The Massachusetts Healthy Families Evaluation Phase 2 (MHFE-2)

Time 6 Summary Report





Tufts Interdisciplinary Evaluation Research (TIER)

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1. Introduction

The statewide Healthy Families Massachusetts (HFM) home visiting program, first implemented in 1998, promotes positive and effective parenting among young mothers and their firstborn children. Offered prenatally until the child turns three years of age, HFM services include voluntary, in-home parenting support, goal-setting activities, developmental and health screenings, and additional service referrals. HFM intends to prevent child abuse and neglect; achieve optimal health, growth, and development in infancy and early childhood; encourage educational attainment, job, and life skills among parents; prevent repeat pregnancies during the teen years; promote parental health and well-being; and as its graduates enter early childhood and elementary school settings, increase mothers' knowledge of, and ability to navigate, these systems. To date, HFM has served approximately 30,000 young families.

Since its early days, HFM has been the subject of ongoing independent evaluation, conducted by a team of researchers from Tufts University. This report details findings from the second phase of this longstanding evaluation project, the Massachusetts Healthy Families Evaluation—Phase 2 (MHFE-2). MHFE-2 is a longitudinal, randomized controlled trial (RCT), begun in 2008, to determine the extent to which HFM achieved its goals, to understand mothers' experiences with parenting, and to explore program processes—how the program was implemented across sites. Over 700 mothers and their children participated in MHFE-2.

Beginning when mothers were pregnant or newly parenting, MHFE-2 participants completed telephone and in-person interviews, and granted access to state administrative data. Data were first collected about one month following HFM enrollment (Time 1, T1), with follow-ups completed one (T2), two (T3), five (T4), and six (T5) years later. To date, MHFE-2 has demonstrated favorable HFM program effects on mothers' mental health, substance use, housing stability, and economic well-being.[1-3] This report focuses on findings from the sixth wave of data collection (T6), approximately 8 years after HFM enrollment, when mothers' firstborn children were about 7.5 years of age.

2. Study Design

MHFE-2 is rooted in Jacobs's Five-Tiered Approach to evaluation,[4,5] a model that aligns evaluation activities with the developmental stage of the program being evaluated, moving from needs assessments (Tier One) to process and implementation evaluations (Tiers Two and Three), to assessment of impact (Tiers Four and Five), with an RCT being the final stage of evaluation. MHFE-2 is a Tier Five evaluation, through the use of random assignment of HFM-eligible young mothers to either the home visiting program group or a control group at the time of study enrollment, but has included a detailed process and implementation evaluation in earlier reports.[1]

Eligibility requirements for participating in MHFE-2 included being a consenting English- or Spanish-speaking female aged 16 years or older who had not received any HFM services in the past (i.e., no transfers or re-enrollments) seeking to enroll in HFM from 2008 to 2009 in one of 18 program catchment areas. All consenting participants were randomly assigned to either the program group, who were offered home visiting services (HVS), or the control group who were offered referrals and information only (RIO); random

assignment occurred at the program site level at the time of enrollment through an algorithm in its web-based management information system. To minimize denial of services, the control group was capped at 40% of the sample, and members of this group were referred to other service providers and received monthly child development and parenting information packets.

As detailed in Figure 1, a total of 837 participants initially consented to the study and were randomized, with 704 (61.5% program, 38.5% control; 35.2% parenting at enrollment) completing a T1 telephone interview or signing a state administrative data release. The integrative sample (see Figure 1) refers to participants who completed an additional in-home interview and assessment available at T1-T5. The 133 mothers lost between the consent/randomization phase and the baseline survey asked to be withdrawn or were deemed ineligible by Tufts (n = 91), or were never located by the Tufts team (n = 42). Mothers assigned to the program group received, on average, 24.15 (SD = 26.37, median = 14) home visits over 14.74 months (SD = 12.78, median = 9.76); 14.1% received no home visits.

The sampling frame for T6 was the 684 mothers who completed the T1 telephone interview, of which 59.6% completed the T6 telephone interview and signed a consent allowing access to their state administrative data from the Massachusetts Departments of Transitional Assistance (DTA), Elementary and Secondary Education (DESE), and Children and Families (DCF). Only data from the T6 interviews were analyzed for this report. The TIER team will continue to analyze administrative data for program impacts as new data are received. Further details about the MHFE-2 sample over time can be found in Section 3.

2.1. Telephone Interview

The T6 telephone interview was 45-minutes in length and included items aimed at capturing participants' background and demographic characteristics, as well as outcomes related to the HFM goal areas. More specifically, the telephone interviews examined participants' living arrangements and housing stability, current family resources and financial circumstances, relationship status and involvement of the child's father, mothers' educational attainment, and maternal and child health (e.g., diagnosis or treatment of asthma and diabetes). Information about participants' use of public and social services other than HFM was elicited to contextualize the impact of HFM services relative to the array of other services that mothers in both the HVS and RIO groups may have received. In addition, standardized questionnaires were administered, collecting information about parenting behaviors, personal functioning and well-being (e.g., maternal depression, child physical and school functioning, child externalizing and internalizing behavior), and family involvement in school. For more information about the measures used, see Appendix B.

