ATTACHMENT B
Demonstration Evaluation Plan

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Section 1115 Demonstration Waiver Amendment
Evaluation Proposal

Evaluation Proposal Prepared by
The Institute for Healthcare Policy & Innovation
University of Michigan

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Centers for Medicare & Medicaid Services
Evaluation Design

ATTACHMENT B
Demonstration Evaluation Plan

Table of Contents

ATTACHMENT B
Demonstration Evaluation Plan

Evaluation start date: June 1, 2014
Evaluation end date: September 30, 2019

I. Brief Overview and History of the Demonstration

On December 30, 2013, the Centers for Medicare & Medicaid Services approved amendments to Michigan's existing Section 1115 Demonstration, which had been known as the Adult Benefits Waiver. These amendments to the Section 1115 Demonstration authorize the creation of a new program known as the Healthy Michigan Plan, enacted by the Michigan legislature and signed by Governor Snyder in Public Act 107 of 2013. The Centers for Medicare & Medicaid Services' approval of this plan allows the State to make comprehensive health care coverage available to eligible adults ages 19-64 with incomes at or below 133% of the Federal Poverty Level, who are not currently eligible for Medicare or existing Medicaid programs. An anticipated 300,000-500,000 people are eligible for the Healthy Michigan Plan, including an estimated 60,000 adults previously covered by the Adult Benefits Waiver.

Since 2004, the Adult Benefits Waiver program has provided a limited ambulatory benefit package to previously uninsured, low-income non-pregnant adults ages 19-64, with incomes at or below 35% of the Federal Poverty Level. Adult Benefits Waiver services are provided to beneficiaries primarily through a managed health care delivery system utilizing a network of county-administered health plans and Community Mental Health Services Programs.

The new Healthy Michigan Plan is designed to provide comprehensive health insurance coverage for low-income residents and thereby improve their access to primary care and specialty care when appropriate. Proponents of this plan also anticipate that it will improve the health outcomes and healthy behaviors of newly covered adults and also reduce levels of uncompensated care in the state. Benefits will be provided through existing contracted health plans in the state and will meet the federal benchmark coverage standards, including the 10 essential health benefits. The Healthy Michigan Plan also introduces a number of reforms, including cost-sharing for individuals with incomes above the Federal Poverty Level, the creation of an individual's MI Health Account to record health care expenses and cost-sharing contributions, and opportunities for beneficiaries to reduce their cost-sharing by completing health risk assessments and engaging in healthy behaviors.

This new program became effective April 1, 2014. The transition of current Adult Benefits Waiver beneficiaries and identification and enrollment of newly eligible beneficiaries into the Healthy Michigan Plan is of great importance to the State.

Population groups affected by demonstration

Current Adult Benefits Waiver beneficiaries: Low-income, non-pregnant adults ages 19-64 with income below 35% of the Federal Poverty Level currently enrolled in the Adult Benefits Waiver Program were transitioned into the Healthy Michigan Plan effective April 1, 2014. As approved

by the Centers for Medicare & Medicaid Services, no eligibility redetermination was necessary at the time of transition, though enrollees will need to re-determine eligibility at a later time.

New Healthy Michigan Plan enrollees: Adults ages 19-64 with incomes at or below 133% of the Federal Poverty Level under the Modified Adjusted Gross Income methodology, who do not qualify for existing Medicare or Medicaid programs, are residents of the State of Michigan, and are not pregnant at the time of application will be eligible to receive comprehensive health care coverage through the Healthy Michigan Plan.

II. Objectives & Goals of the Demonstration

The central objective of this demonstration is to improve the health and well-being of Michigan residents by extending health care coverage to low-income individuals who are uninsured or underinsured, and to implement systemic innovations to improve quality and stabilize health care costs.

As approved by the Centers for Medicare & Medicaid Services in the December 30, 2013 Healthy Michigan Plan Section 1115 Demonstration Waiver, the policy goals of the Healthy Michigan Plan are to:

- Improve access to healthcare for uninsured or underinsured low-income Michigan residents;
- Improve the quality of healthcare services delivered;
- Reduce uncompensated care and costs;
- Encourage individuals to seek preventive care;
- Encourage the adoption of healthy behaviors;
- Help uninsured or underinsured individuals manage their healthcare issues; and
- Encourage quality, continuity, and appropriateness of medical care.

Under this demonstration model, the State aims to evaluate the implementation of market-driven principles into a public healthcare insurance program. This evaluation will examine the following six specific domains, as outlined in the Healthy Michigan Plan Section 1115 Demonstration Waiver:

1. "The extent to which the increased availability of health insurance reduces the costs of uncompensated care borne by hospitals;
2. The extent to which availability of affordable health insurance results in a reduction in the number of uninsured/underinsured individuals who reside in Michigan;
3. Whether the availability of affordable health insurance, which provides coverage for preventive and health and wellness activities, will increase healthy behaviors and improve health outcomes;
4. The extent to which beneficiaries feel that the Healthy Michigan Plan has a positive impact on personal health outcomes and financial well-being;
5. Whether requiring beneficiaries to make contributions toward the cost of their health care has no impact on the continuity of their coverage, and whether collecting an average co-pay from beneficiaries in lieu of copayments at the point of service, and increasing

communication to beneficiaries about their required contributions (through quarterly statements) affects beneficiaries' propensity to use services; and

6. Whether providing a MI Health Account into which beneficiaries' contributions are deposited, that provides quarterly statements that include explanation of benefits (EOB) information and details utilization and contributions, and allows for reductions in future contribution requirements, deters beneficiaries from receiving needed health services or encourages beneficiaries to be more cost-conscious."[4]

III. Demonstration Hypotheses

A. Domain I: Uncompensated Care Analysis

Hypothesis I.1: Uncompensated care in Michigan will decrease significantly.

- Hypothesis I.1A: Uncompensated care in Michigan will decrease significantly *relative to the existing trend in Michigan.*
- Hypothesis I.1B: Uncompensated care will decrease more by percentage *for Michigan hospitals with baseline levels of uncompensated care that are above the average for the state than for hospitals with levels that are below the average for the state.*
- Hypothesis I.1C: Uncompensated care will decrease more by percentage *for Michigan hospitals in areas with above average baseline rates of uninsurance in the state than for hospitals with below state average levels.*
- Hypothesis I.1D: Uncompensated care in Michigan will decrease significantly *relative to states that did not expand their Medicaid programs.*
- Hypothesis I.1E: Trends in uncompensated care in Michigan will not differ significantly *relative to other states that did expand their Medicaid programs.*

B. Domain II: Reduction in the Number of Uninsured

Hypothesis II.1: The uninsured population in Michigan will decrease significantly.

