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Enhancing Futures: Exploring the Impact of the MIHP Healthy Moms, Healthy Babies Pilot Program on Michigan Families

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EXECUTIVE SUMMARY

Michigan's Maternal Infant Health Program (MIHP) is a statewide home visiting program that aims to support the health and wellness of Medicaid-eligible families during pregnancy and infancy. Recognizing the pivotal role that social determinants play in maternal and infant health, the Michigan Department of Health and Human Services (MDHHS) launched the MIHP Healthy Moms, Healthy Babies (HMHB) pilot program to help home visitors better meet the needs of the families with whom they work. The pilot involved nearly sixty MIHP agencies. About half of the participating MIHP agencies were randomly assigned to the treatment group that was able to bill for additional visit time, an additional home visit, care coordination, and a discharge visit. The other half of the agencies were assigned to the control group and were only able to bill for a discharge visit.

MDHHS partnered with the University of Michigan Youth Policy Lab to conduct an evaluation to determine whether expanding services for which MIHP providers could bill was effective in better meeting the needs of families. Using survey data from families and home visitors, the evaluation explored how the enhanced MIHP services impacted social determinants of health (SDOH), health equity, and other outcomes for families. The evaluation also examined the impact of the program on home visiting service providers. Our findings offer important insights for policymakers and home visiting professionals as they work towards improving long-term health-related outcomes for pregnant individuals and babies.

Key Findings

Analyzing survey responses for over 1,700 individuals who participated in the HMHB pilot, we observed the following:

- Overall, the pilot appears to have had a positive impact on **families' self-reported social determinants of health,** including food security, financial security, and housing stability. Families receiving enhanced MIHP services were less likely to cut meals due to cost, significantly less likely to report going without essential utilities, and significantly less likely to meet the McKinney-Vento definition of homelessness. Participants who were unemployed and looking for work were also significantly more likely to contact someone about a job when served by treatment group agencies.
- The pilot appears to have demonstrated notable benefits for **Black families**. In particular, the program bridged the gap between Black and White families who reported that MIHP met their needs and significantly reduced the likelihood of experiencing utility disruptions for Black families served by treatment group agencies.
- The pilot program seems to have been particularly beneficial for **families experiencing their first pregnancy**. These families were significantly less likely to report going without essential utilities or cutting meals due to financial constraints.
- **Independent freestanding agencies** seem to have benefited more from the pilot than local health departments. Families served by independent agencies in the treatment group were much less likely to report utility disruptions and food insecurity than their counterparts served by independent agencies in the control group.

Given the program costs and the positive impacts highlighted above, the evaluation suggests that the HMHB pilot program is likely a cost-effective approach for supporting families throughout pregnancy and early infancy. Starting on October 1, 2024, Medicaid will reimburse all MIHP providers for enhanced services including additional home visits, care coordination, and a discharge visit. This indicates an official rollout of HMHB pilot services across all MIHP agencies, which is expected to bring long-term benefits to Michigan families.

INTRODUCTION

As Michigan's largest evidence-based home visiting program for Medicaid-eligible pregnant individuals and infants, the Maternal Infant Health Program (MIHP) aims to promote healthy pregnancies, positive birth outcomes, and healthy infant growth and development, with the long-term goal of reducing maternal and infant mortality and morbidity. During the program, licensed social workers, registered nurses, and lactation consultants provide home visiting services to eligible pregnant individuals up to 60 days postpartum and infants up to 18 months of age. [1, 2] After an initial enrollment visit the home visitor develops a plan of care for the family to address their needs and guide subsequent visits. Infants may be eligible for additional visits per program guidelines. MIHP services also include options for family planning, education, transportation arrangements, and referrals to community services to address families' diverse needs.

As part of Governor Whitmer's Healthy Moms, Healthy Babies initiative, the Michigan Department of Health and Human Services (MDHHS) began piloting an enhancement of MIHP services to explore how MIHP provider agencies could help address social determinants of health for the families they serve.[3] The initiative began in June 2021, and throughout the 2-year implementation period over 80 MIHP agencies received invitations to join the pilot. Fifty-nine MIHP provider agencies accepted the invitation and participated in the study. The pilot concluded on December 31, 2023.

MDHHS partnered with the University of Michigan Youth Policy Lab (YPL) to conduct an evaluation of this pilot project. The goal of the evaluation was to understand whether expanding the services for which MIHP providers can bill could better help serve families with high levels of need for basic services.

Half of the participating providers—the treatment group—were randomly selected to have the opportunity to bill for the following additional services for eligible members who scored as "high risk" on either the Maternal Risk Identifier (MRI) or Infant Risk Identifier (IRI) that is administered at enrollment:

1. Additional home visit: Providers were able to bill for one additional home visit per "high risk" maternal or infant member, which could take place at any time during MIHP services.
2. Complex home visit with additional face-to-face time: Providers were able to bill for any professional visit that lasts at least 60 minutes.
3. Care coordination: Billed at a monthly flat rate per "high risk" member, advanced care coordination included phone calls or other activities to coordinate services and resources that lasted more than 30 minutes.
4. Discharge visit: The discharge visit, which could last longer than a typical visit, and could be billed at a higher rate, provided an opportunity to develop a follow-up plan of care to transition the member out of MIHP services. As part of the evaluation, the discharge visit also included the completion of a brief survey.

The other half of the agencies— the control group—were allowed to bill for a discharge visit only for families who were deemed "high risk" on the MRI or IRI.[4]

This study explored the impact of this enhanced billing on social determinants of health, health equity, and other outcomes for families, as well as the impact of the program on home visiting providers.

Social Determinants of Health

One of the primary goals of this pilot was to explore how MIHP provider agencies can help address social determinants of health (SDOH) for the families they serve.

SDOH are known to have a major impact on people's health and well-being and may widen health disparities and inequities. Healthy People 2030, a nationwide decade-long strategic initiative to address the most pressing health issues, includes SDOH among its leading health indicators, signaling their importance in addressing family need. There are five domains of SDOH, including economic stability, education access and quality, health care access and quality, neighborhood and the built environment, and social and community context.[5]

Social determinants can influence maternal and infant health at diverse levels.[6] Studies have found that the increase in maternal mortality in the U.S. between 1997 and 2012 was partially attributed to SDOH such as the percentage of women of childbearing age without a high-school diploma.[7] Multiple studies have found relationships between adverse maternal and infant health outcomes and community-level social risk factors, such as neighborhood deprivation, residential segregation and rurality.[8] Chronically being exposed to racial segregation and poverty is associated with an increased risk of negative birth outcomes, including preterm birth and low birth weight, which is particularly prevalent among Black women.[9] Research findings have also revealed a connection between certain environmental factors (like air pollution) and severe maternal morbidity, including conditions like pregnancy-induced hypertensive disorders.[10]

The impact of SDOH on health and well-being can be lifelong and multi-generational. Risk and protective factors experienced during important stages of life can significantly affect biological systems, resulting in diverse disease paths and health outcomes.[11] While stressful events occurring during pregnancy and early infancy are associated with an increased risk of heart disease and other illnesses for both the parent and child, protective measures including public policies and intervention programs can play a positive role in buffering these adverse effects.[12]

MIHP agencies address and support families every day with resources and tools that directly address SDOH, including screening for and supporting access to primary care, food accessibility, early childhood development and education, employment, exposure to violence, and housing stability. Providing additional resources to MIHP agencies to better support their members in addressing key SDOH has the potential to have a long-term beneficial impact on health outcomes for birthing parents and infants alike.

Equity

The racial and ethnic disparities in maternal and infant health in Michigan have been evident for years and persist despite significant investments that have been made to advance maternal and infant health equity.

In Michigan, the likelihood for Black birthing parents to die during pregnancy or childbirth is nearly two times higher than their White counterparts.[13] The maternal mortality rate in Michigan was 19.4 deaths per 100,000 live births between 2016 and 2020,[14] 17% below the national average of 23.5 deaths per 100,000 live births.[15] State data suggests over 60% of these pregnancy-related maternal deaths are preventable.[16] The infant mortality rate in Michigan was 6.2 deaths per 1,000 live births in 2022, 15% higher than the national rate.[17] Recent 2021 data (the most recent year available) showed the infant mortality rates in Michigan varied significantly by race and ethnicity. For every 1,000 live births, there were 11.6 deaths among Black infants, compared to 6.5 for Hispanic infants, 5.7 for Asian/Pacific Islander infants, and 4.4 for White infants.[18]

This disparity is in part driven by the long-standing history of structural racism within health care and social service systems, where Black individuals often endure low quality of care or even denial of care.[19] Research indicates that the persistent exposure to racism and life-long stressors can negatively affect the reproductive health of Black birthing parents by taking a long-term toll on their body's adaptive systems.[20] This "weathering" process contributes to a higher risk of pregnancy-related medical conditions and mental health disorders among pregnant Black families.[21] For example, the preterm birth rate, one of the leading causes of infant mortality, has been approximately 30% to 67% higher among Black birthing parents than those among all other race and ethnicity categories between 2020 and 2022.[22] The racial disparity exists regardless of a Black birthing parent's education level, income status, and behavioral health status.

Given the significant disparity in maternal and infant mortality rates between Black families and their White counterparts in Michigan, and the profound influence of SDOH on long-term maternal and infant well-being, the enhanced MIHP services implemented through this pilot program have the potential to offer substantial benefits to vulnerable groups and reduce inequities for participating maternal and infant members.

DATA

The data used to assess the outcomes of the HMHB pilot project came from several different sources, including an outcome survey of members and their home visitors, agency billing codes, a provider survey, and Medicaid claims data. We describe each in more detail below.

