

DEPARTMENT OF HEALTH & HUMAN SERVICES  
Centers for Medicare & Medicaid Services  
7500 Security Boulevard, Mail Stop S2-25-26  
Baltimore, Maryland 21244-1850



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## State Demonstrations Group

July 15, 2021

Kate Massey  
Director  
State of Michigan, Medical Services Administration  
400 South Pines Street  
Lansing, MI 48913

Dear Ms. Massey:

The Centers for Medicare & Medicaid Services (CMS) completed its review of the Evaluation Design, which is required by the Special Terms and Conditions (STC), specifically, STC #49, of Michigan's section 1115 demonstration, "Healthy Michigan Plan" (Project No: 11-W-00245/5), effective through December 31, 2023. CMS has determined that the Evaluation Design, which was submitted on August 12, 2019 and revised on May 27, 2021, meets the requirements set forth in the STCs and our evaluation design guidance, and therefore, approves the state's Evaluation Design.

CMS has added the approved Evaluation Design to the demonstration's STCs as Attachment F. A copy of the STCs, which includes the new attachment, is enclosed with this letter. In accordance with 42 CFR 431.424, the approved Evaluation Design may now be posted to the state's Medicaid website within thirty days. CMS will also post the approved Evaluation Design as a standalone document, separate from the STCs, on Medicaid.gov.

Please note that an Interim Evaluation Report, consistent with the approved Evaluation Design, is due to CMS one year prior to the expiration of the demonstration, or at the time of the extension application, if the state chooses to extend the demonstration. Likewise, a Summative Evaluation Report, consistent with this approved Evaluation Design, is due to CMS within 18 months of the end of the demonstration period. In accordance with 42 CFR 431.428 and the STCs, we look forward to receiving updates on evaluation activities in the demonstration monitoring reports.

We appreciate our continued partnership with Michigan on the Healthy Michigan Plan section 1115 demonstration. If you have any questions, please contact your CMS demonstration team.

Sincerely,

Danielle Daly  
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Danielle Daly -S  
Date: 2021.07.15  
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Andrea J.  
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Danielle Daly  
Director  
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Andrea Casart  
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cc: Keri Toback, State Monitoring Lead, CMS Medicaid and CHIP Operations Group

**Healthy Michigan Plan  
Final Evaluation Design – June 2021**

**June 24, 2021**

**University of Michigan  
Institute for Healthcare Policy & Innovation**



INSTITUTE FOR  
HEALTHCARE POLICY & INNOVATION  
UNIVERSITY OF MICHIGAN

## Healthy Michigan Plan Evaluation Design Narrative

### A. General Background Information about the Demonstration and Evaluation

The Centers for Medicare & Medicaid Services (CMS) approved the renewal of the Healthy Michigan Plan (HMP) Section 1115 Demonstration Waiver (Project No. 11-W-00245/5) on December 21, 2018, for the period January 1, 2019-December 31, 2023. The waiver provided approval for the State to require the following:

- (1) Beneficiaries age 19-62 to complete and report 80 hours per month of community engagement as a condition of eligibility, and
- (2) Beneficiaries with incomes >100% of the Federal Poverty Level (FPL) who have been enrolled in the demonstration  $\geq$ 48 months to (a) pay a monthly premium of 5% of income, and (b) complete a Health Risk Assessment (HRA) at redetermination or complete a healthy behavior in the previous 12 months as conditions of eligibility.

The community engagement policy was implemented on January 1, 2020. On March 4, 2020, the U.S. District Court vacated CMS approval of Michigan's community engagement waiver. The 48-month policy, consisting of the monthly premium and HRA/healthy behavior requirements, was slated to begin October 1, 2020, but was delayed due to the maintenance of effort requirements of Section 6008 of the Families First Coronavirus Response Act during the public health emergency (FFCRA) related to the COVID-19 pandemic.

This updated evaluation design reflects these modifications to the State's implementation plan. As a result, this evaluation design focuses on current HMP policies (cost-sharing and Healthy Behaviors Incentives program) and requirements expected to be implemented later in this waiver period (48-month policy). Activities to evaluate the impact of the community engagement requirement have been removed in response to the U.S. District Court decision as noted above. Activities to evaluate the impact of the 48-month policy are included, with a delayed timeline to reflect the uncertain date of implementation; these activities will be limited to descriptive trend analyses of administrative data to characterize enrollment patterns in individuals affected by the policy if the new 48-month policy is implemented after January 2023 because there otherwise would be insufficient time to complete the evaluation activities related to surveys of HMP beneficiaries affected by this policy for the summative report to be submitted to MDHHS in July 2024.

#### A.1. Overview and history of the demonstration

On April 1, 2014, Michigan expanded its Medicaid program under the Affordable Care Act (ACA) to include adults with incomes up to 133% FPL. To accompany this expansion, the Michigan Adult Benefits Waiver (ABW) was amended and transformed to establish HMP, through which the State intended to test innovative approaches to beneficiary cost-sharing and personal responsibility. HMP is administered through the Michigan Department of Health and Human Services (MDHHS). HMP beneficiaries receive a full health care benefit package, which includes all of the ACA-mandated essential health benefits. Most are enrolled in a managed care benefit (HMP-MC) and choose or are assigned a primary care provider through one of the State's Medicaid Health Plans.

Since 2014, to encourage beneficiary engagement and personal responsibility, HMP-MC beneficiaries with incomes above 100% FPL have been required to pay a monthly fee (formerly known as contributions) equal to 2% of their household income, similar to an insurance premium. In addition, all beneficiaries with incomes from 0 to 133% FPL have been required to pay service-related co-payments. Each HMP-MC beneficiary has a MI Health Account that tracks fees, co-pays, and health care expenditures. This cost-sharing policy was modified effective January 1, 2020, when medically frail beneficiaries became exempt from both fees and service-related co-payments.

To promote seeking preventive care, adopting healthy behaviors, and making responsible decisions about health care use, beneficiaries have opportunities to reduce their cost-sharing by participating in the Healthy Behaviors Incentives program, designed to encourage beneficiaries to maintain and implement healthy behaviors in collaboration with their primary care provider via a standardized Health Risk Assessment (HRA). Additional mechanisms to document healthy behaviors through claims/encounter data were later added to include beneficiaries who completed healthy behavior activities but did not submit an HRA.

In December 2017, MDHHS submitted an application to extend the HMP demonstration for an additional five years. In September 2018, the State applied to amend certain elements of HMP to comply with new provisions in state law, and these policy changes were approved by CMS in December 2018. Under the 48-month policy, beneficiaries with household incomes between 100% and 133% FPL and cumulative HMP enrollment of  $\geq 48$  months would be required to meet two conditions to maintain HMP eligibility. The first condition requires monthly premiums of 5% of their income in order for beneficiaries to become more familiar with how commercial coverage operates; the premiums would represent the beneficiary's full obligation, with no additional co-payments. Because the 5% premium is designed as a requirement to maintain eligibility, the evaluation team expects it will lead to higher rates of premium payment among those who are subject to this requirement. The second condition is completion of an HRA or documented engagement in a specified healthy behavior (e.g., cancer screening, influenza vaccination) within the twelve-month period prior to the annual eligibility re-determination deadline. Beneficiaries exempt from the new 48-month requirements include pregnant women, beneficiaries identified or self-attested as medically frail, beneficiaries not enrolled in a Medicaid Health Plan, and beneficiaries enrolled in the Flint Michigan Section 1115 demonstration. American Indian/Alaska Natives and children under 21 years of age are exempt from paying premiums but they will still be required to meet the HRA/healthy behavior requirement.

Implementation of the 48-month policy has been delayed, as noted above. Until implementation, HMP beneficiaries continue to be subject to the cost-sharing and HRA/healthy behavior policies described above.

## **A.2. Population groups impacted by the demonstration**

HMP beneficiaries enrolled in managed care, unless otherwise exempt, will continue to be subject to the cost-sharing responsibilities and HRA/healthy behavior incentives as described in the HMP Special Terms & Conditions (STC 22(d)) from CMS.

HMP beneficiaries with incomes 100-133% FPL and cumulative HMP enrollment of  $\geq 48$  months, unless otherwise exempt, will be subject to the new policy of monthly 5% premiums and annual HRA/healthy behavior requirements, as approved by CMS.

### **A.3. Goals of the demonstration**

As stated by MDHHS, the overarching goals of the HMP demonstration are to increase access to quality health care, encourage the utilization of high-value services, promote beneficiary adoption of healthy behaviors, and implement evidence-based practice initiatives.

The main objectives for HMP stated by MDHHS include:

- Improving access to healthcare for uninsured or underinsured low-income Michigan residents;
- Improving the quality of healthcare services delivered;
- Reducing uncompensated care;
- Strengthening beneficiary engagement and personal responsibility;
- Encouraging individuals to seek preventive care, adopt healthy behaviors, and make responsible decisions about their healthcare;
- Supporting coordinated strategies to address social determinants of health in order to promote positive health outcomes, greater independence, and improved quality of life;
- Helping uninsured or underinsured individuals manage their health care issues;
- Encouraging quality, continuity, and appropriate medical care

### **A.4. Other relevant contextual factors**

HMP was initially implemented in April 2014 in the context of broader changes to health insurance markets in Michigan and in other states under the Affordable Care Act. In particular, the health insurance exchange, associated premium tax credits, and individual mandate all affected consumer and employer behavior. An increase in private insurance coverage as people enrolled in the health insurance Marketplace established in 2013 also reduced the number of uninsured individuals in the state.<sup>1</sup> However, the longer-term trend toward private plans with high deductibles has meant that more privately insured patients face large out-of-pocket obligations when they are hospitalized, which may increase hospital uncompensated care for patients who are unable to pay hospital charges not covered by their private insurance.

The HMP community engagement requirement was implemented January 1, 2020, following months of beneficiary and stakeholder education. The implementation process gave MDHHS valuable experience in broad communication of policy changes, development of efficient methods of identifying policy exemptions, and modifying information systems to track policy compliance. From the perspective of beneficiaries, the rapid changes, from policy implementation to suspension, may have introduced confusion. A prior version of the evaluation plan included a randomized controlled trial to understand the impact of the community engagement requirement, and beneficiary surveys had begun as part of this effort.<sup>2</sup> These

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<sup>1</sup> Kaiser Family Foundation. [Marketplace Enrollment 2014-2019](#).

<sup>2</sup> [Evaluation of the Healthy Michigan Plan Section 1115 Community Engagement Requirement Waiver](#)

activities were discontinued after the March 2020 ruling that vacated CMS approval for the community engagement provision.

The first individuals diagnosed with COVID-19 in Michigan were identified in March 2020. Since that time, the COVID-19 pandemic has had a dramatic effect on health care utilization and costs and financial well-being for people in Michigan and across the country, including HMP beneficiaries. In particular, HMP enrollment, which had been quite stable in recent years, has grown substantially from approximately 670,000 individuals in March 2020 to over 874,000 individuals as of February 1, 2021. This substantial increase in enrollment can be attributed both to people becoming newly eligible for the program and also to the state's implementation of the maintenance of effort provisions of Section 6008 of the FFCRA.

## **B. Logic Model, Evaluation Questions, and Hypotheses**

### **B.1. Logic model**

Please see the evaluation logic models at the end of this document (pages 45-46).

### **B.2. Evaluation questions and hypotheses**

The evaluation questions and hypotheses are organized around three HMP policies and four broad goals of the overall demonstration that reflect the MDHHS objectives outlined in Section A.3 above. The seven components of the evaluation are: (1) Healthy Behaviors Incentives program, (2) cost-sharing, (3) 5% premium cost-sharing and HRA/healthy behavior requirements (48-month policy), (4) reduce uninsurance and uncompensated care, (5) promote primary care/responsible use of services, (6) support financial well-being, and (7) support coordinated strategies to address social determinants of health. Within each area, we have identified key evaluation questions that explore how HMP promotes the objectives of Titles XIX and XXI by improving access, continuity, and quality of care for low-income adults in Michigan. Because the MDHHS objectives for HMP are stated in qualitative terms, we have framed our hypotheses below to assess directional change without associated quantitative targets. The analysis plan is designed to identify both positive outcomes and potential adverse consequences.

#### **1. Healthy Behaviors Incentives Program**

**Evaluation question 1.1:** How has the health and healthy behavior engagement among Michigan adults changed since introduction of HMP and its Healthy Behaviors Incentives Program?

**Hypothesis 1.1:** Health status will improve and healthy behaviors will increase over time among income-eligible adults in Michigan compared with similar adults in comparison states.

**Evaluation question 1.2:** What is the association between beneficiary knowledge of the Healthy Behaviors Incentives program and efforts to maintain or improve health?

**Hypothesis 1.2:** Engagement in efforts to maintain or improve health will be higher among beneficiaries who report knowledge of the HMP Healthy Behaviors Incentives Program.

**Evaluation question 1.3:** Is HRA completion associated with improved health status and health behaviors?

**Hypothesis 1.3:** Beneficiaries who complete an HRA will report improvement in health status and health behaviors compared to beneficiaries who do not complete an HRA.

**Evaluation question 1.4:** Is HRA completion associated with higher rates of preventive service use?

**Hypothesis 1.4:** Beneficiaries who complete at least one HRA will demonstrate higher rates of preventive service use compared to beneficiaries who have similar primary care utilization but who have not completed an HRA.

**Evaluation question 1.5:** How has the Healthy Behaviors Incentives program, and HMP as a whole, affected beneficiaries' engagement in health behaviors and other efforts to maintain or improve health over time?

**Hypothesis 1.5:** Beneficiaries will describe assistance from primary care providers in setting health goals and engaging in behavior change to meet those goals.

**Evaluation question 1.6:** How do primary care providers use the HRA to assist in patient engagement and health promotion?

**Hypothesis 1.6:** Primary care providers will describe that they have become more knowledgeable over time about how to use the HRA to engage patients enrolled in HMP.

## 2. Cost-Sharing

**Evaluation question 2.1:** Do beneficiaries understand cost-sharing and other consumer-oriented features of HMP coverage?

**Hypothesis 2.1:** Beneficiaries who are aware of healthy behavior financial incentives will demonstrate a better understanding of cost-sharing obligations and connections between service utilization and amount owed.