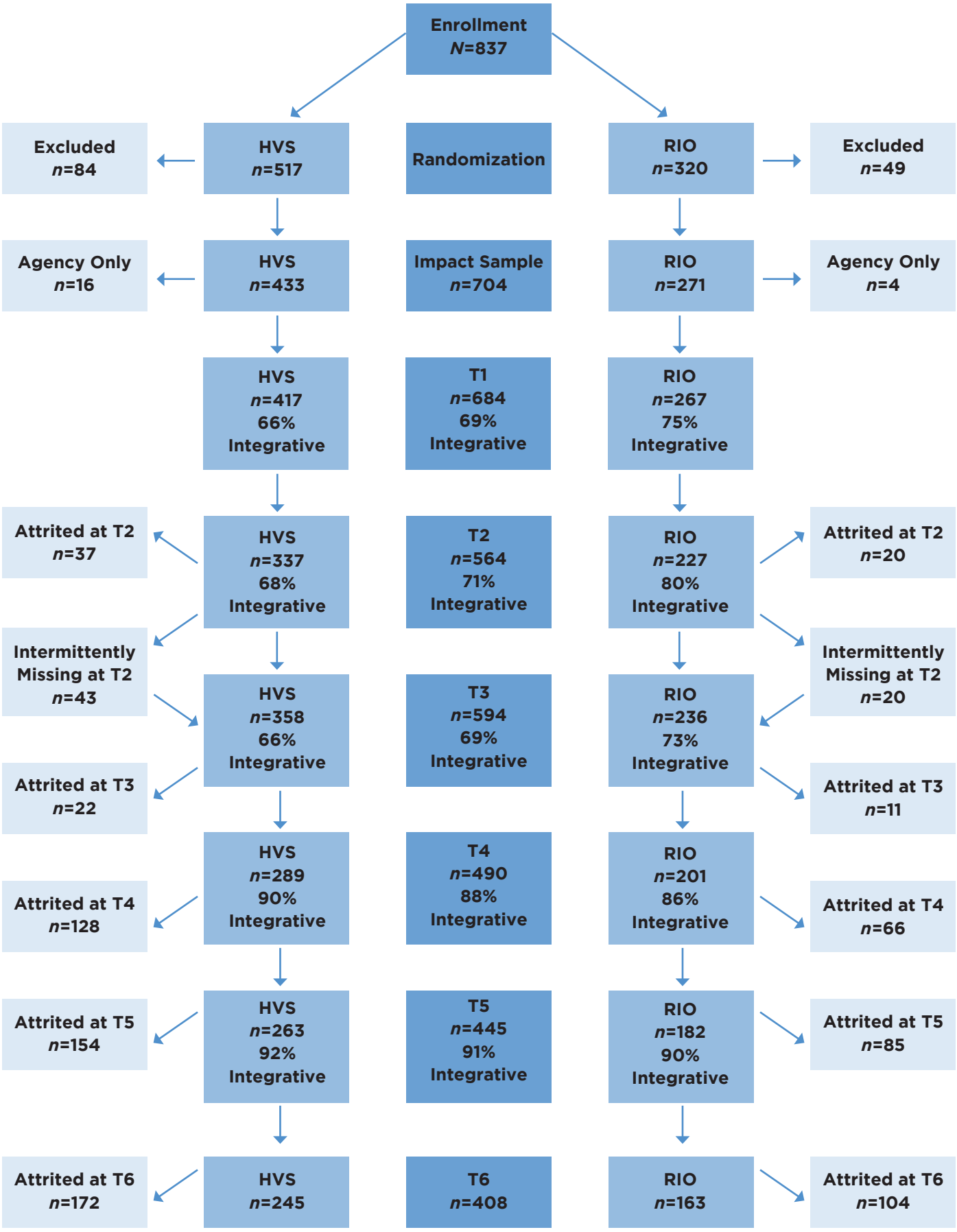


Figure 1. Sample Recruitment and Retention

2.2. Analytic Approach

Keeping in line with previous analyses, program effects were estimated using an intent to treat (ITT) approach, comparing T6 outcomes between the HVS program group and the RIO control group based on random assignment status, regardless of whether mothers in the HVS group took up the home visiting program and received home visits. Recall, 14.1% of HVS mothers did not receive any home visits, suggesting that the ITT estimates are a lower-bound estimate of program effects, but perhaps more closely reflect the reality of implementing the intervention at the population level, where take-up and dosage vary between participants.

Analyses were conducted in Stata 15.0, in which each outcome was regressed on the program status indicator variable (1 = HVS, 0 = RIO). Ordinary least squares (OLS) regression was used with continuous outcomes and logistic regression for binary outcomes. All models included a standard list of control variables to improve precision of the estimates of program effects, including maternal age at target child's (TC) birth (in years), maternal race/ethnicity (non-Hispanic White [omitted], non-Hispanic Black, Hispanic, non-Hispanic other), TC's age at the T6 phone interview (in years), and TC's sex (1 = female, 0 = male). All main effects analyses utilized Stata's survey data commands in order to incorporate Inverse Probability Weights (IPW) to reweight the data to be representative of the original T1 sample and adjust for attrition over time (see Appendix A).

3. MHFE-2 Sample

A total of 684 mothers (*n* = 417 HVS, *n* = 267 RIO) participated in MHFE-2 at Time 1 (T1). Of this original sample, 59.6% (*n* = 408) participated in T6, with comparable proportions of HVS and RIO mothers retained (HVS = 58.8%, RIO = 61.0%).

3.1. Attrition Analyses

Mothers who participated in T6 were compared with mothers who did not participate on T1 background and demographic characteristics, as well as state administrative data from DTA, DCF, and DPH measured prior to study enrollment, for the overall sample and within the program and control groups, respectively (see Table 1).

With respect to the overall sample, mothers who were retained and those who were not differed on a few characteristics. Mothers who participated at T6 were more likely to be non-Hispanic Black and English-speaking than mothers lost to attrition. They were also more likely to have lived with an adult relative and reported depressive symptomatology, and less likely to have dropped out of high school and received food stamps at T1 than mothers who left the study. Similar to the overall sample, HVS mothers who participated at T6 were more likely to have lived with an adult relative, and less likely to have dropped out of high school or received food stamps at T1 than HVS mothers lost to attrition. They were also more likely to be English speakers. No statistically significant differences by retention status were observed for RIO mothers, specifically.

Finally, specifically within HVS mothers, we examined whether there were differences in HFM utilization according to T6 retention status, including the total number of home visits received and the duration of enrollment. HVS mothers who participated at T6 received a greater number of home visits (*M* = 28.18, *SD* = 28.60, median = 17) and were enrolled in HFM longer (*M* = 16.77 months, *SD* = 13.53, median = 10.95) than HVS mothers lost to attrition (*M* = 18.90 home visits, *SD* = 22.14, median = 10; *M* = 12.09 months, *SD* = 11.24, median = 8.14).

3.2. Program Group Equivalency

To ensure that the HVS and RIO groups were equivalent and that random assignment still held within the T6 sample, mothers in the two program groups were compared on the T1 background and demographic characteristics and state administrative data. Overall, few differences emerged between HVS and RIO mothers at T6. In comparison to HVS mothers, RIO mothers were more likely to have been born in the U.S. and less likely to have been born in Puerto Rico; a difference that was observed at baseline (T1) as well (see Table 2).

Table 1. Comparison of Retained and Attrited Participants on Background and Demographic Characteristics at Baseline (N = 684)

	HVS			RIO			Overall		
	Retained (*n* = 245)	Attrited (*n* = 172)	Total (*n* = 417)	Retained (*n* = 163)	Attrited (*n* = 104)	Total (*n* = 267)	Retained (*n* = 408)	Attrited (*n* = 276)	Total (*N* = 684)
Background and demographic characteristics									
Maternal age at study enrollment (years)	18.63 (1.34)	18.56 (1.29)	18.60 (1.32)	18.67 (1.25)	18.62 (1.26)	18.65 (1.25)	18.65 (1.31)	18.58 (1.28)	18.62 (1.29)
Race/ethnicity									
White, non-Hispanic	32.7%	36.6%	34.3%	38.7%	46.2%	41.6%	35.0%	40.2%	37.1%
Black, non-Hispanic	23.3%	16.3%	20.4%	21.5%	12.5%	18.0%	22.5%	14.9%	19.4%*
Hispanic	38.8%	37.8%	38.4%	31.9%	26.9%	30.0%	36.0%	33.7%	35.1%
Other, non-Hispanic	5.3%	9.3%	7.0%	8.0%	14.4%	10.5%	6.4%	11.2%	8.3%*
Preferred language									
English	77.0%	67.9%	73.2%*	75.9%	76.7%	76.2%	76.5%	71.2%	74.4%
Spanish	4.1%	7.7%	5.6%	3.7%	2.9%	3.4%	4.0%	5.9%	4.7%
English and Other	18.5%	23.2%	20.4%	19.8%	20.4%	20.0%	19.0%	22.1%	20.3%
Other	0.4%	1.2%	0.7%	0.6%	0.0%	0.4%	0.5%	0.7%	0.6%
Place of birth									
United States	78.0%	77.9%	77.9%	89.0%	84.6%	87.3%	82.4%	80.4%	81.6%
Puerto Rico	7.3%	10.5%	8.6%	2.5%	4.8%	3.4%	5.4%	8.3%	6.6%
Outside of United States	14.7%	11.6%	13.4%	8.6%	10.6%	9.4%	12.3%	11.2%	11.8%
Born in Massachusetts	67.3%	73.1%	69.7%	69.3%	66.3%	68.2%	68.1%	70.5%	69.1%
Relationship status									
Single	26.1%	32.3%	28.7%	27.2%	24.3%	26.0%	26.6%	29.3%	27.6%
Dating target child's father	19.9%	15.0%	17.9%	14.2%	23.3%	17.7%	17.6%	18.1%	17.8%
Engaged/married to target child's father	48.5%	45.5%	47.3%	50.0%	43.7%	47.5%	49.1%	44.8%	47.4%
Dating someone else	5.4%	7.2%	6.1%	8.6%	8.7%	8.7%	6.7%	7.8%	7.1%
Lives with an adult relative	77.5%	67.1%	73.2%*	74.7%	69.9%	72.8%	76.4%	68.1%	73.1%*
High school/GED status									
Dropped out	19.9%	30.2%	24.1%*	17.3%	22.3%	19.2%	18.9%	27.2%	22.2%*
In progress	39.4%	32.5%	36.6%	38.9%	35.9%	37.7%	39.2%	33.8%	37.0%
Completed	40.7%	37.3%	39.3%	43.8%	41.7%	43.0%	41.9%	39.0%	40.7%
Currently employed	26.4%	22.0%	24.6%	22.8%	27.2%	24.5%	25.0%	24.0%	24.6%
Moved at least once in past year	52.1%	58.9%	54.9%	58.1%	67.0%	61.6%	54.5%	62.0%	57.5%
Below adequate basic family resources	18.5%	21.0%	19.5%	20.3%	18.9%	19.8%	19.2%	20.2%	19.6%
Depression symptoms above clinical cutoff	38.0%	28.9%	34.3%	46.0%	37.9%	42.8%	41.2%	32.3%	37.6%*
Parenting at study enrollment (vs. pregnant)	33.9%	36.0%	34.8%	37.4%	30.8%	34.8%	35.3%	34.1%	34.8%
Maternal age at first birth (years)	18.79 (1.31)	18.71 (1.27)	18.76 (1.29)	18.81 (1.24)	18.77 (1.21)	18.80 (1.23)	18.80 (1.28)	18.74 (1.25)	18.77 (1.27)
Target child's sex (male)	51.8%	55.6%	53.4%	52.8%	54.5%	53.4%	52.2%	55.2%	53.4%
State agency data									
US Census 2010 block median neighborhood income ($1,000s)	48.33 (27.73)	46.21 (23.37)	47.46 (26.02)	48.73 (26.21)	48.76 (23.61)	48.74 (25.18)	48.49 (27.10)	47.17 (23.45)	47.96 (25.68)
Received DTA cash assistance before enrollment	19.6%	22.4%	20.7%	16.7%	17.6%	17.0%	18.4%	20.5%	19.3%
Received DTA food stamps before enrollment	13.1%	23.6%	17.2%*	19.1%	18.6%	18.9%	15.5%	21.7%	17.9%*
DCF substantiated child maltreatment report (mother)[1]	51.5%	55.5%	53.2%	51.3%	45.6%	49.2%	51.4%	51.9%	51.6%
DCF substantiated child maltreatment report before study enrollment (target child)[2]	9.6%	5.2%	7.8%	15.0%	13.3%	14.4%	11.9%	8.0%	10.4%
DPH adequate prenatal care[2]	69.4%	78.8%	73.4%	74.5%	82.8%	77.5%	71.5%	80.2%	75.0%
DPH target child low birthweight[2]	8.3%	9.4%	8.8%	13.5%	10.3%	12.3%	10.5%	9.8%	10.2%
DPH target child premature birth[2]	6.9%	7.5%	7.2%	13.5%	10.3%	12.3%	9.7%	8.5%	9.2%