Outcomes Survey

To measure outcomes related to SDOH and MIHP services, YPL developed a survey that was administered to families and home visitors at the time of discharge from MIHP. The survey included questions for the family about their background, experiences, interactions with their home visitor, and social determinants of health. Home visitors from participating agencies (treatment and control) administered the survey to families during their discharge visits. A separate survey asked questions of the home visitors about their experiences with the family. Home visitors could complete those surveys during the discharge visit or at another time. Home visitors also completed surveys for families with whom they were not able to schedule a discharge visit.

Billing Codes

To better explore the social determinants of health being addressed as part of the program, home visitors were asked to identify specific billing codes (Z codes) associated with each additional service they provided. A part of the International Classification of Diseases Clinical Modification (ICD-10-CM) coding system, Z codes (Z00-Z99) are designed to capture "factors influencing health status" and to provide additional information regarding a patient's encounter with a health provider.[23] A subset of Z codes (Z55-Z65) addressing social determinants of health were established to help identify a variety of social, economic, and environmental issues that affect patients' health-related outcomes. Research shows that Z codes can help document important socioeconomic, community, and environmental factors that affect health outcomes.[24,25]

Provider Survey

To explore how the pilot has impacted provider agencies and agency staff and capture agency-level outcomes, YPL developed a standalone survey that asked questions about providers' experience with the pilot. The survey was administered to home visitors and MIHP program coordinators in all participating agencies during the summer of 2023.

SAMPLE

Agencies

Table 1 shows the characteristics of the 59 agencies who agreed to participate in the evaluation and were randomly assigned to either the treatment group (31 agencies) or the control group (28 agencies). Most of the participating agencies were independent freestanding agencies (56% overall), with more independent agencies in the control group (64%) than in the treatment group (48%). Most agencies were in the Southern Lower Peninsula.

TABLE 1: Background Characteristics of Participating MIHP Agencies

Agency Type	Control		Treatment		Total	
	n	%	n	%	n	%
Federally Qualified Health Center	0	0	3	10	3	5
Health System	2	7	3	10	5	8
Independent Free Standing	18	64	15	48	33	56
Local Health Department	8	29	10	32	18	31
Location[a]						
Northern Lower Peninsula	3	11	5	16	8	14
Southern Lower Peninsula	23	82	25	81	48	81
Upper Peninsula	2	7	1	3	3	5
Size[b]						
Large	12	43	12	39	23	39
Medium	8	29	10	32	18	31
Small	8	29	9	29	18	31
TOTAL	**28**	**47**	**31**	**53**	**59**	**100**

Notes:

a. Upper Peninsula includes all counties in Michigan's Upper Peninsula; Northern Lower Peninsula includes all counties north of Saginaw to the east and Muskegon to the west, north to the Mackinac Bridge; Southern Lower Peninsula includes the rest of the counties in the state.

b. "Small" if an agency served fewer than 45 "high risk" members per year; "Large" if an agency provided services to over 120 "high risk" members, and the remaining agencies fall under the "Medium" category.

Participating Families

As shown in Table 2, over the course of the pilot, we received surveys for 1,706 unique maternal and infant members (representing 25 treatment group agencies and 18 control group agencies). Of these, approximately 45% identified as White, 28% identified as Black/African American, 12% identified as multiracial, 5% identified as Hispanic/Latino and the remaining 10% identified as another race or ethnicity or declined to provide their racial background. There were more Black respondents in the treatment group (33%) than in the control group (18%). Conversely, there were more White respondents in the control group than in the treatment group. This is likely due to geographic and demographic differences across the communities served by the providers who participated. The demographic characteristics of the members for whom we have responses to either the family survey, the home visitor survey, or both are shown in Appendix Table A1.

TABLE 2: Background Characteristics of Participating Families (Family response only)

Race/Ethnicity	Control		Treatment		Total	
	n	%	n	%	n	%
Black / African American	91	18	391	33	482	28
Hispanic / Latino	14	3	73	6	87	5
White / Caucasian	303	58	460	39	763	45
Multiracial	67	13	130	11	197	12
Other[a]	45	9	132	11	177	10
TOTAL	**520**	**30**	**1186**	**70**	**1706**	**100**

Note:

a. This category includes those who identified themselves as a race/ethnicity not listed above or indicated that they preferred not to answer the question

Providers

We obtained responses from 146 providers across participating MIHP agencies about their own experiences participating in the pilot: 92 from treatment group home visitors and providers, and 56 from control group home visitors and providers. Among these survey responses, 68% identified as White, 16% identified as Black/African American, 2% identified as Hispanic/Latino, 1% identified as multiracial, and 12% declined to provide their race/ethnicity. Consistent with the demographic makeup of the members, there were more White home visitors in the treatment group (71%) than in the control group (64%). See Appendix Table A2 for details.

Medical Claims

Finally, in the Medicaid data there were a total of 17,722 infant members served by HMHB pilot agencies during the study period (10,039 from treatment agencies and 7,683 from control agencies) and 19,446 maternal members (11,803 from treatment agencies and 7,643 from control agencies). As noted above, it is likely that only a small percentage of these (fewer than 20%) were eligible for or received enhanced services as part of the pilot. Future analyses will seek to identify and analyze the data for the specific sample who were impacted by the pilot.

ANALYSES

The analyses were all conducted using a regression framework in which we controlled for the family race/ethnicity, and the agency size, type, and location. Below, we indicate whether results were statistically significant, but also highlight any results in which treatment and control groups differed by more than two percentage points. We did not impute missing outcome data. We used mean imputation for instances in which covariates (race/ethnicity, first pregnancy and agency size, type and location) were missing. For instance, when we were missing data on whether this was a survey respondent's first pregnancy, we imputed the overall mean (or proportion of respondents for whom it was first pregnancy) for that respondent, and included an indicator variable to indicate that the variable had been imputed for that respondent. Subgroup analyses were conducted by running separate regressions on the subgroup of interest. Regression results for the full sample and subgroup analyses can be found in Appendix tables 7A and 8A.

RESULTS: IMPACT ON FAMILIES

Overall, the enhanced billing afforded to the MIHP sites in the treatment group had a positive impact on members. During the 30-month pilot period, 6,451 members (4,463 infants, and 1,988 maternal members) received enhanced services. Agencies submitted, on average, six enhanced claims per member— translating to an additional three hours of service per member, or 38,708 additional service hours over the course of the pilot. As shown in Table 3, the additional claims billed most frequently were extended visit time (complex home visit) and care coordination, which comprise nearly 95% of all pilot claims.

TABLE 3: Claims Billed

	Treatment		Control	
	n	%	n	%
Additional Home Visit	511	1	N/A	
Complex Home Visit	20,384	54	N/A	
Care Coordination	15,141	40	N/A	
Discharge Visit	1,605	4	876	100
TOTAL	**37,641**		**876**	

The HMHB Pilot Appears to Have Had a Positive Impact on Self-Reported Social Determinants of Health

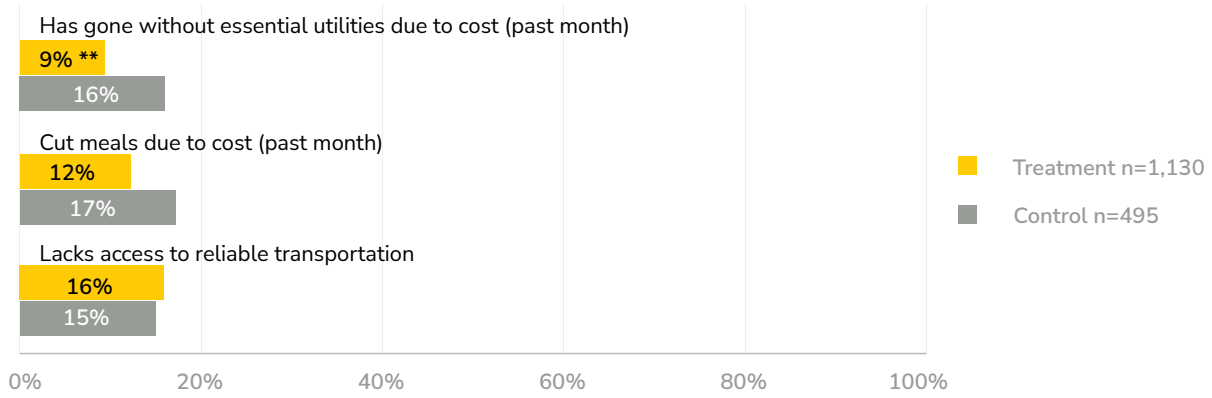
On surveys, families were asked to report on their experiences related to several social determinants of health including food insecurity, housing, transportation, mental health, employment, and domestic abuse. Across many of the outcomes, **families served by treatment group agencies were less likely than families in the control group to report experiencing hardships.**

Financial Security

As shown in Figure 1, families in the treatment group were:

- Less likely to report going without essential utilities (9% vs. 16%). **This represents a 43% reduction over the control group and is a statistically significant finding**.
- Less likely to report cutting meals due to cost (12% vs. 17%); and
- About equally likely to lack access to reliable transportation

FIGURE 1: Financial Security



Note:

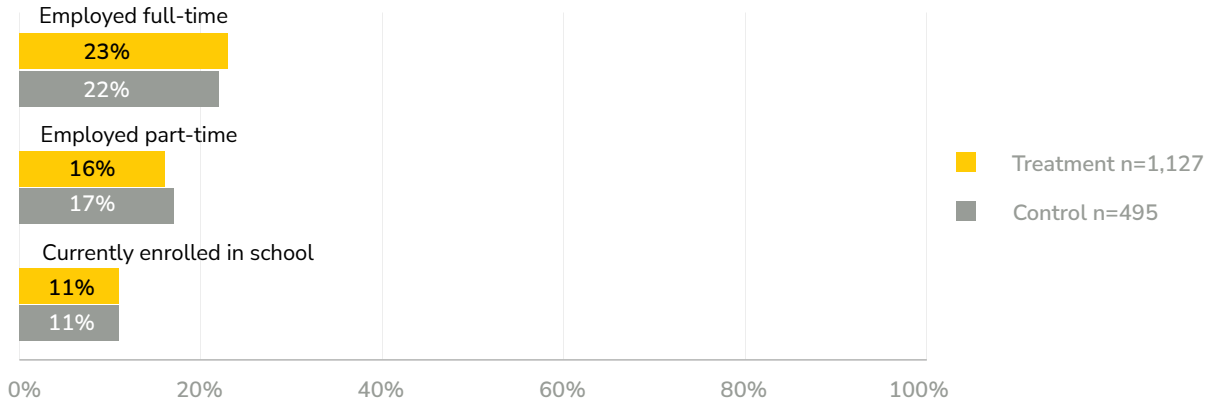
The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates. Ns for specific questions may vary slightly based on missing values

** Indicates statistical significance with a p-value < 0.05

Employment and Education

As shown in Figure 2, families in the treatment group were equally likely to be employed as the families in the control group, although somewhat more likely to be employed full-time rather than part-time. They were also equally likely to be currently enrolled in school.