**Evaluation question 2.2:** What factors are associated with beneficiaries' compliance with cost-sharing obligations?

**Hypothesis 2.2:** Beneficiaries with MI Health Account fees will have better payment compliance than their counterparts with service-based cost-sharing only.

**Evaluation question 2.3:** Are beneficiaries able to understand the MI Health Account statement?

**Hypothesis 2.3:** Beneficiaries will understand where to find the amount they owe, but may not understand how that amount is calculated.

**Evaluation question 2.4:** What are barriers and facilitators for beneficiaries to pay the amount owed?

**Hypothesis 2.4:** Beneficiaries will report financial barriers more often than logistical barriers to paying the amount owed.

## 3. 5% Premium Cost-Sharing & HRA/Healthy Behavior Requirements (48-month policy)



**Evaluation question 3.1:** Do beneficiaries subject to the new 48-month policy understand the requirements and consequences for noncompliance?

**Hypothesis 3.1:** Beneficiary literacy level will be associated with understanding of specific provisions of the new 48-month policy.

**Evaluation question 3.2:** Is the penalty of disenrollment for failure to complete the HRA/healthy behavior requirement stronger than the incentive of cost-sharing reduction for HRA/healthy behavior completion?

**Hypothesis 3.2:** Among beneficiaries subject to the new 48-month policy, HRA/healthy behavior completion will increase for beneficiaries with income >100% FPL who are subject to disenrollment, with no change for beneficiaries with income <100% FPL who are not subject to disenrollment.

**Evaluation question 3.3:** Among beneficiaries with income above 100% FPL, how does payment compliance change with the new cost-sharing requirements (from 2% fee and service-related co-payments to a flat 5% premium)?

**Hypothesis 3.3:** Payment compliance will be higher among those subject to the 5% monthly premium requirement than under the previous cost-sharing requirements.

**Evaluation question 3.4:** To what extent is the 5% monthly premium requirement associated with disenrollment?

**Hypothesis 3.4a:** The rate of disenrollment will be higher after implementation of the 5% monthly premium requirement compared to before implementation.

**Hypothesis 3.4b:** Disenrollment will disproportionately occur among beneficiaries with low utilization in the 24 months prior to implementation of the 5% monthly premium requirement.

#### **4. Overall demonstration: Reduce uninsurance**

**Evaluation question 4.1:** How have insurance coverage rates in the state changed since the implementation of HMP, compared with states that did not expand Medicaid and with states that expanded Medicaid without a waiver?

**Hypothesis 4.1a:** The decline in uninsurance among non-elderly adults in Michigan compared to other states that did not expand Medicaid that was observed in 2013-2017 will be sustained through subsequent years.

**Hypothesis 4.1b:** The decline in uninsurance among non-elderly adults in Michigan compared to other states that expanded without a waiver that was observed in 2013-2017 will be sustained through subsequent years.

#### **5. Overall demonstration: Promote primary care/responsible use of services**

**Evaluation question 5.1:** Does HMP's facilitation of primary care access (e.g., through managed care PCP assignment) influence beneficiary engagement in health and maintenance or improvement in physical and mental health?

**Hypothesis 5.1a:** Beneficiaries who report no barriers to primary care will be more likely to report improved health status and ability to take action to improve or maintain their health.

**Hypothesis 5.1b:** Beneficiaries who make regular primary care visits will be more likely to report improved health status and ability to take action to improve or maintain their health.

**Evaluation question 5.2:** What factors influence beneficiaries' decisions about seeking care in the emergency department?

**Hypothesis 5.2:** Beneficiaries who report barriers to care will be more likely to report an emergency department visit without first attempting to contact their primary care provider.

**Evaluation question 5.3:** Is use of the emergency department related to continuity of primary care?

**Hypothesis 5.3:** Beneficiaries with higher continuity of primary care will have lower rates of emergency department utilization and lower odds of being high-frequency ED utilizers.

**Evaluation question 5.4:** Does HMP promote more consistent use of services to manage chronic conditions over time?

**Hypothesis 5.4:** Beneficiaries with chronic conditions will demonstrate better rates of medication management and primary care utilization, and lower rates of ED visits and hospitalizations, over time compared to their initial year of HMP enrollment.

**Evaluation question 5.5:** How has HMP impacted beneficiaries' physical, mental, and oral health and their use of health care services over time?

**Hypothesis 5.5:** Beneficiaries will describe HMP as allowing them to receive services that have a significant positive impact on their health and well-being.

## **6. Overall demonstration: Support financial well-being**

**Evaluation question 6.1:** What impact has HMP had on beneficiaries' levels of employment and ability to work?

**Hypothesis 6.1:** Beneficiaries will report sustained or increased employment and decreased health-related barriers to employment over time.

**Evaluation question 6.2:** How is HMP enrollment related to individual beneficiaries' financial outcomes during and after HMP enrollment?

**Hypothesis 6.2:** HMP enrollment will be associated with improved credit report outcomes for beneficiaries over time.

**Evaluation question 6.3:** How has HMP affected beneficiaries' financial and material well-being over time?

**Hypothesis 6.3:** Beneficiaries will describe examples of how HMP has improved their financial and material well-being.

## **7. Overall demonstration: Sustain the safety net and support coordinated strategies to address social determinants of health**

**Evaluation question 7.1:** What are the categories and estimated amounts of the State’s costs to administer key HMP demonstration policies (e.g., Healthy Behaviors Incentives program, cost-sharing)?

**Hypothesis 7.1:** Administrative costs to implement demonstration policies will remain stable during the current Section 1115 waiver period.

**Evaluation question 7.2:** How do trends over time in Medicaid expenditures per member-month for HMP enrollees compare to those for beneficiaries in traditional Medicaid managed care?

**Hypothesis 7.2:** Annual trends in age- and sex-adjusted expenditures per member-month will demonstrate a lower rate of increase over time for enrollees in HMP managed care than for enrollees in traditional Medicaid managed care.

**Evaluation question 7.3:** How have uncompensated care costs in the state changed since the implementation of HMP, compared with states that did not expand Medicaid and with states that expanded Medicaid without a waiver?

**Hypothesis 7.3a:** The decline in hospital uncompensated care and the fraction of hospital discharges among non-elderly adults in Michigan for whom the primary payer was uninsured/self-pay compared with states that did not expand Medicaid that was observed between 2013 and 2017 will be sustained in subsequent years.

**Hypothesis 7.3b:** The decline in hospital uncompensated care and the fraction of hospital discharges among non-elderly adults in Michigan for whom the primary payer was uninsured/self-pay compared with states that expanded Medicaid without a waiver that was observed between 2013 and 2017 will be sustained in subsequent years.

**Evaluation question 7.4:** How does HMP support new or broadened initiatives to address social determinants of health for low-income adults in Michigan?

**Hypothesis 7.4:** State officials and safety-net providers will describe specific examples of health-promoting initiatives that build on HMP’s continuity, breadth of coverage, and primary care emphasis.

## **C. Methodology**

### **C.1. Evaluation design summary**

This new evaluation builds on key findings from the summative report prepared by the HMP evaluation team at the University of Michigan Institute for Healthcare Policy and Innovation for the initial five years of HMP (2014-2018) that was submitted to CMS by MDHHS in May 2019 and finalized in March 2020.

This evaluation design responds to the evaluation requirements outlined in the new HMP Special Terms and Conditions (STCs) (Section XII. Evaluation of the Demonstration) and related guidance provided by CMS in Attachment A: Developing the Evaluation Design.<sup>3</sup> The HMP evaluation team has also followed subsequent guidance released by CMS in March 2019 in its report, *Evaluation Design Guidance for Section 1115 Eligibility and Coverage Demonstrations*,

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<sup>3</sup> [Healthy Michigan Plan Section 1115 Demonstration Standard Terms and Conditions \(2018\)](#)

and guidance released in August 2020 in its report, *Implications of COVID-19 for Section 1115 Demonstration Evaluations: Considerations for States and Evaluators*.<sup>4</sup>

The evaluation will use multiple approaches, including analysis of state administrative data, publicly available data, and primary data collected through interviews and surveys. These data sources are described in detail in this evaluation narrative.

### ***Institutional Review Board (IRB) Review and Considerations***

Federal regulations governing human subjects protection specify categories of human subjects research that are exempt from the standard regulatory process, per the 2018 Common Rule (45CFR46 subpart A). Exemption category 5 includes:

1. Research and demonstration projects that are conducted or supported by a Federal department or agency, or otherwise subject to the approval of department or agency heads (or the approval of the heads of bureaus or other subordinate agencies that have been delegated authority to conduct the research and demonstration projects), and that are designed to study, evaluate, improve, or otherwise examine public benefit or service programs, including procedures for obtaining benefits or services under those programs, possible changes in or alternatives to those programs or procedures, or possible changes in methods or levels of payment for benefits or services under those programs. Such projects include, but are not limited to, internal studies by Federal employees, and studies under contracts or consulting arrangements, cooperative agreements, or grants. Exempt projects also include waivers of otherwise mandatory requirements using authorities such as sections 1115 and 1115A of the Social Security Act, as amended.
  - i. Each Federal department or agency conducting or supporting the research and demonstration projects must establish, on a publicly accessible Federal Web site or in such other manner as the department or agency head may determine, a list of the research and demonstration projects that the Federal department or agency conducts or supports under this provision. The research or demonstration project must be published on this list prior to commencing the research involving human subjects.

The evaluation plan has been reviewed and deemed exempt by the University of Michigan Medical School IRB under Exemption 5. The evaluation plan has also been reviewed and determined to be exempt by the MDHHS IRB, with approval of a HIPAA Privacy Waiver to use protected health information.

## **C.2. Target and comparison populations**

The evaluation plan does not include a broad experimental design that covers all data sources. Rather, the specific target and comparison populations are described for each data source and corresponding hypotheses in the accompanying table.

## **C.3. Evaluation period**

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<sup>4</sup> [CMS 1115 Demonstration State Monitoring & Evaluation Resources](#)

The evaluation period will include the current waiver demonstration period (January 1, 2019, to December 31, 2023). As specified in the descriptions of analytic methods, the period prior to January 1, 2019, will be used as a baseline comparison period when data from this period are available. The specific time periods to be utilized for each data source are described below.

#### **C.4. Data sources, evaluation measures, and analytic approach**

The following sources of data will be used in the evaluation:

- State administrative data
- Beneficiary survey (Healthy Michigan Voices)
- Interviews with beneficiaries
- Interviews with providers
- Interviews with key informants
- Credit data
- Behavioral Risk Factor Surveillance System (BRFSS)
- American Community Survey (ACS)
- HCUP Fast Stats inpatient discharge data
- Medicare cost reports

Descriptions of these data sources and how they will be included in the evaluation are presented below. Analyses related to the 48-month policy are included in italics given that they are contingent on implementation by January 2023. If the 48-month policy is implemented between January 2023 and June 2023, descriptive trend analyses of administrative data will be conducted, when feasible.

##### **C.4.1. State administrative data**

###### ***Data source***

Administrative data will be used in a variety of ways to document changes over time in program enrollment, engagement and utilization, and compliance with cost-sharing requirements. Administrative data allow for multivariate modeling that adjusts for both beneficiary characteristics (e.g., age, sex, region) and programmatic characteristics (managed care vs fee-for-service coverage, cost-sharing requirements) to understand patterns in different subgroups of beneficiaries; this information may be used by policymakers to understand the differential engagement in and benefit from HMP features across subgroups. Administrative data also will be used to describe trends over time in expenditures, with the ability to generate expenditure trends by service type, adjusted estimates by beneficiary characteristics, and comparisons to expenditure trends for other Medicaid benefit plans (e.g., traditional Medicaid).

The state of Michigan offers a rich data environment for evaluation. The backbone of the data environment is the state's Enterprise Data Warehouse. The Data Warehouse maintains individual-level, identifiable data for numerous programs within MDHHS, including:

- Medicaid enrollment files include eligibility dates for different benefit plans, enrollment start and end dates, contact information (address, phone, email), key demographic characteristics (gender, race/ethnicity), and third-party liability coverage.
- Medicaid administrative claims include service-level data on paid claims (fee-for-service)

and encounters (Managed Care), with accompanying billing and reimbursement information (e.g., CPT and ICD-10 diagnosis codes, billing modifiers, billing/rendering provider, paid amount) for inpatient, outpatient, pharmacy, durable medical equipment, dental, lab, and other services.

- Specialty behavioral health administrative claims include individual-level data on services provided through Michigan's behavioral health system.
- Michigan Care Improvement Registry houses individual-level immunization history including vaccine product, date of administration, and provider.
- HRA tables include individual-level data on administration of HRAs (e.g., dates of completion, whether HRA completion was facilitated by a provider, answers to individual HRA questions, and eligibility for HRA-related incentives (e.g., cost-share reduction)).
- Cost-share tables include individual-level data on charges for HMP fees, premiums and co-pays, cost-sharing reductions, and payment history.
- Other tables house data related to specific Medicaid initiatives, such as indicators of medical frailty and other exemptions from program requirements, eligibility for supplementary or pilot programs, and compliance actions.

Each beneficiary has a unique Medicaid ID number that enables linkages across data files within the Data Warehouse. The Data Warehouse houses data from other components of state government, such as the Department of Corrections, Department of Treasury, and Department of Licensing and Regulatory Affairs. The State has implemented a Master Person Indicator that allows linkages across departments once authorization has been obtained.

The HMP evaluation team has a longstanding history of working with MDHHS staff on projects utilizing the state Data Warehouse. A Business Associates Agreement executed between MDHHS and the University of Michigan authorizes direct access to the Data Warehouse via an existing secure portal. The HMP evaluation team has established data storage protocols that comply with MDHHS regulations, including the use of encrypted files, secure networks, and multiple layers of password protection. The evaluation team has extensive experience processing the administrative claims data into analytic data files.

This data source will be used to examine evaluation questions 1.4, 2.2, 3.2, 3.3, 3.4, 5.3, 5.4, and 7.2.

### ***Measures***

Data from the state Data Warehouse will be extracted and processed to derive an array of variables.