- Hypothesis II.1A: The uninsured population in Michigan will decrease significantly *relative to the existing trend within Michigan.*
- Hypothesis II.1B: The uninsured population in Michigan will decrease *more by percentage for subgroups with higher than average baseline rates of uninsurance in the state than for subgroups with lower than state average baseline rates.*
- Hypothesis II.1C: The uninsured population in Michigan will decrease significantly *relative to states that did not expand their Medicaid programs.*
- Hypothesis II.1D: The uninsured population in Michigan will decrease to a similar degree *relative to states that did expand their Medicaid programs.*

Hypothesis II.2: Medicaid coverage in Michigan will increase significantly.

- Hypothesis II.2A: The Medicaid population in Michigan will increase significantly *relative to the existing trend in Michigan.*

[4] CMS Waiver Approval, December 30, 2013.

- Hypothesis II.2B: The Medicaid population in Michigan will increase significantly *more by percentage for subgroups with rates of uninsurance higher than state average baseline than for subgroups with baseline rate lower than the state average.*
- Hypothesis II.2C: The Medicaid population in Michigan will increase significantly *relative to states that did not expand their Medicaid programs.*
- Hypothesis II.2D: The Medicaid population in Michigan will increase to a similar degree *relative to states that did expand their Medicaid programs.*

C. Domain III: Impact on Healthy Behaviors and Health Outcomes

1. Hypothesis III.1: Emergency Department Utilization
    a. Emergency department utilization among the Healthy Michigan beneficiaries will decrease from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not have primary care visits; and
    c. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not agree to address behavior change.
2. Hypothesis III.2: Healthy Behaviors
    a. Receipt of preventive health services among the Healthy Michigan Plan population will increase from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have higher rates of general preventive services compared to beneficiaries who do not have primary care visits;
    c. Healthy Michigan Plan beneficiaries who complete an annual health risk assessment will have higher rates of preventive services compared to beneficiaries who do not complete a health risk assessment;
    d. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will demonstrate improvement in self-reported health status compared to beneficiaries who do not agree to address behavior change; and
    e. Healthy Michigan Plan beneficiaries who receive incentives for healthy behaviors will have higher rates of preventive services compared to beneficiaries who do not receive such incentives.
3. Hypothesis III.3: Hospital Admissions
    a. Adjusted hospital admission rates for Healthy Michigan Plan beneficiaries will decrease from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of hospital admissions compared to beneficiaries who do not have primary care visits; and
    c. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of hospital admission compared to beneficiaries who do not agree to address behavior change.

D. Domain IV: Participant Beneficiary Views of the Healthy Michigan Plan

1. Aim IV.1: Describe Healthy Michigan Plan enrollees' consumer behaviors and health

insurance literacy, including knowledge and understanding about the Healthy Michigan Plan, their health plan, benefit coverage, and cost-sharing aspects of their plan.
2. Aim IV.2: Describe Healthy Michigan Plan enrollees' self-reported changes in health status, health behaviors (including medication use), and facilitators and barriers to healthy behaviors (e.g. knowledge about health and health risks, engaged participation in care), and strategies that facilitate or challenge improvements in health behaviors.
3. Aim IV.3: Understand enrollee decisions about when, where and how to seek care, including decisions about emergency department utilization.
4. Aim IV.4: Describe primary care practitioners' experiences with Healthy Michigan Plan beneficiaries, practice approaches and innovation adopted or planned in response to the Healthy Michigan Plan, and future plans regarding care of Healthy Michigan Plan patients.

E. Domains V & VI: Impact of Contribution Requirements & MI Health Accounts

1. **Hypothesis V/VI.1:** Cost-sharing implemented through the MI Health Account framework will be associated with beneficiaries making more efficient use of health care services, as measured by total costs of care over time relative to their initial year of enrollment, and relative to trends in the Healthy Michigan Plan's population below 100% of the Federal Poverty Level that face similar service-specific cost-sharing requirements but not additional contributions towards the cost of their care.
2. **Hypothesis V/VI.2:** Cost-sharing implemented through the MI Health Account framework will be associated with beneficiaries making more effective use of health care services relative to their initial year of enrollment, as indicated by a change in the mix of services from low-value (e.g., non-urgent emergency department visits, low priority office visits) to higher-value categories (e.g., emergency-only emergency department visits, high priority office visits), and relative to trends in the Healthy Michigan Plan's population below 100% of the Federal Poverty Level that face similar service-specific cost-sharing requirements but not additional contributions towards the cost of their care. Several questions on the Healthy Michigan Voices Survey also address this hypothesis.
3. **Hypothesis V/VI.3:** Cost-sharing and contributions implemented through the MI Health Account framework will not be associated with beneficiaries dropping their coverage through the Healthy Michigan Plan.
4. **Hypothesis V/VI.4a:** Exemptions from cost-sharing for specified services for chronic illnesses and rewards implemented through the MI Health Account framework for completing a health risk assessment with a primary care provider and agreeing to behavior changes will be associated with beneficiaries increasing their healthy behaviors and their engagement with healthcare decision-making relative to their initial year of enrollment. Several questions on the Healthy Michigan Voices Survey also address this hypothesis.

   Hypothesis V/VI.4b: This increase in healthy behaviors and engagement will be associated with an improvement in enrollees' health status over time, as measured by changes in elements of their health risk assessments and changes in receipt of recommended preventive care (e.g., flu shots, cancer screening) and adherence to prescribed medications for chronic disease (e.g., asthma controller medications).

IV. Information about Evaluation Entity

The University of Michigan Institute for Healthcare Policy and Innovation is an interdisciplinary institute at a premier public research university. The mission of the Institute is to enhance the health and well-being of local, national, and global populations through innovative health services research that effectively informs public and private efforts to optimize the quality, safety, equity, and affordability of health care. The Institute includes more than 400 health services researchers from 14 schools and colleges across the university, as well as 4 nonprofit private-sector partners and the Veterans Health Administration. Institute faculty members participating in the proposed Healthy Michigan Plan evaluation represent the Medical School, School of Public Health, Institute for Social Research, Ross School of Business, Ford School of Public Policy, and School of Social Work.

V. Timeline

Fiscal Year	Deliverable/Milestone	Domain
2015	Initial Baseline Estimate of the Rate of Uninsurance	II
2016	Interim Report: Primary Care Physician Survey (select measures)	IV
2016	Interim Report: Healthy Michigan Voices Survey (select measures)	IV
2017	Interim Report: Healthy Behaviors and Health Outcomes (select measures)	III
2017	Interim Report: Impact of Cost-Sharing/MI Health Accounts (select measures)	V, VI
2018	Interim Report: Uncompensated Care Analysis	I
2018	Interim Report: Rate of Uninsurance	II
2019	Final Evaluation Report	All

ATTACHMENT B
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Special Terms and Conditions Requirements

The federal approval of the Healthy Michigan Plan Demonstration is conditioned upon compliance with a set of Special Terms and Conditions. Specific to program evaluation, the Special Terms and Conditions outlined six Domains of Focus that the State must investigate, around which Institute for Healthcare Policy and Innovation faculty leads have developed multiple testable hypotheses (listed above). The evaluation design includes a discussion of these goals, objectives, and specific testable hypotheses, including those that focus specifically on target populations for the demonstration, and more generally on beneficiaries, providers, plans, market areas, and public expenditures.