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.
HVS = program group, home visiting services; RIO = control group, referral and information only; DTA = Department of Transitional Assistance; DCF = Department for Children and Families; DPH = Department of Public Health.
*Difference between retained and attrited significant at $p < .05$ or less.
[1]Analysis included only mothers who were born in Massachusetts.
[2]Analysis included only mothers who had given birth to the target child at the time of study enrollment.

Table 2. Background and Demographic Characteristics at Baseline by Home Visiting Program Group for Time 6 Sample (Equivalency Testing)

	HVS (*n* = 245)	RIO (*n* = 163)	Overall (*n* = 408)
Background and demographic characteristics			
Maternal age at study enrollment (years)	18.63 (1.34)	18.67 (1.25)	18.65 (1.31)
Race/ethnicity			
White, non-Hispanic	32.7%	38.7%	35.0%
Black, non-Hispanic	23.3%	21.5%	22.5%
Hispanic	38.8%	31.9%	36.0%
Other, non-Hispanic	5.3%	8.0%	6.4%
Preferred language			
English	77.0%	75.9%	76.5%
Spanish	4.1%	3.7%	4.0%
English and Other	18.5%	19.8%	19.0%
Other	0.4%	0.6%	0.5%
Place of birth			
United States	78.0%	89.0%	82.4%*
Puerto Rico	7.3%	2.5%	5.4%*
Outside of United States	14.7%	8.6%	12.3%
Born in Massachusetts	67.3%	69.3%	68.1%
Relationship status			
Single	26.1%	27.2%	26.6%
Dating target child's father	19.9%	14.2%	17.6%
Engaged/married to target child's father	48.5%	50.0%	49.1%
Dating someone else	5.4%	8.6%	6.7%
Lives with an adult relative	77.5%	74.7%	76.4%
High school/GED status			
Dropped out	19.9%	17.3%	18.9%
In progress	39.4%	38.9%	39.2%
Completed	40.7%	43.8%	41.9%
Currently employed	26.4%	22.8%	25.0%
Moved at least once in past year	52.1%	58.1%	54.5%
Below adequate basic family resources	18.5%	20.3%	19.2%
Depression symptoms above clinical cutoff	38.0%	46.0%	41.2%
Parenting at study enrollment (vs. pregnant)	33.9%	37.4%	35.3%
Maternal age at first birth (years)	18.79 (1.31)	18.81 (1.24)	18.80 (1.28)
Target child's sex (male)	51.8%	52.8%	52.2%
State agency data			
US Census 2010 block median neighborhood income ($1,000s)	48.33 (27.73)	48.73 (26.21)	48.49 (27.10)
Received DTA cash assistance before enrollment	19.6%	16.7%	18.4%
Received DTA food stamps before enrollment	13.1%	19.1%	15.5%
DCF substantiated child maltreatment report (mother)[1]	51.5%	51.3%	51.4%
DCF substantiated child maltreatment report before study enrollment (target child)[2]	9.6%	15.0%	11.9%
DPH adequate prenatal care[2]	69.4%	74.5%	71.5%
DPH target child low birthweight[2]	8.3%	13.5%	10.5%
DPH target child premature birth[2]	6.9%	13.5%	9.7%

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.
HVS = program group, home visiting services; RIO = control group, referral and information only; DTA = Department of Transitional Assistance; DCF = Department for Children and Families; DPH = Department of Public Health.
*Difference between HVS and RIO significant at $p < .05$ or less.
[1]Analysis included only mothers who were born in Massachusetts.
[2]Analysis included only mothers who had given birth to the target child at the time of study enrollment.

3.3. Sample Description

Descriptive statistics for the T6 sample can be found in Table 3. On average, mothers were 26.58 years old (*SD* = 1.37) and were of diverse racial/ethnic backgrounds. Approximately 35% of mothers self-reported as non-Hispanic White, 22.5% as non-Hispanic Black, 36% as Hispanic, and 6.4% as other race/ethnicity. The majority of mothers were born in the United States (82.4%), with 5.4% born in Puerto Rico and 12.3% born outside of the United States. In addition, 68.1% were born in Massachusetts. Most mothers were no longer with the father of their eldest child by T6, with 33.1% reporting as single, 45.5% reporting as in a relationship with someone other than the child's father, and only 21.4% reporting as in a relationship with their eldest child's father. A large majority (85.4%) of mothers had completed high school or their GED by T6. Approximately 28% had moved at least once in the past year, and a little less than 8% reported having below adequate resources to meet their family's basic needs. At T6, children were, on average, 7.78 years old (*SD* = 0.58), and a little over half (52.2%) were boys. Around 37% of children at T6 had at least one substantiated report of maltreatment on file at DCF in their lifetimes, and 2.2% of mothers had lost permanent custody of their eldest child.