Enrollment-related variables will include:

- Cumulative months of HMP enrollment (overall, in HMP-Managed Care)
- Enrollment disruptions (number of disruptions, length of enrollment gaps)
- Disenrollment/noncompliance actions
- Timing of initial HMP enrollment (2014-2018 vs. 2019-2023)
- Change from HMP to another Medicaid benefit plan

Demographic variables will include:

- Age at initial HMP enrollment
- Race ethnicity as categorized in data warehouse
- Geographic region, based on prosperity region
- Income level (% FPL) as documented in the data warehouse
- Medicaid Health Plan for months enrolled in HMP-Managed Care
- Medical frailty indicators

HRA-related variables will include:

- Number and timing of initial and subsequent HRA completions
- Target behavior selected, and self-reported health status on initial and subsequent HRAs
- HRA-related incentives

Cost-sharing variables will include:

- Quarterly/annual amount owed (fees, premiums, co-pays)
- Amount and frequency of payments
- Evidence of cost-share reductions
- Non-compliance determinations

Utilization-related variables will be derived from claims data using established measures from the Healthcare Effectiveness Data and Information Set (HEDIS) and from the CMS Core Set of Adult Quality Measures for Medicaid. We will apply modifications as appropriate (e.g., to incorporate state-specific billing codes and/or data sources, to adjust age ranges to be consistent with HMP eligibility). We will calculate utilization-related measures that reflect HMP policies regarding use of primary care/preventive services, avoiding overuse of the emergency department, and effective management of chronic conditions. Specific outcome measures include:

Primary Care and Preventive Services

- Flu Vaccinations for Adults (NQF 0039; measure steward NCQA): percentage of beneficiaries who received an influenza vaccine between July 1 and June 30 (annual measure, modified to use immunization documentation from the MCIR and Medicaid claims rather than self-report)
- Colon Cancer Screening (NQF 0034, measure steward NCQA): percentage of beneficiaries aged 50-64 who received colon cancer screening by high-sensitivity fecal occult blood test, sigmoidoscopy with FOBT, or colonoscopy.
- Breast Cancer Screening (NQF 2372; measure steward NCQA): percentage of women 40-64 who had a mammogram to screen for breast cancer at least once in a two-year period
- Cervical Cancer Screening (NQF 0032; measure steward NCQA): percentage of women 21-64 years of age who received a Pap test to screen for cervical cancer at least once in a three-year period
- Adults' Access to Preventive/Ambulatory Health Services (HEDIS AAP; measure steward HEDIS): percentage of beneficiaries who made an ambulatory or preventive care visit
- Annual Dental Visit (HEDIS ADV; measure steward HEDIS): percentage of beneficiaries who made at least one dental visit, modified to include a sub-measure for preventive dental services

Emergency Department Utilization

- Overall ED utilization (HEDIS EDU; measure steward HEDIS): rate of ED visits per 1,000 member months
- High Frequency ED utilization: proportion of beneficiaries who make >5 ED visits within a 12-month period

#### Management of Chronic Conditions

- Pharmacotherapy Management of COPD Exacerbation (HEDIS PCE; measure steward HEDIS): percentage of COPD exacerbations for members 40 years of age and older who had an acute inpatient discharge or ED visit and who were dispensed appropriate medications.
- Medication Management for People with Asthma (HEDIS MMA; measure steward HEDIS): percentage of members identified as having persistent asthma who were dispensed appropriate medications that they remained on during the treatment period.
- Statin Therapy for Patients with Cardiovascular Disease (HEDIS SPC; measure steward HEDIS): percentage of members who were identified as having clinical atherosclerotic cardiovascular disease and who (a) were dispensed at least one high- or moderate-intensity statin medication and (b) remained on a statin medication for at least 80% of the treatment period.
- Statin Therapy for Patients with Diabetes (HEDIS SPD; measure steward HEDIS): percentage of members with diabetes who do not have clinical atherosclerotic cardiovascular disease who (a) were dispensed at least one high- or moderate-intensity statin medication and (b) remained on a statin medication for at least 80% of the treatment period.
- Follow-Up After Emergency Department Visit for People with Multiple High-Risk Chronic Conditions (HEDIS FMC; measure steward HEDIS): percentage of ED visits for members who have multiple high-risk chronic conditions that had a follow-up service within 7 days of the ED visit.
- Diabetes, Short-term Complications Admission Rate (NQF 0272; measure steward AHRQ): number of discharges for diabetes short-term complications per 100,000 beneficiaries.
- Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate (NQF 0275; measure steward AHRQ): number of discharges for COPD or asthma per 100,000 beneficiaries.
- Heart Failure Admission Rate (NQF 0277; measure steward AHRQ): number of discharges for CHF per 100,000 beneficiaries.

#### *Analytic approach*

For hypotheses based on utilization of health services and completion of HRAs, we first will identify the populations of interest based on the relevant evaluation timeframe (e.g., pre vs. post-implementation of the 5% premium), and beneficiary enrollment duration (e.g., cumulative enrollment of  $\geq 48$  months). We will also identify each beneficiary's enrollment dates in 12-month increments from initial enrollment, to facilitate longitudinal measures. We will apply measure specifications regarding age, diagnostic and utilization-based inclusion and exclusion criteria.

We will use paired t-tests to compare outcome measures across subgroups. We will employ multivariate negative binomial regression models controlling for demographic characteristics to



generate stratified results (e.g., beneficiaries with and without chronic conditions, those who did vs. did not complete an HRA). For beneficiaries with extended HMP enrollment, we will examine utilization over time (e.g., primary care continuity) and identify characteristics associated with suboptimal patterns (e.g., multiyear pattern of high-frequency ED use).

We will conduct three sets of sensitivity analyses: (1) examining the impact of enrollment disruptions by generating parallel measure results that maintain vs. relax HEDIS/NQA enrollment requirements; (2) examining the impact of managed care plan performance by generating parallel measure results for beneficiaries who do vs. do not remain in the same Medicaid Health Plan throughout their enrollment; and (3) examining the impact of data incompleteness by generating parallel measure results for beneficiaries who have evidence of other insurance in the Third-Party Liability fields.

For hypotheses related to compliance with cost-sharing obligations, we will use logistic regressions (any payment vs. no payment, full payment vs. partial payment) and ordered logistic regression (no payment, partial payment, full payment) analyses to examine differences in payment behavior for beneficiaries subject to fees vs. co-pays only. Analyses will adjust for age, gender, health conditions, race/ethnicity, urban/rural, income, length of HMP enrollment, and total cost-share liability.

Across all areas, we will conduct supplemental analyses, appropriate to each hypothesis, that address the impact of the COVID-19 public health emergency. For example, for measures that reflect a specific timeframe in the beneficiary's enrollment history, we will compare results for those whose measurement period occurred before, during or after the public health emergency. In addition, we will consider the impact of the public health emergency in the interpretation of results; for example, for measures tracking utilization rates over time, we will expect a larger decrease for services that require in-person care (e.g., flu vaccine, cancer screening) compared to services that can be delivered via telehealth (e.g., primary care visit, medication management) during the public health emergency.

The results of these analyses will be included in the interim report, with updated analyses included in the summative report.

*Analyses related to the 48-month policy will incorporate three key characteristics: HRA/healthy behavior completion, payment compliance and maintenance of enrollment. Because the 48-month policy includes disenrollment for beneficiaries who do not meet the requirements, we expect that compliance will be higher among those who are subject to the requirements than it was for this group before the 48-month policy took effect. We will test these hypotheses and identify other factors associated with compliance, by estimating bivariate logistic regression models predicting HRA/healthy behavior completion, payment compliance and maintenance of enrollment as a function of beneficiary characteristics, income (above or below 100% FPL), and enrollment period ( $\geq 48$  vs.  $< 48$  months of cumulative HMP enrollment). We will conduct stratified analyses to compare beneficiaries with higher vs. lower utilization in the 24 months prior to implementation of the new requirements, including number of primary care visits, dental visits, ED visits, inpatient stays, and medication fills.*

The results of analyses focused on the 48-month policy will be included in the summative report if this policy takes effect by January 2023. If the 48-month policy is implemented between January 2023 and June 2023, descriptive trend analyses of these administrative data will be conducted, when feasible.

#### **C.4.2. Beneficiary survey**

##### ***Data source***

The Healthy Michigan Voices (HMV) beneficiary survey will be conducted from July 2021 to April 2022 to understand the experience and impact of HMP structures and policies. *HMV surveys focused on the 48-month policy will be conducted 6-12 months after implementation of that policy.* Surveys supplement administrative data by documenting beneficiary knowledge of key policies such as of the Healthy Behaviors Incentives program and cost-sharing obligations; eliciting barriers that impede beneficiaries from responsible use of health services; describing lifestyle behaviors that impact health status; and understanding the extended impact of HMP on beneficiary financial well-being.

The HMV target population will be beneficiaries with at least 12 months of enrollment in HMP's managed care benefit, through which key HMP features are administered including the primary care provider assignment, HRA, healthy behavior incentives, and cost-sharing.

The beneficiary survey will include two groups: beneficiaries who participated in prior HMV surveys (Longitudinal Cohort), and a refresher sample of more recently enrolled HMP beneficiaries (New Cohort). Recontacting existing cohorts allows for a more thorough understanding of the experiences of beneficiaries over time, while adding new respondents allows for broader representation of the HMP population and understanding the experiences and impact of the program for those who enrolled more recently.

This data source will be used to examine evaluation questions 1.2, 1.3, 2.1, 3.1, 5.1, 5.2, and 6.1.

##### ***Survey cohorts & sample size***

The Longitudinal Cohort will be drawn from two prior HMV target populations:

- Cohort I included beneficiaries with initial HMP enrollment between April 2014 and October 2015. Cohort I completed their initial HMV surveys in 2016 (N=4,106), when beneficiaries had cumulative HMP enrollment of 13-28 months. Follow-up surveys were done in 2017 (N=3,104) and 2018 (N=2,608).
- Cohort II included beneficiaries with initial HMP enrollment between January 2016 and December 2017. Cohort II completed HMV surveys in 2018 (N=2,602) when beneficiaries had cumulative HMP enrollment of 13-24 months.

Inclusion criteria for initial selection into Cohorts I and II were enrollment in HMP-Managed Care in the month selected and at least 9 of the prior 12 months in managed care; preferred language of English, Arabic or Spanish; and having complete contact information (phone, address) in the MDHHS Data Warehouse. To ensure broad representation across income levels and geographic regions, stratified sample selection was done according to the following proportions:

Federal Poverty Level	Prosperity Region				
	UP/NW/NE	W/EC/E	SC/SW/SE	DET	Total
0-35%	7.0%	12.0%	8.0%	12.8%	39.9%
36-99%	6.0%	10.5%	7.0%	11.2%	34.8%
≥100%	4.9%	7.5%	5.0%	8.0%	25.5%
Total	17.9%	30.0%	20.0%	32.0%	100.0%

Eligibility for the Longitudinal Cohort will be based on enrollment in HMP-Managed Care in the month selected, regardless of any gaps in HMP coverage; and agreement to recontact on the prior HMV survey. As of October 2020, roughly 2,800 beneficiaries from HMV Cohorts I and II meet these criteria. We will target 2,000 completed surveys with the Longitudinal Cohort.

The New Cohort will be newly drawn from beneficiaries with initial HMP enrollment between August 2019 and December 2020; with the expected timing for data collection, beneficiaries will have cumulative HMP enrollment of 13-24 months. The New Cohort will be drawn using parallel inclusion criteria: enrollment in HMP-Managed Care in the month selected and at least 9 of the prior 12 months in managed care; preferred language of English, Arabic or Spanish; and having complete contact information (phone, address) in the MDHHS Data Warehouse. Stratified sample selection of the New Cohort will be done by income level and region using the same proportions as shown above. We will target 2,000 completed surveys with the New Cohort.

For two-tailed hypothesis testing with Type I error of 5% ( $p < 0.05$ ), this sample size is designed to provide 80% statistical power to detect a 5 percentage-point difference (i.e. 50% vs. 55% or 45%) between those with excellent/very good/good vs. fair/poor health. This sample size also allows for reliable outcome estimates by FPL, region, length of enrollment, and gender.

*Sampling for evaluation of the 48-month policy: We anticipate that the Longitudinal Cohort will yield about 400 beneficiaries who would be subject to the 5% premium and HRA/healthy behavior requirements, as verified by information from the state Data. If the Longitudinal Cohort yields fewer than 400, we will sample additional beneficiaries who have not participated in prior HMV surveys, in order to achieve a target number of at least 400 surveys with beneficiaries subject to the 48-month policy.*

### **Measures**

Key outcome measures will be based on validated items and scales used in prior HMV surveys. Health-related items will be drawn from national surveys, including the National Health and Nutrition Exam Survey (NHANES),<sup>5</sup> Health Tracking Household Survey (HTHS),<sup>6</sup> National Health Interview Survey (NHIS),<sup>7</sup> Behavioral Risk Factor Surveillance System (BRFSS)<sup>8</sup> and

<sup>5</sup> [NHANES \(National Health and Nutrition Exam Survey, CDC\)](#)

<sup>6</sup> [HTHS \(Health Tracking Household Survey\)](#)

<sup>7</sup> [NHIS \(National Health Interview Survey, CDC\)](#)

<sup>8</sup> [BRFSS \(Behavioral Risk Factor Surveillance System, CDC\)](#)

MiBRFSS<sup>9</sup>), Short Form Health Survey (SF-12),<sup>10</sup> Food Attitudes and Behaviors Survey,<sup>11</sup> Consumer Assessment of Healthcare Providers and Systems (CAHPS),<sup>12</sup> Employee Benefit Research Institute Consumer Engagement in Healthcare Survey (CEHCS),<sup>13</sup> Commonwealth Fund Health Care Quality Survey,<sup>14</sup> and Patient Activation Measure.<sup>15</sup>

Specific health-related outcome measures to be used in the analysis include:

- Physical, mental, oral health status (Excellent, Very good, Good, Fair, Poor)
- Number of days in past 30 days with poor physical health; with poor mental health; where poor physical or mental health kept you from usual activities
- Engagement in healthy lifestyle behaviors (physical activity/exercise, fruit/vegetable consumption, other attempts at healthy eating)
- Engagement in unhealthy lifestyle behaviors (smoking, binge drinking, substance use)
- Engagement in efforts to address unhealthy behaviors (smoking cessation, substance use treatment, diet change)
- Participation in health-supporting programs (peer support, wellness or disease management programs)
- Usual source of primary care
- Availability of primary care advice after hours
- Barriers to accessing primary care, other services
- Patient activation (confidence in ability to take action to maintain or improve health)
- Reason for ED visit in past 12 months
- Attempted contact with primary care provider prior to ED visit