FIGURE 2: Employment & Education



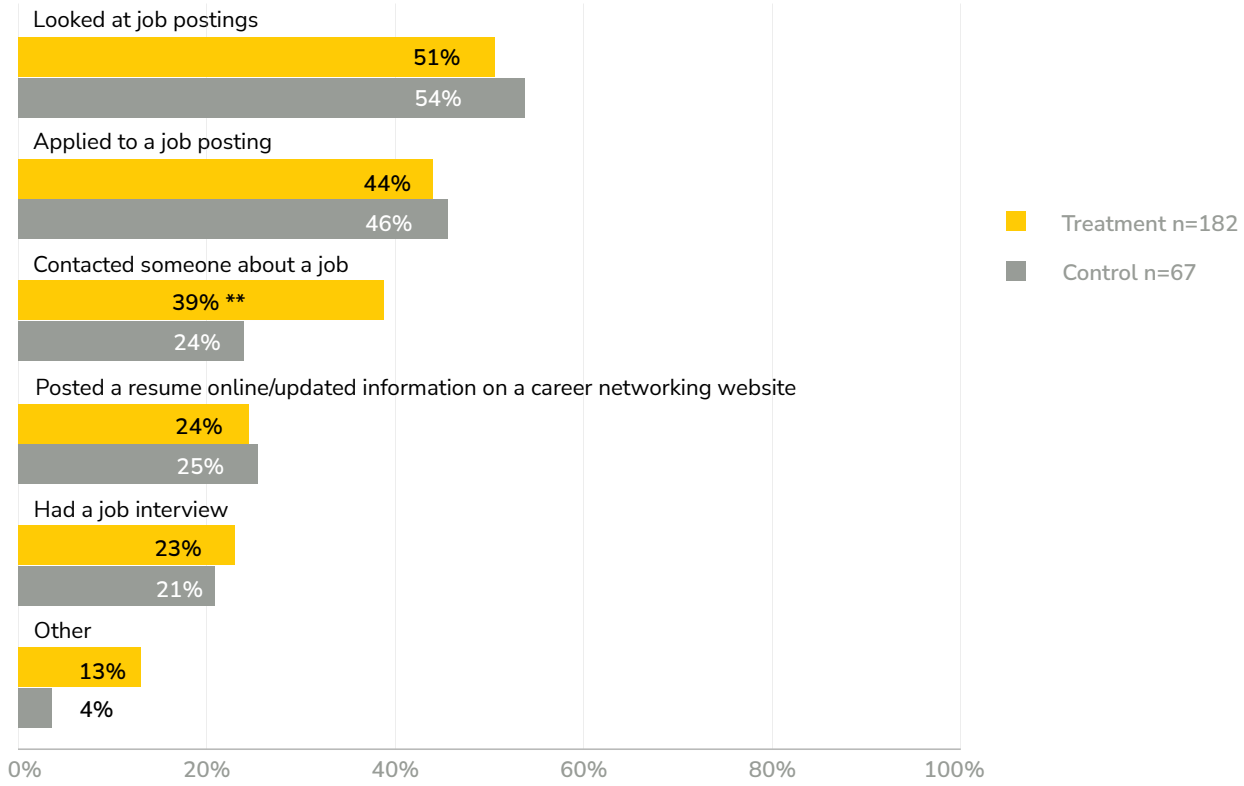
Note:
The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates. Ns for specific questions may vary slightly based on missing values.

Seeking Employment Opportunities

As shown in Figure 3, among those who were unemployed but looking for work, families served by a treatment group agency were:

- More likely to have contacted someone about a job (39% vs. 24%) within the past 30 days. **This is a 62% increase and a statistically significant finding**.
- More likely (13% vs. 4%) to have engaged in other job seeking activities such as attending job training classes or activities.
- Somewhat less likely to say they had looked at job postings (51% vs. 54%) or applied to a job posting (44% vs 46%).

FIGURE 3: Not Employed and Looking for Work



Note:

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**Indicates statistical significance with a p-value < 0.05

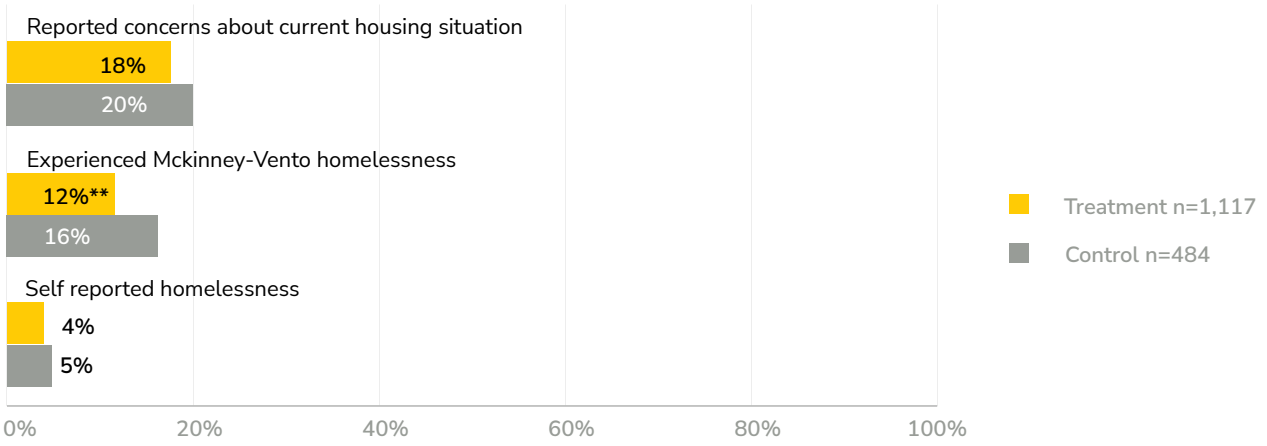
Housing

As shown in Figure 4, the HMHB pilot appears to have had a positive impact on homelessness. Families served by treatment group agencies were:

- Less likely to say they had concerns about their housing situation (18% vs. 20%).
- Less likely to meet the McKinney-Vento definition of homelessness (12% vs. 16%). **This represents a 25% reduction in homelessness and is a statistically significant finding.**
- Equally likely to self-report being unhoused.

The McKinney-Vento definition of homeless includes individuals who lack a "fixed, regular, and adequate night time residence" such as people who are "sharing housing with others due to a lack of housing or economic hardship," those whose primary residence is "a place not designed for regular sleeping accommodations," or those who are living in "cars, parks, public spaces, abandoned buildings… or similar settings."[26] It is not uncommon for a family self-report regarding homelessness to differ from the McKinney-Vento definition.[27]

FIGURE 4: Housing



Note:

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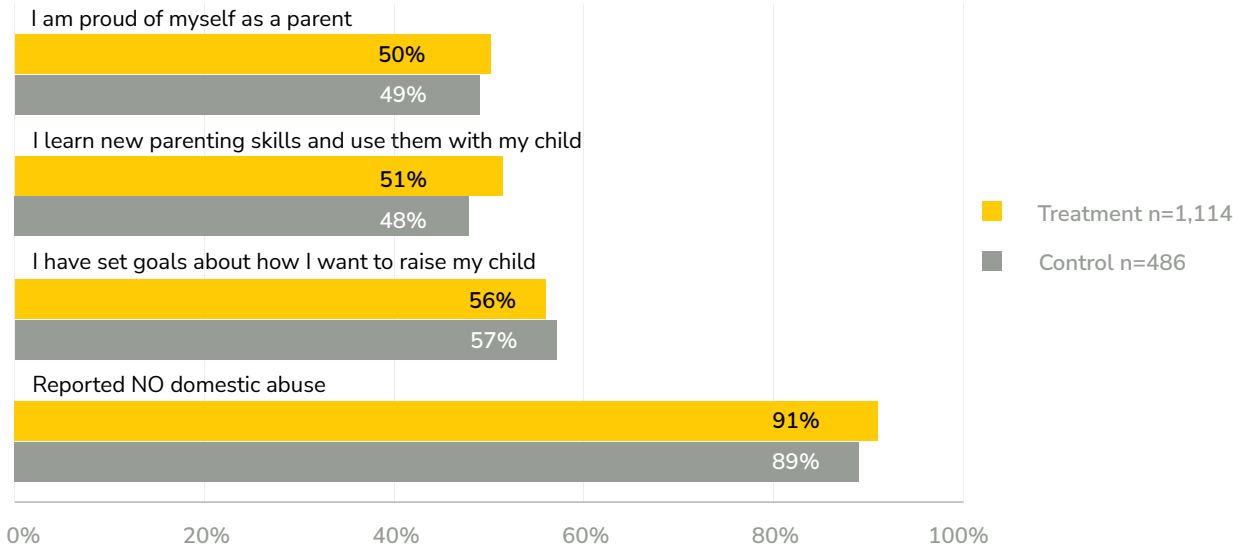
**Indicates statistical significance with a p-value < 0.05

The HMHB Pilot May Have Had a Small Positive Impact on Members' Relationships with their Children and Partners

As shown in Figure 5, members served by treatment group agencies were:

- Somewhat more likely to report that they had learned new parenting skills and used them with their child (51% vs. 48%).
- Somewhat more likely to say they were not experiencing domestic abuse (91% vs. 89%).