While some members of the University of Michigan evaluation team are practicing clinicians at the University of Michigan, this team will function independently from the system-level clinical operations of the University of Michigan Health System and those who interact with Department officials around Medicaid reimbursement and clinical policies. The University of Michigan research team will continue to maintain this separation throughout the demonstration evaluation to avoid potential conflicts of interest.

A. Scientific Rigor & Academic Standards

The Centers for Medicare & Medicaid Services 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. As detailed throughout this proposed evaluation plan, the faculty members and staff of the University of Michigan Institute for Healthcare Policy and Innovation are national leaders in the fields of 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.

As further required by the Centers for Medicare & Medicaid Services, the design of the proposed evaluation includes a discussion of the goals, objectives and specific testable hypotheses, including those that focus specifically on target populations for the demonstration, and more generally on beneficiaries, providers, plans, market areas and public expenditures. The analysis plan addresses all six domains specified in paragraph 69 of the waiver approval with a scientifically rigorous data strategy and evaluation plan. The University of Michigan evaluation team will make careful use of the best available data in each of the six required domains; control for and report limitations of these data and their effects on results; and characterize the generalizability of results.

B. Measures Summary

Outcome measures are described in detail in each specific Domain design and reflect key hypotheses. Importantly, because the design of the Healthy Michigan Plan goes beyond the organization of health care to address the personal health behaviors and choices of enrollees, the selected measures are based on established indicators for both clinical care and personal health-

related behaviors. The evaluation team will utilize its significant expertise to refine existing indicators to better match the goals of the Healthy Michigan Plan.

Because most Healthy Michigan Plan enrollees will not have prior Medicaid coverage, there are limitations around baseline values for the selected measures. The University of Michigan evaluation team will take a dual approach to this limitation: 1) Year 1 of the Healthy Michigan Plan will serve as a baseline from which to measure changes over the course of the demonstration project; and 2) comparison data from comparable populations will be gleaned from national data sources when feasible.

C. Data Handling and Management

The evaluation will use a wide variety of data sources (summarized in Appendix B and detailed in specific Domain designs, as noted), including Medicaid enrollment, utilization, encounter and cost data from the Michigan Department of Community Health Data Warehouse, enrollee survey data (the newly-designed Healthy Michigan Voices Survey), hospital cost reports and filings, and provider survey data.

D. Recognition of other initiatives occurring in the state

A fundamental challenge associated with this evaluation is the fact that the Healthy Michigan Plan is being implemented in the context of broader changes to health insurance markets in Michigan and in other states. In particular, the health insurance exchange, the associated premium tax credits, and the individual mandate all affect consumer and firm behavior. An increase in private insurance coverage as people enroll in plans through the newly established health insurance exchange should reduce the amount of uncompensated care provided to uninsured patients. At the same time, the longer-term trend toward private plans with high deductibles will mean more privately insured patients may not be able to pay large out-of- pocket obligations when they are hospitalized, thereby increasing uncompensated care provided to privately insured patients.

In order to address these challenges, our analysis in Domains I and II will compare Michigan to a "control group" of states that are and are not expanding their Medicaid programs, in order to help isolate the impact of the Healthy Michigan Plan on policy problems like uncompensated care, rates of uninsurance, access to appropriate medical services, and trends in health care utilization and health outcomes.

ATTACHMENT B
Demonstration Evaluation Plan

Domain I: Reduction in Uncompensated Care

Uncompensated Care Analysis *– This evaluation project will examine the impact of reducing the number of uninsured individuals on uncompensated care costs to hospitals in Michigan through the expansion of subsidized insurance.*

I. Hypotheses

Hypothesis I.1: Uncompensated care in Michigan will decrease significantly.

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- Hypothesis I.1E: Trends in uncompensated care in Michigan will not differ significantly *relative to other states that did expand their Medicaid programs.*

II. Management/Coordination of Evaluation

A. Evaluation Team

The work on Domains I and II of the evaluation will be conducted by a team of researchers led by two University of Michigan faculty members, Thomas Buchmueller Ph.D. and Helen Levy Ph.D. Buchmueller's primary appointment is in the Ross School of Business, where he holds the Waldo O. Hildebrand Endowed Chair in Risk Management and Insurance and currently serves as the Chair of the Business Economics Area. He has a secondary appointment in the Department of Health Management and Policy in the School of Public Health. Levy is a tenured Research Associate Professor, with appointments in the Institute for Social Research, the Ford School of Public Policy and the Department of Health Management and Policy. She is a Co-Investigator on the Health and Retirement Survey, a longitudinal survey supported by the National Institute on Aging. Buchmueller and Levy are experts on the economics of health insurance and health reform. In 2010-2011, Levy served as the Senior Health Economist at the White House Council of Economic Advisers. Buchmueller succeeded her in this position in 2011-2012.

Additional faculty and staff working on this domain are described in Appendix A.

III. Timeline

A. Overview

Initially, our main activities will be related to background research to improve our understanding of the data and to sharpen our hypotheses, the preparation of analytic data files, and an analysis of baseline measures using those files. Once we have sufficient data from the post-Healthy Michigan Plan period, our main focus will be on evaluating trends in uncompensated care and analyses aimed at disentangling the effect of the Healthy Michigan Plan from other factors affecting hospitals and their provision of uncompensated care.

B. Specific Activities: 6/14 to 10/15

The main data sources for this domain are hospital cost reports and Internal Revenue Service filings (see below). Because these data sources were not created for the purposes of research or evaluation, creating data files that can be used for the analysis will require substantial effort. In order to ensure that we are on track to deliver a rigorous evaluation in state fiscal year 2018, it will be important to develop these files well before then. (If it turns out that the cost report and Internal Revenue Service data are not suitable for our purposes, this will give us time to develop other strategies.)

An important part of this process will involve comparing baseline results from the different sources with the goal of representing the distribution of uncompensated care in the state in a clear and consistent fashion. We will also analyze the baseline data from Michigan and other states to identify appropriate comparison groups for the cross-state components of the analysis. This process will involve merging the hospital level data with state and county level data on measures such as the baseline rate of insurance coverage and population demographics.

Another important initial activity will be to review the relevant academic literature on hospital uncompensated care. This review will build on prior reviews conducted by Drs. Lee and Singh who have conducted substantial research on hospital uncompensated care and community benefit.

C. Specific Activities: 10/15 to 10/19

We will conduct most of the analysis in state fiscal year 2018. By December 2017, we expect to have more than a full year of post-implementation data for all hospitals in Michigan and up to two years of post-implementation data for some.

