = 802)$		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
Self-Sufficiency					
Ever received TANF?	42.9% (272)		40.7% (323)		O.R.=1.15 P=.23
Received 1st TANF post randomization (of those receiving TANF)	44.0% (142)		46.7% (127)		O.R.=.92 P=.59
# of days on TANF	187.4** (634)	260.0	167.1 (193)	249.3	E^2=.00 P=.04
# of days on TANF (of those receiving TANF)	436.8* (272)	220.4	410.2 (323)	229.9	E^2=.00 P=.10
Ever received SNAP?	85.6% (543)		83.7% (664)		O.R.=1.2 P=.19
Received supplemental nutrition assistance 1st time post randomization (of those receiving food stamps)	16.4% (109)		19.3% (105)		O.R.=1.0 P=.99
# of days on supplemental nutrition assistance	488.3* (634)	268.5	464.3 (793)	277.7	E^2=.00 P=.05
# of days on supplemental nutrition assistance (of those receiving food stamps)	570.4 (543)	193.5	554.5 (664)	205.0	E^2=.00 P=.13

	Received at Least 1 HV (n = 636)[1]		Received No HVs (n = 802)		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
Ever received child care subsidy?	11.0% (70)		10.3% (82)		O.R.=1.11 P=.54
Received child care 1st time post randomization (of those receiving child care)	87.1%** (61)		73.2% (60)		O.R.=.41 P=.04
# of days with child care	21.9 (634)	85.6	17.6 (793)	70.6	E^2=.00 P=.21
# of days with child care (of those receiving child care)	198.0 (70)	178.5	170.0 (82)	150.2	E^2=.01 P=.29
Ever received employment services?	31.5% (200)		29.8% (236)		O.R.=1.19 P=.16
Received employment services 1st time post randomization (of those receiving employment services)	52.5% (105)		55.1% (130)		O.R.=1.06 P=.79
# of days with employment services	111.0*** (634)	208.7	89.2 (793)	176.0	E^2=.01 P=.00
# of days with employment services (of those receiving employment services)	351.8*** (200)	231.3	299.8 (236)	202.4	E^2=.02 P=.01
Health Insurance Coverage					
% parents ever enrolled in public insurance	85.8% (544)		82.8% (793)		O.R.=1.22 P=.20
% children ever enrolled in public insurance	83.3% (528)		82.2% (652)		O.R.=1.13 P=.38
Avg. total days enrolled (parents)	406.0*** (634)	292.8	361.6 (793)	292.2	E^2=.01 P=.01
Avg. total days enrolled (children)	531.6* (634)	275.5	509.2 (793)	281.7	E^2=.00 P=.08
# of gaps in enrollment for those with at least some coverage (parents)	.63 (405)	.82	.68 (451)	.83	E^2=.00 P=.18
# of gaps in enrollment for those with at least some coverage (children)	.24 (500)	.50	.27 (608)	.52	E^2=.00 P=.38

	Received at Least 1 HV (n = 636)[1]		Received No HVs (n = 802)		
	Mean /Proportion	*sd*	Mean /Proportion	*sd*	Partial Eta^2/Odds Ratio
Health Insurance Claims for those with at least some OHP coverage					
Total # claims (parents)	28.3*** (544)	48.5	22.6 (657)	28.9	E^2=.01 P=.00
Total # claims (children)	32.0*** (528)	25.1	25.7 (652)	25.8	E^2=.01 P=.00
Total cost of claims (parents)	$1,123.04*** (544)	$2,942.7	$720.98 (657)	$2,110.9	E^2=.00 P=.02
Total cost of claims (children)	$925.51 (528)	$3,071.9	$915.63 (652)	$7,390.7	E^2=.00 P=.80
# emergency room services (parents)	.07 (544)	.35	.10 (657)	.39	E^2=.00 P=.38
# emergency room services (children)	.10 (528)	.34	.09 (652)	.40	E^2=.00 P=.68
# well baby checkups (children)	6.4* (528)	2.2	6.1 (652)	2.5	E^2=.00 P=.09
# immunizations for children with at least 1 immunization (children)	1.8 (528)	2.3	1.9 (652)	2.3	E^2=.00 P=.70
# maltreatment-related medical claims (children)	.45 (528)	2.6	.63 (652)	4.4	E^2=.00 P=.50
Substance Abuse Treatment					
Ever received treatment?	4.4% (17)		5.2% (30)		O.R.=.98 P=.95
Total days in treatment (all)	7.8 (375)	41.2	9.7 (575)	54.2	E^2=.00 P=.88
Total days in treatment (for those receiving treatment)	140.4 (17)	113.2	180.0 (30)	160.9	E^2=.03 P=.23
Criminal Justice/Arrests[2] (during study period)					
Ever arrested?	2.4%* (15)		4.3% (34)		O.R.=.58 P=.08
Total # of arrests	.06 (634)	.59	.07 (793)	.37	E^2=.00 P=.97

	Received at Least 1 HV (n = 636)[1]		Received No HVs (n = 802)		
	Mean /Proportion	sd	Mean /Proportion	sd	Partial Eta^2/Odds Ratio
Total # of arrests (for those with at least one arrest)	2.5 (15)	3.0	1.5 (34)	.99	E^2=.06 P=.10

*=p < .1; **p <.05 *** p <.01

[1] The sample size represents the total number of people who have or have not received a home visit; however, sample size varies across outcomes due to missing data, truncated timeframes available from the administrative data source, or analyses specific to subsets of participants meeting criteria, e.g., OHP coverage gaps only for participants receiving at least some OHP coverage within the study window. To account for sample size fluctuation, the n has been reported alongside each outcome calculation throughout the table.

[2] In addition to race and NBQ risks, the total number of prior arrests was controlled for in the criminal justice outcomes analyses.

Effects of HFO on Service Utilization for Specific Subgroups of Families

Research Question 1D: Are the effects of HFO on self-sufficiency, health, and substance abuse treatment services different for subgroups of families with different baseline risk and demographic characteristics?

The following service delivery outcomes were used in subgroup analyses (note that these were conducted using the full ITT sample only): (1) Receipt of TANF for the first time; (2) Total days on TANF; (3) Total days on Supplemental Nutrition Assistance Programs (SNAP); (4) Number of days received child care subsidies; (5) Number of days received employment services; (6) Total days of health insurance coverage (parent); (7) total days of health insurance coverage (child); (8) total number of gaps in health insurance (parent); (9) total number of gaps in health insurance (child); (10) total number of emergency room claims (parent); (11) total number of emergency room claims (child); (12) total number of immunization claims; (13) total number of well baby claims; (14) total number of possible maltreatment-related claims; and (15) whether or not the parent ever received substance abuse treatment.

As was the case for maltreatment outcomes, there were few significant moderators of program effects related to service utilization (see Table 11). Children of Hispanic/Latino parents served in the HFO program had fewer days of health insurance coverage, compared to Non-Hispanic/Latino parents served in the program (but no difference compared to controls). Children of HFO parents who reported more financial difficulties had more days of OHP coverage, compared to those without financial difficulties. Several factors also seemed to moderate program impacts on gaps in health insurance for the parent, although not in the same way. Specifically, teenaged HFO parents had fewer gaps in insurance coverage compared to older HFO parents or controls. Parents in the control group who had more than four risks or who had late prenatal care had significantly fewer gaps than control parents at lower risk or

with early prenatal care. Given the large number of analyses conducted examining potential moderators, and the relative lack of consistent findings for particular subgroups, these results should be interpreted with caution.

Table 11. HFO Program X Subgroup Interaction Results for Significant Service Utilization Outcomes

	Days Health Insurance Coverage (Child)		# Gaps in Health Insurance (Parent)		# Gaps in Health Insurance (Child)	
	HFO	Control	HFO	Control	HFO	Control
Race/Ethnicity						
Hispanic/Latino	489.21 [a]	539.63				
Non-Hispanic/Latino	530.12 [a]	518.44				
	F=6.46, p=.011m E^2 =.002					
Parents Age						
<19			.39 [a,b] (84)	.77 (89)		
19+			.64 [a] (163)	.62 [b] (154)		
			F=7.30, p=.007, E^2 =.015			
More than 4 Risks						
Yes			.62 (357)	.57 [a] (329)	.29 (380)	.22 (350)
No			.68 (489)	.79 [a] (45)	.24 (728)	.29 (659)
			F=3.74, p=.053, E^2 =.002		F=6.74, p=.010, E^2 =.003	
Late Prenatal Care						
Yes			.74 (238)	.58 [a] (226)		
No			.62 (604)	.75 [a] (545)		
			F=10.45, p=.001, E^2 =.006			
Difficulty Meeting Basic Needs						
Yes	529.46 [a] (1130)	525.24 (1006)				
No	481.51 [a] (285)	523.66 (267)				
	F=3.07, p=.080, E^2 =.001					

[a,b] *Note. Cells that share the same superscript within each subgroup row are significantly different from each other. Only significant results are reported in this table.*

Effects of HFO Program Implementation on Outcomes

Research Question 1E: How do differences in HFO program implementation and service delivery relate to administrative outcomes for families in the HFO group?

To explore the relationship of HFO program implementation to outcomes, a set of analyses were conducted using only that subgroup of study participants who received at least one home visit. Descriptive statistics for the calculated program implementation variables are shown in Table 12 As can be seen, these results indicate that in many cases services were not provided at the level specified by the HFO model. For example, while families are intended to receive weekly visits for the first 6 months of enrollment (while on "Level 1"), the average number of visits received in the first 3 months was only about nine (out of 12 possible weeks). Fewer than half (41.6%) of families received Level 1 services for the required 6-month period. The average percentage of expected visits was about 75%, which meets the national standard for the model. However, at the family level, only about two thirds of families received at least 75% of expected visits. The average duration of enrollment was 15.3 months (out of a possible 24), with only 32% of families still enrolled at the end of the 2-year follow-up period. Among those families who had exited the program after receiving at least one visit, 19.3% had moved out of the service area, 18.6% were no longer interested, 17.9% had "graduated" from the program successfully meeting their goals; and 13.2% could not be contacted or located.