Table 3. Background and Demographic Characteristics by Home Visiting Program Group at Time 6

	HVS (*n* = 245)	**RIO (*n* = 163)**	**Overall (*n* = 408)**
Maternal age (years)	26.58 (1.40)	26.56 (1.34)	26.58 (1.37)
Race/ethnicity			
White, non-Hispanic	32.7%	38.7%	35.0%
Black, non-Hispanic	23.3%	21.5%	22.5%
Hispanic	38.8%	31.9%	36.0%
Other, non-Hispanic	5.3%	8.0%	6.4%
Place of birth			
United States	78.0%	89.0%	82.4%*
Puerto Rico	7.3%	2.5%	5.4%*
Outside of United States	14.7%	8.6%	12.3%
Born in Massachusetts	67.3%	69.3%	68.1%
Relationship status			
Single	34.4%	31.1%	33.1%
In a relationship with target child's father	22.4%	19.9%	21.4%
In a relationship with someone else	43.2%	49.1%	45.5%
Completed high school/GED	86.0%	84.5%	85.4%
Moved once or more (past year)	27.7%	28.6%	28.0%
Below adequate basic family resources	7.2%	8.4%	7.7%
Target child age	7.79 (0.55)	7.75 (0.61)	7.78 (0.58)
Target child sex (male)	51.8%	52.8%	52.2%
Substantiated child maltreatment report (target child)	35.8%	39.1%	37.2%
Permanent custody loss (target child)	2.5%	1.9%	2.2%

Note. Table presents *M (SD)* for continuous variables and % for categorical variables. Time non-invariant variables are assessed at Time 6.
HVS = program group, home visiting services; RIO = control group, referral and information only.
*Difference between HVS and RIO significant at $p < .05$ or less.

4. Program Impacts at Time 6

The following section presents program impacts using data from the T6 interviews categorized by the HFM goal areas. Main effects were found in two of the five HFM goal areas assessed (Goal area 4 was not assessed; see below). We report odds ratios for binary outcomes and unstandardized regression coefficients and standard errors for continuous outcomes, along with 95% confidence intervals (see Tables 4-5). Detailed information and descriptive statistics on all measures used in the study can be found in Appendix B.

4.1. Goal 1: Prevent Child Abuse and Neglect by Supporting Positive, Effective Parenting

HFM's first goal area focuses on supporting parenting to prevent child maltreatment. To assess impacts in this area, analyses included indicators of parenting stress. No significant main effects were found.[a]

4.2. Goal 2: Achieve Optimal Health, Growth, and Development in Infancy and Early Childhood

HFM's second goal area focuses on child well-being and development. To assess program impacts in this domain, we examined the following maternal reported indicators of children's well-being: children's diagnosed health conditions (e.g., asthma, obesity/overweight) in the past year; whether children had an Individualized Education Plan (IEP) or a 504 plan to ensure appropriate educational accommodations and services for those with special needs; and whether children were currently enrolled in afterschool activities. Mothers also reported on their children's physical health using the Pediatric Quality of Life Inventory (PedsQL), as well as children's socioemotional and behavioral functioning via the Strengths and Difficulties Questionnaire (SDQ).

HVS mothers reported that their children displayed higher physical functioning than children of RIO mothers (M_{HVS} = 93.91, M_{RIO} = 91.91, Cohen's d = 0.20). In addition, children of HVS mothers were significantly less likely to be diagnosed with asthma in the past year than children of RIO mothers (7.2% HVS, 14.3% RIO). Finally, children of HVS mothers were significantly more likely to be enrolled in an afterschool program than children of RIO mothers (54.6% HVS, 41.9% RIO).

Table 4. HFM Impacts in Goal 2: Achieve Optimal Health, Growth, and Development in Infancy and Early Childhood

	B (SE)	***OR***	***95% CI***
Pediatric Quality of Life – Physical Functioning	2.53 (1.26)		0.05, 5.01
Asthma (Diagnosed Past Year)		0.46	0.23, 0.90
TC in Afterschool Program		1.71	1.08, 2.71

Note. We present unstandardized regression coefficients (*B*) and standard errors (*SE*) with 95% confidence intervals (*CI*) for continuous outcomes and Odd Ratios (*OR*) with 95% confidence intervals (*CI*) for binary outcomes.

4.3. Goal 3: Encourage Educational Attainment, Job, and Life Skills Among Parents

HFM's third goal focuses on supporting parents' economic self-sufficiency. To assess this goal area, analyses included indicators of residential mobility; homelessness; access to basic resources; educational attainment (e.g., completion of high school or college); mother's salary and employment; and receipt of cash assistance, food stamps, and public housing. No significant main effects were found.

4.4. Goal 4: Prevent Repeat Pregnancies During the Teen Years

Because mothers who participated in the evaluation are no longer in adolescence, no analyses were included for this goal area.

4.5. Goal 5: Promote Parental Health and Well-Being

To assess goal area 5, we examined the following maternal-reported indicators of parental health and well-being: maternal depression; whether mothers had been treated for anxiety or substance abuse in the past year; and whether mothers had been treated in the past year for diabetes, high blood pressure, and asthma. Two significant effects were found. Mothers in the HFM program group were less likely to have been treated for asthma (11.3% HVS, 18.8% RIO) and substance abuse issues (1.3% HVS, 6.1% RIO) in the past year than mothers in the control group.

[a] No additional DCF data have been received since previously reported analyses.[2] The TIER team will continue to monitor longer-term program impacts on child maltreatment in future years

Table 5. HFM Impacts in Goal 5: Promote Parental Health and Well-Being

	OR	95% *CI*
Asthma (Treated Past Year)	0.54	0.29, 1.00
Substance Abuse (Treated Past Year)	0.20	0.06, 0.68

Note. We present Odd Ratios (*OR*) with 95% confidence intervals (*CI*).

4.6. Goal 6: Increase Mothers' Knowledge and Ability to Navigate Early Childhood Systems

To assess goal area 6, analyses included indicators of family involvement in school; mothers' and children's visits to the emergency room; and children's well visits and dental visits. No significant main effects were found.

5. Discussion

Healthy Families Massachusetts (HFM) has had a positive influence in the lives of young families across the state. Adding to previously reported favorable program effects on parenting stress and maternal mental health and economic self-sufficiency, we revealed HFM impacts on both child and maternal health at Time 6,[1,2] nearly 10 years after participants initially enrolled in the program. Table 6 summarizes the favorable program effects to date by evaluation time point. Our findings add to the ever-expanding home visiting evidence base and are testament to the potential of home visiting in its various roles: offering guidance and emotional support to parents, providing concrete supports, encouraging tenacity in the face of adversity, and helping mothers navigate complex service requirements. Below we offer a more detailed discussion of HFM program effects over the course of MHFE-2, contextualized by findings from other home visiting evaluations.

Table 6. Summary Table of HFM Program Main Effects by MHFE-2 Time Point

	Time 2	Time 3*	Time 4	Time 5	Time 6
Goal 1: Prevent Child Abuse and Neglect by Supporting Positive, Effective Parenting					
Parenting stress	✓	✓			
Goal 2: Achieve Optimal Health, Growth, and Development in Infancy and Early Childhood					
Working memory			✓		
Parents' involvement in literacy activities				x	
Physical functioning					✓
Asthma					✓
Participation in after-school programs					✓
Goal 3: Encourage Educational Attainment, Job, and Life Skills Among Parents					
College attendance		✓			
Homelessness				✓	
Goal 4: Prevent Repeat Pregnancies During the Teen Years					
Condom use	✓				
Goal 5: Promote Parental Health and Well-Being					
Maternal depression			✓		
Substance use		✓		✓	✓
Asthma					✓
Goal 6: Increase Mothers' Knowledge and Ability to Navigate Early Childhood Systems					
Advocacy skills				✓	
Emergency room use			✓		

Note. * = Time 3 was the end of HFM services; ✓= favorable program effect; x = unfavorable program effect; shaded cells indicate that the outcome was not assessed at that time point.