Survey items that address specific HMP features will draw on questions that were developed and used for prior HMP surveys by the evaluation team.<sup>16,17,18,19,20</sup> If new policies are implemented or modified, items exploring those features (e.g., understanding of new requirements) will undergo pre-testing to assess clarity of wording and appropriateness of response choices. Additional items may be drawn from emerging topics identified during qualitative interviews with beneficiaries. Specific measures based on HMP policies will include:

- Knowledge of HRA/healthy behaviors and cost-share reduction incentive
- Completion of an HRA, engagement with primary care provider around HRA
- Knowledge of cost-sharing obligations and link between service utilization and amount owed
- Recall of MI Health Account statement

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<sup>9</sup> [MiBRFSS \(Michigan Behavioral Risk Factor Surveillance System, MDHHS\)](#)

<sup>10</sup> [SF-12 \(Short Form Health Survey, RAND\)](#)

<sup>11</sup> [FAB \(Food Attitudes and Behaviors Survey, NCI\)](#)

<sup>12</sup> [CAHPS \(Consumer Assessment of Healthcare Providers and Systems\)](#)

<sup>13</sup> [Consumer Engagement in Health Care Survey \(EBRI: CEHCS\)](#)

<sup>14</sup> [Commonwealth Fund Health Care Quality Survey](#)

<sup>15</sup> [PAM \(Patient Activation Measure\)](#)

<sup>16</sup> Goold, S. D., & Kullgren, J. (2018). [Report on the 2016 Healthy Michigan Voices Enrollee Survey.](#)

<sup>17</sup> Goold, S. D., & Kullgren, J. (2018). [Report on the 2016 Healthy Michigan Voices Enrollee Survey: Supplemental Analyses.](#)

<sup>18</sup> Clark, S. J. & Goold, S. D. (2018). [Report on the Healthy Michigan Voices 2016-17 Survey of Individuals No Longer Enrolled in the Healthy Michigan Plan.](#)

<sup>19</sup> Goold, S. D., Kullgren, J., Beathard, E., Kirch, M., & Bryant, C. (2018). [2017 Healthy Michigan Voices New Enrollee Survey Report.](#)

<sup>20</sup> Goold, S. D., Kullgren, J., Beathard, E., Kirch, M., Bryant, C., Tipirneni, R., Ayanian, J. Z. (2018). [2017 Healthy Michigan Voices Follow-Up Survey Report.](#)

- *Knowledge of new 48-month requirements and consequences for noncompliance*

Measures of employment and social determinants of health, used in previous HMP surveys, will be largely drawn from national surveys, such as the American Community Survey (ACS),<sup>21</sup> the Current Population Survey (CPS),<sup>22</sup> and the Health Reform Monitoring Survey (HRMS).<sup>23</sup> Items addressing the impact of the pandemic on employment and social determinants of health will be drawn from the NIH PhenX toolkit.<sup>24</sup> Specific measures related to employment and social determinants of health to assess the goals of the overall demonstration will include:

- Employment status (full/part time, number of hours worked)
- Health-related barriers to employment
- Other barriers to employment (inconsistent work hours, transportation, caregiving responsibilities, discrimination, homelessness in past 12 months)

### ***Survey administration***

HMP survey administration will build on strategies used successfully in previous HMP surveys. The evaluation team will utilize a Computer-Assisted Telephone Interviewing (CATI) system to administer surveys. Survey questions will be programmed into the CATI system, allowing for branching of survey items based on characteristics known prior to the survey and responses given during the survey. The CATI system will integrate individual characteristics (e.g. gender, name of Medicaid Health Plan) to allow for tailored question wording, as well as tailored branching based on identified characteristics (e.g., subject to 48-month policy). Interviewers will be trained on the survey instrument, including prompts and definitions, pronunciation of terms, and appropriate response to questions about coverage or services. Interviewers will engage in practice interviews and supervisor review of initial interviews until their proficiency is confirmed. Supervisors will conduct ongoing quality assessment checks to ensure fidelity to the interview protocol.

Sampled individuals will be mailed an introductory packet containing a letter explaining the project and a simple-language brochure with key information. The letter and brochure will provide phone, text and email options for individuals to indicate a preferred time/day for the interview or refusal to participate.

For sampled individuals who do not refuse to participate, interviewers will place phone calls between the hours of 9:00 AM and 8:30 PM. Non-respondents will receive two additional mailings with a brief letter and brochure encouraging participation. At the outset of the survey, interviewers will explain the purpose of the project, emphasize the confidentiality of responses, and obtain agreement to participate. Interviewers will note that completion of the survey is voluntary that questions can be skipped for any reason. Interviewers will also note that only aggregate data will be reported. Interviewers will ask if the interview can be recorded; in the prior HMP evaluation, over 95% of respondents agreed to be recorded. At the end of the survey, interviewers will ask if the respondent agrees to be re-contacted for future surveys and interviews and, if yes, the preferred phone, email, and text information to use. Individuals who complete the

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<sup>21</sup> [ACS \(American Community Survey\)](#)

<sup>22</sup> [CPS \(Current Population Survey\)](#)

<sup>23</sup> [HRMS \(Health Reform Monitoring Survey\)](#)

<sup>24</sup> [NIH PhenX Toolkit](#)

survey will be mailed a gift card in an amount commensurate with the expected time for participation (e.g., \$25 for an interview of 20-30 minutes); incentives will be administered through the University of Michigan research incentive system, to allow for tracking and replacement of lost cards.

Initial data files will be generated from the CATI system. Trained research assistants will review recordings to verify the accuracy of coding and to categorize responses to open-ended questions. Variables describing respondents' demographic and health services utilization characteristics will be generated from Medicaid administrative data for use in analysis of survey data.

### ***Analytic approach***

#### ***Survey weights***

Sample design and survey nonresponse will be handled through weights as well as adjustments to the weights. From the sample design, we will have base weights that account for over- or under-sampling based on the income and region stratification. Because the New Cohort will be drawn from the HMP enrollee list ("frame"), we will use a wide range of characteristics available in the frame to examine nonresponse patterns. A response propensity score model will be developed with multiple predictors. Using the estimated response propensity scores, we will develop weighting classes that include both respondents and nonrespondents and compensate for the potential nonresponse bias by adjusting the base weights of respondents. A similar procedure will be used for the Longitudinal Cohort sample with a wider range of characteristics available from the survey data. Once nonresponse adjustment is completed, we will combine the two samples and post-stratify to the known current beneficiary characteristics ascertained from the Data Warehouse (e.g., the population count of minority beneficiaries).

Note that weight adjustment addresses potential biases using the observed data from both the frame and the survey.

#### ***Overall analysis***

The design of the survey cohorts allows for three types of analyses.

Cross-sectional analyses of data collected in this evaluation period will include descriptive analysis with subgroup analyses by key beneficiary characteristics (age, gender, race/ethnicity, urban/rural, income, chronic condition, and cumulative HMP enrollment). As appropriate to the hypothesis, cross-sectional analyses may include bivariate comparisons based on survey response patterns (e.g., comparing beneficiaries who do vs. do not report HRA completion).

Comparison of an individual beneficiary's responses over time will be done only for the Longitudinal Cohort. For many items, respondents from Cohort I will have a total of four data points while respondents from Cohort II will have two data points. Comparisons over time will use mixed effects logistic regression models, adjusting for age, gender, race/ethnicity, region, income level, and chronic disease status.

Comparison of aggregate responses for cohorts at a similar point in their HMP enrollment (13-24 months of cumulative enrollment) will be operationalized by comparing responses from the initial HMV Cohort I survey vs. the initial HMV Cohort II survey (both included in the

Longitudinal Cohort) vs. the New Cohort. We will use independent sample t-tests and multivariate regression models adjusting for age, gender, race/ethnicity, income, and chronic disease status within each cohort.

High-level findings from these analyses will be included in the interim report and findings from more detailed analyses (e.g. multivariate, longitudinal) will be included in the summative report.

*Analyses related to the 48-month policy will include descriptive analysis with subgroup analyses by key beneficiary characteristics (age, gender, race/ethnicity, urban/rural, income).*

The results of analyses focused on the 48-month policy will be included in the summative report if this policy takes effect by January 2023, which would allow a sufficient period for survey data collection from enrollees affected by this policy through the end of the current waiver period in December 2023 and for data analysis between January and April 2024 to be included in the final summative report that will be finalized in May and June and submitted to MDHHS in July 2024.

### **C.4.3. Interviews with beneficiaries**

#### ***Data source***

Interviews with beneficiaries will be used to gain a richer understanding of the multifaceted ways that beneficiaries interact with and benefit from HMP coverage. We will conduct in-depth longitudinal qualitative interviews by telephone, with a purposive sample of approximately 30 beneficiaries who have completed a prior HMP survey and agreed to be recontacted. Sampling will reflect diversity of geographic region, income, age, gender, race/ethnicity, length of HMP enrollment, and health conditions. This design will allow us to conduct both cross-sectional and longitudinal mixed-methods analyses, using qualitative and survey data. The first round of interviews will be conducted from June to September 2021 and the second round of interviews will be conducted from November 2022 to March 2023.

We will send participants a \$25 gift card in recognition of their time (approximately 30-45 minutes per interview). We will request permission to record the interview and will generate verbatim transcriptions of those recordings.

This data source will be used to examine evaluation questions 1.5, 2.3, 2.4, 5.5, and 6.3.

#### ***Measures***

We will develop a structured interview guide to explore:

- How HMP has affected beneficiaries' engagement in health behaviors and other efforts to maintain or improve health
- Beneficiaries' understanding and perceptions of the MIHA statement, including terminology, layout, and description of payment options
- Barriers and facilitators to making payments
- How HMP has impacted beneficiaries' physical, mental, and oral health over time and their use of health care services
- How HMP has affected beneficiaries' financial and material well-being, including out-of-pocket costs for medical care and ability to work

### ***Analytic approach***

We will use an inductive approach to analysis, coding iteratively using standard qualitative analysis techniques and Dedoose software (<https://www.dedoose.com>). For the first stage of the process, immediately post-interview interviewers will complete a summary of major themes that arose during the interview that are relevant to the project aims. These summaries will be used to develop an initial codebook while data collection is still in progress. We will modify or add new codes to capture emerging themes. Then two team members will independently code the interviews, with differences in coding resolved by consensus in team meetings.

A cross-sectional analysis of initial interview data will be conducted for the whole group of beneficiaries, and in subgroups with shared experiences, e.g., those with cost-sharing obligations; those with chronic conditions. Case profiles will allow us to capture individual narratives in a reduced form that allows both within interviewee and between interviewee comparisons at the group level. Change over time at the individual level will be explored for specific research questions by analyzing responses to questions that remind interviewees of earlier responses and ask them to describe changes during the interval between interviews. Change over time at the group level will be assessed by comparing the overall key themes that emerged during the initial interviews to those that emerge from the follow-up interviews.

High level results from the initial interview data will be included in the interim report. This results of the longitudinal analysis of interview data will be included in the summative report.

### **C.4.4. Interviews with providers**

#### ***Data source***

Interviews with providers will offer a complementary perspective on how HMP, particularly the HRA process, facilitates beneficiary engagement with healthy behaviors. We will conduct 20-25 in-depth qualitative telephone interviews with a purposive sample of primary care providers from September-November 2021 who are the PCP of record for at least 5 HMP beneficiaries, based on information in the Data Warehouse from January to June 2021. The selected sample will reflect diversity of geographic region, setting (private practice, FQHC, health system-affiliated), and assigned number of HMP beneficiaries.

We will recruit providers via mailed invitation, with telephone and email follow-up. We will conduct 30-minute individual interviews via phone or Zoom, scheduled at the provider's convenience. We will offer a \$50 reimbursement for participation, an amount shown in prior projects to be sufficient to achieve recruitment goals. We will request permission to record the interview and will generate transcriptions of those recordings.

This data source will be used to examine evaluation question 1.6.

#### ***Measures***

We will develop a structured interview guide to explore providers' knowledge of HRA processes, including variation between health plans; perceptions of HMP beneficiaries' awareness of HRA processes and incentives; use of HRAs to facilitate conversations about



health risks and healthy behaviors; and knowledge of and referral to support services (e.g., peer support groups, gym memberships, online tools).

### ***Analytic approach***

We will conduct a thematic analysis of the provider interviews. We will review transcriptions to identify key themes and illustrative quotations.

High-level findings from this analysis will be included in the interim report and findings from more detailed analyses will be included in the summative report.

## **C.4.5. Interviews with key informants**

### ***Data source***

Interviews with key informants will provide insight and information about how Medicaid officials calculate and monitor the state cost impacts of HMP. These interviews will explore the costs of implementation and ongoing operations for specific demonstration policies, with a particular focus on components related to HRA/healthy behavior incentives and cost-sharing/premiums. This will include the costs of contracts to implement, monitor and evaluate demonstration policies, as well as staff time estimates to implement, administer, and communicate with beneficiaries. These interviews will also explore the short- and long-term effects of eligibility and coverage policies on Medicaid health service expenditures.

Interviews with key informants will also allow us to gain a broader understanding of how HMP has contributed to the development, facilitation, and maintenance of innovative approaches to system development and service delivery, including efforts to address social determinants of health. These innovations targeted to HMP and other Medicaid beneficiaries, and to the systems that serve them, are aimed at reducing barriers to care and improving connection, continuity, and coordination of care for beneficiaries. An example is the partnership between MDHHS and the Michigan Department of Corrections to initiate application for HMP prior to release of returning citizens from prison, facilitating transition to covered status upon release, and connection to primary care and behavioral health services. Other examples include the Michigan Opioids Task Force; Michigan's State Innovation Model and Health Homes initiatives; and use of community health workers by Medicaid health plans to facilitate outreach to beneficiaries, and coordination and connections to resources to address the social determinants of health. We expect to identify additional innovations during the interviews.

From December 2021 to March 2022, we will conduct 20-25 key informant interviews with two groups. The first group will focus on individuals familiar with Medicaid program administration, rate setting, budgeting, and operations, including the directors and/or key staff of Medicaid Policy, Operations and Actuarial Services, Managed Care Plan Division, and Customer Service Division. The second group will focus on administrators and service providers involved in developing and/or implementing state and local initiatives and services for HMP beneficiaries and HMP-eligible individuals, such as representatives from Medicaid health plans, Behavioral Health, and Public Health Administration; officials from other state departments, such as Michigan Department of Corrections; officials from provider organizations, such as the Michigan Primary Care Association (representing federally qualified health centers), the

Michigan Opioid Task Force and the Michigan State Medical Society; and representatives from relevant advocacy groups, such as the Michigan League for Public Policy.