FIGURE 5: Relationship with Children and Partners

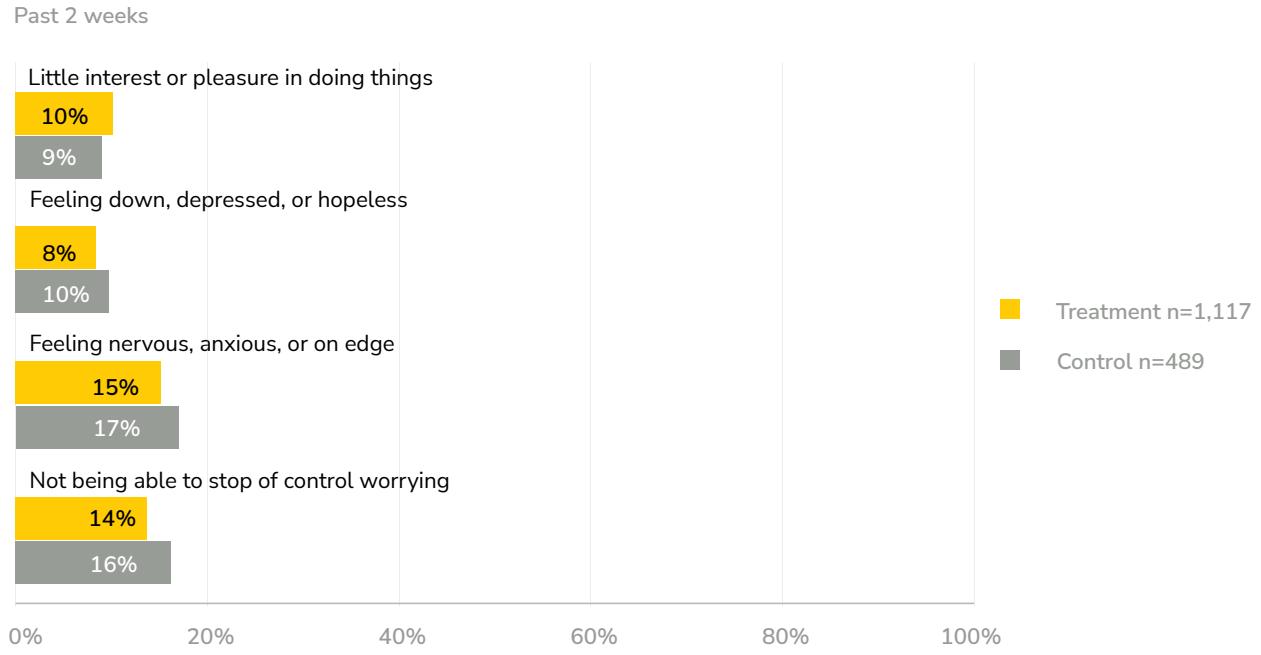


Note:
The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates. Ns for specific questions may vary slightly based on missing values.

The HMHB Pilot May Have Had a Positive Impact on Mental Health

Members served by treatment group agencies were also somewhat less likely to report symptoms of depression and anxiety. As shown in Figure 6, for example, 17% of families served by control group agencies reported that they had felt nervous, anxious, or on edge over the past two weeks compared to 15% of families served by treatment group agencies. Similarly, members served by treatment group agencies were less likely to report not being able to stop or control their worrying (14% vs. 16%).

FIGURE 6: Mental Health



Note:
The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates. Ns for specific questions may vary slightly based on missing values.

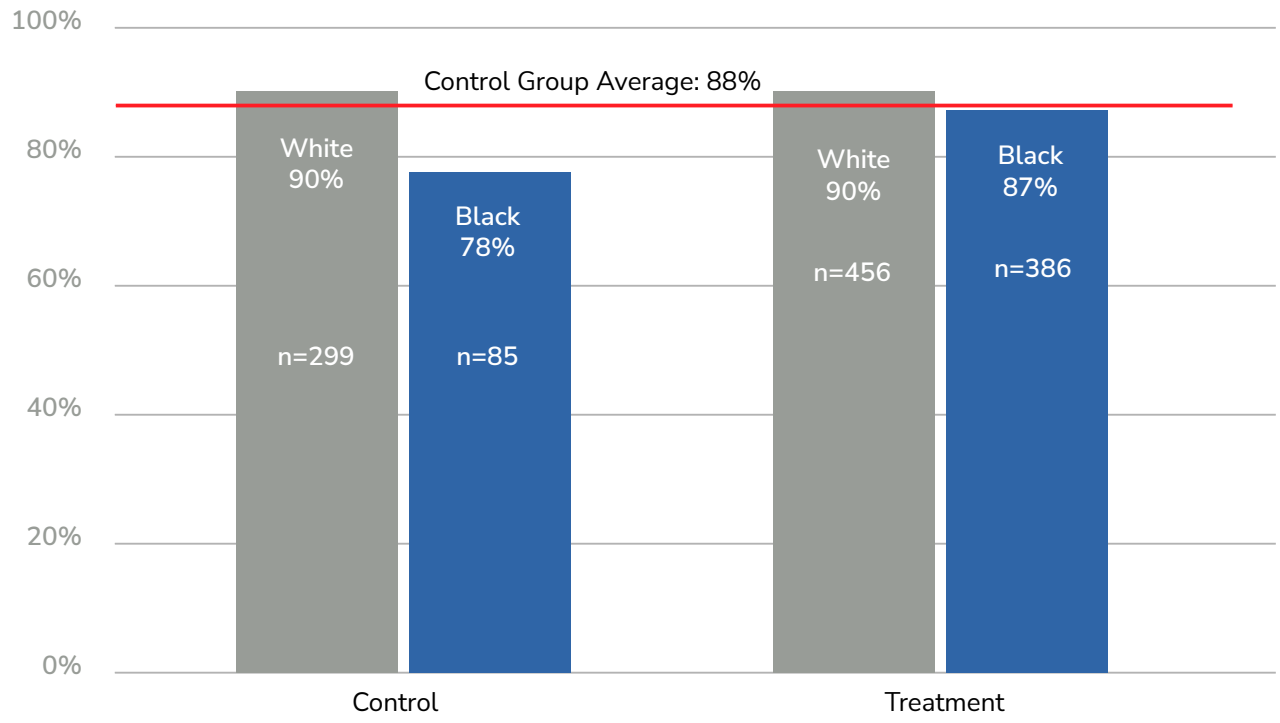
The HMHB Pilot Appears to Have Had a Positive Impact on Family Satisfaction

Consistent with prior research, we find that satisfaction with home visiting services is quite high, with over 85% of members in this pilot indicating that MIHP home visiting fully met their needs. However, members receiving services from treatment group providers were more likely to say that MIHP fully met their needs, compared to members in the control group.

- Overall, 88% of the families served by control group agencies said that home visiting fully met their needs compared to 91% of the treatment group.
- This was especially true for Black families. As shown in Figure 7, among Black families served by treatment group agencies, 87% said that home visiting fully met their needs compared to 78% of Black families served by control group agencies.

Being served by a treatment group agency appears to have almost eliminated the gap between White and Black families in the degree to which they felt that home visiting fully met their needs. In the treatment group agencies 90% of White families said the home visiting fully met their needs, and 87% of Black families said the same, a gap of 3 percentage points. In the control group, there was a 12 percentage point gap between White and Black families on this measure (90% vs. 78%).