Table 12. Descriptive Statistics for Home Visiting Involvement

	Mean/% (n)	Minimum	Maximum	SD
Early Engagement				
Ever got a home visit (1,438)	44% (636)			
Number of visits 1st 3 months	8.67(636)	0^7	18	4.03
Weeks on Creative Outreach 1st 3 mos.	1.21 (636)	0	12.57	2.81
Duration of Services				
Months in the program (1 year)	9.60 (636)	0	12	3.53
Months in the program (2 years)	15.26 (636)	0	24	8.36
Fidelity to model				
Received 75%+ of expected visits (yes/no, $n = 633$)	60.1% (380)			
Average % of total expected visits received (633)	76.5%	0	2.40	.22
Received L1 for at least 3 months (yes/no, $n = 636$)	41.6% (277)			
Received L1 for at least 6 months (yes/no, $n = 636$)	19.3% (129)			
Intensity of Services				
Avg. # home visits per week (636)	.46	0	2	.212
# Weeks on Level 1 (636)	23.42	0	77.1	15.45
Total # of HVs received (2 years) (636)	32.13	0	107	25.6
Engagement challenges				
% Ever Received Creative Outreach? ($n = 636$) yes	59.9% (410)			
# days on Creative Outreach (636)	63.82	0	72.58	10.30
Exit Reasons (for those not receiving Home Visits, $n = 656$)				
Could not contact or contact information incorrect	43.5% (325)			
Could not be served - full caseloads	3.0% (23)			
Moved out of service area	2.9% (22)			
Too busy/no longer interested	32.2% (249)			
Other/unknown	18.7% (152)			
Exit Reasons (for home visited) ($n = 636$)				
Still active 2 years post randomization	32.2% (205)			
Could not contact or locate family	13.2% (78)			
Moved out of service area	19.3% (114)			
Too busy/No longer interested	18.6% (110)			
Graduated	17.9% (106)			

[7] Note that a family could have received their first home visit more than 90 days following randomization.

To reduce the number of implementation-related variables for analysis purposes, we examined the Pearson correlation coefficients between each of these indicators (see Table 13). As can be seen, most of the fidelity indicators were at least moderately correlated with each other; some were very highly correlated (greater than $r = .70$). When a pair of indicators were inter-correlated at a level greater than $r = .60$, we selected the indicator with the better distributional property for further analysis. We then reviewed the items further to identify what appeared to be the indicator that best represented each of the program fidelity domains, selecting one indicator from each domain for further analysis, as follows: (1) Early engagement—number of visits provided in the first 3 months of enrollment; (2) Duration—number of months capped at 24 months; (3) Visit fidelity—Percentage of total expected visits received; (4) Intensity—average number of home visits per week; and (5) Dis-Engagement indicators—whether the family was ever on Creative Outreach. These variables were then used in a series of logistic regressions (for binary outcomes) or linear regressions or ANCOVAs (for continuous outcomes) to explore the relationship of service implementation to key outcomes. The subset of outcomes used for the HFO subgroup analyses were also used for the analyses exploring program implementation effects. Each fidelity indicator was regressed on the administrative outcome; models controlled for the total number of risk factors and parent's race/ethnicity (Hispanic/Latino vs. not Hispanic/Latino).

Table 13. Correlations Between Home Visiting Dosage and Fidelity Indicators

	Number of visits 1st 3 months (636)	Weeks on Creative Outreach 1st 3 months	Months in the program (1 year) (636)	Months in the program (2 years) (636)	Received 75%+ of expected visits yes/no (n = 633)	% of total expected visits received (633)	Received L1 for at least 6 months (n = 636) yes/no	Avg. home visits per week (636)	#Weeks on Level 1 (636)	# Visits Received in 2 years	% Ever Received Creative Outreach (n = 636) yes/no	# weeks on Creative Outreach (636)
Early Engagement												
Number of visits 1st 3 months (636)	**											
Weeks on Creative Outreach 1st 3 mos.	-.611**	**										
Duration of Services												
Months in the program (1 year) (636)	.577***	-.293***	**									
Months in the program (2 years) (636)	.527***	-.317***	.879***	**								
Fidelity to model												
Received 75%+ of expected visits yes/no (n = 633)	.416***	-.187**	.375***	.461***	**							
% of total expected visits received (636)	.403***	-.164***	.340***	.387***	.715***	**						
Received L1 for at least 6 months (n = 636) yes/no	.423***	-.275***	.526***	.525***	.257***	.196***	***					
Intensity of Services												
Avg #home visits per week (636)	.535***	-.521***	-.029	-.008	.348***	.453***	.216***	**				

	Number of visits 1st 3 months (636)	Weeks on Creative Outreach 1st 3 months	Months in the program (1 year) (636)	Months in the program (2 years) (636)	Received 75%+ of expected visits yes/no (n = 633)	% of total expected visits received (633)	Received L1 for at least 6 months (n = 636) yes/no	Avg. home visits per week (636)	#Weeks on Level 1 (636)	# Visits Received in 2 years	% Ever Received Creative Outreach (n = 636) yes/no	# weeks on Creative Outreach (636)
#Weeks on Level 1 (636)	.614***	-.392***	.633***	.638***	.245***	.193***	.793***	.270***	**			
# Visits received 1st 2 years (636)	.792***	-.431***	.768***	.890***	.554***	.465***	.633***	.278***	.751***	**		
Engagement challenges												
% Ever Received Creative Outreach (n = 636) yes/no	-.197***	.369***	.106**	-.003	-.193***	-.153***	-.070	-.515***	-.050	-.176***	**	
# weeks on Creative Outreach (636)	-.155***	.359	.205***	.099*	-.168***	-.080*	.-.059	-.442***	-.035	-.150***	.720***	**

* = *p* <.05; ***p* <.01; ****p* <.001

Results are summarized in Table 14. As can be seen, very few program implementation variables were significantly associated with child welfare outcomes. Generally, families that received more visits had more unfounded reports; families that received a higher percentage of expected visits had significantly *fewer* founded reports and, if there was a child in foster care, were more likely to be reunified. Families that remained in HFO services longer, if there was a child in placement, were also more likely to be reunified.

In terms of access to resources, there were a number of relationships between program service delivery and service utilization. Families who remained in HFO longer received fewer days of TANF, and fewer employment-related supports. However, they received MORE days of SNAP and had more days of maternal OHP coverage, with fewer gaps. Families who remained in the program longer also had more immunization- and well-baby-related medical claims.

Implementation of home visits with fidelity (either within the first 3 months, the percentage of expected visits received, or the average visits per week) was generally associated with less utilization of self-sufficiency resources and health insurance. Families who received more visits during the first 3 months had fewer days of TANF and maternal OHP coverage, and more gaps in maternal coverage. Families who received a higher percentage of expected visits also had fewer days of maternal health insurance coverage, but more well-baby claims. Families who received more visits per week also received fewer days of TANF, employment supports, and OHP coverage for parents. These families were also less likely to received Alcohol or Drug (AOD) treatment.

Finally, being placed on Creative Outreach was associated with having more unfounded reports, as well as more days of TANF, SNAP, employment supports, and maternal OHP coverage; these families also were more likely to have received AOD treatment and to have more gaps in insurance coverage for both parents and babies.

Table 14. Relationship of Program Service Delivery to Key Administrative Outcomes (summary table)

Fidelity Indicators	Outcome	Significant Predictor?
Number of visits 1st 3 months	Any maltreatment report?	no
	Any unfounded report?	yes - more visits = more unfounded (p=.09)
	Any founded report?	no
	Any founded neglect?	no
	Any foster care placement?	no
	Ever reunified?	no
	Received TANF first time?	no
	Total days on TANF	more visits, less TANF
	Total days on SNAP	no
	Total days on child care subsidies	no
	Total days employment supports	no
	Total days OHP coverage (parent)	more visits, less OHP
	Total days OHP coverage (child)	no
	Total number of coverage gaps (parent)	More visits, more gaps
	Total number of coverage gaps (child)	no
	Total ER claims (parent)	no
	Total ER claims (child)	no
	Total immunization claims	no
	Total possible maltreatment claims	no
	Ever in AOD treatment?	no
Months in the program (duration)	Any maltreatment report?	no
	Any unfounded report?	no
	Any founded report?	no
	Any founded neglect?	no
	Any foster care placement?	no
	Ever reunified?	yes - longer duration = more reunification
	Received TANF first time?	no
	Total days on TANF	yes - longer duration, fewer days on TANF
	Total days on SNAP	yes - longer duration, more days on SNAP
	Total days on child care subsidies	no
	Total days employment supports	yes - longer duration, fewer employment supports
	Total days OHP coverage (parent)	no
	Total days OHP coverage (child)	yes - longer duration, more days on OHP

Fidelity Indicators	Outcome	Significant Predictor?
	Total number of coverage gaps (parent)	no
	Total number of coverage gaps (child)	yes - longer duration, fewer gaps
	Total ER claims (parent)	no
	Total ER claims (child)	no
	Total immunization claims	yes - longer duration, more immunization claims
	Total well baby claims	yes - longer duration, more well baby claims
	Total possible maltreatment claims	no
	Ever in AOD treatment?	no
% of expected visits received	Any maltreatment report?	no
	Any unfounded report?	yes - higher % of expected = more unfounded
	Any founded report?	yes - higher % of expected = fewer founded
	Any founded neglect?	yes - higher % of expected = fewer founded neglect
	Any foster care placement?	no
	Ever reunified?	yes - higher % of expected = more reunification
	Received TANF first time?	no
	Total days on TANF	no
	Total days on SNAP	no
	Total days on child care subsidies	no
	Total days employment supports	no
	Total days OHP coverage (parent)	yes - higher % of expected = fewer days OHP
	Total days OHP coverage (child)	yes - higher % of expected = fewer days OHP
	Total number of coverage gaps (parent)	no
	Total number of coverage gaps (child)	no
	Total ER claims (parent)	no
	Total ER claims (child)	no
	Total immunization claims	no
	Total well baby claims	yes - higher % of expected = more well baby claims
	Total possible maltreatment claims	no
	Ever in AOD treatment?	no
Average # visits per week	Any maltreatment report?	no
	Any unfounded report?	no
	Any founded report?	no
	Any founded neglect?	no
	Any foster care placement?	no