5.1. Maternal parenting stress and mental health

Results from MHFE-2 revealed HFM program impacts on mothers' parenting stress and depression. Indeed, mothers who participated in the program scored lower on indicators of parenting stress (PSI) during infancy and toddlerhood, with effects at later time points concentrated among mothers who had lower levels of family support. Similarly, other evaluations of home visiting programs (e.g. Early Head Start, Healthy Families Alaska, Healthy Families San Diego, Healthy Families New York) have reported reductions in parenting stress;[6,7] however, effects have been variable overall, with some evaluations finding no effect.[8]

Findings from a longitudinal analysis of MHFE-2 data from Time 2 to Time 5 revealed that, relative to mothers in the control group, program mothers displayed fewer depressive symptoms both pre- and post-birth, with a sizable program effect apparent at T4 when children were approximately 5 years of age. Responding to earlier evidence indicating high rates of depression among HFM participants,[9] the program has spent the past decade strengthening their capacity to address this issue, implementing trainings, curricula, and program enhancements aimed at better equipping home visitors to screen for, identify, and make appropriate referrals related to depression. There have been similar findings on the effect of home visiting programs' reductions in depression[6], with these impacts most apparent around the time of program receipt, perhaps closer to the postpartum period. These findings, as well as those found in MHFE-2, suggest that home-visiting programs may have a more immediate impact on maternal mental health in children's early years and that these effects may diminish further out from program completion.[8]

MHFE-2 results also showed consistent program impacts on maternal substance abuse. Specifically, program mothers were less likely to report using (Times 3 and 5) and seeking treatment for substances (Time 6). While the latter finding regarding treatment is more ambiguous, we argue that it fits the previously reported pattern of lower problematic substance use for mothers who received home visiting. These findings are consistent with results from other evaluations of home visiting programs, which demonstrate positive effects on the reduction of substance abuse, such as problematic levels of alcohol consumption.[10,11] It should also be noted that the positive impacts of other home visiting programs, as well as the sustained impacts of the HFM program on maternal substance abuse, are particularly salient in light of the nationwide opioid crisis, of which Massachusetts has been particularly hard hit.[12] Furthermore, there is some evidence that reductions in maternal substance use have the potential to not only increase a mother's future earnings,[13] but also decrease the heavy cost burden to communities of providing resources to combat the opioid crisis.[14]

5.2. Maternal health

MHFE-2 results showed favorable HFM program effects on several health indicators. Mothers who participated in HFM were less likely to be treated for asthma at Time 6 than mothers in the control group, perhaps suggesting better management and control of this chronic condition among mothers in the HFM program group. In addition, at Time 4, those mothers who had participated in HFM were less likely to visit the emergency room to receive treatment for themselves. Few other evaluations have included measures of maternal physical health other than those related to pregnancy, and there is limited evidence of other program effects on maternal physical health. For example, an evaluation of Early Head Start found no differences in parents who participated in the program and those who did not regarding parents' own perceptions of their physical health.[7] The favorable HFM program impacts on maternal health have implications for potential reductions in emergency and longer-term health care costs.[13,15]

5.3. Child health and development

MHFE-2 revealed HFM program impacts around child health and well-being. Specifically, at Time 6, children of program mothers were less likely to be diagnosed with asthma in the past year, and program mothers reported that their children showed higher physical functioning compared to children of mothers in the control group. In 2015, nearly 13% of children in Massachusetts had asthma, one of the highest rates in the nation, leading to school absence and financial strain on the healthcare system.[b] These reductions in asthma diagnoses may yield longer-term healthcare costs savings, as well as benefits on children's school attendance and achievement, which we will assess in future analyses using state educational records. Improvements in children's physical health may also favorably affect maternal work productivity related to illness management. Many previous home visiting evaluations have assessed program

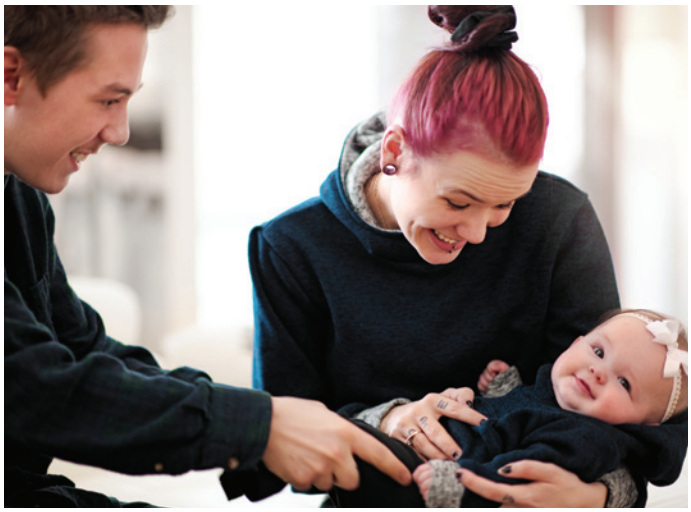
[b] https://www.mass.gov/service-details/statistics-about-asthma

impacts on child health using birth outcomes as the key constructs; however, the findings have been variable. For example, some evaluations have found positive impacts on infants' birthweight, particularly when mothers enrolled earlier in pregnancy, while other evaluations have found no effect.[16-18] In comparison, most infants in the MHFE-2 sample were born healthy weight, likely due to the availability of universal healthcare in Massachusetts at the time when mothers were enrolling in HFM. Furthermore, almost all children in our sample had their well visit check-up and had visited the dentist at least once (99% and 96%, respectively), also likely attributable to universal healthcare available in the Commonwealth. Finally, at Time 6, children of mothers in the program group were more likely to attend structured afterschool programs, which have the potential to favorably influence children's behavior, educational attainment and achievement, and social adjustment in the future.[19]

5.4. Economic self-sufficiency

HFM has had impacts on mothers' economic self-sufficiency following program completion to Time 5. Notably, mothers who participated in HFM were more likely to complete at least one year of college by Time 3. Support for the continuation of education, particularly college, may be important for home visiting programs geared towards young mothers, whose educational attainment may be one avenue for promoting economic self-sufficiency. Indeed, we found that mothers who participated in HFM were less economically dependent by Time 4, as characterized by employment as well as receipt of cash assistance and food stamps. Specifically, this effect was mediated through completion of at least one year of college. Further, among the subgroup of mothers who exhibited depressive symptoms at the time of enrollment, mothers in the program group were more likely to have received a college degree at Time 5, relative to mothers in the control group. A meta-analysis of home visiting program effects found a small but significant effect of home visiting participation on maternal life course, which included indicators of economic self-sufficiency and educational attainment.[17]

We also found that mothers who participated in the program were less likely to have experienced homelessness with their child by Time 5. Although there were no program impacts on homelessness and residential mobility at Time 6, the prevalence of mothers experiencing such hardships (14% and 28% of our sample, respectively) is concerning in light of the negative implications of experiencing homelessness with young children.[20] Because



young mothers who are at risk for or are already experiencing homelessness may be highly mobile and experiencing environments of instability (e.g., moving in and out of shelters), the flexibility of home visiting in meeting mothers where they are residing is crucial.[21] Further research is needed to assess the degree to which home visiting helps to alleviate housing insecurity.

5.5. Conclusion

The MHFE-2 evaluation has followed a cohort of young women for nearly a decade as they transitioned into first-time motherhood, documenting their—and their children's—outcomes across a range of domains, and assessing the short- and long-term impacts of HFM on these outcomes. The HFM program effects on mothers and their children have been small to moderate, but largely favorable, concentrated in maternal and child health and well-being. These positive program effects—in particular, the long-term effects, several years out from program participation—are impressive for many reasons, among them given that HFM participants typically did not receive the full complement of program services (with fewer home visits and shorter duration of program participation than offered).