Key informant interviews will be conducted, by telephone and are expected to take approximately 30-45 minutes. Interviews will be digitally recorded and transcribed.

This data source will be used to examine evaluation questions 7.1 and 7.4.

### ***Measures***

We will develop structured interview guides for each research question. For key informants who are familiar with Medicaid program administration, staffing and budgeting, we will discuss the state's calculation of the incremental costs associated with administering the distinctive policies of the Section 1115 waiver, including the Healthy Behaviors Incentives program, 5% premium cost-sharing requirement and HRA/healthy behavior requirement, and other cost-sharing provisions. For key informants involved in innovative approaches to system development and service delivery, including efforts to address social determinants of health, we will explore whether and how HMP facilitated or supported new or expanded initiatives, including; identifying eligible participants, how the initiatives facilitated connection, continuity and quality of care and addressing social determinants of health; barriers and facilitators to initiation, implementation over time focusing on the linkage to HMP; financing; and developing a model for sustainability for these initiatives.

### ***Analytic approach***

For key informant interviews pertaining to administrative costs, we will identify major themes related to monitoring and controlling costs. We will review documents shared by interview participants to identify changes in HMP costs over the period of HMP (2014-2023).

For key informant interviews related to programs to address social determinants of health, we will conduct a thematic analysis of the key informant interviews. Immediately following the interview, interviewers will complete a summary of major themes that arose. Subsequently, the interviewer will review the recording to confirm themes and identify illustrative quotations. These summaries will be used by evaluation team members to identify themes that emerged between interviews and quotes that exemplify these themes. This approach is designed to provide rapid but rigorous information to foster understanding of the contributions of HMP policy to systems and service system changes.

An overview of findings from this analysis will be included in the interim report and findings from more detailed analyses will be included in the summative report.

## **C.4.6. Credit data**

### ***Data source***

Analysis of linked credit report data from commercial credit agencies presents a unique opportunity to examine the impact of several different aspects of the HMP program on financial outcomes for beneficiaries.

To estimate the effect of HMP on household financial outcomes, we will link HMP administrative data to data on consumer credit histories provided by a credit reporting agency (TransUnion, Experian, or Equifax). Our data linkage procedure will closely follow that used in a previous study led by a U-M faculty member in IHPI that examined financial outcomes for HMP beneficiaries.<sup>25</sup> Data from the credit reporting agency will be matched with the HMP administrative data using name, address, and Social Security number. To preserve the confidentiality of HMP beneficiaries' identities, the matching process will utilize a double-blind procedure. Evaluation team members at U-M will extract the identifying information on HMP beneficiaries and append to this dataset a randomly selected sample of approximately one million Michigan residents drawn from an unrelated state health database. These additional observations will serve as "masking" observations. A file consisting of personal information for both HMP beneficiaries and the masking observations will then be provided to the credit reporting agency, which will perform the final step of the data linkage, and then deliver the data to our team with all identifying information removed. Because of the masking procedure, the credit reporting agency will be unable to distinguish which observations are associated with HMP beneficiaries. In the prior study, approximately 98% of HMP beneficiaries were successfully matched to the credit reporting data. We will obtain semi-annual snapshots of credit report data for HMP beneficiaries and comparison groups in low-income zip codes of states that have not expanded Medicaid, beginning in 2013 through 2022 (the most recent data we anticipate being available for analysis).

This data source will be used to examine evaluation question 6.2.

### ***Measures***

The credit reporting agency data include several measures that have been used in previous studies of financial distress. Our analysis will be informed by this previous research. One measure is the total amount of debt that has been sent by an original creditor to a third-party collection agency. This debt could represent unpaid bills or severely derogatory credit accounts, such as a credit card bill that is over 180 days late. The credit reporting agency data provide details on the type of third-party collections. Medical bills are reported separately from other sources of debt and are of particular interest. Another indicator of financial distress is credit accounts that are 30 days or more past due but not yet sent to a collection agency. The amount of credit that is in collections and the amount past due but not yet in collections can be summed to form the total amount of debt on which a consumer is delinquent. Another marker of financial difficulties that we will examine is the number of months a consumer is overdrawn on his or her credit card out of the last 12 months. While being overdrawn is not a measure of delinquency *per se*, it is a sign that the consumer is having difficulty spending less than their card limit. This may be a precursor to delinquent debt. We will also analyze financial judgments from court proceedings, including evictions from housing and personal bankruptcies, as measures of severe financial distress.

Finally, we will examine credit score or similar summary of creditworthiness. Lenders use this measure when evaluating whether to extend credit and at what price. As such, it is a concise summary of an individual's access to credit markets. We will analyze the credit score as a

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<sup>25</sup> Miller, S., Hu, L., Kaestner, R., Mazumder, B., & Wong, A. (2018). [The ACA Medicaid Expansion in Michigan and Financial Health](#). NBER Working Paper No. 25053.

continuous variable. We will also examine the probability that an individual has a credit score in the “subprime” ( $\leq 600$ ) range, as well as in the “deep subprime” ( $< 500$ ) range.

### ***Analytic approach***

We will construct several different cohorts of HMP beneficiaries with an appropriate comparison group for each cohort and examine credit report outcomes for all cohorts.

Early beneficiary cohort: Individuals who enrolled in HMP in 2014-2015 and have at least one year of total enrollment in HMP. *Comparison group:* Randomly selected individuals from low-income zip codes in states that have not expanded Medicaid.

Later beneficiary cohort: Individuals who enrolled in HMP in 2018-2019 and have at least one year of total enrollment in HMP. *Comparison groups:* (a) Randomly selected individuals from low-income zip codes in states that have not expanded Medicaid; (b) early beneficiary cohort.

2020 beneficiary cohort: Individuals who enrolled in HMP between March 2020 and March 2021 and have at least one year of total enrollment in HMP. *Comparison groups:* Randomly selected individuals from low-income zip codes in states that have not expanded Medicaid.

Disenrollment cohort: Individuals who disenrolled from HMP after at least one year of enrollment. *Comparison group:* Individuals matched on age, zip code, and initial enrollment period who remain enrolled in HMP.

For all analyses, we will use an event study framework to test for a break in trend from 2013 through 2022 within the cohort. We will also use standard difference-in-differences techniques using the comparison groups specified above, including using an evaluation of pre-trends in each cohort and its comparison group(s). If there is not good matching of the pre-trends between treatment and comparison groups, we will consider propensity score weighting or synthetic control methods combined with difference-in-differences analysis.

The results of the early beneficiary cohort and later beneficiary cohort analyses will be included in the interim report. The results of the 2020 beneficiary cohort and the disenrollment cohort will be included in the summative report.

## **C.4.7. Behavioral Risk Factor Surveillance System (BRFSS)**

### ***Data source***

We will use national survey data from the Behavioral Risk Factor Surveillance System (BRFSS)<sup>26</sup> to estimate changes in health behaviors and health status at the population level. The BRFSS is a nationally representative telephone survey of U.S. adults conducted at the state level and overseen by the Centers for Disease Control & Prevention. Its state-based sampling will allow us to compare changes in health behaviors and health status among low-income Michigan residents to low-income residents in Medicaid expansion states without a healthy behavior incentive or requirement, and to low-income residents in states that did not expand Medicaid.

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<sup>26</sup> [BRFSS \(Behavior Risk Factor Surveillance System, CDC\)](#)

Household income as a proportion of FPL for each respondent will be estimated from income and household variables available in the BRFSS.

This data source will be used to examine evaluation question 1.1.

### ***Measures***

Health outcome variables to be used in the analysis include [variable names]:

- General health status (Excellent, Very good, Good, Fair, Poor) [GENHLTH]
- Poor physical health days per month [PHYSHLTH]
- Poor mental health days per month [MENTHLTH]
- Poor physical or mental health keeping from doing usual activities [POORHLTH]

Health behavior variables to be used in the analysis [variable names] can be grouped into three categories:

#### Unhealthy lifestyle behaviors

- Smoking status, frequency, and cessation attempts [SMOKE100, SMOKDAY2, STOPSMK2]
- Alcohol use (unhealthy alcohol levels, binge drinking) [ALCDAY5, AVEDRNK3, DRNK3GE5, MAXDRNKS]

#### Healthy lifestyle behaviors

- Physical activity/exercise [EXERANY2, EXEROFT1, EXERHMM1]
- Fruit and vegetable consumption [FRUIT2, FVGREEN1, VEGETAB2]

#### Preventive health services

- Cholesterol screening [CHOLCH2]
- HIV screening [HIVTST7]
- Cancer screening: (e.g., colonoscopy, mammogram, Pap smear) [HADSIGM3, HADSGCO1, LASTSIG3, BLDSTOO, LSTBLDS3, HADMAM, HOWLONG, HADPAP2, LASTPAP2]
- Immunizations: Flu vaccine [FLUSHOT7]

### ***Analytic approach***

To focus on individuals who are likely to be eligible for HMP, the target group will include low-income Michigan adults between the ages of 19 and 64 with incomes less than or equal to 138 percent of the FPL. Similar to our prior work,<sup>27</sup> we will assess this group against two comparison groups: 1) low-income adults between the ages of 19 and 64 with incomes less than or equal to 138 percent of the FPL who reside in demographically or geographically similar states that expanded Medicaid as of the penultimate year of analysis (2019 for the interim report, 2021 for the summative report) but did not include a provision for a healthy behavior incentive or requirement; 2) low-income adults between the ages of 19 and 64 with incomes less than or equal to 138 percent of the FPL who reside in demographically or geographically similar states that did not expand Medicaid as of the penultimate year of analysis. Thus, states other than Michigan that expanded Medicaid with a healthy behavior provision (e.g., Indiana, Iowa) will be excluded from analysis.

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<sup>27</sup> Nelson, D.B., Sommers, B.D., Singer, P.M., Arntson, E.K., & Tipirneni, R. (2020). [Changes in Coverage, Access, and Health Following Implementation of Healthy Behavior Incentive Medicaid Expansions vs. Traditional Medicaid Expansions](#). *J Gen Intern Med*, 35, 2521–2528.

We will use a difference-in-differences analytic approach, comparing trends in health and health behavior outcomes in Michigan to trends in expansion states without a similar waiver and to non-expansion states. The pre-period will include the years 2011-2014 (prior to implementation of the first HMP waiver in 2014), and the post-period will include the years 2015-2022. The regression model will include fixed effects for state and quarter and also control for covariates, such as age, gender, race/ethnicity, marital status, education, income, employment status, and whether the respondent was part of the BRFSS cell phone sample. We will apply the BRFSS survey weights to all analyses. To meet the assumptions of the difference-in-differences analytic approach, we will assess for parallel trends between target and comparison groups among all outcomes in the pre-period. If the parallel trends assumption is not met for any outcome, we will minimize confounding by using propensity score matching based on inverse probability of treatment weights. These weights will be formed by estimating a logistic model of Medicaid enrollment for a sample of Michigan residents in the years before the implementation of the HMP healthy behavior program features and then applying the estimated parameter models to observations from Michigan and the comparison states.

A confounder of secular trends in Michigan and comparison states will be the coronavirus disease 2019 (COVID-19) pandemic experienced by all states in 2020 and 2021. The inclusion of time fixed effects in our models may partially but not completely mitigate this potential bias. Given higher enrollment during the economic downturn in 2020, sample selection may also be changed before and after the pandemic, despite using the same sample inclusion criteria. We will assess this by examining target and comparison group characteristics before and after 2020. We will also conduct sensitivity analyses assessing trends in health and health behaviors before and after 2020 to ensure the parallel trends assumption of difference-in-differences analysis is met, incorporating quarters in calendar years 2020 and 2021 as a confounding covariate in analyses, and consider dropping calendar year 2020 and some or all of 2021 from analyses.

The results of this analysis using BRFSS data from 2015 to 2020 will be included in the interim report and the results of this analysis using BRFSS data from 2015 to 2022 will be included in the summative report.

#### **C.4.8. American Community Survey (ACS)**

##### ***Data source***

The American Community Survey (ACS) is a nationally representative survey conducted annually by the Census Bureau. The sample size in the ACS public release is approximately 3 million individuals in each year. Our analysis will be limited to adults ages 19 through 64 since this is the group potentially eligible for HMP.

Focusing on observations for individuals from ages 19 to 64 yields approximately 1.8 million observations in each year. Of these individuals, approximately 58,000 in each year are in Michigan, while about 1.1 million observations are in other states that have expanded their Medicaid programs and about 690,000 are in states that have not expanded Medicaid. Based on

prior work with these data in the prior waiver evaluation,<sup>28</sup> we anticipate having to drop approximately 4 percent of all observations because they are missing data on family income.

This data source will be used to examine evaluation question 4.1.

### ***Measures***

Since 2008, the ACS has included a question about health insurance that asks respondents to indicate sources of current health insurance for every household member. Respondents may mark more than one option. We use these data (variable names HINS1 through HINS6) to create binary indicators of four different measures reflecting insurance outcomes: (1) Medicaid or related public coverage, (2) private non-group coverage, (3) employer-sponsored coverage (including TRICARE), and (4) uninsured. With the exception of uninsured, these outcomes are not mutually exclusive; someone might have, for example, both private non-group coverage and Medicaid; however, this is relatively unusual. Our primary outcomes of interest are Medicaid, private coverage, and uninsurance; trends in employer-sponsored coverage will also be reported. These data will be used to assess insurance coverage among non-elderly low-income adults ages 19 through 64 in Michigan relative to other states.<sup>29</sup>

### ***Analytic approach***

To evaluate the effect of HMP on insurance coverage we will use data from the ACS to compare trends in Michigan with trends in demographically or geographically similar non-expansion states and in demographically or geographically similar expansion states without a similar waiver. Comparing trends in Michigan with trends in non-expansion states extends the analysis we did in the original waiver evaluation. Comparing trends in Michigan with trends in other expansion states without similar waiver provisions will shed light on the impact of Michigan's waiver policies. Our analysis of insurance coverage will separately test for effects on the percentage of people with private health insurance, Medicaid, and uninsured.