Fidelity Indicators	Outcome	Significant Predictor?
	Ever reunified?	no
	Received TANF first time?	no
	Total days on TANF	more visits, less TANF
	Total days on SNAP	no
	Total days on child care subsidies	no
	Total days employment supports	more visits, less employment support
	Total days OHP coverage (parent)	more visits, less OHP
	Total days OHP coverage (child)	no
	Total number of coverage gaps (parent)	no
	Total number of coverage gaps (child)	no
	Total ER claims (parent)	no
	Total ER claims (child)	no
	Total immunization claims	no
	Total possible maltreatment claims	no
	Ever in AOD treatment?	yes - more visits, less AOD TX
Ever on Creative Outreach?	Any maltreatment report?	yes - CO = more reports
	Any unfounded report?	yes - CO = more reports
	Any founded report?	no
	Any founded neglect?	no
	Any foster care placement?	no
	Ever reunified?	no
	Received TANF first time?	no
	Total days on TANF	yes - CO = more TANF
	Total days on SNAP	yes- CO-more SNAP
	Total days on child care subsidies	no
	Total days employment supports	yes - CO = more employ
	Total days OHP coverage (parent)	yes - CO = more OHP
	Total days OHP coverage (child)	no
	Total number of coverage gaps (parent)	yes - CO = more gaps
	Total number of coverage gaps (child)	yes - CO = more gaps
	Total ER claims (parent)	no
	Total ER claims (child)	no
	Total immunization claims	no
	Total possible maltreatment claims	no
	Ever in AOD treatment?	yes - CO = more TX

Additionally, we investigated the baseline characteristics that were associated with different levels of services received (see Table 15). Regression models were conducted that utilized each of the five key fidelity indicators as outcomes, and entered the full set of NBQ risk characteristics as well as parents' race/ethnicity (Hispanic/Latino vs. non-Hispanic/Latino) in the model. This design allowed us to better understand whether particular risk factors, controlling for other characteristics, were uniquely associated with variability in program service delivery. As can be seen, very few consistent predictors emerged. Hispanic/Latino families tended to receive more visits during the first 3 months of services, but were no more or less likely (controlling for other risks) to remain in the program longer, to receive a higher percentage of expected home visits, to receive more visits per week, or to be placed on Creative Outreach. Teen parents received fewer visits in the first 3 months compared to older parents, and also tended to remain in the program for fewer months. Parents who reported receiving late prenatal care also tended to receive fewer initial visits, and were more likely to have been placed on CO. Receiving a prenatal screen, however, was associated with remaining in the program longer and receiving more early home visits. Finally, parents who reported higher levels of relationship problems received more visits during the first 3 months and also remained in the program longer. Parents who reported an AOD-related concern at screening were also more likely to be placed on Creative Outreach.

While preliminary, these findings do suggest that parents with certain risk characteristics – having relationship difficulties and late prenatal care—may be more likely to be open to receiving early home visiting and to remain in services longer. On the other hand, being a teenage parent was associated with fewer visits and shorter program duration. Those parents screened prenatally also appear to be retained in services more successful and to receive more early home visits. Receiving more visits in the first 90 days is associated with retention in services ($r = .523$). It is possible that early engagement and successful delivery of those early home visits establishes a more positive trajectory for longer term retention.

Table 15. Relationship of Baseline Risk Factors to Service Delivery Indicators (summary table)

Fidelity Indicators	Predictors in Model	Unique Predictor?
Number of visits 1st 3 months	Hispanic/Latino v. White	yes - Hispanic/Latino parents = more visits
	Less than 19 years old	yes - teen moms = fewer visits
	Unmarried	no
	Late prenatal care	yes - late prenatal care = fewer visits
	< High school/GED	no
	No adult employed full time	no
	Difficulty paying basic expenses	no
	Depression screen positive	no
	Family relationship problems (yes/no)	yes - relationship problems = more visits
	Substance abuse concern	no
	Prenatal screening (yes/no)	yes - prenatal screen = more visits
	# social supports	no
Months in the program (duration)	Hispanic/Latino v. White	no
	Less than 19 years old	yes - teens = shorter duration
	Unmarried	no
	Late prenatal care	no
	< High school/GED	no
	No adult employed full time	no
	Difficulty paying basic expenses	no
	Depression screen Positive	no
	Family Relationship Problems (yes/no)	yes - relationship problems = longer duration
	Substance Abuse Concern (yes/no)	no
	Prenatal Screening (yes/no)	yes - prenatal screen = longer duration
	# social supports	no
% of Expected visits received	Hispanic/Latino v. White	no
	Less than 19 years old	no
	Unmarried	no
	Late prenatal care	no
	< High school/GED	no
	No adult employed full time	no
	Difficulty paying basic expenses	no
	Depression screen positive	no
	Family relationship problems (yes/no)	no
	Substance Abuse Concern (yes/no)	no
	Prenatal Screening (yes/no)	no
	# social supports	no
Average # visits per week	Hispanic/Latino v. White	no
	Less than 19 years old	no

Fidelity Indicators	Predictors in Model	Unique Predictor?
	Unmarried	no
	Late prenatal care	no
	< High school/GED	no
	No adult employed full time	no
	Difficulty paying basic expenses	no
	Depression screen positive	no
	Family relationship problems (yes/no)	no
	Substance abuse concern (yes/no)	no
	Prenatal screening (yes/no)	no
	# social supports	no
Ever on Creative Outreach?	Hispanic/Latino v. White	no
	Less than 19 years old	no
	Unmarried	no
	Late prenatal care	yes - late prenatal = more likely to get CO
	< High school/GED	no
	No adult employed full time	no
	Difficulty paying basic expenses	no
	Depression screen positive	no
	Family relationship problems (yes/no)	no
	Substance abuse concern (yes/no)	yes - AOD concern = more likely to get CO
	Prenatal screening (yes/no)	no
	# social supports	no

Surveillance Effects and Timing of Maltreatment

Given the results suggesting that families in the HFO group, and particularly those who received more home visits, were somewhat more likely to have unfounded reports of abuse/neglect, we conducted descriptive analyses to examine the timing of reports more closely. First, we compared the age of the child at the time of the first report. This analysis showed no significant differences between program (7.88 months) and control (6.98 months) children. However, for HFO families who received at least one home visit, we examined the number and percentage of children whose first reports occurred during program participation vs. after program exit. For children who had a founded report, the great majority (86.2%, 94 children) occurred after they had left the program. Only 13.8% (15) children had a founded report while enrolled in HFO. However, the pattern was quite different for unfounded reports, with 50.5% (n = 55) of the children with unfounded reports being reported after HFO enrollment, and an equal percentage (49.5%, n = 54) occurring during their enrollment. This result again suggests that HFO home visitors are engaged in reporting to child welfare, but that these reports are much more likely to be unfounded than founded. It may be either that they are reporting situations that do not meet the criteria for DHS safety threats, or that because the HFO visitor is working with the family, DHS is less likely to substantiate the report.

We also conducted survival analyses using Cox's Regression to examine the timing of maltreatment reports for the full sample (Figure A). These analyses controlled for the number of risk factors at baseline. A second model examined differences in timing of reports for program vs. control families who were Hispanic/Latino or non-Hispanic/Latino (Figure B). Results from the first survival model indicate that, as hypothesized, HFO families come into contact with the child welfare system faster, compared to control families. However, Figure B shows that the pattern is reversed for Hispanic/Latino families. Hispanic/Latino families in the HFO group came into contact with the child welfare system more slowly compared to Hispanic/Latino families in the control group. This result is consistent with the regression outcomes indicating lower frequency of reports for Hispanic/Latino families in the HFO group as compared to Hispanic/Latino controls. Thus, if surveillance is happening, it appears to be happening within the non-Hispanic/Latino families, and not within Hispanic/Latino families.