FIGURE 7: Satisfaction with Home Visiting Services

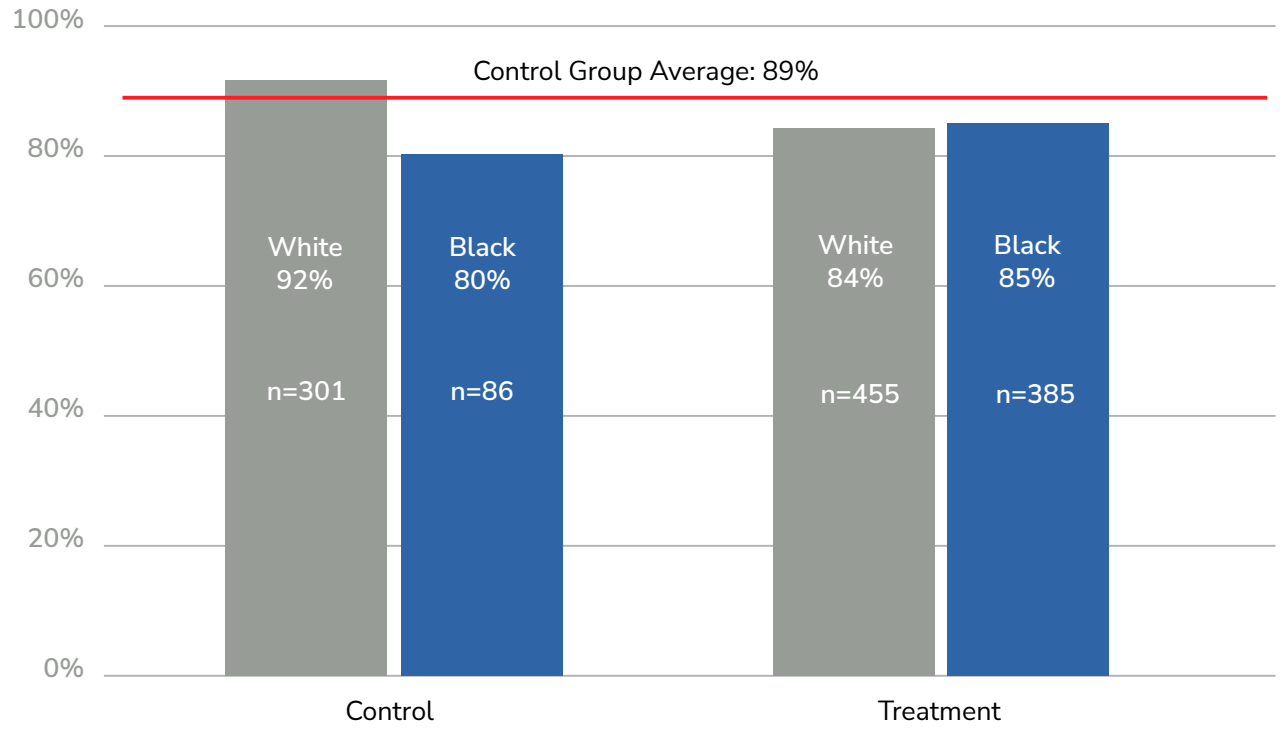


Note:

The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates.

There is a similar pattern in the percentage of families saying that their relationship with their home visitor was excellent or very good. Overall, most families served by both treatment and control group agencies said their relationship with their home visitor was very good or excellent. However, as shown in Figure 8, in the treatment group agencies, Black families were more likely to report having a very good or excellent relationship with their home visitor than Black families in the control group agencies (80% in the control group vs. 85% in the treatment group).

FIGURE 8: Relationships with Home Visitors



Note:

The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates.

We also examined over 500 open-ended responses from families detailing their relationship with the home visitor. An overwhelming majority of these responses spoke highly of their home visitors and the MIHP services they received. **It seemed that members were looking for a support system for parenting, and having a home visitor who was accessible and able to answer questions proved beneficial for most.** Figure 9 shows a word cloud highlighting the most frequently mentioned words in families' responses.

FIGURE 9: Most Frequently Mentioned Words in Families' Open-Ended Responses

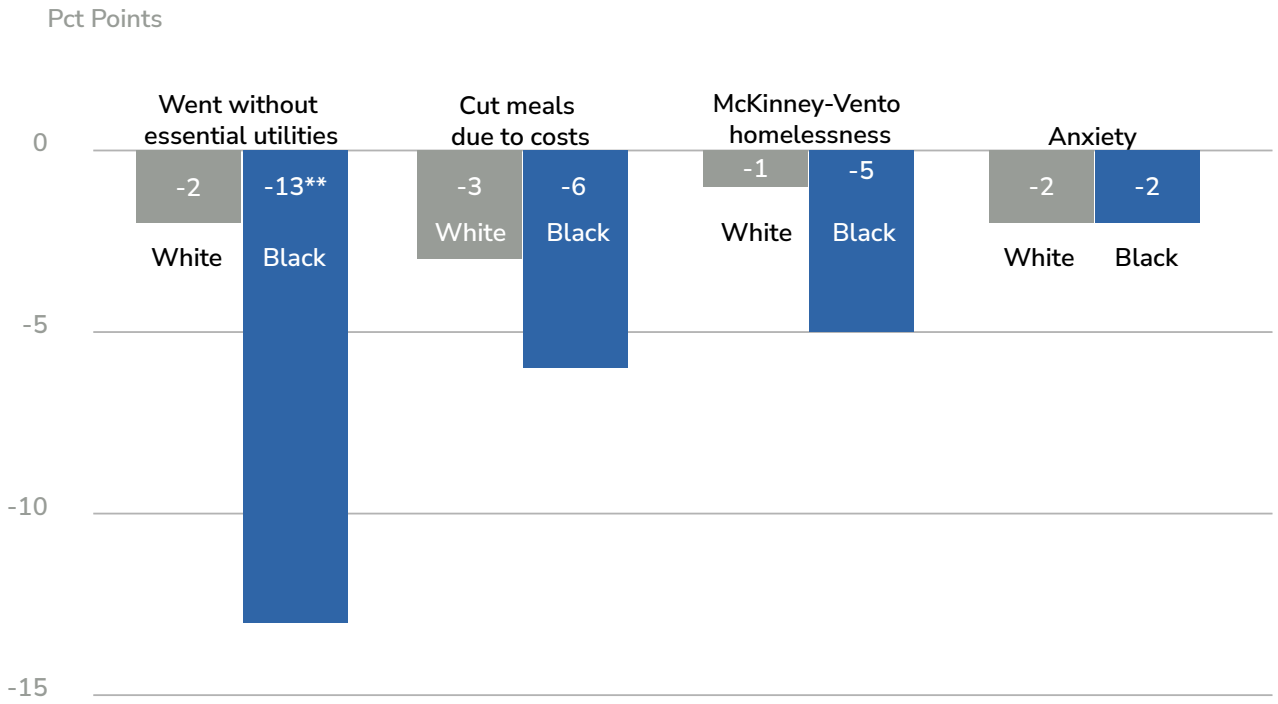
Note:
For clarity purposes, non-substantive words such as "really," "lot," or neutral nouns such as "visitor," or an individual's name have been excluded from this analysis.

The HMHB Pilot Seems to Have Been Particularly Beneficial for Black Families and Those Experiencing Their First Pregnancy

Figure 10 shows that the impacts of the HMHB pilot program were larger for Black members than White members across several dimensions. The number of Hispanic/Latinx families and families of other racial or ethnic backgrounds in our sample was too small to conduct subgroup analyses. Although the pilot appears to have had a positive impact on all members, compared to White families, Black families served by treatment group agencies were even less likely to have:

- Gone without essential services (a reduction of 13 percentage points for Black families vs. a reduction of 2 percentage points for White families);
- Cut meals (a 6 percentage point reduction for Black families compared to a 3 percentage point reduction for White families); and
- Met the McKinney-Vento definition for homelessness (a 5 percentage point reduction vs. a 1 percentage point reduction).

FIGURE 10: Pilot Impact on Families by Race



Note:

The values shown are from a conditional model that controls for covariates. The N is 449 for White families and 386 for Black families. Ns for specific questions may vary slightly based on missing values.

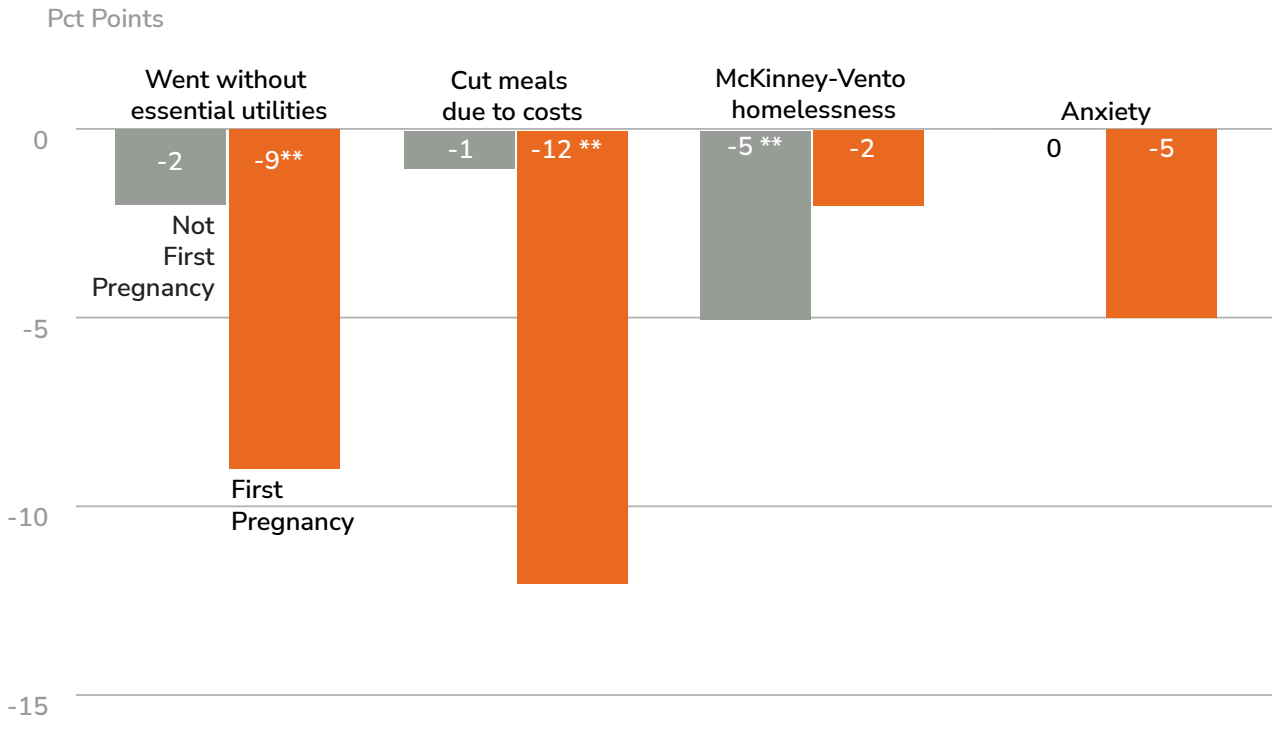
**Indicates statistical significance with a p-value < 0.05

We observed a similar pattern among members for whom this was their first pregnancy, as shown in Figure 11. As with Black families, **the impacts of the HMHB pilot program were larger for MIHP members for whom this was their first pregnancy. They were:**

- Less likely to go without essential services (a reduction of 9 percentage points vs. 2 percentage points);
- Less likely to cut meals (a reduction of 12 percentage points vs. 1 percentage point); and
- Less likely to experience anxiety (a reduction of 5 percentage points, vs. less than 1 percentage point).