We will apply standard difference-in-differences techniques. In the analysis of individual-level data from the ACS we will control for a standard set of individual demographic variables and variables that capture economic conditions measured at the state and sub-state level. These control variables include age, race/ethnicity (white non-Hispanic, black non-Hispanic, other non-Hispanic, Asian non-Hispanic, and Hispanic [any race]), education, gender, and marital status. To account for differences in labor market conditions, we will merge unemployment rate data from the Bureau of Labor Statistics to ACS observations at the state-year level.

We plan also to run analyses that minimize the influence of observed confounders on estimates of program effect by limiting the analysis sample to low-income adults with incomes less than or equal to 150% FPL.

The results of this analysis using ACS data from 2008 to 2020 will be included in the interim report and the results of this analysis using ACS data from 2008 to 2022 will be included in the summative report.

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<sup>28</sup> Levy, H. & Buchmueller, T. (2019). [Report on Reduction in the Number of Uninsured](#).

<sup>29</sup> ACS data are released annually in late September for the previous year. So, for example, 2023 ACS microdata would not be released until September 2024.

#### **C.4.9. HCUP Fast Stats inpatient discharge data**

##### ***Data source***

The Healthcare Cost & Utilization Project (HCUP) sponsored by the federal Agency for Healthcare Research and Quality (AHRQ) provides the Fast Stats database (<https://www.hcup-us.ahrq.gov/faststats/landing.jsp>) as a timely source of state-level inpatient discharge data. These data include demographic variables, diagnoses, and payer for patients discharged from non-federal acute-care hospitals.

This data source will be used to examine evaluation question 7.3.

##### ***Measures***

Outcomes of interest in the HCUP data include the fraction of hospital discharges for adults ages 19 through 64 for whom the primary payer is Medicaid or uninsured/self-pay. Additional outcomes include the fraction with private coverage or Medicare as primary payer.

##### ***Analytic approach***

To evaluate the effect of HMP on hospital payer mix for non-elderly adults, we will use data from the Medicare cost reports to compare trends in Michigan with trends in demographically or geographically similar non-expansion states and in demographically or geographically similar expansion states without a similar waiver. Comparing trends in Michigan with trends in non-expansion states extends the analysis we did in the original waiver evaluation. Comparing trends in Michigan with trends in other expansion states without similar waiver provisions will shed light on the impact of Michigan's waiver policies. Payer mix for inpatient hospital stays, which is an important determinant of hospital uncompensated care

The results of this analysis using HCUP data from 2010 to 2021 will be included in the interim report and the results of this analysis using HCUP data from 2010 to 2023 will be included in the summative report.

#### **C.4.10. Medicare cost reports**

##### ***Data source***

We will compare trends in uncompensated care provided by acute care hospitals in Michigan to trends for hospitals in other states using data from the Medicare Hospital cost reports. These data are available for all Medicare-certified hospitals in the U.S. Hospitals report data on a fiscal year basis. Information on uncompensated care comes from Schedule S-10 of the cost reports. The analysis in the prior waiver evaluation used cost report data corresponding to fiscal years 2011 to 2015. For the new waiver evaluation, we will extend the analysis period through 2024.

This data source will be used to examine evaluation question 7.3.

##### ***Measures***



As in the prior waiver evaluation and consistent with the research literature,<sup>30</sup> we will focus on uncompensated care, which equals the sum of charity care and bad debt. Both types of uncompensated care can arise from patients who are uninsured or from those who have private insurance but are unable to afford the cost-sharing required by their insurance plan. The amounts of charity care and bad debt that hospitals report to CMS represent the *charges* corresponding to the care provided. The *cost* of this care can be calculated by applying the hospital's cost-to-charge ratio, which is another measure that hospitals provide in their cost reports. We will analyze the cost of uncompensated care measured in dollars and as a percentage of total operating expenses.

Before analyzing these data, it will be necessary to complete several data cleaning steps. In some cases, hospitals submit multiple cost reports, often for periods that are shorter than 12 months. In these cases, we will combine multiple reports to create a single fiscal year observation for the hospital. We will also check the data for infeasible entries in key fields. Where such outliers are found, we will check for consistency within the set of submissions for a particular hospital. A hospital that consistently reports extremely high values in certain fields is less of a concern than a hospital that reports extreme values in one year, but not others.

### ***Analytic approach***

To evaluate the effect of HMP on uncompensated care, we will use data from the Medicare cost reports to compare trends in Michigan with trends in demographically or geographically similar non-expansion states and in demographically or geographically similar expansion states without a similar waiver. Comparing trends in Michigan with trends in non-expansion states extends the analysis we did in the original waiver evaluation. Comparing trends in Michigan with trends in other expansion states without similar waiver provisions will shed light on the impact of Michigan's waiver policies. In regression analyses, we will include hospital and area-level control variables obtained from other sources, including the American Hospital Association annual survey, the Health Resources and Service Administration, and the Bureau of Labor Statistics. These covariates will include hospital ownership status, teaching status, bed count, participation in the 340B prescription drug program, and the county unemployment rate where the hospital is located.

The results of this analysis using Medicare cost report data from 2010 to 2021 will be included in the interim report and the results of this analysis using Medicare cost report data from 2010 to 2023 will be included in the summative report.

## **D. Methodological Limitations**

The statewide implementation of the HMP waiver precludes the conduct of a randomized controlled trial. Where possible, we will rely on quasi-experimental designs (e.g., comparing statewide HMP trends to trends from other states; analyzing trends over time) using difference-in-differences or other appropriate methods to conduct more rigorous analyses of the main outcomes of interest. However, we will not be able to draw definitive causal inferences about specific features of HMP.

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<sup>30</sup> See, for example, Rhodes, J. H., Buchmueller, T. C., Levy, H. G., & Nikpay, S. S. (2019). [Heterogeneous Effects of the ACA Medicaid Expansion on Hospital Financial Outcomes](#). *Contemporary Economic Policy*.

Several HMP features are complementary, notably the enrollment of beneficiaries into managed care with a specific primary care provider and the encouragement to complete an annual health risk assessment with the primary care provider. It may not be possible to separate the effects of these complementary features. However, state Medicaid officials have expressed interest in understanding the additive benefit of an HRA requirement; as such, the evaluation includes several analyses that attempt to understand the contribution of HRA completion in both changes in health status and engagement in healthy behaviors.

The COVID-19 pandemic has had profound effects the availability and delivery of health care services for Medicaid beneficiaries in Michigan and throughout the country. These effects will impact the evaluation by disrupting trends in patterns of enrollment, utilization of services, employment, and financial stability. We will incorporate sensitivity and supplemental analyses throughout the evaluation, based on the timing of the federal COVID-19 public health emergency, to interpret the impact on evaluation results.

During Michigan's COVID-19 public health emergency, HMP enrollment increased by 30% over a one-year period. It is difficult to estimate the proportion of the enrollment increase due to people becoming newly eligible vs. the proportion due to the lack of disenrollment related to the maintenance of effort provisions of Section 6008 of the FFCRA. This will affect the calculation of claims-based outcomes (e.g., HEDIS, NQF measures) that rely on the number of beneficiaries or member-months for a denominator. We will address this limitation by recalculating outcomes after maintenance of effort provisions expire and enrollment corrections are implemented.

Evaluation activities that utilize administrative data rely on complete and accurate information in the state Data Warehouse. For longitudinal measures, we anticipate some challenges due to modifications in the data structure, particularly for the cost-sharing and HRA tables. We will address these challenges by working with state partners to understand changes in definitions and data management procedures, and employing sensitivity analyses to assess how differential categorization may impact results.

Nonresponse bias can affect evaluation results based on beneficiary surveys. We will address this limitation by employing strategies used in the prior evaluation period, including colorful and engaging recruitment brochures, varying the timing of contact attempts, using email addresses of beneficiaries when listed in the Data Warehouse, and allowing unscheduled call-in surveys as well as scheduled appointments. In addition, we will incorporate nonresponse into our weighting of results. Beneficiary surveys include some measures of self-reported health care utilization (e.g., ED visits in prior year, completion of an HRA), which may suffer from recall bias. When possible, we will validate self-report with claims and encounter data from the Data Warehouse.

Finally, data sources that reflect multi-state or national datasets will use income variables to represent the HMP population. Invariably, this data will include some individuals who are eligible but not enrolled in HMP, which may dampen potential observable effects.

## **F. Attachments**

### **Independent evaluator**

The CMS approval of the Section 1115 waiver for the Healthy Michigan Plan requires that the evaluation be designed and conducted by researchers who will meet the scientific rigor and research standards of leading academic institutions and academic journal peer review. The University of Michigan Institute for Healthcare Policy and Innovation (IHPI) is an interdisciplinary university-wide institute at a premier public research university. The mission of the Institute is to improve the quality, safety, equity, and affordability of health care. The Institute includes more than 650 health services researchers from 15 schools and colleges across the university. IHPI faculty members and staff are national leaders in health services research, health economics, and population health with substantial experience conducting rigorous evaluations of access to care, quality of care, costs of care, and health outcomes.

The Institute for Healthcare Policy and Innovation faculty members participating on the HMP evaluation team represent the University of Michigan Medical School, School of Public Health, Institute for Social Research, Ross School of Business, Ford School of Public Policy, and School of Social Work. They conducted the independent evaluation of the Healthy Michigan Plan during the first five years of the Section 1115 demonstration waiver that authorized this program from April 2014 through December 2018.

A summary of the HMP evaluation reports and articles published in peer-reviewed journals by the evaluation team is available on the Institute for Healthcare Policy and Innovation [website](#).

### **Brief biographies of evaluation team**

John Z. Ayanian, MD, MPP, is the Alice Hamilton Distinguished University Professor of Medicine and Healthcare Policy and Director of the Institute for Healthcare Policy and Innovation at the University of Michigan. He has led the team of faculty and staff conducting the CMS-authorized evaluation of the Healthy Michigan Plan in collaboration with MDHHS since 2014. He is a primary care physician and health services researcher whose research focuses on access to care, quality of care, and health care disparities, including the effects of insurance coverage on health services and outcomes. He is the lead author of three articles on the Healthy Michigan Plan published in the *New England Journal of Medicine*. Dr. Ayanian is an elected member of the National Academy of Medicine, a Master of the American College of Physicians, and the founding Editor of *JAMA Health Forum*.

Nora V. Becker, MD, PhD, is an Assistant Professor in the Department of Internal Medicine, Division of General Medicine, and at the Institute for Healthcare Policy and Innovation at the University of Michigan. Dr. Becker's research focuses on the impact of changes in health policy and health insurance coverage on health care utilization and health outcomes among women and economically disadvantaged populations. As a member of the HMP evaluation team, she brings expertise in health economics and working with insurance claims and financial data.

Thomas C. Buchmueller, PhD, is the Waldo O. Hildebrand Professor of Risk Management and Insurance at the University of Michigan's Stephen M. Ross School of Business. From 2012 to 2019 he served as the Chair of the School's Business Economics and Public Policy area. Buchmueller is an expert on the economics of health insurance and related public policies. His

areas of expertise on the HMP evaluation team include the impact of the expansion on health insurance coverage and on hospital uncompensated care. Other research on the Affordable Care Act includes studies on the law's effects on insurance coverage, hospital utilization and finances and labor market outcomes. In 2011-12 he served as Senior Health Economist to the President's Council of Economic Advisers.

Sarah J. Clark, MPH, is a Research Scientist in the Department of Pediatrics, based in the Susan B. Meister Child Health Evaluation and Research (CHEAR) Center at the University of Michigan. She also serves as Co-Director of the C.S. Mott Children's Hospital National Poll on Children's Health. Since joining the University of Michigan faculty in 1998, Ms. Clark has worked closely with Michigan Medicaid and other MDHHS units on projects evaluating programs and policies related to managed care, children with special health needs, substance use disorder, and provision of dental care, and others. She led the utilization analyses in the initial HMP evaluation, and oversaw data collection for the HMP beneficiary surveys.

Susan Dorr Goold, MD, MHSA, MA, is a Professor of Internal Medicine and Health Management and Policy. She engages patients and communities, particularly minority and underserved communities, in research on health policy. She served as the lead on the beneficiary and provider surveys in the initial HMP evaluation. The Healthy Michigan Voices surveys and interviews have become a national model for Medicaid expansion evaluations in numerous other states. She has served on a CMS panel advising state leaders about 1115 waiver evaluations, consulted for Mathematica as they developed guidance for 1115 waiver evaluations and serves on the advisory board for the Medicaid Demonstration Evaluation Learning Collaborative. Dr. Goold is a Fellow of the American College of Physicians and the Hastings Center.

Richard Hirth, PhD, is the S.J. Axelrod Collegiate Professor of Health Management and Policy at the University of Michigan School of Public Health. Dr. Hirth is an economist whose research focuses on healthcare spending, insurance design and payment systems. He led the cost-sharing analyses for the initial HMP evaluation. In that role, he led the analyses and report writing about the effects of HMP cost-sharing and premium contributions on spending, value of care, and program enrollment.

Edith C. Kieffer, MPH, PhD, is Professor Emerita at the University of Michigan School of Social Work. She conducts community-based participatory intervention research addressing disparities in health and health care. She has contributed to survey design, analyses, and development of reports, presentations and publications as part of the HMP evaluation team. She led the qualitative interviews and analyses conducted as part of the initial HMP evaluation which have provided an in-depth understanding of the perceptions and experiences of HMP beneficiaries, health care providers, and individuals who are eligible for HMP but unenrolled, in their own words. In 2015, she led cognitive interviews to assess HMP beneficiaries' understanding of their MI Health Account statements and recommend modifications.

Sunghee Lee, MS, PhD, is an Associate Research Scientist in the Survey Research Center at the University of Michigan's Institute for Social Research. She provides guidance on power analysis and sample design for the HMP evaluation and leads post-survey statistical weighting efforts.