Figure A. Cox's Regression Results Predicting Number of Months from Random Assignment to First Report for HFO vs. Control Groups
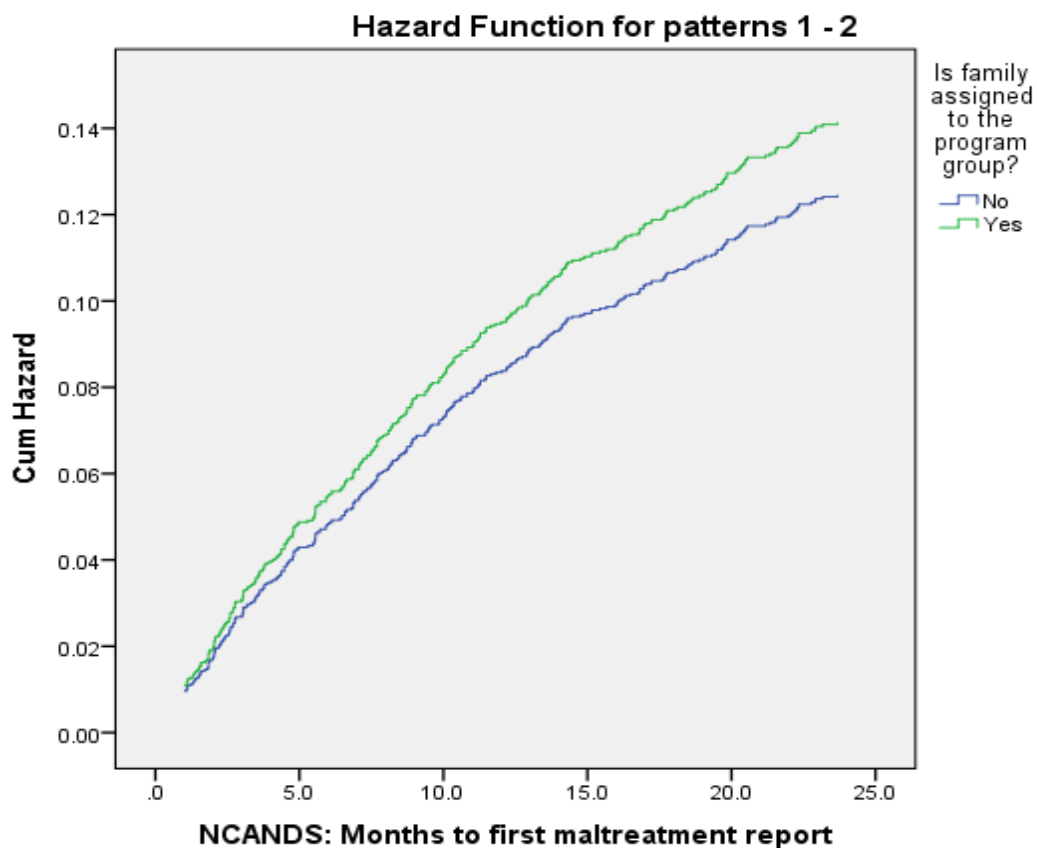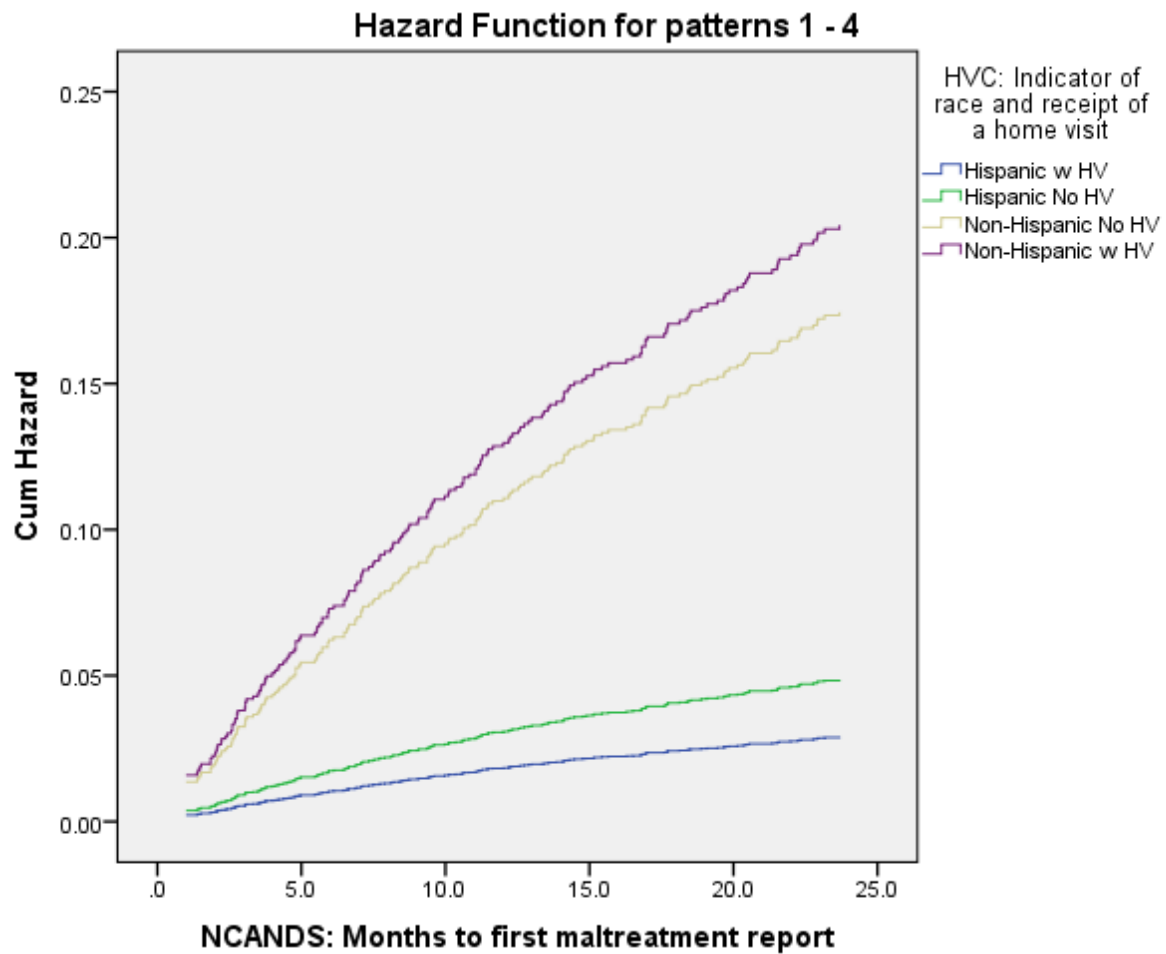
Figure B. Cox's Regression Models Predicting Months to First Maltreatment Report for Hispanic/Latino vs. Non-Hispanic/Latino Families in the HFO vs. Control Groups

COST ANALYSIS

Cost Evaluation Overview

NPC conducted a cost-benefit analysis of the seven Healthy Families Oregon (HFO) sites to determine whether costs due to criminal justice, health care, child welfare, and other related outcomes were lower due to HFO participation. A cost-benefit evaluation calculates the cost of the program and also the cost of the outcomes, resulting in a cost-benefit ratio (for example, the cost of the program is compared to the cost-savings due to the reduction in foster care days or number of arrests).

The cost evaluation was designed to address the following study questions:

- How much do the HFO programs cost?

- What are the 2-year cost impacts on the criminal justice, child welfare, and other related systems for HFO participants compared to individuals eligible for HFO but who did not participate (the control group)?

- What is the short-term cost-benefit ratio for investment in HFO?

Cost Evaluation Design

A "cost-to-taxpayer" approach was used for this evaluation, which means that costs and avoided costs involving public funds were the main focus. This design includes outcome/impact costs to the taxpayer such as foster care, Temporary Assistance for Needy Families (TANF) payments, publicly funded health insurance, and arrests. However, costs/benefits to the individuals participating in the program were also included in the analysis because some of the greatest effects of the HFO program are more long-term in nature and affect society as a whole. Examples of outcome/impact costs/benefits to the individual or society include child abuse/neglect, homelessness, and the achievement of a high school diploma or GED.

Cost Evaluation Methods

The cost evaluation involved calculating the costs of the program and the costs of outcomes/impacts over 2 years after random assignment. In order to determine if there were any benefits (or avoided costs) due to HFO program participation, it was necessary to determine what the participants' outcome costs would have been had they not participated in the HFO program. To do this analysis, we utilized the full randomized study sample described previously.

COST DATA COLLECTION

Cost data that were collected for this analysis were divided into program costs and outcome costs. The **program costs** were those associated with activities performed within the program. The HFO program-related "transactions" included in this analysis were screenings (NBQ), initial engagement, home visiting services, Creative Outreach, volunteer resources, administrative

costs, and support/overhead costs (materials, services, supplies, training, rent, utilities, insurance, travel, etc.). The **outcome costs** were those associated with activities that occurred outside the HFO program. These transactions included founded child welfare reports, foster care days, child abuse/neglect victimizations, child care subsidies, Supplemental Nutrition Assistance Program (SNAP) payments, Temporary Assistance for Needy Families (TANF) payments, employment assistance, domestic violence victimizations (indicated by receipt of services for intimate partner violence), GED or high school diplomas achieved, emergency room visits, health care claims paid, publicly funded health insurance coverage, detoxification days, methadone treatment days, residential treatment days, arrests, and person crime victimizations (from arrest data).

PROGRAM COSTS

The first step in calculating program costs for each HFO program was a thorough analysis of budget documents and interviews with key informants such as program managers and fiscal officers. Key program transactions and services were identified by analyzing the budget information and through discussions with program managers. Next, we determined the resources used by program participants through extensive interviewing of key informants and by collecting administrative data from the HFO programs (number of children served, number of volunteer hours, salary and benefits information, hours spent on tasks, etc.). Finally, cost results were obtained by calculating the total cost of each type of transaction (either by multiplying the transaction cost by the number of transactions, or dividing the budget line item by the number of transactions). For example, to calculate the cost of volunteer resources, the calculated rate per hour of volunteer services is multiplied by the number of volunteer hours. Note that the program cost per child in this report is the annual cost per child served, based on average amounts of actual services received, NOT the cost per child for 1 full year of HFO services. Also, the total program cost per child is NOT the sum of the seven program transactions. For example, each participant in Healthy Families Oregon has a screening, but there are also numerous screenings for children who end up not entering the program. The screening costs for non-participants (as well as Creative Outreach and initial engagement costs) are included in the total program cost per child.

OUTCOME/IMPACT COSTS

Outcome/impact costs used in this cost analysis were the same for each local HFO program as statewide averages or proxies were used. Two years of outcomes were used for both the program and control group.

The cost of founded (substantiated) child welfare reports was calculated using information from the Oregon Department of Human Services (DHS) Staffing Survey Data and average salary and benefits information obtained on DHS staff. The cost per report in 2013 was updated to fiscal year 2015 dollars using the Consumer Price Index.

Foster care costs were obtained from Oregon DHS, Children and Families Foster Care Program staff and information found on the DHS website. The cost per day of foster care in 2011 was updated to fiscal year 2015 dollars using the Consumer Price Index.

The cost of child abuse and neglect victimizations used in this cost analysis is a long-term proxy outcome cost and includes adult medical costs, productivity losses, criminal justice costs and special education costs (Fang, Brown, Florence, & Mercy, 2012). The average lifetime cost per nonfatal child maltreatment in 2010 was updated to fiscal year 2015 dollars using the Consumer Price Index.