However, the impact of HMHB on McKinney-Vento homelessness was larger for those for whom this was not their first pregnancy.

FIGURE 11: Pilot Impact on Families with First Pregnancy



Note:
The values shown are from a conditional model that controls for covariates. The N is 403 for families for whom this was a first pregnancy and 711 for families for whom this was not their first pregnancy. Ns for specific questions may vary slightly based on missing values.
**Indicates statistical significance with a p-value < 0.05

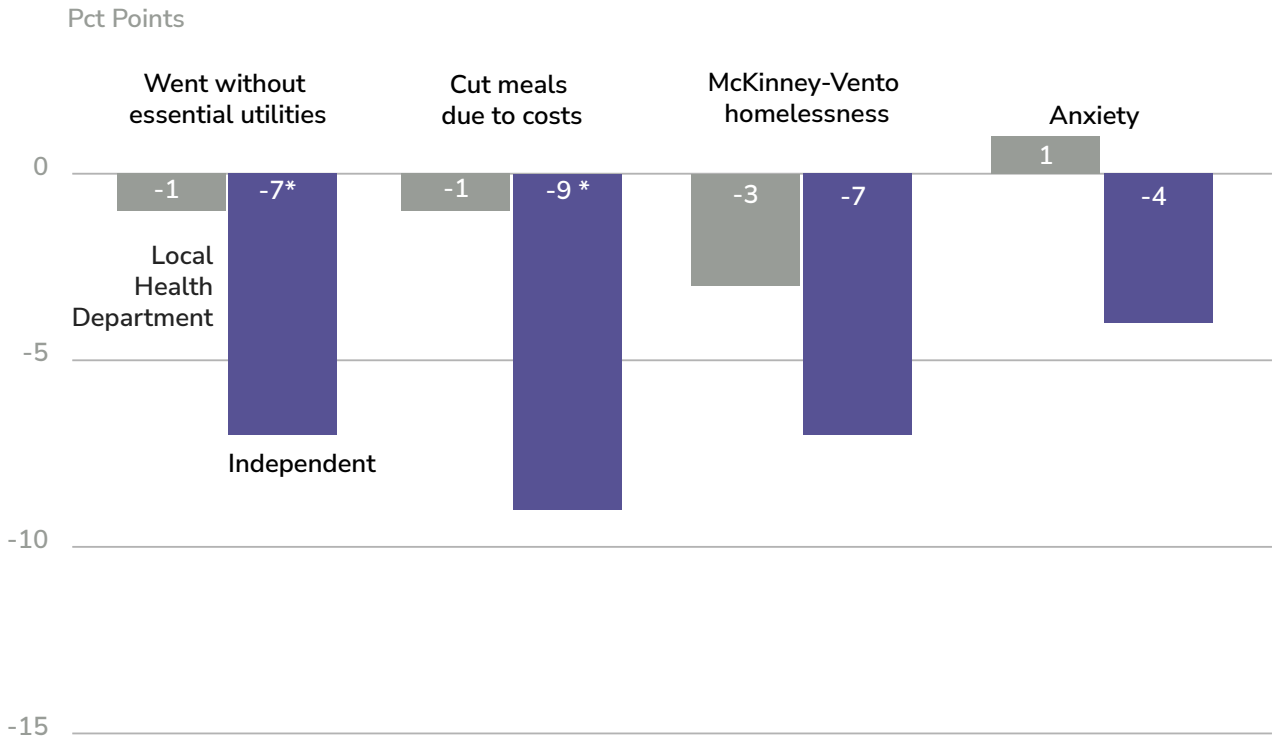
The HMHB Pilot Seems to Have Particularly Helped Independent Agencies Serve Their Members More Effectively

We also find **larger impacts of the HMHB pilot program among independent agencies compared to local health departments** (the number of health systems and FQHCs in our sample was too small to conduct subgroup analyses). As shown in Figure 12, members who were served by independent agencies were:

- Less likely to go without essential services (a reduction of 7 percentage points vs 1 percentage point);
- Less likely to cut meals (a reduction of 9 percentage points vs 1 percentage point);
- Less likely to meet the McKinney-Vento definition of homelessness (a reduction of 7 percentage points vs. 3 percentage points); and
- Less likely to experience anxiety (a reduction of 4 percentage points vs. an increase of 1 percentage point).

Independent MIHP agencies often struggle to cover their costs, so the extra funding provided by the HMHB pilot may have provided the resources necessary for these agencies to more effectively meet the needs of their members.

FIGURE 12: Pilot Impact on Families by Agency Type



Note:

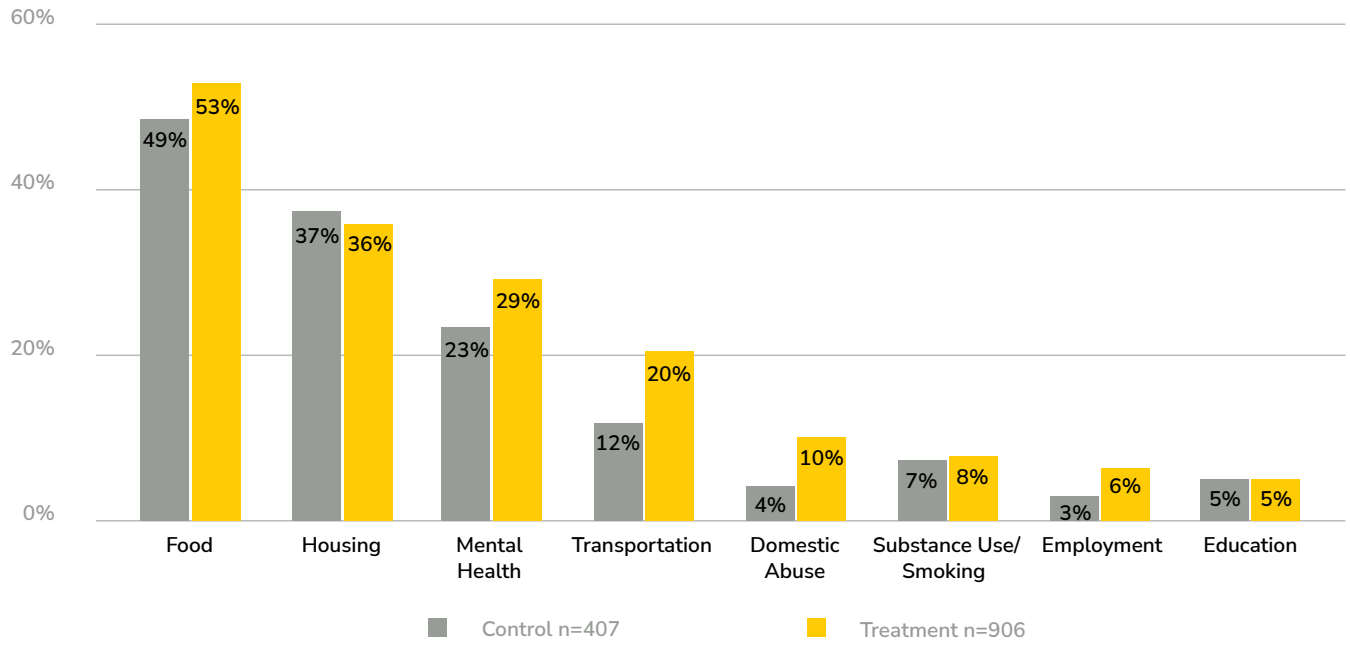
The values shown are from a conditional model that controls for covariates. The N is 295 for independent agencies and 574 for local health departments. Ns for specific questions may vary slightly based on missing values.

*Indicates statistical significance with a p-value < 0.1

Home Visitors in Treatment Group Agencies Were More Likely to Refer Members for Support

Consistent with these findings, on outcomes surveys completed by the home visitor we find that **home visitors in the treatment group agencies reported that they were more likely than home visitors in the control group agencies to refer their members for additional support and services** (see Figure 13 below). They were more likely to refer members to additional support for food, mental health, transportation, domestic abuse, and employment. Aside from transportation (where we found no differences in outcomes between families served by treatment and control agencies), the pattern of increased referrals matches the improvements we observed in outcomes for families. Home visitors in the treatment group were more likely to refer families for food, mental health, domestic abuse, and employment than home visitors in the control group and we saw corresponding reductions in food insecurity and domestic abuse, and improvements in employment and mental health.

FIGURE 13: Referrals by Home Visitors



Note:

The reported values for the control group come from an unconditional regression model. The reported values for the treatment group are drawn from a conditional model that controls for covariates

Billing Codes Suggest that Families Faced Multiple SDOH and Other Life Stressors

When submitting billing claims for the enhanced services that the HMHB pilot provided, home visitors were asked to indicate an associated "Z code." As noted earlier in this report, a subset of Z codes (Z55-Z65) addressing social determinants of health were used in this pilot to identify a variety of social, economic, and environmental issues that affect patients' health-related outcomes.