That we have found positive program effects in relatively consistent domains for this heterogeneous group of young mothers participating in a statewide universal home visiting program underscores the wisdom of the HFM approach. Other analyses we have undertaken and presented elsewhere, demonstrate additional significant effects for particular subgroups of participants, according to demographic and background characteristics and psychological vulnerability.[22,23] This suggests that a tilt toward "precision home visiting," that is, customizing

home visiting services to reflect the profile of strengths and needs of each family—or specific subgroups of families—could well help HFM maximize the benefits families gain from program participation.

While comprehensive, the main effects analyses presented in this report leave further questions. Future analyses of the data will focus on understanding relationships over time between parents' and children's outcomes to understand the pathways by which home visiting influences the next generation. We will more closely examine how mothers use economic and social programs and services in addition to HFM, accepting that home visiting may be most effective when complemented by other services and supports. Similarly, we will continue our research examining home visitors' referrals to and families' use of child and family support services, acknowledging that home visitors provide a central linking function of families to the wider system of care. We will analyze state agency data, focusing on children's maltreatment reports and school records and achievement test scores, to assess longer-term program effects, enabling comparisons with other home visiting evaluations. Future evaluations should sample specifically for subgroups of interest, ensuring adequate sample sizes and power, to enable more definitive assessments of home visiting moderation. While the focus of MHFE-2 was on young mothers, further attention to fathers in home visiting programs is needed, including whether father involvement leads to greater take-up and retention and outcomes for mothers. Using program and evaluation data to explore these topics will provide further nuance to overall home visiting program effects to better understand its longer-term impacts on families.

We have been fortunate to participate in this multi-year investigation of Healthy Families Massachusetts—a well-conceived, well-implemented, successful home visiting program—one that has demonstrated significant benefits to young families in Massachusetts across several outcome domains. Over the past 20 years, the Children's Trust has proven the ideal evaluation partner, helping with study planning, facilitating data collection, and joining us in interpreting findings. The Children's Trust has made intelligent, strategic use of the results, modifying and experimenting with programming in response to them. We hope this report falls in line with earlier ones, making a meaningful contribution to HFM, and to the field of home visiting more widely.

Appendix A. Attrition Weights

Inverse probability weights (IPW) were selected to adjust for any biases due to sample attrition over time. The 684 mothers who participated in the Time 1 telephone interview were targeted for Time 6, with 408 mothers retained (59.6% retention rate). IPW recalibrate the data so they become more representative of the original sample of mothers. Specifically, IPW give greater weight to those who had a lower chance of participating at Time 6 and less weight to those who had a higher chance of participating based on selected variables that may account for attrition based on their association with sample attrition and retention at Time 6 (see Table 1) and previous time points.[1,2]

IPW were computed by regressing Time 6 participation (1 = retained at Time 6, 0 = not retained at Time 6) on Time 1 background and demographic characteristics and state agency data collected at the time of program and study enrollment (Time 1 data collection). Missing data ranged from 0%-7%; thus, data were multiply imputed prior to creating the IPW. We imputed 50 datasets in Stata 15.0 using chained equations; imputation was conducted separately for HVS and RIO. Using multiply imputed data, the initial logistic regression model tested second- and third-order interactions, but the final model only included those with p-values < .10 (see Table A1).

Table A1. Variables Used to Create IPW

Variable	Description
Home visiting program group	HVS, RIO[a,b,c,d,e,f,g]
Age at first child's birth	In years[d,f,l,m]
Race/ethnicity	White, Black, Hispanic, other non-Hispanic[a,l]
Place of birth	U.S., Puerto Rico, non-U.S.[i,j,n]
Born in Massachusetts	Born in Massachusetts, born outside of Massachusett[sc]
Relationship status (T1)	Single, not single[j]
Living arrangements (T1)	Living with adult relatives, living with partner (without adult relatives), other arrangement[b,h]
Residential mobility	Number of residences in past year (before study enrollment)[g]
High school/GED status (T1)	Dropped out, in progress, graduated high school/GED[c,i,m]
Employment status (T1)	Employed, not employed[a,b,k,o]
Difficulties managing expenses (T1)	1=No difficulties, 4=Major difficulties[n,o]
Depressive symptoms (T1)	Center for Epidemiological Studies Depression Scale (CES-D); sum of 20 items (higher scores=more frequent symptoms)[f,g]
Parenting status at study enrollment	Parenting, pregnant[k]
Target child sex	Female, male[e]
Transitional Aid to Families with Dependent Children (TAFDC, cash assistance, before study enrollment)	Received TAFDC, did not receive TAFDC[e]
Supplemental Nutrition Assistance Program (SNAP, food stamps, before study enrollment)	Received SNAP, did not receive SNAP[d,h]
Study status (since study enrollment)	Participated in T1 phone interview only, participated in some T1 phone interview and some other phone or in-person interview, participated in all T1-T3 phone and in-person data collection
Note. Variables that share the same superscripts indicate the second-and-third order interactions in the final logistic regression model.	

Finally, the weights were created by taking the inverse of the predicted probability of Time 6 participation. Thirteen participants with inverse probabilities greater than 4 (range = 4.01-21.65) were top-coded at 4, with the remaining difference in weight between their original weight value and 4 redistributed among all participants so that the sum of the weights totaled 684, the targeted Time 1 sample size, and the summed weights for the HVS and RIO groups summed to their respective Time 1 sample sizes (n = 417, n = 267, respectively).

Several checks were carried out to determine the efficacy of the weights in ensuring the Time 6 sample was representative of the Time 1 sample. First, we regressed the weight on the variables in Table 1 to ensure higher weights were observed for participants with characteristics related to attrition, which they were. Second, we examined descriptive statistics for the weighted and unweighted Time 6 sample on Time 1 demographic and background characteristics and found that the weighted Time 6 sample was representative of the Time 1 sample. Finally, we tested the weights in regression models predicting program effects, replicating previously reported program effects using the weighted Time 6 sample.[1,2] All Time 6 program effects were tested with weighted and unweighted data.

Appendix B. Details and Descriptive Statistics on Time 6 Outcomes Measures

Goal 1: Prevent Child Abuse and Neglect by Supporting Positive, Effective Parenting

Parenting Stress Index – Short Form (PSI-SF). The PSI-SF is a 36 item self-report questionnaire of parenting stress.[24] During the telephone interview, mothers indicated the degree to which they agreed with statements (e.g. "I feel trapped by my responsibilities as a parent", "My child rarely does things for me that make me feel good") using a 5-point scale, ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. Three subscales were used; each subscale comprised 12 items and sum scores were created by adding items. A total parenting stress score was also calculated by summing the three subscales. Higher scores indicate higher parental stress.

- *Parental Distress.* Examines the extent to which mothers experienced stress in her role as a parent. It measures sense of parenting competence, stresses associated with restrictions on her life, conflict with child's other parent, social support, and depression.
- *Parent-Child Dysfunctional Interaction.* Assesses the extent to which mothers believed that her child does not meet her expectations and their interactions are not satisfying. High scores in this subscale indicate that the mother may see the child as a disappointment, feel rejected or alienated by/from the child, or has not properly bonded with the child.
- *Difficult Child.* Assesses how easy or difficult mothers perceived her child.