Self-sufficiency and family stability outcome costs were found on the Oregon Department of Human Services website. For the cost of child care subsidies, NPC used the Licensed Rate Maximum for a certified family rate for a toddler in Group Area B (the midpoint for all rate options). This rate was found at http://www.oregon.gov/dhs/assistance/CHILD-CARE/Pages/rates.aspx. The average monthly benefit per household for Supplemental Nutrition Assistance Program (SNAP), otherwise known as food stamp payments, was taken from http://www.oregon.gov/dhs/assistance/Branch%20District%20Data/Supplemental%20Nutritio n%20Assistsance%20Program%20Activity.pdf. The cost of Temporary Assistance for Needy Families (TANF) was found at http://www.oregon.gov/dhs/assistance/CASH/ReportsReviews/2013%20JOBS%20Plus%20Annu al%20Report.pdf (the maximum monthly benefit for a family of 3 was used in this cost analysis). The cost of employment assistance was taken from the Oregon JOBS Plus program website (http://www.oregon.gov/dhs/assistance/CASH/ReportsReviews/2013%20JOBS%20Plus%20Ann ual%20Report.pdf).

In addition, proxies were used for several family stability outcomes, including long-term outcomes that involve costs more associated with individuals rather than taxpayers. The costs associated with being a victim of intimate partner violence (CDC, 2003) in 1995 were updated to fiscal year 2015 dollars using the Consumer Price Index. The benefits associated with high school diploma/GED attainment used a calculation of average lifetime earnings and tax benefits in 2007 (Belfield, 2007), which was updated to fiscal year 2015 dollars with the Consumer Price Index. The average cost per household per homelessness incidence in 2006 (Spellman, Khadduri, Sokol, Leopold, & Abt Associates, 2010) was updated to fiscal year 2015 dollars using the Consumer Price Index. Administrative data on homelessness incidents and high school diplomas/GEDs achieved were taken from a parent interview (see Appendix A).

Health care costs were obtained from the Oregon Health Authority's Division of Medical Assistance Programs (DMAP). DMAP data included actual costs per individual for emergency room visits (for both parent and child) and total medical claims paid by the Oregon Health Plan (also for both parent and child). The cost of publicly funded health insurance was found on the Oregon Health Plan's website

(http://www.oregon.gov/oha/healthplan/DataReportsDocs/Capitated%20Rates%20Report%20
%E2%80%93%20January%202015.pdf). Rates for January 2015 were used. The 19–44 age range
was used for parents and the 1–5 age range was used for children. Time on publicly funded
health insurance was also taken from DMAP data.

Substance abuse treatment costs were obtained from the Oregon Health Plan's October 2015
Fee Schedule for Fee-for-Service Providers, found on the Oregon Health Plan's website
(http://www.oregon.gov/OHA/healthplan/pages/feeschedule.aspx). Substance abuse
treatment transactions included detoxification days, methadone treatment days, and
residential treatment days (outpatient treatment days were not included in this cost analysis as
neither the program nor control group had any days in outpatient treatment). Administrative
data on substance abuse treatment usage were taken from the Oregon Department of Human
Services' Client Process Monitoring System (CPMS).

The cost per arrest was taken from NPC's 2011 drug court cost study of Measure 57 programs
throughout Oregon. In this study, NPC contacted staff at each law enforcement agency to
obtain the typical positions involved in an arrest, average time involvement per position per
arrest, as well as salary and benefits and support/overhead rates. NPC used that information to
calculate the cost of an average arrest episode. The arrest cost at each law enforcement agency
was averaged to calculate the final cost per arrest. The average cost per arrest for law
enforcement agencies throughout the state was updated to fiscal year 2015 dollars using the
Consumer Price Index. The number of arrests per HFO and control group parent was obtained
from data in the Oregon Judicial Information Network (OJIN).

Person crime victimizations were calculated from the National Institute of Justice's *Victim Costs
and Consequences: A New Look* (Miller, Cohen, & Wiersema, 1996). The costs were updated to
fiscal year 2015 dollars using the Consumer Price Index. The number of person crime
victimizations (parent as perpetrator) was obtained from data in OJIN.

COST EVALUATION RESULTS

Program Costs

Table 16 displays the average cost per program-related event (or "transaction") and the range of costs *per child* for each of the seven HFO sites in this cost analysis. Note that the program cost per year (per child) is the annual cost per child served, NOT the cost per child for one full year of HFO services. Tables for each of the seven individual site program costs are in Appendix C.

Table 16. Average and Range of Key Program/Investment Costs for Seven HFO sites in Oregon

Item	Average	Range (per site)
Screenings	$50.93 per screening	$12.10 to $85.98 per screening
Initial Engagement	$35.02 per child	$5.46 to $67.42 per child
Home Visits	$970.94 per year per child	$627.94 to $1,305.99 per year per child
Creative Outreach	$18.70 per child	$5.46 to $32.18 per child
Volunteer Resources	$363.37 per child	$14.23 to $1,259.21 per child
Administrative Costs	$851.54 per child. This number includes supervisory and other administrative staff costs.	$586.71 to $1,244.09 per child
Support/Overhead	$708.06 per child. This number includes materials, services, supplies, training, rent, utilities, insurance, travel, etc.	$412.22 to $1,213.89 per child
Program Cost per year, per child	**$3,766.96** is the average annual cost per child of Healthy Family Oregon services[8]	**$2,502.97 – $5,956.33** per year per child

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[8] Note that the total program cost per year per child is NOT the sum of the 7 program cost items. For example, each participant in a Healthy Families program has a screening, but there are also numerous screenings for children who end up not entering the program. The other screening costs for non-participants (as well as Creative Outreach and initial engagement costs) are included in the total program cost per child.

Outcome/Impact Costs

Table 17 presents the unit cost per outcome transaction, the average number of events for each outcome transaction, and the average cost for each outcome transaction for HFO program participants and the control group. The sample size for each group is included in parentheses below each average number of events. Table 17 includes only costs for 2 years post random assignment for outcomes measured through administrative data sources. Table 18 includes a limited number of outcomes based on lifetime cost estimates (abuse victimization, GED attainment, and criminal justice victimization) and on outcomes available only for the subset of families who completed the parent survey (GED and homelessness).

More detailed cost estimates for each program site are included in Appendix C. A table showing detailed cost calculations for each outcome event is also included in Appendix C.

Table 17. Unit cost, Average Number of Events, and Average Cost per Outcome Event for HFO Program vs. Control Group—2-Year Outcomes Only

Key cost-related home visiting program outcomes	Unit Cost	Program	Control
1. Number of founded (substantiated) child welfare reports[9]	$579.19 per report	.07 (1,438)	.07 (1,289)
		$40.54	$40.54
2. Number of foster care days	$77.69 per day	15.15 (1,436)	12.74 (1,288)
		$1,177.00	$989.77
3. Child Care Subsidies	$17.50 per day	19.73 (1,438)	19.68 (1,289)
		$345.28	$344.40
4. Supplemental Nutrition Assistance Program (SNAP; food stamp payments) (ICS)	$7.76 per day	474.17 (1,438)	460.18 (1,289)
		$3,679.56	$3,571.00
5. Temporary Assistance for Needy Families (TANF) payments (ICS)	$16.64 per day	175.82 (1,438)	168.85 (1,289)
		$2,925.64	$2,809.66
6. Employment Assistance (ICS)	$2,226 per participant	0.31 (1,438)	0.30 (1,289)
		$690.06	$667.80
7. Intimate Partner Violence (ICS)	$2,043 per victim	0.05 (1,438)	0.04 (1,289)
		$102.15	$81.72
8. Number of emergency room visits (parent) (DMAP)		.09 (1,209)	.10 (1,075)

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[9] Although research suggests that unsubstantiated reports are also good indicators of child maltreatment, such information is often not available through administrative child welfare data systems. However, programs could include total report costs if available. The programs in this study only included substantiated report information and costs.

Key cost-related home visiting program outcomes	Unit Cost	Program	Control
	N/A[10]	$0.53	$0.96
9. Number of emergency room visits (child)	N/A	.09	.10
		(1,188)	(1,063)
		$0.75	$1.71
10. Total claims paid (minus emergency room visits) (parent)	N/A	4.19**[11]	2.75
		(1,209)	(1,075)
		$897.06	$778.66
11. Total claims paid (minus emergency room visits) (child)	N/A	4.01	3.54
		(1,188)	(1,063)
		$915.16	$835.12
12. Member Months (DMAP) - Enrollment in publicly funded health insurance (parent)	$14.26 per day	452.79	453.94
		(1,209)	(1,075)
		$6,456.79	$6,473.18
13. Member Months (DMAP – Enrollment in publicly funded health insurance (child)	$4.44 per day	628.35	634.88
		(1,188)	(1,063)
		$2,789.87	$2,818.87
14. Detox treatment days (CPMS)	$135.00 per day	0.00	0.02
		(969)	(852)
		$0	$2.70
15. Methadone treatment days (CPMS)	$4.54 per day	.05	.00
		(969)	(852)
		$0.23	$0
16. Residential (inpatient) treatment days (CPMS)	$120.00 per day	1.46	1.07
		(969)	(852)
		$175.20	$128.40
17. Number of arrests (OJIN)	$223.04 per arrest	.06	.06
		(1,438)	(1,289)
		$13.38	$13.38
TOTAL		**$20,209.20**	**$19,557.87**

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[10] The unit cost is N/A because these data were based on actual costs in DMAP and there is no "unit cost" per ER visit (or per claim paid).

[11] This is the mean number of total claims paid out of total number of claims, excluding emergency room visits. The dollar amount in the cell below is the total amount paid on all claims minus the emergency room visits total paid in the 2-year outcome window.