Z codes can help document important socioeconomic, community, and environmental factors that impact health outcomes. For example, a Florida study found that patients with a documented health-related social need had a higher prevalence of chronic conditions, four times the number of negative health events, and nine times the total annual health care costs compared to individuals without a documented health-related social need.[28] A national study of delivery-related hospital discharges found a 60% greater risk of stillbirth among patients with a documented SDOH risk factor compared to patients without a documented SDOH.[29]

As shown in Appendix Table A3, the Z codes used most frequently in the HMHB pilot suggest that needs among this population are varied and do not easily fit into a single category like transportation, housing, mental health, or domestic abuse. Instead, the codes used most often by home visitors were codes that capture more general need. The code used most frequently was "Other personal risk factors, not elsewhere identified," followed by "low income" and "stressful life events affecting family & household."

Findings from Provider Surveys Showed Few Direct Benefits to the Home Visitors Themselves

We had hypothesized that in addition to the benefits to MIHP members, home visitors in treatment group agencies might also benefit directly from the program via reductions in stress and burnout, increases in feelings of competence, or increases in overall job satisfaction. However, we found only limited evidence to support these hypotheses.

On provider surveys, home visitors were asked to indicate how effective they felt in addressing various social determinants of health. For most of the domains, home visitors in control group agencies were more likely to say they felt effective addressing social determinants of health with their members than home visitors in the treatment group. See Appendix Table A4 for details.

Similarly, on provider surveys, home visitors were asked to report on their satisfaction with various aspects of their job and work environments. Home visitors in treatment group agencies were more likely than home visitors in the control group to report satisfaction with the size of their caseloads, with opportunities for professional development, with the availability of referral resources, and with the flexibility of scheduling. However, in every other respect, treatment group home visitors were less likely to report they were satisfied with their jobs. Only 33% of the treatment group said they were very satisfied with their jobs overall, compared to 49% of the control group. Similarly, only 32% said they were very satisfied with their work-life balance, compared to 45% of the control group. See Appendix Table A5 for details. There is also limited evidence that the HMHB pilot helped reduce burnout. See Appendix Table A6 for details.

These findings are somewhat surprising but may reflect increases in the additional time home visitors can and need to devote to case management and extended visits. Although this extra time may add to the workload of individual home visitors, it appears to be beneficial to members who are the recipients of these additional services.

In open-ended response to the surveys, home visitors clearly seem to recognize and appreciate the benefits that are provided.

> *"This has been so helpful for the clinicians who have those high risk/high need clients that require more time and effort. It helps them provide a better service to the client and also allows them to not have the stress of feeling like they are not being productive on the job."*

> *"The HMHB pilot has been hugely beneficial in... allow(ing) more time to provide good care to our clients..."*

> *"If the extended visits and care coordination reimbursement goes away, I will no longer feel that I can meet families' needs or make the difference that MIHP can make in their lives. I cannot say enough good about these changes for our families..."*

LIMITATIONS

While these findings are encouraging, it is important to note several limitations of this research. First, although sites were randomized, the sites did not look identical at baseline. As noted above, for example, there were more large agencies in the treatment group than in the control group. Results hold even after controlling for many observable characteristics, including member race/ethnicity and agency location, type, and size. However, other unobservable differences in participating pilot sites across treatment arms could bias our results.

There was also a substantial amount of attrition from the sample: we do not have data from 16 of the 59 sites randomly assigned, an overall attrition rate of 27%. We are missing outcome data from six treatment group sites and ten control group sites, which is a differential attrition rate of 17 percent. This is considered a high level of attrition by the What Works Clearinghouse.[30] It is possible that attrition is leading to some bias in our results.

CONCLUSIONS

The HMHB pilot appears to have had a beneficial impact on the families served by MIHP agencies who were able to bill for enhanced services. The program had positive impacts (defined as two percentage points or more) on nine of the 17 primary outcomes we explored. In no case did the outcomes for families in the control group exceed the outcomes for families in the treatment group by more than 2 percentage points. In some cases, the impact of the program was quite large. Among families served by treatment group agencies we observed:

- A 43% reduction in families who reported going without essential utilities in the last month;
- A 62% increase in the likelihood that a person who was unemployed and looking for work had contacted someone about a job; and
- A 25% reduction in families meeting the McKinney-Vento definition of homelessness.

The program seems to have been particularly beneficial for Black families and for individuals for whom this was their first pregnancy. Most notably:

- The program eliminated the gap between Black and White families in those who reported that the MIHP program met their needs.
- The program reduced the number of Black families who reported that they had gone without essential utilities in the last month by 13 percentage points. The program reduced the number of families who reported that they had cut meals due to cost in the last month by 12 percentage points for families for whom this was their first pregnancy.
- The program was particularly beneficial in helping independent MIHP agencies meet the needs of their members.

In the future we will also explore the impact of the HMHB pilot on several health care utilization outcomes from Medicaid Claims data. We will add those findings to this report once they are completed.

Given these findings, the investment in program resources is almost certainly cost effective. As just one example, we estimated that the additional services provided as part of

the pilot reduced homelessness by 5 percentage points among treatment group families. During the pilot, MIHP agencies provided enhanced services to 5,575 treatment group families at a total cost of approximately $3.2 million. A 5 percentage point reduction in homelessness would result in 278 fewer homeless families among the treatment group. Homelessness is estimated to cost society anywhere from $2,000-$35,000 per person per year, with higher costs associated with families who are homeless.[31] If we assume the cost is $5,000 per family in one year, then the intervention would save $1,390,000 (278*$5,000)—almost half the cost of the program, and this estimate considers only one of the many positive impacts of the program. The reductions in food insecurity, anxiety, and the number of families that have gone without essential utilities would all also yield considerable additional savings.

All of this suggests that Michigan families would benefit from expanding and institutionalizing this enhanced billing program and we are pleased to see that funding for the program is included in Governor Whitmer's Fiscal Year 2024-2025 budget, which was signed into law in July 2024. According to the updated Medicaid policy, starting on October 1, 2024, Medicaid will reimburse all MIHP providers for enhanced services. We are looking forward to the long-term benefits that the official rollout of these services across all MIHP agencies will bring to Michigan families.

APPENDIX

TABLE A1: Background Characteristics of Participating Families (Full Sample)

Race/Ethnicity	Control		Treatment		Total	
	n	%	n	%	n	%
Black / African American	207	18	698	31	905	26
Hispanic / Latino	48	4	175	8	223	6
White / Caucasian	490	42	706	31	1196	35
Multiracial	103	9	187	8	290	8
Other*	323	28	496	22	819	24
TOTAL	**1171**	**34**	**2262**	**66**	**3433**	**100**

** This category includes those who identified themselves as another race/ethnicity not listed above or prefer not to provide their racial background.*

TABLE A2: Background Characteristics of Providers

Race/Ethnicity	Control		Treatment		Total	
	n	%	n	%	n	%
Black / African American	13	24	10	11	23	16
Hispanic / Latino	2	4	1	1	3	2
White / Caucasian	35	64	65	71	100	68
Multiracial	0	0	2	2	2	1
Other*	5	9	13	14	18	12
TOTAL	**55**	**38**	**91**	**62**	**146**	**100**

** This category includes those who identified themselves as another race/ethnicity not listed above or prefer not to provide their racial background.*

TABLE A3: Frequency of Use of Z codes in Treatment Group

Diagnosis Code and Description	Frequency	Percent
Z91.89 Other specified personal risk factors, not elsewhere classified	759	25.78
Z59.6 Low income	430	14.61
Z63.79 Other stressful life events affecting family and household	423	14.37
Z60.0 Problems of adjustment to life-cycle transitions	318	10.80
Z63.72 Alcoholism and drug addiction in family	150	5.10
Z59.1 Inadequate housing	123	4.18
Z59.41 Food insecurity	92	3.13
Z63.0 Problems in relationship with spouse or partner	82	2.79
Z59.5 Extreme poverty	78	2.65
Z55.0 Illiteracy and low-level literacy	68	2.31
Z56.0 Unemployment, unspecified	53	1.80
Z77.22 Contact with and (suspected) exposure to environmental tobacco smoke (acute) (chronic)	52	1.77
Z72.0 Tobacco use	42	1.43
Z91.410 Personal history of adult physical and sexual abuse	41	1.39
Z62.810 Personal history of physical and sexual abuse in childhood	39	1.32
Z62.21 Child in welfare custody	23	0.78
Z59.00 Homelessness unspecified	22	0.75
Z62.811 Personal history of psychological abuse in childhood	22	0.75
Z72.4 Inappropriate diet and eating habits	19	0.65
Z62.0 Inadequate parental supervision and control	18	0.61
Z63.5 Disruption of family by separation and divorce	15	0.51
Z65.3 Problems related to other legal circumstances	12	0.41
Z63.1 Problems in relationship with in-laws	11	0.37
Z56.3 Stressful work schedule	10	0.34
Z77.29 Contact with and (suspected) exposure to other hazardous substances	9	0.31
Z65.4 Victim of crime and terrorism	7	0.24
Z77.011 Contact with and (suspected) exposure to lead	5	0.17
Z56.1 Change of job	4	0.14
Z60.5 Target of (perceived) adverse discrimination and persecution	4	0.14
Z59.0 Homelessness	3	0.10
Z59.4 Lack of adequate food and safe drinking water	3	0.10
Z56.2 Threat of job loss	2	0.07
Z65.0 Conviction in civil and criminal proceedings without imprisonment	1	0.03
Z65.2 High risk homosexual behavior	1	0.03
Z72.52 Personal history of nonsuicidal self-harm	1	0.03
Z91.51 Personal history of suicidal behavior	1	0.03
Z91.52 Problems related to release from prison	1	0.03
TOTAL	55	91