IV. Performance Measures

A. Specific measures and rationale

A number of indicators of uncompensated care will be used to test the research hypotheses outlined above. Our primary indicators will include measures of uncompensated care from hospitals' Medicare and Medicaid cost reports. In particular, we will focus on hospitals' expenditures on charity care and bad debt, measured in terms of cost rather than full charges. Data from Medicare cost reports on these indicators are available for all Medicare-certified hospitals in the U.S. In the Medicare cost report, we will focus on Schedule S-10, which

provides detailed information on hospital uncompensated care and indigent care. Specifically, we will measure charity care costs using the information in line 23 on Schedule S-10. This number represents the cost of care provided to charity and self-pay patients. To distinguish between charity care and self-pay patients, we will further refine our analysis for Michigan hospitals by using data from the Medicaid cost report. In particular, we will estimate true charity care costs by using information on indigent volume and charges reported by Michigan hospitals on their Medicaid cost report. Data from Medicaid cost reports on these indicators are available for all Michigan hospitals. In addition to charity care, we will examine hospitals' bad debt expense. Specifically, we will measure charity care costs using the information in line 29 on Schedule S-10. This number represents a hospital's bad debt expenditures – measured at cost – after accounting for any Medicare bad debt reimbursement.

We will supplement data from the Medicare and Medicaid cost reports with information on community benefits provided from the hospitals' Internal Revenue Service filings. In particular, we will focus on the amount of charity care and bad debt reported by hospitals on their Internal Revenue Service Form 990 Schedule H. In this form, hospitals are required to report their charity care costs net of any direct offsetting revenue. Hospitals are also required to report their bad debt expenses, at cost. We will compare these to the levels of uncompensated care reported in hospitals' Medicare cost reports to validate our primary estimates. Data from the Form 990 is only available for a subset of hospitals, however. More specifically, only federally tax-exempt hospitals that are either free-standing or system-affiliated but report their community benefit at the individual hospital level are required to file Form 990 with the Internal Revenue Service. These data sources are described in more detail below.

B. Methodology and specifications

i. Eligible/target population

The analysis will focus on uncompensated care provided by acute care hospitals. According to Medicare.gov, there are 130 non-Federal hospitals in Michigan.[5] Of these, 85 are federally tax-exempt hospitals that file Form 990 with the Internal Revenue Service at the individual hospital level.[6] As discussed below, hospitals in neighboring states and other states not expanding their Medicaid programs will be used as comparison groups.

ii. Time period of study

The time period of the analysis will vary according to the data used. Data from Schedule H of Form 990 are not available before 2009. Additionally, the Medicare cost report underwent substantial change in data elements reported in 2010. Therefore, for any analyses using these data for the pre-Healthy Michigan Plan period will be 2009/2010 to 2013.

C. Measure steward

[5] https://data.medicare.gov/Hospital-Compare/Michigan-hospitals-April-2011/xmzb-hgc8
[6] Although most hospitals in Michigan are tax-exempt, not all file a Form 990 at the facility level.

As described below, our main data sources are Centers for Medicare & Medicaid Services cost reports, Michigan Medicaid cost reports, and Internal Revenue Service filings.

D. Baseline values for measures

The most recent Medicare cost report data we have is for 2009. Our calculations using those data indicate that the mean level of uncompensated care provided by Michigan hospitals was $8.6 million. This is slightly lower than the mean of $10.3 million for hospitals nationwide. Median amounts for Michigan and the U.S. are more similar: $4.4 million and $4.1 million, respectively. According to the American Hospital Association, in aggregate the cost of uncompensated care provided by community hospitals nationwide was nearly $46 billion in 2012, or 6 percent of total expenses.[7]

The most recent Form 990 data we have is also from 2009. That year non-profit hospitals nationwide reported an average of $3.4 million in charity care costs and an average of $4.3 million in bad debt expense. Non-profit hospitals in Michigan reported an average of $1.3 million in charity care costs and an average of $3.8 million in bad debt expenses. According to the Michigan Hospital Association, in 2011 Michigan hospitals provided a total of more than $882 million in bad debt and charity care.[8]

E. Data Sources

There are several sources of data on hospital uncompensated care, each with particular strengths and weaknesses with respect to this evaluation.

Our primary data source will be Medicare cost reports, which Medicare-certified hospitals are required to submit annually to a Medicare Administrative Contractor. The cost report contains provider information such as facility characteristics, utilization data, cost and charges by cost center (in total and for Medicare), Medicare settlement data, and financial data. As part of the financial data, hospitals are required to provide detailed data on uncompensated care and indigent care provided. These include charity care and bad debt (both in terms of full charges and cost) as well as the unreimbursed cost for care provided to patients covered under Medicaid, the State Children's Health Insurance Program, and state and local indigent care programs. Medicare cost reports (Form CMS-2552-10) for hospitals in Michigan and other states will be obtained from the Centers for Medicare & Medicaid Services website.

We will also use Medicaid cost reports as well as supplementary forms compiled by the Michigan Department of Community Health. These reports have the advantage of providing

[7] American Hospital Association. 2014. Uncompensated Hospital Care Cost Fact Sheet, http://www.aha.org/research/policy/finfactsheets.shtml

[8] Michigan Health & Hospital Association. 2013. Michigan Community Hospitals, A Healthy Dose of the Facts. http://www.hnjh.org/MHAfactsheet.pdf

more detail than the Centers for Medicare & Medicaid Services reports, but are only available for Michigan hospitals.

A third data source will be the Schedule H of Form 990. Since 2009, federally tax-exempt hospitals have been required to complete the revised Form 990 Schedule H, which requires hospitals to annually report their expenditures for activities and services that the Internal Revenue Service has classified as community benefits. These include charity care (i.e., subsidized care for persons who meet the criteria for charity care established by a hospital), unreimbursed costs for means-tested government programs (such as Medicaid), subsidized health services (i.e., clinical services provided at a financial loss), community health improvement services and community-benefit operations (i.e., activities carried out or supported for the express purpose of improving community health), research, health professions education, and financial and in-kind contributions to community groups. In addition to community benefits, Schedule H asks hospitals to report on their bad debt expenditures.

Hospitals' Internal Revenue Service filings will be obtained from GuideStar, a company that obtains, digitizes, and sells data that organizations report on Form 990 and related Schedules. Data will be obtained for all hospitals that file Form 990 with the Internal Revenue Service at the individual hospital-level. (For 2009 to 2011, Form 990 Schedule H is available for 85 federally tax-exempt hospitals in Michigan.) Members of our research team have previous experience working with these data.[9]

V. Plan for Analysis

A. Evaluation of performance

Our evaluation of the impact of the Healthy Michigan Plan on uncompensated care relies on three types of comparisons: (1) across time; (2) within state; (3) across states.

Comparisons over time

Our initial comparison, looking at changes in Michigan over time, analyzes whether by increasing insurance coverage the Healthy Michigan Plan will reduce the amount of uncompensated care provided by hospitals in Michigan. In technical terms, we will estimate interrupted time series regression models to test for a break in the trend in aggregate uncompensated care amounts at the time the demonstration was implemented.