Table B1. Descriptive Information for Goal 1 Outcomes

	HVS			RIO			Overall		
	M (SD)	**Range**	***n***	***M (SD)***	**Range**	***n***	***M (SD)***	**Range**	***n***
Parenting Stress Index (PSI)									
Parental Distress	24.41 (8.19)	12-48	230	26.32 (8.98)	12-51	149	25.16 (8.55)	12-51	379
Parent–Child Dysfunctional Interaction	18.38 (5.77)	12-44	230	19.71 (6.30)	12-42	150	18.91 (6.02)	12-44	380
Difficult Child	24.14 (7.26)	12-43	228	25.97 (8.00)	12-53	152	24.87 (7.61)	12-53	380

Note. Table presents *M (SD)* for continuous variables.

Mothers reported moderate levels of overall parenting stress (*M* = 68.89) and on each of the three subscales, including parental distress (*M* = 25.16), difficult child (*M* = 24.87), and parent-child dysfunctional interaction (*M* = 18.91). For the parental distress and difficult child subscales, scores above 36 indicate clinical levels of parenting stress whereas scores above 30 indicate clinical levels of parenting stress on the parent-child dysfunctional interaction subscale.

Goal 2: Achieve Optimal Health, Growth, and Development in Infancy and Early Childhood

Pediatric Quality of Life Inventory (PedsQL). The PedsQL is a 30-item survey used to examine children's health related quality of life.[25] For the current study, 2 of the 5 subscales were used: Physical Functioning (8 items) and School Functioning (5 items). During the telephone survey, mothers responded on a 5-point Likert scale ranging from 1 *(never)* to 5 *(almost always)* to a list of items that may or may not have been a problem for their child. Composite scores for each subscale were created by reverse coding items on a scale of 0-100, where a higher score indicates higher functioning.

- *Physical Functioning.* Examines maternal report of children's general health and daily physical functioning. Mothers reported on how often things were a problem for their child, such as "walking more than a block" or "doing chores, like picking up his or her toys".
- *School Functioning.* Examines maternal report of children's daily functioning in school. Mothers reported on how often things were a problem for their child, such as "paying attention in class" or "keeping up with school activities".

Strengths and Difficulties Questionnaire (SDQ). The SDQ is a 25-item survey used to examine children's mental health, including behavioral, social, and emotional difficulties as well as prosocial behaviors.[26] Mothers were asked to rate their child's behaviors across five scales: conduct problems, inattention-hyperactivity, emotional symptoms, peer problems, and prosocial behaviors. Mothers responded on a 3-point Likert scale, ranging from 0 *(not true)* to 2 *(certainly true)*, with items reverse coded as necessary so that higher scores represent more of the behavior in question.

- *Externalizing Problems.* This scale captures children's total externalizing behaviors/symptoms. The scale is a composite of the two externalizing subscales (Conduct Problems and Hyperactivity). Scores range from 0 to 20.
- *Internalizing Problems.* This scale assesses children's total internalizing behaviors/ symptoms. The scale is a composite of the two internalizing subscales (Emotional Problems and Peer Problems). Scores range from 0 to 20.

Child Health and Well-Being.

- *Asthma (Diagnosed Past Year).* During the intake, mothers were asked whether or not the target child had been diagnosed with asthma in the past year (1 = diagnosed in the past year).
- *Obesity/Overweight (Diagnosed Past Year).* During the intake, mothers were asked whether or not the target child had been diagnosed as overweight or obese in the past year (1 = diagnosed in the past year).
- *TC has IEP or 504 Plan.* During the intake, mothers were asked whether or not the target child currently had an Individualized Education Plan (IEP) or 504 Plan in place (1 = has IEP or 504 Plan).
- *TC in Afterschool Program.* During the intake, mothers were asked whether or not the target child currently participated in any afterschool programs (1 = in afterschool program).

Table B2. Descriptive Information for Goal 2 Outcomes

	HVS				RIO				Overall			
	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*
Pediatric Quality of Life Inventory (PedsQL)												
Physical Functioning		93.59 (9.43)	56.25-100	230		91.19 (13.03)	31.25-100	151		92.64 (11.05)	31.25-100	381
School Functioning		78.24 (18.69)	0-100	232		78.06 (16.81)	30-100	151		78.17 (17.95)	0-100	383
Strengths and Difficulties Questionnaire (SDQ)												
Externalizing		5.58 (4.01)	0-16	220		5.60 (3.72)	0-18	146		5.59 (3.89)	0-18	366
Internalizing		3.48 (2.92)	0-13	219		3.51 (2.91)	0-18	141		3.49 (2.91)	0-18	360
Child Health and Well-Being												
Asthma (diagnosed past year)	8.6			233	13.3			151	10.4			384
Obesity/overweight (diagnosed past year)	5.2			233	4.6			151	5.0			384
TC has IEP or 504 Plan	27.2			224	29.5			146	28.1			370
TC in afterschool program	55.2			223	42.8			145	50.3			368

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.

Using the PedsQL, mothers reported on their children's physical and school functioning. According to these reports, children's physical functioning was relatively high (*M* = 92.64), whereas their school functioning tended to be lower (*M* = 78.17).

Mothers also reported on their children's mental health using the SDQ. Mothers reported that their children showed relatively low externalizing issues (*M* = 5.59; a composite of the conduct problems and hyperactivity subscales), where, on a scale of 0-20, a higher score indicates more issues. Children also showed few internalizing issues (*M* = 3.49; a composite of the emotional problems and peer problems subscales), where, on a scale from 0-20, a higher score indicates more issues.

Mothers reported on several child health indicators, disclosing that 10% children had been diagnosed as having asthma and 5% as being overweight or obese in the past year. Mothers also reported that 28% of children had an Individualized Education Plan (IEP) or 504 Plan in place, and half (50%) of children were involved in some sort of afterschool program.

Goal 3: Encourage Educational Attainment, Job, and Life Skills Among Parents

Homelessness and Mobility.

- *Residential Mobility (Past Year).* During the intake, mothers indicated how many times that they had moved in the past year.
- *Homelessness (Past Year).* During the intake, mothers indicated whether they had been homeless or without a place to live in the past year, including temporary, transitional, or homeless shelter, a motel, on the streets, or living temporarily with family or friends (1 = experienced homelessness).

Basic Resources (Family Resource Scale; FRS). The FRS is a self-report questionnaire that assesses perceived adequacy of resources in households with young children.[27] Mothers responded to 14 items from the questionnaire on how well their basic needs were met on a consistent basis, including food, shelter, or money to pay bills, using a 5-point Likert scale (1 = *not at all enough* and 5 = *almost always enough*). The items were added together to create a sum score, where a higher score indicated higher adequacy of resources to meet needs.

Educational Attainment.

- *Mother Finished HS/GED.* During the intake, mothers indicated whether or not they had finished high school or obtained their GED (1 = Finished HS/GED).
- *Mother Graduated from College (AA or BA).* During the intake, mothers indicated whether or not they had graduated from college with a bachelor's or associate's degree (1 = graduated from college).

Employment.

- *Maternal Employment Status.* During the intake, mothers indicated whether they were employed or not, including any work on the side or under the table (1 = Employed).
- *Mother Annual Salary.* During the intake, mothers reported their weekly, monthly, or yearly salary. Annual salary was then calculated for employed mothers.

Benefits Receipt.

- *Receipt of TAFDC/Cash Assistance.* During the intake, mothers were asked whether they had received cash assistance (Transitional Aid to Families with Dependent Children [TAFDC]) in the past year (1 = received cash assistance).
- *Receipt of Food Stamps.* During the intake, mothers were asked whether they had received food stamps (Supplemental Nutrition Assistance [SNAP]) in the past year (1 = received food stamps).
- *Receipt of Public Housing.* During the intake, mothers were asked whether they had received public housing in the past year (1 = received public housing).