Table 18. Unit cost, Average Number of Events, and Average Cost per Outcome Event for HFO Program vs. Control Group, Lifetime Estimates Included

Key cost-related home visiting program outcomes	Unit Cost	Program	Control
1. Number of founded (substantiated) child welfare reports[12]	$579.19 per report	.07 (1,438)	.07 (1,289)
		$40.54	$40.54
2. Number of foster care days	$77.69 per day	15.15 (1,436)	12.74 (1,288)
		$1,177.00	$989.77
3. Number of child abuse or neglect victims (unduplicated)[13]	$187,159 per victim[a]	.20 (1,438)	.17 (1,289)
		$37,431.80	$31,817.03
4. Child Care Subsidies (ICS)	$17.50 per day	19.73 (1,438)	19.68 (1,289)
		$345.28	$344.40
5. Supplemental Nutrition Assistance Program (food stamp payments) (ICS)	$7.76 per day	474.17 (1,438)	460.18 (1,289)
		$3,679.56	$3,571.00
6. Temporary Assistance for Needy Families (TANF) payments (ICS)	$16.64 per day	175.82 (1,438)	168.85 (1,289)
		$2,925.64	$2,809.66
7. Employment Assistance (ICS)	$2,226 per participant	0.31 (1,438)	0.30 (1,289)
		$690.06	$667.80
8. Intimate Partner Violence (ICS)	$2,043 per victim	0.05 (1,438)	0.04 (1,289)
		$102.15	$81.72
9. GED or HS diploma achieved (Parent Survey, PS)[14]	$332,482 per diploma[a,b]	.74 (298)	.77 (306)
		($246,036.68)	($256,011.14)
10. Homelessness (ever homeless) (PS)	$8,513 per event[b]	.03 (13)	.03 (12)
		$255.39	$255.39
11. Number of emergency room visits (parent)	N/A	.09 (1,209)	.10 (1,075)
		$0.53	$0.96
12. Number of emergency room visits (child)	N/A	.09 (1,188)	.10 (1,063)
		$0.75	$1.71

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[12] Although research suggests that unsubstantiated reports are also good indicators of child maltreatment, such information is often not available through administrative child welfare data systems.

[13] The term "child abuse victimization" in this table refers to the long-term effects and associated costs of a child abuse case. This is different from the "child welfare report" listed above, which refers to the cost of an investigation/report by a child welfare agency.

[14] GED or high school diploma achieved and Homelessness are from a Parent Survey, which is a smaller subsample. Also note that GED or High School diploma achieved is a benefit, while all other outcomes are a cost to taxpayers or to the program participant (or control group member). For this reason, GED or High School diplomas costs are shown as a negative number.

Key cost-related home visiting program outcomes	Unit Cost	Program	Control
13. Total claims paid (minus emergency room visits) (parent)	N/A	4.19**[15] (1,209)	2.75 (1,075)
		$897.06	$778.66
14. Total claims paid (minus emergency room visits) (child)	N/A	4.01 (1,188)	3.54 (1,063)
		$915.16	$835.12
15. Member Months (DMAP) - Enrollment in publicly funded health insurance (parent)	$14.26 per day	452.79 (1,209)	453.94 (1,075)
		$6,456.79	$6,473.18
16. Member Months (DMAP – Enrollment in publicly funded health insurance (child)	$4.44 per day	628.35 (1,188)	634.88 (1,063)
		$2,789.87	$2,818.87
17. Detox treatment days (CPMS)	$135.00 per day	0.00	0.02
		$0	$2.70
18. Methadone treatment days (CPMS)	$4.54 per day	.05 (969)	.00 (852)
		$0.23	$0
19. Residential (inpatient) treatment days (CPMS)	$120.00 per day	1.46 (969)	1.07 (852)
		$175.20	$128.40
20. Number of arrests (OJIN)	$223.04 per arrest	.06 (1,438)	.06 (1,289)
		$13.38	$13.38
21. Number person crime victimizations (OJIN)	$43,024 per victimization[a]	.01 (1,438)	.02 (1,289)
		$430.24	$860.48
TOTAL[16]		$(187,710.05)	$(203,520.37)

[a] Event cost based on lifetime estimates per event.
[b] Outcome based on subset of parent survey participants (*n* = 803).

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[15] This is the mean number of total claims paid out of total number of claims, excluding emergency room visits. The dollar amount below this is the total amount paid on all claims minus the emergency room visits total paid in the 2-year outcome window.

[16] Note that GED or High School diploma achieved is a benefit, while all other outcomes in the table are a cost to taxpayers or to the program participant (or control group member). For this reason, GED or High School diplomas costs are shown as a negative number and are subtracted from total outcome costs.

Summary: Cost Analysis Results

Table C1 shows outcome costs for HFO and controls based on the 2-year study window. As shown in Table C1, the outcome costs for HFO families were slightly higher overall, compared to controls, although this difference was small in magnitude. Within the 2-year window, HFO costs were somewhat higher in a number of areas. In some cases, these differences reflect the findings described previously that showed more access and use of services in the HFO group. Additionally, there were somewhat higher HFO costs related to having slightly more days of foster care and slightly more child abuse reports. HFO costs were somewhat lower in terms of months of OHP coverage and use of emergency room services for children and parents, although all of these differences are quite small in magnitude. Most differences were based on outcome differences that were not statistically significant, and therefore should be interpreted with caution.

When lifetime estimates are included, HFO costs were lower for lifetime estimates of the effects of person crime victimizations, but substantially higher for the somewhat fewer HFO parents who reported on the parent survey having completed a GED. Given the large monetary impact in terms of lifetime benefits of obtaining a GED, this one difference accounts for a rather substantial long-term monetary deficit for the HFO group when lifetime estimates are considered.

HFO programs are a moderate taxpayer investment, with an average program cost per year of $3,766.96 per family. However, the outcome cost per HFO program participant over the 2 years included in this analysis came to $20,209.20, which does not result in a positive return on the investment over the 2-year outcome time period. It is unknown if a longer outcome time period would result in a different outcome. Further evaluation that includes data from many sources (e.g., criminal justice, employment, and health outcomes) and a longer time period is recommended before any meaningful conclusions can be reached related to the potential cost-benefits of the HFO programs. Other cost-benefit analyses of early childhood prevention programs have shown positive cost-benefit ratios, but over considerably longer periods of time (e.g., Masse & Barnett, 2002; Olds et al., 1997; Olds et al., 1998). The long-term evaluation of Healthy Families New York (HFNY) (Lee et al., 2009) did find relatively shorter term cost-benefits, finding significant reductions in low birth weight births for children after the initial project period; this finding was based on a 7-year follow-up period.

DISCUSSION

R esults of this study that were reported after one year (see Green et al., 2014) indicated that the HFO program had modest but potentially important outcomes for high-risk families with young children. Just 1 year post-random assignment, HFO parents reported reading to young children more frequently and providing more developmentally supportive activities to their young children, compared to parents in the control group. Further, as reported in that article, HFO parents had lower levels of parenting-related stress at their child's 1-year birthday. However, consistent with other studies of Healthy Families America (Dumont et al., 2008; Jacobs, Easterbrooks, & Mistry, 2015) and other home visiting programs (Green et al., 2014; Zielinski, Eckenrode & Olds, 2009) there were no short-term reductions in the number of substantiated reports of child abuse or neglect. Rather, and consistent with the hypothesis that one function of early home visitation is to provide needed supports to families that may be at elevated risk of child maltreatment, we found significantly more unsubstantiated reports among children randomly assigned to the home visiting group; this finding was even more pronounced among those families who received at least one home visit. This pattern suggests that having a mandated reporter in contact with higher risk, potentially isolated families may lead to increased reporting, a pattern also found in the statewide evaluation of Healthy Families Massachusetts (Jacobs et al., 2015). At the same time, the fact that these families were no more likely to have had a founded report suggests that either some of these reports were of behavior or circumstances that was not considered to be a threat to the safety of the child, or that the presence of a supportive home visitor may have influenced the decision on the part of child welfare investigators to deem the situation unsafe.

Interestingly, however, this effect was only seen for non-Hispanic/Latino families. Hispanic/Latino families who were home visited were much *less* likely to be reported to the child welfare system, compared to Hispanic/Latino families who were not home visited. Reasons for this warrant further investigation. It may be that home visitors working with Hispanic/Latino and Spanish-speaking families are more reluctant to make reports to the child welfare system, perhaps due to concerns that such reporting could raise other legal issues (e.g., immigration issues). It also could be that these workers interpret family situations differently, with a more culturally appropriate/informed "lens" and therefore may have a larger range of acceptable behavior related to discipline, parent-child interactions, home environment, and child monitoring.

Administrative records also suggest that home visitors play a role in helping to connect higher risk families to needed resources. HFO families were more likely to have received TANF supports for the first time, and were more likely to have received Supplemental Nutrition Assistance (SNAP). Moreover, although the number of parents receiving publicly funded

substance abuse treatment services was small, significantly more HFO parents received treatment (4.9%, *n* = 47) compared to controls (3.2%, n = 27). Some of these findings were strengthened when using the Propensity Matched Control group. For example, using the matched controls, HFO families who received a visit were also significantly more likely to receive more days of TANF coverage and more days of SNAP supports, compared to matched controls. Moreover, for HFO families who received at least one visit compared to those without visits, there were significant differences favoring the visited group in several additional outcome domains, specifically, the percentage of families receiving employment services, child care subsidies, and the number of days of employment services received.

Contrary to expectations, there were no significant differences for treatment and control families in terms of access to, or utilization of, medical services. Levels of health insurance coverage may be difficult to impact in Oregon, as the overall rates of participation in publicly funded health insurance are high (84% of parents and 83% of children). The fact that both groups had generally high rates of coverage could also account for the lack of differences in terms of utilization of preventive health care services for children. There were no additional outcomes in this domain for the propensity score matched subsample. However, for the HFO group who received at least one visit, there were significant differences in a number of health-related areas, compared to HFO families who were not visited. Visited parents and children had more days of health insurance coverage, more total medical service claims, more medical billing costs (parents only), and the children received more well-baby visits.

In terms of subgroup differences, patterns were inconsistent. Particular risk factors appeared to be associated with relatively higher rates of reporting in the HFO, specifically frequent relationship troubles and maternal depression. Parents with more relationship problems at baseline also tended to stay in the program longer and receive more visits, compared to those without relationship problems. This is interesting given anecdotal reports of maltreatment reporting by home visitors as being associated with higher program drop out. In fact, parents who received more visits early in the program received a higher percentage of their expected visits, and tended to have more unfounded reports.

Overall, results are promising in terms of providing at least preliminary evidence that HFO services are having some of their intended effects. Results do, however, point to a number of areas where the program could be strengthened. First, given relatively consistent data that parents who received their HFO screening prenatally stayed in the program longer and received more services, prenatal screening (and potentially, service) is strongly recommended. Further, results of the HFNY study found stronger outcomes for parents who were enrolled and served early in their pregnancy, including later reductions in substantiated maltreatment.