Comparisons within the state

We expect that the baseline level of uncompensated care to be distributed unevenly across hospitals in Michigan. Some hospitals located in areas with high rates of uninsurance are likely to have high levels of uncompensated care, while other hospitals in areas with lower rates of

[9] Young, G.J., Chou, C, Alexander, J, Lee, S.D. and Raver, E. 2013. "Provision of Community Benefits by Tax-Exempt U.S. Hospitals, *New England Journal of Medicine*, 368(16): 1519-1527.

uninsurance are likely to provide less uncompensated care. To account for these differences we will stratify the analysis by hospital characteristics, including baseline measures of the provision of uncompensated care, size, for-profit status, etc. In doing so, we will test the hypothesis that hospitals that had previously faced a large burden of uncompensated care experienced larger reductions in this burden compared with hospitals that provided less uncompensated care at baseline.

Comparisons across states

We will also compare trends in uncompensated care in Michigan to trends in other states. Cross-state comparisons are useful for two reasons. First, comparisons with trends in neighboring expansion states (Ohio and Illinois) put the effects of the Healthy Michigan Plan in meaningful context. This comparison will provide a sense of whether Michigan's approach to the Medicaid expansion is living up to its potential, gauged relative to what other expansion states are achieving. Second, comparing Michigan with selected states that have not chosen to expand their Medicaid programs allows us to isolate the effect of the Healthy Michigan Plan on uncompensated care outcomes.

In conducting the cross-state analysis, we will also be able to leverage the within-state differences just described. Essentially, we will compare hospitals in Michigan to hospitals in other states that prior to the implementation of the Healthy Michigan Plan provided similar amounts of uncompensated care. This component of the evaluation will use multivariate statistical models that are designed to minimize the impact of other potentially confounding differences between hospitals in Michigan and hospitals in comparison states.

Increased insurance coverage is the primary mechanism by which the Healthy Michigan Plan and other aspects of the Affordable Care Act are expected to reduce uncompensated care. Some cross-state comparisons will directly examine the link between changes in insurance coverage and changes in uncompensated care. As part of the analysis of insurance coverage (Domain II, described below) we will estimate annual rates of uninsurance by sub-state geographic regions (in most cases, counties) for a period spanning several years before the implementation of the Affordable Care Act and the first few years after. We will use these estimates as an independent variable in statistical models that estimate the relationship between changes in market-level rates of insurance coverage and changes in hospital uncompensated care.

B. Outcomes (expected)

We expect total uncompensated care in Michigan to decline as a result of the Healthy Michigan Plan as many currently uninsured individuals gain coverage through Medicaid. Additional currently uninsured individuals will gain coverage through health insurance exchanges. We expect that these gains in coverage will drive declines in uncompensated care that more than offset any increase in uncompensated care that arises as some patients shift from generous employer-sponsored coverage to exchange plans with higher cost-sharing. We expect to observe larger declines in uncompensated care in areas with baseline levels of uncompensated care that are above the state average than in area with levels below the state average. We expect this

pattern to hold for both the within-Michigan analysis and the analysis that uses non-expanding states as a comparison group.

C. Limitations/challenges/opportunities

A fundamental challenge associated with this analysis is the fact that the Healthy Michigan Plan is being implemented in the context of broader changes to health insurance markets in Michigan and in other states. The largest changes will be the result of other provisions of the Affordable Care Act. An increase in private insurance coverage as people enroll in plans through the newly established health insurance exchange should reduce the amount of uncompensated care provided to uninsured patients. In addition, new limits on out-of-pocket payments mean that fewer privately insured patients have large hospital bills that they cannot pay. At the same time, the longer-term trend toward private plans with high deductibles will mean more privately insured patients with large out of pocket obligations.

In order to address this challenge, our cross-state analysis comparing Michigan to a "control group" of states that are and are not expanding their Medicaid programs will help to isolate the impact of the Healthy Michigan Plan on uncompensated care. Still, it will be difficult to precisely isolate the impact of the Healthy Michigan Plan from these other confounding factors.

D. Interpretations/conclusions

The main way that the Healthy Michigan Plan will reduce uncompensated care provided by hospitals is by reducing the number of uninsured patients. Therefore, the results from this analysis will be best interpreted in light of the results concerning the effect of the Healthy Michigan Plan on insurance coverage (Domain II).

ATTACHMENT B
Demonstration Evaluation Plan

Domain II: Reduction in the Number of Uninsured

Reduction in the Number of Uninsured *– The Healthy Michigan Program will test the hypothesis that, when affordable health insurance is made available and the application for insurance is simplified (through both an exchange and the state's existing eligibility process), the uninsured population will decrease significantly. This evaluation will examine the insured/uninsured rates in general and more specifically by select population groups (e.g., income levels, geographic areas, age, gender, and race/ethnicity).*

I. Hypotheses

Hypothesis II.1: The uninsured population in Michigan will decrease significantly.

- Hypothesis II.1A: The uninsured population in Michigan will decrease significantly *relative to the existing trend within Michigan.*
- Hypothesis II.1B: The uninsured population in Michigan will decrease *more by percentage for subgroups with higher than average baseline rates of uninsurance in the state than for subgroups with lower than state average baseline rates.*
- Hypothesis II.1C: The uninsured population in Michigan will decrease significantly *relative to states that did not expand their Medicaid programs.*
- Hypothesis II.1D: The uninsured population in Michigan will decrease to a similar degree *relative to states that did expand their Medicaid programs.*

Hypothesis II.2: Medicaid coverage in Michigan will increase significantly.

- Hypothesis II.2A: The Medicaid population in Michigan will increase significantly *relative to the existing trend in Michigan.*
- Hypothesis II.2B: The Medicaid population in Michigan will increase significantly *more by percentage for subgroups with rates of uninsurance higher than baseline state average than for subgroups with baseline rate lower than state average.*
- Hypothesis II.2C: The Medicaid population in Michigan will increase significantly *relative to states that did not expand their Medicaid programs.*
- Hypothesis II.2D: The Medicaid population in Michigan will increase to a similar degree *relative to states that did expand their Medicaid programs.*

II. Management/Coordination of Evaluation

A. Evaluation Team

The work on Domains I and II of the evaluation will be conducted by a team of researchers led by two University of Michigan faculty members, Thomas Buchmueller Ph.D. and Helen Levy Ph.D. Buchmueller's primary appointment is in the Ross School of Business, where he holds the Waldo O. Hildebrand Endowed Chair in Risk Management and Insurance and currently serves as the Chair of the Business Economics Area. He has a secondary appointment in the Department of Health Management and Policy in the School of Public Health. Levy is a tenured Research Associate Professor, with appointments in the Institute for Social Research, the Ford School of Public Policy and the Department of Health Management and Policy. She is a Co-Investigator

on the Health and Retirement Survey, a longitudinal survey supported by the National Institute on Aging. Buchmueller and Levy are experts on the economics of health insurance and health reform. In 2010-2011, Levy served as the Senior Health Economist at the White House Council of Economic Advisers. Buchmueller succeeded her in this position in 2011-2012.