Table B3. Descriptive Information for Goal 3 Outcomes

	HVS				RIO				Overall			
	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*
Residential mobility (past year)	27.7			242	28.6			161	28.0			403
Homelessness (past year)	13.3			241	14.9			161	13.9			402
Family Resource Scale (FRS)		51.18 (5.71)	27-56	219		50.70 (6.26)	19-56	143		51.00 (5.93)	19-56	362
Mother finished HS/GED	86.0			242	84.5			161	85.4			403
Mother graduated from college (AA or BA)	12.0			242	12.4			161	12.2			403
Maternal employment status[1]	66.1			242	61.5			161	64.3			403
Mother annual salary ($1000's)[2]		29.32 (15.42)	2.05-80.25	128		25.07 (14.15)	1.80-75.09	80		27.69 (15.06)	1.80-80.25	208
Receipt of TAFDC/cash assistance	20.9			235	26.3			156	23.0			391
Receipt of food stamps	63.8			235	67.3			156	65.2			391
Receipt of public housing	32.5			234	29.5			156	31.3			390

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.
[1]Analysis indicates percentage of full T6 sample who are currently employed.
[2]Analysis included only those who were employed.

At T6, about 28% of mothers had moved at least once in the past year, and about 14% of mothers had experienced at least one episode of homelessness in the past year. According to the Family Resource Scale, mothers felt that they had adequate resources to meet their basic needs (*M* = 51), such as food for two meals a day, a house or apartment, or enough clothes for their family.

By T6, approximately 85% of mothers had finished high school or completed their GED, and about 12% had graduated from college with their AA or BA. In addition, 64% of mothers were employed, with almost 70% of employed mothers working full-time. On average, mothers earned $27,685 a year. Furthermore, 23% of mothers indicated that they had received TAFDC or cash assistance in the past year, 65% indicated they had received food stamps in the past year, and about 31% indicated that they had received public housing in the past year.

Goal 5: Promote Parental Health and Well-Being

Maternal Depression (Center for Epidemiologic Studies-Depression Scale; CES-D). The CES-D is a 20-item self-report questionnaire designed to measure depressive symptoms in the general population.[28,29] Using a four-point Likert scale ranging from 1 *(not at all)* to 4 *(a lot)*, mothers indicated how frequently they experienced a particular depressive symptom (e.g. "I did not feel like eating" or "I had trouble keeping my mind on what I was doing") in the last week. The items were added to create a sum score, where a higher score indicated a higher risk for depression.

Maternal Health.

- *Diabetes (Treated Past Year).* During the intake, mothers were asked whether or not they had been treated for diabetes in the past year (1 = treated in the past year).
- *High Blood Pressure (Treated Past Year).* During the intake, mothers were asked whether or not they had been treated for high blood pressure in the past year (1 = treated in the past year).
- *Asthma (Treated Past Year).* During the intake, mothers were asked whether or not they had been treated for asthma in the past year (1 = treated in the past year).
- *Anxiety Disorder (Treated Past Year).* During the intake, mothers were asked whether or not they had been treated for an anxiety disorder in the past year (1 = treated in the past year).
- *Substance Abuse (Treated Past Year).* During the intake, mothers were asked whether or not they had been treated for substance abuse issues in the past year (1 = treated in the past year).

Table B4. Descriptive Information for Goal 5 Outcomes

	HVS				RIO				Overall			
	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*
Maternal Depression Symptomatology (CES-D)		10.01 (9.70)	0-42	233		12.10 (11.27)	0-53	155		10.84 (10.40)	0-53	388
Anxiety disorder (treated past year)	27.0			241	33.5			161	29.6			402
Substance abuse (treated past year)	1.7			241	6.2			161	3.5			402
Diabetes (treated past year)	2.5			241	2.5			161	2.5			402
High blood pressure (treated past year)	3.7			241	5.0			161	4.2			402
Asthma (treated past year)	12.0			241	18.6			161	14.7			402

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.

According to maternal reports on the CES-D, most mothers scored, on average, relatively low (*M* = 10.84), where on a scale from 0-60, a lower score indicates less risk for depression. Furthermore, about 28% of mothers scored above the clinical cutoff (i.e., above a score of 16), putting them at risk for clinical levels of depression.

Mothers also reported on whether they had sought treatment in the past year for several health indicators: almost 30% had been treated for an anxiety disorder; 4% had been treated for substance abuse issues; about 3% of mothers had been treated for diabetes in the past year, 4% had been treated for high blood pressure; and about 15% had been treated for asthma.

Goal 6: Increase Mothers' Knowledge and Ability to Navigate Early Childhood Systems

Family Involvement Questionnaire-Short Form (FIQ-SF). The FIQ-SF is a 21-item survey used to examine family involvement in early childhood education.[30] Parents are asked to answer questions about their own involvement in their child's education (e.g., volunteering at school, practicing skills at home, and meeting with teachers). Mothers responded on a 4-point Likert scale ranging from 1 *(rarely)* to 4 *(always)*.

- *Home-School Conferencing.* Examines the extent to which mothers engaged with their child's teacher, including talking to the teacher about their "child's accomplishments", "classroom rules", or how well their child "gets along with his/her classmates".
- *Home-Based Involvement.* Examines the extent to which mothers engaged in learning activities with their child outside of school, such as taking their child "places in the community to learn special things (e.g., zoo, museum)", spending time "working on reading/writing skills", or "working on creative activities (like singing, dancing, drawing, and storytelling)".
- *School-Based Involvement.* Examines the extent to which mothers participated in school activities, such as "parent workshops or trainings", "class trips", or "parent and family social activities".

Access to Health Care.

- *TC Visited Emergency Room (Past Year).* During the intake, mothers indicated whether or not they had been to the emergency room in the past year for the target child (1 = visited ER at least once).
- *Well Visit for TC (Past Year).* During the intake, mothers indicated whether or not the target child had a well visit in the past year (1 = had well visit).
- *Dental Visit for TC (Past Year).* During the intake, mothers indicated whether or not the target child had visited the dentist in the past year (1 = visited dentist).
- *Mother Visited Emergency Room (Past Year).* During the intake, mothers indicated whether or not they had been to the emergency room in the past year for themselves (1 = visited ER at least once).

Table B5. Descriptive Information for Goal 6 Outcomes

	HVS				RIO				Overall			
	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*	%	*M (SD)*	Range	*n*
Family Involvement Questionnaire (FIQ)												
Home-School Conferencing		20.18 (5.78)	7-28	221		19.34 (5.92)	7-28	147		19.84 (5.84)	7-28	368
Home-Based Involvement		22.16 (4.44)	9-28	225		21.74 (4.36)	9-28	148		22.00 (4.41)	9-28	373
School-Based Involvement		13.30 (5.50)	7-28	211		13.28 (5.15)	7-28	130		13.29 (5.37)	7-28	341
Access to Health Care												
Mother visited emergency room (past year)	43.3			240	51.6			161	46.6			401
TC visited emergency room (past year)	27.2			232	23.8			151	25.9			383
TC had well visit (past year)	98.7			232	98.7			151	98.7			383
TC had dental visit (past year)	94.8			231	98.0			148	96.0			379

Note. Table presents *M (SD)* for continuous variables and % for categorical variables.

Using the FIQ-SF, mothers reported on their involvement in their eldest child's education, both at school and at home. Mothers reported moderate levels of overall involvement (*M* = 55.00; scores on the FIQ range from 21-84). In addition, mothers reported moderate levels of involvement on the Home-Based Involvement subscale (*M* = 22.00), but relatively lower involvement on the Home-School Conferencing subscale (*M* = 19.84) and the School-Based Involvement subscale (*M* = 13.29), where scores on each subscale range from 7-28.

At T6, 47% of mothers reported having visited the emergency room for themselves in the past year, for an average of 1.2 visits, and 26% of children had visited the emergency room in the past year, for an average of 0.49 visits. In addition, about 99% of mothers reported that their child had a well visit in the past year, and 96% reported that their child had been to the dentist in the past year.

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