Overall, program fidelity warrants additional focus, in particular family retention and delivery of Level 1 (weekly) services as intended. Moreover, the data speak to the importance of research

that can track outcomes for longer periods of time, especially in terms of understanding potential benefits of early surveillance of potentially unsafe circumstances (coupled with support from home visitors) and in terms of the potential for cost savings. Given the role that home visitors appear to play in terms of linking families to services, it is not unsurprising that in this short follow-up time frame, few areas of cost-savings were achieved. Longer term follow-ups will be important to understanding how, and whether, early and modest benefits to supporting families might lead to more substantive long-term benefits with measurable returns on investments.

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APPENDIX A. PARENT INTERVIEW SUB-STUDY

Results from a Randomized Trial of the Healthy Families Oregon Accredited Statewide System: Early Program Impacts on Parenting

Abstract

Home visiting programs are a promising early prevention model for improving parenting and reducing children's risk for child maltreatment. However, randomized studies of widely implemented ("scalable") home visiting models targeting infants and toddlers remain relatively scarce. Moreover, few studies provide much-needed information about whether home visiting services may be differentially effective for families with different social, demographic, and other characteristics. As part of a larger randomized study of the Healthy Families America home visiting program being conducted in Oregon (Healthy Families Oregon, HFO), we conducted a telephone survey with a randomly selected group of mothers to assess early outcomes at children's 1-year birthday. Eight hundred three first-time mothers (n=803, 402 randomly assigned to receive the HFO program and 401 control) were interviewed by telephone to assess the effects of the program on service utilization and on early parenting and child risk and protective factors associated with abuse and neglect. Results found that mothers assigned to the Healthy Families program group read more frequently to their young children, provided more developmentally supportive activities, and had less parenting stress. Children of these mothers were more likely to have received developmental screenings, and were somewhat less likely to have been identified as having a developmental challenge. Families with more baseline risk had better outcomes in some areas; however, generally there were not large differences in outcomes across a variety of subgroups of families. Implications of these results for understanding which short-term program impacts are most feasible for early prevention programs, as well as for understanding how these services might be better targeted are discussed.

Reference

Green, B. L., Tarte, J. M., Harrison, P. M., Nygren, M., & Sanders, M. B. (2014). Results from a randomized trial of the Healthy Families Oregon accredited statewide program: Early program impacts on parenting. *Children and Youth Services Review, 44*, 288–298.

APPENDIX B. ICD-9 CODES INDICATIVE OF MALTREATMENT

Diagnosis Code	Description
9955	Child maltreatment syndrome
99550	99550 - Child abuse NOS
99551	99551 - Child emotional/psych abuse
99552	99552 - Child neglect-nutrition
99553	99553 - Child sexual abuse
99554	99554 - Child physical abuse
99555	99555 - Shaken infant syndrome
99559	99559 - Child abuse/neglect NEC
E967	E967 - CHILD&ADULT BATTERING & OTH MALTX
E9670	E9670 - Abuse by father/stepfather/boyfriend
E9671	E9671 - Child abuse by person NEC
E9672	E9672 - Abuse by parent/stepparent/girlfriend
E9675	E9675 - Battering by sibling
E9676	E9676 - Battering by grandparent
E9677	E9677 - Batter by other relative
E9678	E9678 - Batter by non-relative
E9679	E9679 - Child abuse NOS
V6121	V6121 - Counseling for Victim of Child Abuse

APPENDIX C: COST STUDY COUNTY RESULTS

Table C1. Clackamas Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars[17]
Screenings	HS Budget and TICA	$85.98 per screening
Initial Engagement	HS Budget, TICA, and Program Director Survey	$56.07 per child
Home Visiting Services	HS Budget, TICA, and OCCF Database	$1,204.99 per child
Creative Outreach	HS Budget, TICA, and Program Director Survey	$27.48 per child
Value of Volunteer Resources	HS Budget and TICA	$1,259.21 per child
Admin Costs	HS Budget and TICA	$586.71 per child
Support/Overhead	HS Budget and TICA	$1,213.89 per child
Total Program Cost	HS Budget	$5,956.33 per child[18]

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[17] All program transaction costs were updated from Fiscal Year 2013 dollars with a 3.00% Consumer Price Index.

[18] Note that the total program cost per child is the annual cost per child served, NOT the cost per child for one full year of Healthy Families Oregon services. Also, the total program cost per child is NOT the sum of the seven program cost items. For example, each participant in HFO has a screening, but there are also numerous screenings for children who end up not entering the program. The other screening costs for non-participants (as well as Creative Outreach and initial engagement costs) are included in the total program cost per child.

Table C2. Deschutes Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$57.58 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$58.92 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$1,305.99 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$19.64 per child
Value of Volunteer Resources	HFO Budget and TICA	$628.40 per child
Admin Costs	HFO Budget and TICA	$1,126.54 per child
Support/Overhead	HFO Budget and TICA	$599.76 per child
Total Program Cost	HFO Budget	$4,302.52 per child

Table C3. Douglas Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$64.33 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$20.44 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$1,224.96 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$13.41 per child
Value of Volunteer Resources	HFO Budget and TICA	$50.48 per child
Admin Costs	HFO Budget and TICA	$856.91 per child
Support/Overhead	HFO Budget and TICA	$483.82 per child
Total Program Cost	HFO Budget	$2,502.97 per child

Table C4. Jackson Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$62.18 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$9.54 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$948.02 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$5.73 per child
Value of Volunteer Resources	HFO Budget and TICA	$157.65 per child
Admin Costs	HFO Budget and TICA	$803.62 per child
Support/Overhead	HFO Budget and TICA	$412.22 per child
Total Program Cost	HFO Budget	$3,348.23 per child

Table C5. Lane Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$43.42 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$67.42 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$627.94 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$32.18 per child
Value of Volunteer Resources	HFO Budget and TICA	$14.23 per child
Admin Costs	HFO Budget and TICA	$1,244.09 per child
Support/Overhead	HFO Budget and TICA	$811.96 per child
Total Program Cost	HFO Budget	$3,967.54 per child

Table C6. Marion Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$30.95 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$27.30 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$821.03 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$26.97 per child
Value of Volunteer Resources	HFO Budget and TICA	$290.86 per child
Admin Costs	HFO Budget and TICA	$734.83 per child
Support/Overhead	HFO Budget and TICA	$520.63 per child
Total Program Cost	HFO Budget	$2,956.79 per child

Table C7. Polk Program Costs

Transaction	Data Source	Cost in FY 2015 Dollars
Screenings	HFO Budget and TICA	$12.10 per screening
Initial Engagement	HFO Budget, TICA, and Program Director Survey	$5.46 per child
Home Visiting Services	HFO Budget, TICA, and OCCF Database	$663.68 per child
Creative Outreach	HFO Budget, TICA, and Program Director Survey	$5.46 per child
Value of Volunteer Resources	HFO Budget and TICA	$142.79 per child
Admin Costs	HFO Budget and TICA	$608.10 per child
Support/Overhead	HFO Budget and TICA	$914.11 per child
Total Program Cost	HFO Budget	$3,334.37 per child

Table C8. Detailed Outcome Cost for each Outcome Event

Transaction	Transaction Cost in FY 2015 Dollars	Cost Data Source
DHS Intake/Assessment	$562.32 per intake/assessment in 2013, updated to 2015 dollars with 3.00% CPI is $579.19	TICA and DHS Staffing Survey Data
Foster Care Days	$72.89 per day[19] in 2011, updated to 2015 dollars with 6.59% CPI is $77.69	3/8/11 Angela Long email and 3/5/11 Sue Miller email (from Oregon Department of Human Services, Children and Families Foster Care Program Manager Kevin George) and http://www.oregon.gov/DHS/aboutdhs/docs/brochure-dhs.pdf?ga=t
Supplemental Nutrition Assistance Program Payments	$236 avg. monthly benefit per household	http://www.oregon.gov/dhs/assistance/Branch%20District%20Data/Supplemental%20Nutrition%20Assistsance%20Program%20Activity.pdf
Temporary Assistance for Needy Families Payments	$506 maximum monthly benefit for a family of 3	http://www.oregon.gov/dhs/assistance/CASH/Pages/apply-tanf.aspx
Intimate Partner Violence	$1,289 per case in 1995, updated to 2015 dollars with 58.51% CPI is $2,043	*Costs of Intimate Partner Violence Against Women in the United States.* Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2003. (pages 2 and 15)[20]
Employment Assistance	$2,226 per participant for JOBS Plus program	http://www.oregon.gov/dhs/assistance/CASH/ReportsReviews/2013%20JOBS%20Plus%20Annual%20Report.pdf
Child Care Subsidy	$532 per month	http://www.oregon.gov/dhs/assistance/CHILD-CARE/Pages/rates.aspx Used Licensed Rate Maximum for a certified family rate for a toddler in Group Area B (the midpoint for all rate options)
Homelessness	$7,243 average cost per household per homelessness incidence in 2006, updated to 2015 dollars with 17.54% CPI is $8,513	Spellman, B., Khadduri, J., Sokol, B., Leopold, J., and Abt. Associates, Inc. (2010). *Costs Associated with First-Time Homelessness for Families and Individuals.* Prepared for U.S. Housing and Urban Development, Office of Policy Development and Research. (page ES-8) (http://www.huduser.org/publications/pdf/Costs_Homeless.pdf)

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[19] The cost per day of foster care used in this analysis includes the average cost of room and board, enhanced supervision, personal care services, one-time payments, staff time, etc., but it does not include the costs of residential treatment services, screenings, assessments, certification, or SSA transportation.