Additional faculty and staff working on this domain are described in Appendix A.

III. Timeline

A. Overview

The evaluation timeline for this domain is determined by when the necessary data are released by the Census Bureau. Data for both of the main sources used in evaluating insurance coverage—the Current Population Survey (CPS) and the American Community Survey (ACS)—are released annually in September, although the reference periods for the two surveys differ (see below). The data released each fall describe insurance coverage in the prior calendar year. For example, in September 2014 the Census Bureau will release data from the March 2014 Current Population Survey and from the 2013 American Community Survey; both of these sources describe coverage in calendar year 2013. Therefore, we expect to produce the first quantitative estimates of the overall effect of the Healthy Michigan Plan on insurance coverage in fall 2015. In subsequent years, as additional data from both surveys are released, we will update the analysis to evaluate longer-term impacts of the Healthy Michigan Plan on insurance coverage.

B. Specific Activities: 10/15 to 10/19

The report on insurance coverage will be prepared during state fiscal year 2018. The most recent Census data available from that point will provide estimates of coverage in 2016. These data will become available in September 2017. In order to make timely use of these data, it will be important to undertake a number of preliminary tasks in the latter half of state fiscal year 2017.

The two Census Bureau surveys have slightly different questions about health insurance and it will be important to investigate and understand any differences in the estimated coverage rates that each produces. For example, does one survey consistently produce higher rates of insurance coverage than the other? Do the two surveys produce similar differences in insurance coverage across demographic groups?

We will also analyze baseline data in order to determine which states offer the most relevant comparison to Michigan's experience. To understand how the Healthy Michigan Plan affected coverage relative to what would have happened if the state had not expanded Medicaid at all, we will want to compare Michigan to states that did not expand their Medicaid programs. We will therefore need to establish which states are similar to Michigan before 2014, in terms of health insurance, population, and other characteristics such as unemployment rates, as well as monitoring ongoing implementation activities in other states. Our approach for this domain will be similar to the one we will use for Domain I.

IV. Performance Measures:

A. Specific measures and rationale

The outcomes analyzed will be various measures of insurance coverage based on questions in the Current Population Survey and the American Community Survey. The Current Population Survey asks a detailed battery of health insurance questions referring to the respondent's coverage in the prior calendar year; for example, the March 2015 Current Population Survey asks respondents to report coverage during calendar year 2014. These questions make it possible to construct measures of the fraction of the population with Medicaid and the fraction of the population with no coverage – our two main outcome measures. We also plan to look at changes in rates of coverage from other source, such as employer-sponsored coverage and individually-purchased private coverage, since health reform will likely affect those too. The Census Bureau is implementing new health insurance questions in March 2014[10]; we have communicated with Census Bureau staff to get more information about these new measures and will carefully evaluate their usefulness as data become available.

The changes to the Current Population Survey are one rationale for also using data from American Community Survey; another is that the American Community Survey sample is approximately 20 times larger than Current Population Survey (see tables 1 and 2 below) and allows reliable analysis of smaller geographic areas within Michigan.

B. Methodology and specifications

i. Eligible/target population

The population that will gain Medicaid eligibility as a result of the Healthy Michigan Plan consists of non-elderly adults with incomes less than or equal to 133 percent of the Federal Poverty Level. We expect coverage to increase for higher income adults because of other components of the Affordable Care Act, most importantly the availability of premium tax credits for insurance purchased through the new health insurance marketplace and the individual mandate. Therefore, it is important to analyze changes in coverage for non-elderly adults at all income levels. The implementation of the Healthy Michigan Plan is expected to increase Medicaid take-up among people who were eligible for coverage under pre-Affordable Care Act rules (the "welcome mat effect"). Since children make up a large percentage of this group, we will also analyze coverage changes for children.

ii. Time period of study

The Healthy Michigan Plan's implementation date is April 1, 2014. Data covering the years 2006 to 2013 (for the Current Population Survey) and 2010 to 2013 (for the American

[10] Pascale, Joanne, et al. "Preparing to Measure Health Coverage in Federal Surveys Post-Reform: Lessons from Massachusetts." INQUIRY: The Journal of Health Care Organization, Provision, and Financing 50.2 (2013): 106-123.

Community Survey) will be used to establish baseline levels and prior trends in Michigan and other states. The post-implementation period will be defined as 2014 to 2016.

C. Measure steward

The Census Bureau is the measure steward.

D. Baseline values for measures

Please see Tables 1 and 2, which present rates of Medicaid coverage and uninsurance in Michigan and in neighboring states using data from both surveys. We also calculate these rates for respondents in Michigan broken into groups based on race/ethnicity, income, and age. Note that the poverty categories in the Current Population Survey require us to use categories of income relative to poverty of <125%, 125-399%, 400%+ since the underlying continuous measure of income/poverty is not provided on the public use file. In the American Community Survey, in contrast, income/poverty is measured continuously and so our categories better match the Affordable Care Act eligibility categories.

E. Data Sources

The analysis will be based on data from two annual national surveys conducted by the Census Bureau: the Current Population Survey and the American Community Survey. Each survey has specific strengths related to this evaluation. The Current Population Survey is the most commonly cited data source for state-level estimates of insurance coverage. It provides a detailed breakdown by source of coverage. The American Community Survey provides less detail on source of coverage but with a much larger sample size than the Current Population Survey, it provides for precise estimates, even for subgroups defined by geography or demographic characteristics. In each case, our analysis will be based on public use files disseminated by Census.

Each data source is publicly available at no cost from the Census Bureau.

V. Plan for Analysis

A. Evaluation of performance

Our evaluation of the impact of the Healthy Michigan Plan on uninsurance relies on three types of comparisons: (1) across time; (2) within state; (3) across states.

Comparisons across time

Our initial comparison, looking at changes in Michigan over time, analyzes whether the Healthy Michigan Plan reduced the numbers of uninsured both in an absolute sense and relative to the pre-existing trend. In technical terms, we will estimate interrupted time series regression models to test for a break in coverage trends at the time the demonstration was implemented.

Comparisons within the state

As shown in Tables 1 and 2, baseline rates of uninsurance were much higher for some groups within Michigan than for others. We will examine whether the Healthy Michigan Plan effectively reached the groups most in need, reducing disparities in insurance coverage. We will investigate the impact of the Healthy Michigan Plan on disparities within the state across groups defined by income, age, race/ethnicity, sex and geographic location.