Helen Levy, PhD, is a Research Professor at the University of Michigan's Institute for Social Research, Gerald R. Ford School of Public Policy, and School of Public Health. Her research interests include evaluating the impact of Medicaid expansion at both the state and national levels, the causes and consequences of lacking health insurance, and material hardship among older Americans. Her expertise on the HMP evaluation team includes the impact of the expansion on health insurance coverage and on hospital uncompensated care. She has also conducted research on the impact of Medicaid expansion nationally on economic outcomes including consumption and labor supply, and she co-authored a study of the fiscal impact of Michigan's Medicaid expansion on the state. Levy is also an Associate Director of the Health and Retirement Study, an NIH-funded longitudinal study of health and economic dynamics at older ages. She is a Research Associate at the National Bureau of Economic Research and served as a Senior Economist to the President's Council of Economic Advisers in 2010-11.

Minal Patel, MPH, PhD, is an Associate Professor in the Department of Health Behavior & Health Education at the University of Michigan School of Public Health. Emphases of her work include access to care, health care navigation, health-related financial burden, and team-based care. Dr. Patel has led studies focused on improving health insurance literacy in economically disadvantaged communities that are primarily covered under Medicaid/HMP, screening and addressing social determinants of health in clinical settings, and health care provider training in implementing guideline-based care. She contributed to the initial HMP evaluation by providing expertise to the survey team related to individuals with chronic conditions.

Zachary Rowe is Executive Director of Friends of Parkside, a non-profit, community-based organization that concerns itself with the health, education and safety of the residents that live in the Village at Parkside on the eastside of Detroit. He has more than 23 years of experience with community-based participatory research and was a founding member of the Detroit Urban Research Center (URC) Board. He serves on the Health Housing Heatwave Partnership Steering Committee, Healthy Environment Partnership Steering Committee, Community Action Against Asthma Steering Committee, the University of Michigan Clinician Scholars Program Advisory Committee and consults for the Michigan Institute for Clinical and Health Research. He has co-directed several projects with Dr. Goold, including the NIA-funded DECIDERS project.

Renuka Tipirneni, MD, MSc, is an Assistant Professor in the Department of Internal Medicine, Divisions of General Medicine and Hospital Medicine, and at the Institute for Healthcare Policy and Innovation investigating the impact of health reform policies and programs on low socioeconomic status, aging and other vulnerable populations, and on delivery of care in the health care safety net. As a member of the team conducting the initial HMP evaluation, she focused on assessing health and employment-related outcomes among enrollees. Dr. Tipirneni will continue to assist with evaluating these key measures in the next waiver evaluation.

Community Advisory Board. The HMP evaluation team has benefitted from the guidance and insights of a Community Advisory Board composed of leaders from minority and underserved communities across Michigan since 2014. These community leaders consult with the evaluation team to ensure Healthy Michigan Voices surveys and other evaluation activities are reflective of diverse perspectives. The Community Advisory Board has engaged with the University of

Michigan in Michigan-focused health policy projects since 2011 to give voice to these communities in decisions about health policy and health research.

### **Evaluation budget**

The HMP evaluation team has prepared and submitted an evaluation budget which includes the total estimated cost, as well as a breakdown of estimated staff, administrative, and other costs for all aspects of the evaluation.

### **Evaluation data collection, analysis, and reporting milestones**

The interim report will be submitted to MDHHS in July 2022 and will contain initial analyses of Data Warehouse (DW) enrollment and claims data, HMP survey data, beneficiary interview data, provider interview data, key informant interview data, credit report data, BRFSS data, ACS data, HCUP data, and Medicare cost report data, as well as findings from interviews with beneficiaries. The summative report will be submitted to MDHHS in July 2024 and will contain final analyses of administrative data, HMP survey data, beneficiary interview data, provider interview data, key informant interview data, credit report data, BRFSS data, ACS data, HCUP data, and Medicare cost report data, as well as the findings from provider interviews, beneficiary follow-up interviews, key informant interviews, and the HMP beneficiary survey.

The below timeline may be modified based on the duration of the federal declaration of the public health emergency, due to delays in data availability, as a result of any limitations on data collection due to pandemic workforce restrictions, or due to other reasons related to the COVID-19 pandemic. As noted above in Sections C.4.1 and C.4.2, evaluation activities focused on the 48-month policy will be limited to descriptive, trend analyses of administrative data if implementation of the new requirements occurs between January and June 2023.

<b>Evaluation Activities/Reporting Milestones</b>	<b>Date</b>
Initial linkages & analysis of DW data, credit report data, BRFSS data, ACS data, HCUP data, and Medicare cost report data	January 2021 – May 2022
Conduct beneficiary interviews	July 2021 – September 2021
Field HMP beneficiary survey	July 2021 – April 2022
Conduct provider interviews	September 2021 – November 2021
Conduct key informant interviews	December 2021 – March 2022
Conduct initial analyses of survey and interview data	October 2021-May 2022
<b>Interim report submitted to MDHHS</b>	<b>July 2022</b>
Ongoing analysis of HMP survey data, beneficiary interview data, provider interview data, key informant interview data, DW data, credit report data, BRFSS data, ACS data, HCUP data, and Medicare cost report data	August 2022 – May 2024
Conduct follow-up beneficiary interviews	November 2022 – March 2023
<b>Summative report submitted to MDHHS</b>	<b>July 2024</b>

## Healthy Michigan Plan Evaluation Tables of Hypotheses & Research Questions

### 1. Healthy Behaviors Incentives Program

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 1.1:</b> Health status will improve and healthy behaviors will increase over time among income-eligible adults in Michigan compared with similar adults in comparison states.			
<b>Research question 1.1:</b> How has the health and healthy behavior engagement among Michigan adults changed since introduction of HMP and its Healthy Behaviors Incentives Program?			
Similar adults in expansion states without a healthy behavior waiver provision	Proportion reporting fair/poor health status	BRFSS	Difference-in-difference regression model of health and health behavior outcomes in Michigan vs. comparison states not implementing similar waivers
	Proportion reporting >5 days in past 30 days with poor physical health, mental health, and physical or mental health keeping from usual activities		
	Proportion reporting engagement in unhealthy lifestyle behaviors		
	Proportion reporting engagement in healthy lifestyle behaviors		
Similar adults in states that did not expand Medicaid under the ACA	Proportion reporting receipt of preventive services		
<b>Hypothesis 1.2:</b> Engagement in efforts to maintain or improve health will be higher among beneficiaries who report knowledge of the HMP Healthy Behaviors Incentives Program.			
<b>Research question 1.2:</b> What is the association between beneficiary knowledge of the Healthy Behaviors Incentives program and efforts to maintain or improve health?			
Beneficiaries who report higher vs. lower knowledge of Healthy Behaviors Incentives program	Proportion reporting engagement in healthy lifestyle behaviors	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional survey outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, duration of HMP enrollment
	Proportion reporting that they are able to take actions to maintain or improve their health		
	Proportion reporting participation in health-supporting measures		
<b>Hypothesis 1.3:</b> Beneficiaries who complete an HRA will report improvement in health status and health behaviors compared to beneficiaries who do not complete an HRA.			
<b>Research question 1.3:</b> Is HRA completion associated with improved health status and health behaviors?			
Beneficiaries who do vs. do not report completion of an HRA	Proportion reporting fair or poor physical, mental and oral health status	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional survey outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, duration of HMP enrollment
	Proportion reporting >5 days in past 30 days with poor physical health, mental health, and physical or mental health keeping from usual activities		

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
	Proportion reporting improvement in physical and mental health over past 12 months		Mixed effects logistic regression models of Longitudinal Cohort responses over time, adjusting for age, gender, race/ethnicity, income, and chronic condition
	Proportion reporting engagement in unhealthy lifestyle behaviors		
	Proportion reporting engagement in healthy lifestyle behaviors		
<b>Hypothesis 1.4:</b> Beneficiaries who complete at least one HRA will demonstrate higher rates of preventive service use compared to beneficiaries who have similar primary care utilization but who have not completed an HRA.			
<b>Research question 1.4:</b> Is HRA completion associated with higher rates of preventive service use?			
Beneficiaries who do vs. do not have evidence of a completed HRA	Proportion with evidence of annual primary care and dental visits (HEDIS AAP, ADV)	Medicaid claims and encounter data; HRA tables	Bivariate comparison of outcomes; multivariate models adjusting for primary care continuity patterns; multivariate negative binomial regression controlling for demographic characteristics to generate stratified results for those with chronic conditions (asthma, heart failure, COPD, diabetes)
	Proportion with evidence of flu vaccine, cancer screening (NCQF 0039, 0034, 2372, 0032)		
<b>Hypothesis 1.5:</b> Beneficiaries will describe assistance from primary care providers in setting health goals and engaging in behavior change to meet those goals.			
<b>Research question 1.5:</b> How has the Heathy Behaviors Incentives program, and HMP as a whole, affected beneficiaries' engagement in health behaviors and other efforts to maintain or improve health over time?			
n.a.	Reported impact on engagement in health behaviors	Interviews with beneficiaries	Descriptive cross-sectional and longitudinal qualitative analysis
	Reported impact on other efforts to maintain or improve health		
<b>Hypothesis 1.6:</b> Primary care providers will describe that they have become more knowledgeable over time about how to use the HRA to engage patients enrolled in HMP.			
<b>Research question 1.6:</b> How do primary care providers use the HRA to assist in patient engagement and health promotion?			
n.a.	Reported usefulness of HRA as tool to engage patients	PCP interviews	Descriptive cross-sectional qualitative analysis; assessment of variation by plan participation, volume of HMP-enrolled patients
	Reported understanding of the HRA process and financial incentives		



## 2. Cost-Sharing

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 2.1:</b> Beneficiaries who are aware of healthy behavior financial incentives will demonstrate a better understanding of cost-sharing obligations and connections between service utilization and amount owed.			
<b>Research question 2.1:</b> Do beneficiaries understand cost-sharing and other consumer-oriented features of HMP coverage?			
Beneficiaries who do vs. do not report awareness of healthy behavior financial incentives	Proportion reporting awareness of financial incentives related to Healthy Behaviors Incentives program  Proportion reporting correct information about payment obligations, link between service utilization and cost-sharing  Proportion who recall receiving a MI Health Account (MIHA) statement	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional survey outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, literacy, duration of HMP enrollment
<b>Hypothesis 2.2:</b> Beneficiaries with MI Health Account fees will have better payment compliance than their counterparts with service-based cost-sharing only.			
<b>Research question 2.2:</b> What factors are associated with beneficiaries' compliance with cost-sharing obligations?			
Beneficiaries who are vs. are not subject to fees	Beneficiary-level payments (any payment, full payment) of amount owed	Medicaid cost-share tables	Descriptive quantitative analysis of the average amounts and distribution of cost-sharing obligations and estimating multivariate models adjusting for beneficiary characteristics including time enrolled, and subgroup analyses (such as age, gender, race/ethnicity, urban/rural, income, and length of HMP enrollment)
<b>Hypothesis 2.3:</b> Beneficiaries will understand where to find the amount they owe, but may not understand how that amount is calculated.			
<b>Research question 2.3:</b> Are beneficiaries able to understand the MI Health Account statement?			
n.a.	Understanding of MIHA terminology and layout	Interviews with beneficiaries	Descriptive cross-sectional qualitative analysis
<b>Hypothesis 2.4:</b> Beneficiaries will report financial barriers more often than logistical barriers to paying the amount owed.			
<b>Research question 2.4:</b> What are barriers and facilitators for beneficiaries to pay the amount owed?			
n.a.	Barriers and facilitators to making payments	Interviews with beneficiaries	Descriptive cross-sectional qualitative analysis

### 3. 5% Premium Cost-Sharing & HRA/Healthy Behavior Requirements (48-month policy)\*

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 3.1:</b> Beneficiary literacy level will be associated with understanding of specific provisions of the new 48-month policy.			
<b>Research question 3.1:</b> Do beneficiaries subject to the new 48-month policy understand the requirements and consequences for noncompliance?			
n.a.	Proportion reporting knowledge of HRA/healthy behavior requirement  Proportion reporting knowledge of 5% monthly premium requirement  Proportion reporting knowledge of consequences for noncompliance	Beneficiary surveys – longitudinal cohort (subject to 48-month policy)	Bivariate comparison of cross-sectional survey outcomes by literacy level; multivariate models adjusting for age, gender, race/ethnicity, chronic condition
<b>Hypothesis 3.2:</b> Among beneficiaries subject to the new 48-month policy, HRA/healthy behavior completion will increase for beneficiaries with income >100% FPL who are subject to disenrollment, with no change for beneficiaries with income <100% FPL who are not subject to disenrollment.			
<b>Research question 3.2:</b> Is the penalty of disenrollment for failure to complete the HRA/healthy behavior requirement stronger than the incentive of cost-sharing reduction for HRA/healthy behavior completion?			
Beneficiaries before vs. after implementation of the 48-month policy	Probability of completing an annual HRA or healthy behavior	Medicaid HRA tables	Regression model of HRA completion stratified by income group (</>100%), adjusted for demographic characteristics (gender, age, race/ethnicity, urban/rural)
<b>Hypothesis 3.3:</b> Payment compliance will be higher among those subject to the 5% monthly premium requirement than under the previous cost-sharing requirements.			
<b>Research question 3.3:</b> Among beneficiaries with income above 100% FPL, how does payment compliance change with the new cost-sharing requirements (from 2% fee and service-related co-payments to a flat 5% premium)?			
Beneficiaries before vs. after implementation of the 48-month policy	Rates of any payment, full payment of cost-share obligations	Medicaid cost-share tables	Regression model of payment adjusted for demographic characteristics (such as age, gender, race/ethnicity, urban/rural )
<b>Hypothesis 3.4a:</b> The rate of disenrollment will be higher after implementation of the 5% monthly premium requirement compared to before implementation.			
<b>Hypothesis 3.4b:</b> Disenrollment will disproportionately occur among beneficiaries with low utilization in the 24 months prior to implementation of the 5% monthly premium requirement.			
<b>Research question 3.4:</b> To what extent is the 5% monthly premium requirement associated with disenrollment?			
Beneficiaries with high vs. low utilization prior to implementation of the 48-month policy	Rate of HMP disenrollment  Utilization in prior 24 months (number of primary care visits, dental visits, ED visits, hospitalizations, medication fills)	Medicaid enrollment files Medicaid claims and encounter data	Comparison of disenrollment rates for pre- vs. post-implementation period using paired t-tests. Multivariate negative binomial regression controlling for demographic characteristics to generate stratified results for those with high vs. low utilization.

\*Contingent on implementation, if implemented between January 2023 and July 2023, all analyses will be descriptive, trend analyses.