TABLE A4: The Percentages of Home Visitors Feeling Effective* in Addressing Families' Social Determinants of Health (SDOH)

	Control		Treatment	
	Sample size	Percent	Sample size	Percent
Food	87	86	53	87
Housing	82	34	50	47
Finding a job	84	36	52	44
Financial Insecurity	83	29	52	42
Furthering their education	86	52	53	56
Transportation	85	48	53	51
Mental health	86	67	53	67
Substance misuse/smoking	86	45	53	53
Parenting support	86	78	53	85
Domestic abuse/intimate partner violence	87	59	53	64
Health care needs	87	87	53	85

** The results here only reflect responses from home visitors who indicated they felt "extremely effective" or "very effective" in addressing SDOH in at least one category.*

TABLE A5: Provider Job Satisfaction

	Control		Treatment	
	Sample size	Percent	Sample size	Percent
The amount of on-the-job stress in your job	54	25	80	19
The size of your caseload	52	24	82	27
Availability of referrals/resources for families	51	13	82	16
Coordination with health plans, other entities serving families, etc.	54	67	84	64
The amount of time required of you to get the job done	52	20	82	14
The flexibility of your schedule	54	25	77	27
The recognition you receive at work for your accomplishments	54	9	80	7
The training and professional development opportunities available to you	53	27	84	33
How rewarding the work with families is	53	64	83	58
Your work-life balance	54	45	83	32
Your job overall	54	49	81	33

** The results here only reflect responses from home visitors who said they felt extremely satisfied with any of the items listed above.*

TABLE A6: Staff Burnout Rate

	Control		Treatment	
	n	%	n	%
Low	6	11	9	11
Medium	39	74	46	55
High	8	15	28	34
TOTAL	53		83	

TABLE A7: Family Outcomes (Full Sample)

Family Outcomes	Control Group Mean	Treatment effects	Adjusted Treatment Group Mean	Standard Error	P-value	Treatment Observations	Control Observations
Cut meals due to cost (past month)	17%	-5%	12%	0.034	0.151	1122	493
Access to reliable transportation	85%	-1%	84%	0.021	0.775	1130	495
Went without essential utilities (past month)	16%	-7%	9%	0.026	0.01**	1117	492
Employed full time	22%	0%	23%	0.033	0.88	1115	495
Employed part time	17%	-1%	16%	0.028	0.716	1115	495
Reported domestic abuse (past month)	11%	-2%	9%	0.026	0.364	1111	483
Self-reported homelessness	5%	-1%	4%	0.012	0.477	1117	484
Concerns about housing	20%	-3%	18%	0.026	0.318	1109	483
McKinney-Vento homelessness	16%	-5%	11%	0.024	0.046**	1074	462
I have set goals about how to raise my child (past month)	57%	-1%	56%	0.027	0.629	1076	470
I learn new parenting skills and use them with my child (past month)	48%	3%	51%	0.032	0.29	1063	465
I am proud of myself as a parent (past month)	49%	2%	50%	0.028	0.582	1114	486
Depression symptoms (past 2 weeks)	11%	1%	11%	0.014	0.707	1048	456
PHQ score (past 2 weeks)	0.96	-0.073	0.89	0.062	0.242	1048	456
Anxiety symptoms (past 2 weeks)	19%	-1%	17%	0.022	0.508	1034	456
GAD score (past 2 weeks)	1.37	-0.155	1.21	0.102	0.129	1034	456
Little interest or pleasure in doing things (past 2 weeks)	9%	1%	10%	0.015	0.484	1117	489
Feeling down, depressed or hopeless (past 2 weeks)	10%	-1%	8%	0.017	0.425	1052	457
Feeling nervous, anxious or on edge (past 2 weeks)	17%	-2%	15%	0.021	0.371	1045	459
Not being able to stop or control worrying (past 2 weeks)	16%	-3%	14%	0.018	0.156	1046	457
MIHP fully met my needs	88%	3%	91%	0.030	0.294	1122	480
Excellent or good relationship with home visitor	89%	-1%	88%	0.034	0.668	1119	485
Unemployed & looked at job postings (past month)	54%	-2%	51%	0.061	0.696	182	67
Unemployed & applied to a job posting(past month)	24%	15%	39%	0.071	0.034**	182	67
Unemployed & contacted someone about a job (past month)	46%	-1%	44%	0.086	0.895	182	67
Unemployed and posted a resume online/updated information on a career networking website (past month)	21%	2%	23%	0.066	0.799	182	67
Unemployed and had a job interview (past month)	25%	-1%	24%	0.057	0.861	182	67
Other (unemployed and looking for work) (past month)	4%	9%	13%	0.059	0.115	182	67
Currently enrolled in school	11%	0%	11%	0.022	0.991	1127	492

**P-Value < 0.1*

*** P-Value < 0.05*

**** P-Value < 0.01*

TABLE A8: Family Outcomes (Subgroup)

Family Outcomes	Subgroup	Control Group Mean	Treatment effects	Adjusted Treatment Group Mean	Standard Error	P-value	Treatment Observations	Control Observations
Cut meals due to cost	White	13%	-3%	10%	0.038	0.42	449	301
Cut meals due to cost	Black	24%	-6%	17%	0.076	0.416	386	89
Cut meals due to cost	Not first pregnancy	13%	-1%	12%	0.025	0.687	711	313
Cut meals due to cost	First pregnancy	23%	-12%	11%	0.042	0.005**	403	178
Cut meals due to cost	Local health department	15%	-1%	13%	0.014	0.302	574	267
Cut meals due to cost	Independent agency	20%	-9%	11%	0.051	0.063 *	295	223
Anxiety	White	22%	-2%	21%	0.031	0.587	435	290
Anxiety	Black	14%	-2%	11%	0.043	0.627	345	74
Anxiety	Not first pregnancy	20%	0%	19%	0.024	0.861	644	291
Anxiety	First pregnancy	21%	-5%	16%	0.051	0.374	384	164
Anxiety	Local health department	19%	1%	20%	0.028	0.836	545	251
Anxiety	Independent agency	21%	-4%	18%	0.039	0.36	258	202
MIHP fully met my needs	White	90%	0%	90%	0.043	0.991	456	299
MIHP fully met my needs	Black	78%	10%	87%	0.064	0.136	386	85
MIHP fully met my needs	Not first pregnancy	90%	4%	94%	0.023	0.117	709	305
MIHP fully met my needs	First pregnancy	86%	3%	89%	0.046	0.555	405	173
MIHP fully met my needs	Local health department	94%	2%	96%	0.023	0.287	577	263
MIHP fully met my needs	Independent agency	83%	9%	92%	0.052	0.099 *	292	214
Excellent or good relationship with home visitor	White	92%	-8%	84%	0.051	0.128	455	301
Excellent or good relationship with home visitor	Black	80%	5%	85%	0.054	0.367	385	86
Excellent or good relationship with home visitor	Not first pregnancy	90%	-1%	89%	0.040	0.81	706	308
Excellent or good relationship with home visitor	First pregnancy	89%	-2%	87%	0.037	0.551	405	175
Excellent or good relationship with home visitor	Local health department	96%	-7%	89%	0.044	0.111	575	266
Excellent or good relationship with home visitor	Independent agency	85%	3%	88%	0.059	0.66	291	216
McKinney-Vento homelessness	White	13%	-1%	12%	0.031	0.816	433	290
McKinney-Vento homelessness	Black	22%	-5%	17%	0.044	0.216	368	77
McKinney-Vento homelessness	Not first pregnancy	17%	-5%	12%	0.020	0.01**	682	293
McKinney-Vento homelessness	First pregnancy	15%	-2%	13%	0.043	0.575	385	168
McKinney-Vento homelessness	Local health department	14%	-3%	10%	0.031	0.285	563	261
McKinney-Vento homelessness	Independent agency	20%	-7%	13%	0.050	0.163	268	199

TABLE A8: Family Outcomes (Subgroup) (Cont'd)

Family Outcomes	Subgroup	Control Group Mean	Treatment effects	Adjusted Treatment Group Mean	Standard Error	P-value	Treatment Observations	Control Observations
Went without essential utilities	White	8%	-2%	6%	0.019	0.371	446	300
Went without essential utilities	Black	24%	-13%	12%	0.049	0.009**	385	89
Went without essential utilities	Not first pregnancy	13%	-2%	11%	0.031	0.532	708	313
Went without essential utilities	First pregnancy	17%	-9%	8%	0.036	0.012**	401	177
Went without essential utilities	Local health department	7%	-1%	6%	0.022	0.668	571	265
Went without essential utilities	Independent agency	20%	-7%	12%	0.039	0.057 *	293	224

* *P-Value < 0.1*

** *P-Value < 0.05*

*** *P-Value< 0.01*

Endnotes

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Youth Policy Lab

The University of Michigan Youth Policy Lab was launched in 2016 with a vision for reducing socio-economic disparities through improvements in education and other social policies affecting youth. By developing evidence-based, policy-relevant research in partnership with local and state agencies, practitioners, and policymakers, Dr. Robin Jacob and Dr. Brian Jacob sought to build upon their exemplary careers in social science research by taking research findings out of academic journals and putting them in the hands of decision-makers. With this aim in mind, they have spent the past seven years bringing the resources and expertise of one of the nation's leading public research universities to bear on some of Michigan's most pressing social challenges.

The Youth Policy Lab envisions a world where partner-driven research drives positive social change. Our mission is to inform public policy decisions by analyzing data and evaluating programs to help our partners answer their most pressing questions.