Comparisons across states

We will also compare trends in Michigan to trends in other states. Cross-state comparisons are useful for two reasons. First, comparisons with trends in neighboring expansion states (Ohio and Illinois) put the effects of the Healthy Michigan Plan in meaningful context. This comparison will provide a sense of whether Michigan's approach to the Medicaid expansion is living up to its potential, gauged relative to what other expansion states are achieving. Second, comparing Michigan with selected states that have not chosen to expand their Medicaid programs allows us to isolate the effect of the Healthy Michigan Plan on insurance outcomes. This component of the evaluation will use multivariate statistical models that are designed to minimize the impact of other potentially confounding differences between Michigan and comparison states, following current best practices in the program evaluation literature.[11,12]

B. Outcomes (expected)

Our primary outcome measures are uninsurance and health care coverage through the Healthy Michigan Plan. As described above, we hypothesize that uninsurance will decline and Healthy Michigan Plan coverage will increase. We measure uninsurance and Healthy Michigan Plan using the variables described above in both surveys. We are also interested in the interplay between Healthy Michigan Plan and other types of insurance. In particular, some new enrollees in the Healthy Michigan Plan or in Michigan's health insurance exchange will have been uninsured at baseline, while others will have had coverage from another source, such as employer-sponsored coverage or individually purchased private coverage. In order to paint a complete picture of how health reform in Michigan is affecting insurance coverage, we will also analyze coverage from other sources. Both surveys include information on employer-sponsored coverage; other private coverage; and other public coverage (for example, Medicare and Veterans Affairs). We will use these data to analyze how much of the decline in uninsurance can be attributed to increased numbers of Medicaid enrollees and how much to increases in coverage through the exchange or other private sources. We expect to observe larger declines in uninsurance for population subgroups with above average baseline levels of uninsurance, such as racial/ethnic minorities, young adults and low-income families. We will also explore potential

[11] Sommers, Benjamin D., Katherine Baicker, and Arnold M. Epstein. "Mortality and access to care among adults after state Medicaid expansions." New England Journal of Medicine 367.11 (2012): 1025-1034.

[12] Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. "Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program." Journal of the American Statistical Association 105.490 (2010).

differences by gender, though currently rates of uninsurance are similar for men and women. We expect this pattern to hold for both the within-Michigan analysis and the analysis that uses non-expanding states as a comparison group.

C. Limitations/challenges/opportunities

A fundamental challenge associated with this analysis is the fact that the Healthy Michigan Plan is being implemented in the context of broader changes to the health insurance market in Michigan associated with the Affordable Care Act. In particular, the health insurance exchange, the associated premium tax credits, and the individual mandate all affect consumer and firm behavior. In order to address this challenge, our cross-state analysis comparing Michigan to a "control group" of states that are not expanding their Medicaid programs will help to isolate the impact of the Healthy Michigan Plan and uninsurance.

D. Interpretations/conclusions

The outcomes associated with this domain of the Healthy Michigan Plan evaluation are fundamental to understanding the demonstration's impact. Without increases in Healthy Michigan Plan enrollment and commensurate reductions in uninsurance, the demonstration cannot achieve the goals of reducing uncompensated care, enhancing access to appropriate medical services, and improving health. Therefore, the conclusions of this domain of the evaluation help to inform the interpretation of other domains of the evaluation.

Table 1
American Community Survey, 2010 - 2012
Baseline measures - Fraction uninsured and fraction with Medicaid
Estimates are weighted using samples weights provided by the Census Bureau

	Uninsured			Medicaid			Unweighted sample size		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
State									
MI	14.6 %	14.1 %	13.8 %	20.3 %	20.9 %	20.6 %	82,340	81,618	80,570
OH	14.4 %	14.2 %	13.8 %	17.4 %	17.7 %	18.4 %	97,998	97,476	95,969
IN	17.5 %	17.1 %	17.1 %	15.8 %	16.2 %	16.2 %	55,381	55,020	55,046
IL	16.0 %	14.7 %	15.0 %	17.8 %	19.1 %	18.7 %	107,140	106,436	106,264
WI	11.4 %	11.0 %	10.9 %	17.9 %	19.1 %	17.7 %	48,554	48,962	47,704
Race/ethnicity (Michigan only)									
White	13.4 %	12.5 %	12.4 %	15.4 %	15.8 %	15.9 %	66,820	65,459	64,526
Black	18.4 %	19.5 %	18.8 %	40.0 %	41.0 %	39.1 %	7,924	8,597	8,427
Other race	13.5 %	14.5 %	14.1 %	22.5 %	25.2 %	23.7 %	4,377	4,176	4,313
Hispanic	23.6 %	21.0 %	20.3 %	33.0 %	33.6 %	33.8 %	3,219	3,386	3,304
Income/poverty (Michigan only)									

<125% FPL	24.8 %	24.1 %	23.6 %	53.0 %	53.7 %	52.2 %	18,071	18,813	18,492
125-399% FPL	15.2 %	14.6 %	14.0 %	13.8 %	14.6 %	14.3 %	35,001	33,874	33,455
>400% FPL	5.1%	4.4%	4.6%	2.5%	2.5%	3.1%	27,504	26,027	25,984
Age (Michigan only)									
0-18	4.6%	4.2%	4.5%	37.7 %	38.7 %	39.3 %	23,412	22,347	22,033
19-34	27.6 %	24.9 %	23.5 %	16.5 %	17.0 %	16.4 %	16,847	17,135	16,895
35-64	14.4 %	14.7 %	14.5 %	11.4 %	12.1 %	11.5 %	42,081	42,136	41,642

Table 2
Current Population Survey, Annual Social and Economic Supplement (March survey), 2010 - 2013
Baseline measures - Fraction uninsured and fraction with Medicaid
Estimates are weighted using samples weights provided by the Census Bureau

	Uninsured				Medicaid				Unweighted sample size			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
State												
MI	15.5 %	14.9 %	14.1 %	12.7 %	16.2 %	18.9 %	19.3 %	18.8 %	4,324	4,134	4,063	3,830
OH	16.4 %	15.5 %	15.9 %	14.4 %	15.3 %	15.5 %	18.3 %	17.9 %	4,981	4,788	4,239	4,485
IN	16.3 %	15.3 %	13.9 %	15.6 %	18.1 %	17.9 %	18.5 %	18.2 %	2,636	2,712	2,681	2,671
IL	16.6 %	16.6 %	16.7 %	15.5 %	17.2 %	18.2 %	19.2 %	17.6 %	5,846	5,651	5,802	5,399
WI	10.9 %	10.9 %	12.0 %	11.2 %	16.8 %	16.8 %	18.5 %	19.7 %	3,398	3,322	3,251	3,330
Race/ethnicity (Michigan only)												
White	15.1 %	13.2 %	13.5 %	11.3 %	12.2 %	14.6 %	13.8 %	14.5 %	3,171	3,000	2,995	2,875
Black	18.8 %	20.8 %	13.4 %	17.7 %	33.5 %	34.5 %	39.0 %	34.7 %	624	584	599	481
Other race	11.3 %	21.0 %	14.4 %	6.5%	19.7 %	17.2 %	24.7 %	25.5 %	291	262	236	266
Hispanic	17.3 %	16.6 %	26.1 %	28.6 %	22.1 %	38.6 %	42.1 %	31.4 %	238	288	233	208
Income/poverty (Michigan only)												
<125% FPL	30.6 %	28.4 %	25.2 %	22.7 %	48.1 %	51.7 %	52.9 %	52.2 %	850	884	874	754