[20] Includes lost wages, productivity, and health care costs

Transaction	Transaction Cost in FY 2015 Dollars	Cost Data Source
Arrests	$209.25 per arrest in 2011, updated to 2015 dollars with 6.59% CPI is $223.04	TICA and statewide average from NPC's statewide Measure 57 drug court cost study
Person Crime Victimizations	$43,024 per person crime, updated to 2015 dollars	National Institute of Justice's Victim Costs and Consequences: A New Look (1996)
Enrollment in publicly funded health insurance (parent)	$433.39 per month	http://www.oregon.gov/oha/healthplan/DataReportsDocs/Capitated%20Rates%20Report%20%E2%80%93%20January%202015.pdf Used 19-44 age range and rate for January 2015
Enrollment in publicly funded health insurance (child)	$134.99 per month	http://www.oregon.gov/oha/healthplan/DataReportsDocs/Capitated%20Rates%20Report%20%E2%80%93%20January%202015.pdf Used 1-5 age range and rate for January 2015
Alcohol/Drug Group Counseling	$39.66 per session	
Methadone	$4.54 per day	http://www.oregon.gov/OHA/healthplan/pages/feeschedule.aspx October 2015 rates
Detox	$135.00 per day	
Residential Treatment	$120.00 per day	
Child Abuse and Neglect Victimizations *(Long Term Outcome)*	$169,636[21] average lifetime cost per nonfatal child maltreatment in 2010, updated to 2015 dollars with 10.33% CPI is $187,159	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 (http://dx.doi.org/10.1016/j.chiabu.2011.10.006)
High School/GED Attainment *(Long Term Outcome)*	$289,820 in average lifetime earnings and tax benefits in 2007, updated to 2015 dollars with 14.72% CPI is $332,482	Belfield, C. (2007). The Economic Losses from High School Dropouts in California. California Dropout Research Project. Teachers College: Columbia. (page 52)

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[21] This total includes adult medical costs, productivity losses, criminal justice costs and special education costs.

Table C9. Costs by Program vs. Control for Each HFO Site

Key cost-related home visiting program outcomes	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control
Child welfare involvement														
1. Number of founded (substantiated) child welfare reports[22]	0.09 $52.13	0.06 $34.75	0.04 $23.17	0.06 $34.75	0.07 $40.54	0.06 $34.75	0.06 $34.75	0.09 $52.13	0.10 $57.92	0.08 $46.34	0.06 $34.75	0.08 $46.34	0.07 $40.54	0.02 $11.58
2. Number of foster care days	19.28 $1497.86	15.03 $1167.68	5.20 $403.99	14.74 $1145.15	15.44 $1199.53	30.91 $2401.40	15.94 $1238.38	8.68 $674.35	21.80 $1693.64	11.58 $899.65	13.75 $1068.24	11.72 $910.53	5.36 $416.42	2.64 $205.10
3. Number of child abuse or neglect victims (unduplicated)[23]	0.23 $43046.57	0.20 $37431.80	0.12 $22459.08	0.14 $26202.26	0.28 $52404.52	0.24 $44918.16	0.20 $37431.80	0.20 $37431.80	0.22 $41174.98	0.15 $28073.85	0.20 $37431.80	0.17 $31817.03	0.21 $39303.39	0.07 $13101.13
Self-sufficiency/family stability														
4. Child Care Subsidies (ICS)	15.84 $277.20 444.83	25.72 $450.10 454.63	26.32 $460.60 433.63	14.88 $260.40 427.70	0.10 $1.75 494.64	8.94 $156.45 492.23	16.41 $287.18 486.83	15.26 $267.05 455.97	24.66 $431.55 496.97	30.23 $529.03 491.50	20.93 $366.28 483.52	19.29 $337.58 467.00	15.18 $265.65 496.24	6.82 $119.35 390.79

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[22] Although research suggests that unsubstantiated reports are also good indicators of child maltreatment, such information is often not available through administrative child welfare data systems.

[23] The term "child abuse victimization" in this table refers to the long-term effects and associated costs of a child abuse case. This is different from the "child welfare report" listed above, which refers to the cost of an investigation/report by a child welfare agency.

Key cost-related home visiting program outcomes	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control
5. Supplemental Nutrition Assistance Program (food stamp payments) (ICS)	$3451.88	$3527.93	$3364.97	$3318.95	$3838.41	$3819.70	$3777.80	$3538.33	$3856.49	$3814.04	$3752.12	$3623.92	$3850.82	$3032.53
6. Temporary Assistance for Needy Families (TANF) payments (ICS)	139.84	177.42	194.00	121.23	158.10	219.38	154.37	155.26	183.85	178.77	192.46	180.15	195.69	136.89
	$2326.94	$2952.27	$3228.16	$2017.27	$2630.78	$3650.48	$2568.72	$2583.53	$3059.26	$2974.73	$3202.53	$2997.70	$3256.28	$2277.85
7. Employment Assistance (ICS)	0.34	0.39	0.31	0.22	0.28	0.34	0.25	0.26	0.33	0.27	0.30	0.32	0.33	0.25
	$756.84	$868.14	$690.06	$489.72	$623.28	$756.84	$556.50	$578.76	$734.58	$601.02	$667.80	$712.32	$734.58	$556.50
8. Intimate Partner Violence (ICS)	0.07	0.07	0.07	0.04	0.00	0.04	0.05	0.05	0.03	0.05	0.05	0.03	0.03	0.00
	$143.01	$143.01	$143.01	$81.72	$0	$81.72	$102.15	$102.15	$61.29	$102.15	$102.15	$61.29	$61.29	$0
9. GED or HS diploma achieved (Parent Survey, PS)[24]	0.73	0.71	0.83	0.80	0.77	0.69	0.62	0.85	0.84	0.83	0.68	0.74	0.81	0.67
	($242711.86)	($236062.22)	($275960.06)	($265985.60)	($256011.14)	($229412.58)	($206138.84)	($282609.70)	($279284.88)	($275960.06)	($226087.76)	($246036.68)	($269310.42)	($222762.94)
	0.08	0.02	0.04	0.02	0.06	0.04	0.00	0.02	0.01	0.01	0.02	0.06	0.06	0.00

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[24] GED and Homelessness data were obtained from a Parent Interview survey, which is a smaller subsample.

Key cost-related home visiting program outcomes	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control
10. Homelessness (ever homeless) (PS)	$681.04	$170.26	$340.52	$170.26	$510.78	$340.52	$0	$170.26	$85.13	$85.13	$170.26	$510.78	$510.78	$0
Health care														
11. Number of emergency room visits (parent) (DMAP)	0.13	0.16	0.10	0.09	0.18	0.17	0.05	0.10	0.09	0.09	0.06	0.06	0.10	0.13
	$2.63	$0.98	$0	$4.04	$0	$0	$0	$0	$0	$0	$0.17	$1.30	$0	$0
12. Number of emergency room visits (child)	0.18	0.18	0.06	0.05	0.26	0.15	0.05	0.12	0.05	0.06	0.07	0.08	0.09	0.02
	$0.50	$1.43	$0.79	$0	$4.08	$4.02	$0	$2.41	$0	$0	$0.63	$2.73	$4.05	$0
13. Total claims paid (minus emergency room visits) (parent)	3.01	2.37	3.78	2.59	3.48	3.25	4.59	2.71	7.64	4.96	3.44	1.96	3.16	1.31
	$963.18	$672.51	$1072.73	$417.36	$768.20	$568.47	$1080.53	$534.22	$1204.57	$834.34	$641.08	$1182.21	$758.26	$471.67
14. Total claims paid (minus emergency room visits) (child)	3.12	3.44	3.54	2.84	4.96	3.64	2.81	2.89	4.90	3.49	4.56	3.72	2.87	4.86
	$736.80	$957.60	$746.38	$563.32	$1827.67	$910.87	$838.14	$681.35	$887.18	$516.96	$1027.27	$1037.05	$512.28	$827.38

Key cost-related home visiting program outcomes	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control
15. Enrollment in publicly funded health insurance (parent)	410.66	458.18	489.17	426.99	443.68	474.59	438.03	465.62	454.96	471.76	467.30	447.48	486.22	410.82
	$5856.01	$6533.65	$6975.56	$6088.88	$6326.88	$6767.65	$6246.31	$6639.74	$6487.73	$6727.30	$6663.70	$6381.06	$6933.50	$5858.29
16. Enrollment in publicly funded health insurance (child)	590.12	642.60	634.01	626.28	664.65	618.81	644.42	639.96	642.80	653.07	629.73	630.68	604.54	591.57
	$2620.13	$2853.14	$2815.00	$2780.68	$2951.05	$2747.52	$2861.22	$2841.42	$2854.03	$2899.63	$2796.00	$2800.22	$2684.16	$2626.57

Substance Abuse Treatment

	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
17. Detox days (CPMS)	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.00
	$0	$10.80	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1.35	$8.10	$0
18. Methadone treatment days (CPMS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0.73	$0	$0	$0
19. Residential (inpatient) treatment days (CPMS)	1.80	0.12	0.00	3.30	0.00	1.47	3.59	0.77	3.01	1.25	0.30	1.28	0.00	0.00
	$216.00	$14.40	$0	$396.00	$0	$176.40	$430.80	$92.40	$361.20	$150.00	$36.00	$153.60	$0	$0

Key cost-related home visiting program outcomes	Clackamas		Deschutes		Douglas		Jackson		Lane		Marion		Polk	
	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control	Program	Control
Criminal justice involvement														
20. Number of arrests (OJIN)	0.06	0.07	0.07	0.08	0.03	0.09	0.14	0.09	0.02	0.02	0.05	0.05	0.13	0.05
	$13.38	$15.61	$15.61	$17.84	$6.69	$20.07	$31.23	$20.07	$4.46	$4.46	$11.15	$11.15	$29.00	$11.15
21. Number person crime victimiza-tions (OJIN)	0.01	0.01	0.01	0.04	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.04	0.00
	$430.24	$430.24	$430.24	$1720.96	$0	$430.24	$430.24	$430.24	$0	$430.24	$430.24	$860.48	$1720.96	$0
TOTAL OUTCOME COSTS														
	$179,639.52	$177,825.92	$232,790.19	$220,276.04	$182,876.98	$161,627.32	$148,223.09	$225,969.49	$216,330.87	$227,271.19	$167,684.86	$192,588.04	$208,220.36	$193,663.84