#### 4. Overall Demonstration: Reduce uninsurance

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<p><b>Hypothesis 4.1a:</b> The decline in uninsurance among non-elderly adults in Michigan compared to other states that did not expand Medicaid that was observed in 2013-2017 will be sustained through subsequent years.</p>			
<p><b>Hypothesis 4.1b:</b> The decline in uninsurance among non-elderly adults in Michigan compared to other states that expanded without a waiver that was observed in 2013-2017 will be sustained through subsequent years.</p>			
<p><b>Research question 4.1:</b> How have insurance coverage rates in the state changed since the implementation of HMP, compared with states that did not expand Medicaid and with states that expanded Medicaid without a waiver?</p>			
<p>Similar adults in states that did not expand Medicaid under the ACA</p>	<p>Proportion of adults who are:</p> <ul style="list-style-type: none"> <li>• Uninsured</li> <li>• Insured through Medicaid</li> <li>• Insured through employer-sponsored coverage</li> <li>• Insured through private non-group coverage</li> </ul>	<p>ACS (variables HINS1 through HINS6)</p>	<p>Difference-in-differences regression model of coverage among all non-elderly adults, among low-income adults (e.g. income &lt;200% of FPL), and among adults with characteristics correlated with program eligibility (e.g., low levels of education)</p> <p>Regression adjusted for observable demographic characteristics (age, gender, race/ethnicity)</p>

## 5. Overall Demonstration: Promote primary care/responsible use of services

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 5.1a:</b> Beneficiaries who report no barriers to primary care will be more likely to report improved health status and ability to take action to improve or maintain their health.			
<b>Hypothesis 5.1b:</b> Beneficiaries who make regular primary care visits will be more likely to report improved health status and ability to take action to improve or maintain their health.			
<b>Research question 5.1:</b> Does HMP's facilitation of primary care access (e.g., through managed care PCP assignment) influence beneficiary engagement in health and maintenance or improvement in physical and mental health?			
Beneficiaries who do vs. do not report difficulty accessing primary care	Proportion reporting it is easy to get advice or an appointment from their primary care provider	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional survey outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, literacy, duration of HMP enrollment
Beneficiaries who do vs. do not report regular primary care visits (avg 1 per year)	Proportion reporting fair or poor physical, mental and oral health status		
	Proportion reporting >5 days in past 30 days with poor physical health, mental health, and physical or mental health preventing usual activities		
	Proportion reporting improvement in physical and mental health over past 12 months		
	Proportion reporting that they are able to take actions to maintain or improve their health		Mixed effects logistic regression models of Longitudinal Cohort responses over time, adjusting for age, gender, race/ethnicity, income, and chronic condition
<b>Hypothesis 5.2:</b> Beneficiaries who report barriers to care will be more likely to report an emergency department visit without first attempting to contact their primary care provider.			
<b>Research question 5.2:</b> What factors influence beneficiaries' decisions about seeking care in the emergency department?			
Beneficiaries who do vs. do not report difficulty obtaining needed services	Proportion reporting it is easy to get advice or an appointment from their primary care provider	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional survey outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, duration of HMP enrollment
	Proportion reporting medical urgency vs. PCP recommendation vs. other reason for ED visit in the past 12 months		
	Proportion reporting they attempted to contact their primary care provider before going to the ED, among those reporting ED visit		

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
			race/ethnicity, income, and chronic condition
			Mixed effects logistic regression models of Longitudinal Cohort responses over time, adjusting for age, gender, race/ethnicity, income, and chronic condition
<b>Hypothesis 5.3:</b> Beneficiaries with higher continuity of primary care will have lower rates of emergency department utilization and lower odds of being high-frequency ED utilizers.			
<b>Research question 5.3:</b> Is use of the emergency department related to continuity of primary care?			
Beneficiaries with higher vs. lower primary care continuity	Rate of ED visits (HEDIS EDU)  Proportion of high-frequency ED utilizers  Primary care continuity (average number of primary care visits per year)	Medicaid claims and encounter data	Comparison of ED outcomes using paired t-tests; multivariate negative binomial regression controlling for demographic characteristics to generate stratified results for those with chronic conditions (asthma, heart failure, COPD, diabetes)
<b>Hypothesis 5.4:</b> Beneficiaries with chronic conditions will demonstrate better rates of medication management and primary care utilization, and lower rates of ED visits and hospitalizations, over time compared to their initial year of HMP enrollment.			
<b>Research question 5.4:</b> Does HMP promote more consistent use of services to manage chronic conditions over time?			
n.a.	Rate of appropriate medication management (HEDIS PCE, MMA, SPC, SPD)  Emergency department visit rate (HEDIS EDU); Follow-up after ED visit for beneficiaries with multiple chronic conditions (HEDIS FMC)  Disease-specific hospitalization rates (NQF 0272, 0275, 0277)	Medicaid claims and encounter data	Comparison of outcomes in initial vs. subsequent years using paired t-tests; multivariate negative binomial regression controlling for demographic characteristics to generate stratified results by continuity of primary care
<b>Hypothesis 5.5:</b> Beneficiaries will describe HMP as allowing them to receive services that have a significant positive impact on their health and well-being.			
<b>Research question 5.5:</b> How has HMP impacted beneficiaries' physical, mental, and oral health and their use of health care services over time?			
n.a.	Reported impact of HMP on health status (physical, mental, oral)  Reported impact of HMP on use of health care services	Interviews with beneficiaries	Descriptive cross-sectional and longitudinal qualitative analysis

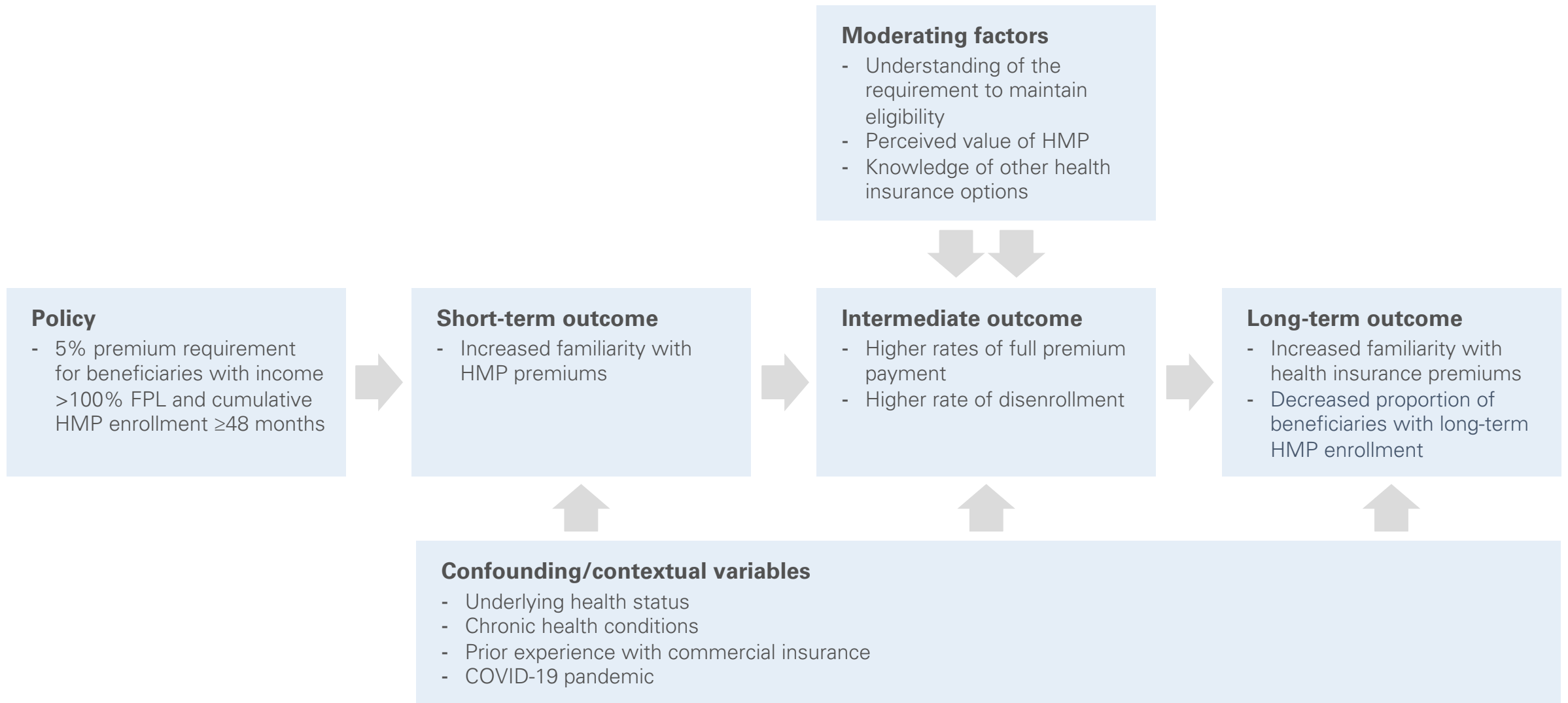
## 6. Overall Demonstration: Support financial well-being

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 6.1:</b> Beneficiaries will report sustained or increased employment and decreased health-related barriers to employment over time.			
<b>Research question 6.1:</b> What impact has HMP had on beneficiaries' levels of employment and ability to work?			
n.a.	Proportion reporting full/part time employment	Beneficiary surveys – longitudinal and new cohorts	Bivariate comparison of cross-sectional outcomes; multivariate models adjusting for age, gender, race/ethnicity, income, chronic condition, duration of HMP enrollment
	Proportion reporting work hours >20 hours/week		
	Proportion reporting health-related barriers to work		Independent sample t-test comparison of aggregate responses for New Cohort vs. Longitudinal Cohort at a similar point in their HMP enrollment; multivariate models adjusting for age, gender, race/ethnicity, income, and chronic condition
	Proportion reporting other barriers to work (inconsistent work schedule, transportation, caregiving responsibilities, homelessness, discrimination)		
<b>Hypothesis 6.2:</b> HMP enrollment will be associated with improved credit report outcomes for beneficiaries over time.			
<b>Research question 6.2:</b> How is HMP enrollment related to individual beneficiaries' financial outcomes during and after HMP enrollment?			
Individuals from low-income zip codes in states that have not expanded Medicaid	Total debt past due	Credit report data linked to Medicaid enrollment	Event study regression models to test for break in trend over time
	Bills in collections (all, medical)		
HMP beneficiaries who enrolled in different time periods	Number of months with overdrawn credit cards		Difference-in-difference regression models
	Financial judgments (e.g., evictions, bankruptcies, and wage garnishments)		
	Credit scores		
<b>Hypothesis 6.3:</b> Beneficiaries will describe examples of how HMP has improved their financial and material well-being.			
<b>Research question 6.3:</b> How has HMP affected beneficiaries' financial and material well-being over time?			
n.a.	Reported impact on how HMP has facilitated ability to work	Interviews with beneficiaries	Descriptive cross-sectional and longitudinal qualitative analysis
	Reported impact on financial well-being, including out-of-pocket costs for health services		

## 7. Overall Demonstration: Sustain the safety net and support coordinated strategies to address social determinants of health

Comparison strategy	Outcome measure(s)	Data sources	Analytic approach
<b>Hypothesis 7.1:</b> Administrative costs to implement demonstration policies will remain stable during the current Section 1115 waiver period.			
<b>Research question 7.1:</b> What are the categories and estimated amounts of the State's costs to administer key HMP demonstration policies (e.g., Healthy Behaviors Incentives program, cost-sharing)?			
n.a.	Reported HMP administrative costs and staff effort over time	Key informant interviews	Descriptive cross-sectional qualitative analysis
<b>Hypothesis 7.2:</b> Annual trends in age- and sex-adjusted expenditures per member-month will demonstrate a lower rate of increase over time for enrollees in HMP managed care than for enrollees in traditional Medicaid managed care.			
<b>Research question 7.2:</b> How do trends over time in Medicaid expenditures per member-month for HMP enrollees compare to those for beneficiaries in traditional Medicaid managed care?			
HMP-MC vs traditional MA-MC	Total expenditures per member-month	Medicaid claims and encounter data	Year-to-rate change in member-month expenditures, adjusted for enrollee age and sex
<b>Hypothesis 7.3a:</b> The decline in hospital uncompensated care and the fraction of hospital discharges among non-elderly adults in Michigan for whom the primary payer was uninsured/self-pay compared with states that did not expand Medicaid that was observed between 2013 and 2017 will be sustained in subsequent years.			
<b>Hypothesis 7.3b:</b> The decline in hospital uncompensated care and the fraction of hospital discharges among non-elderly adults in Michigan for whom the primary payer was uninsured/self-pay compared with states that expanded Medicaid without a waiver that was observed between 2013 and 2017 will be sustained in subsequent years.			
<b>Research question 7.3:</b> How have uncompensated care costs in the state changed since the implementation of HMP, compared with states that did not expand Medicaid and with states that expanded Medicaid without a waiver?			
States that did not expand Medicaid under the ACA  Expansion states without a similar waiver	Proportion of hospital discharges for which primary payer was uninsured/self-pay	HCUP Fast Stats Inpatient Stay data	Comparison of trends in Michigan with other states by payer/age group (Medicaid, 19-64; Medicare, 65+; uninsured, 19-64; private, 19-64)
States that did not expand Medicaid under the ACA  Expansion states without a similar waiver	Uncompensated care costs	Medicare cost reports (worksheet S-10)	Difference-in-differences regression models of uncompensated care costs comparing changes for Michigan to changes in expansion states that do not have a similar demonstration  Regression adjusted for state-level variables
<b>Hypothesis 7.4:</b> State officials and safety-net providers will describe specific examples of health-promoting initiatives that build on HMP's continuity, breadth of coverage, and primary care emphasis.			
<b>Research question 7.4:</b> How does HMP support new or broadened initiatives to address social determinants of health for low-income adults in Michigan?			
n.a.	Reported role of HMP in sustaining new or broadened initiatives	Key informant interviews	Descriptive cross-sectional qualitative analysis

# Logic model for program goals as stated in HMP Section 1115 demonstration waiver 5% premium requirement (48-month policy)





# Logic model for program goals as stated in HMP Section 1115 demonstration waiver HRA/healthy behavior requirement (48-month policy) and Healthy Behaviors Incentives program