125-399% FPL	16.6%	14.7%	15.6%	15.2%	13.0%	16.2%	16.8%	16.0%	1,945	1,809	1,734	1,663
>400% FPL	6.1%	7.2%	6.2%	4.8%	2.8%	2.6%	3.1%	4.4%	1,529	1,441	1,455	1,413
Age (Michigan only)												
0-18	6.0%	5.2%	5.5%	4.0%	31.1%	35.6%	34.9%	35.8%	1,482	1,419	1,406	1,313
19-34	28.7%	25.5%	24.4%	22.1%	13.0%	16.5%	16.8%	14.1%	931	866	841	797
35-64	14.8%	15.7%	14.3%	13.5%	8.4%	9.6%	11.0%	10.5%	1,911	1,849	1,816	1,720

ATTACHMENT B
Demonstration Evaluation Plan

Domain III: Evaluation of Health Behaviors, Utilization & Health Outcomes

Impact on Healthy Behaviors and Health Outcomes *– The Healthy Michigan Program will evaluate what impact incentives for healthy behavior and the completion of an annual risk assessment have on increasing healthy behaviors and health outcomes. This evaluation will analyze selected indicators, such as emergency room utilization rates, inpatient hospitalization rates, use of preventive services and health and wellness programs, and the extent to which beneficiaries report an increase in their overall health status. Clear milestone reporting on the Healthy Behavior Incentives initiative must be summarized and provided to CMS once per year."*

I. Hypotheses

1. Hypothesis III.1: Emergency Department Utilization
    a. Emergency department utilization among the Healthy Michigan beneficiaries will decrease from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not have primary care visits; and
    c. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not agree to address behavior change.
2. Hypothesis III.2: Healthy Behaviors
    a. Receipt of preventive health services among the Healthy Michigan Plan population will increase over time, from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have higher rates of general preventive services compared to beneficiaries who do not have primary care visits;
    c. Healthy Michigan Plan beneficiaries who complete an annual health risk assessment will have higher rates of preventive services compared to beneficiaries who do not complete a health risk assessment;
    d. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will demonstrate improvement in self-reported health status compared to beneficiaries who do not agree to address behavior change; and
    e. Healthy Michigan Plan beneficiaries who receive incentives for healthy behaviors will have higher rates of preventive services compared to beneficiaries who do not receive such incentives.
3. Hypothesis III.3: Hospital Admissions
    a. Adjusted hospital admission rates for Healthy Michigan Plan beneficiaries will decrease from the Year 1 baseline;
    b. Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of hospital admissions compared to beneficiaries who do not have primary care visits; and

c. Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of hospital admission compared to beneficiaries who do not agree to address behavior change.

II. Management/Coordination of Evaluation

A. Faculty Team

The analysis of administrative data will be led by an existing research team within the Child Health Evaluation and Research (CHEAR) Unit, whose faculty are active members of the Institute for Healthcare Policy and Innovation (IHPI). The core of this team has worked together for over ten years, in collaboration with Michigan Department of Community Health officials, on analyses of administrative data. The team includes Sarah Clark, faculty lead, and Lisa Cohn, lead data analyst. Along with this core analysis team, John Ayanian (General Medicine) and other clinical content experts as needed, will participate in refining data protocols and interpreting results.

III. Timeline

Administrative data will be analyzed throughout the Healthy Michigan Plan demonstration project. Data will be analyzed for baseline measurement, for identification of subpopulations to sample for the Domain IV beneficiary survey, for evaluation of changes related to cost-sharing requirements, and for overall evaluation of changes in health care utilization and other healthy behaviors.

June 1 – September 30, 2014: Development of final data extraction, storage and security protocols; analysis of Adult Benefit Waiver data from state fiscal years 2011-2013 to ascertain potential use as baseline data.

October 1, 2014 – September 30, 2015: Assess rate of primary care visits and health risk assessment completion for persons enrolled in state fiscal year 2014. Analyze early utilization patterns to develop targeted sample for Domain IV beneficiary survey. Provide assistance to the Department in summarizing Healthy Behaviors Incentives initiative.

October 1, 2015 – September 30, 2016: Assess rate of primary care visits and health risk assessment completion for persons enrolled in state fiscal year 2015. Analyze utilization data to support analysis of Domain IV beneficiary survey. Provide assistance to the Department in summarizing Healthy Behaviors Incentives initiative.

October 1, 2016 – September 30, 2017: Calculate measures on emergency department utilization, healthy behaviors/preventive health services, and hospital admissions. Analyze trends over time, and summarize in report to the Centers for Medicare & Medicaid Services. Provide assistance to the Department in summarizing Healthy Behaviors Incentives initiative.

October 1, 2017 – September 30, 2018: Calculate measures on emergency department utilization, healthy behaviors/preventive health services, and hospital admissions for final year of demonstration project. Analyze trends over time, and summarize in final evaluation report to the Centers for Medicare & Medicaid Services.

IV. Performance Measures/Data Sources

A. Overview: Using Medicaid Enrollment & Utilization Data

The Michigan Department of Community Health's Data Warehouse offers an unusually rich data environment for evaluation. For Michigan Medicaid enrollees, the Data Warehouse contains individual-specific information, refreshed daily, on demographic characteristics, enrollment, and health care utilization (including inpatient, outpatient, emergency department, pharmacy, durable medical equipment, immunization, dental and mental health). Data elements unique to the Healthy Michigan Plan will include self-reported health status and other individual-specific data on health risk assessments, incentives for healthy behaviors, and cost-sharing requirements.

The University of Michigan has a longstanding history of collaborating with the Michigan Medicaid program within the Department of Community Health to analyze information from the Data Warehouse to evaluate Medicaid programs and policies. This experience positions the University evaluation team to analyze information in the Data Warehouse to:

- Document trends in key health care utilization (e.g., emergency department use, preventive care services) and Medicaid adult quality measures over time within the Healthy Michigan Plan population, using the first year of implementation as baseline rates and measuring annual changes. This type of analysis addresses federal evaluation requirements.
- Explore associations of health care utilization and Medicaid adult quality measures with major features of the Healthy Michigan Plan, such as receipt of annual visit to a primary care provider, completion of annual health risk assessment, and cost-sharing.
- Identify subgroups of beneficiaries, providers or geographic areas with higher- or lower-than-average utilization, to enable targeted sampling for Domain IV activities exploring beneficiary and provider perspectives.

B. Data Sources

The data source will be the Michigan Department of Community Health Data Warehouse. Under the authority of a Business Associates' Agreement between the Department of Community Health and the University of Michigan, individual-level data for Healthy Michigan Plan enrollees will be extracted from the Data Warehouse, to include enrollment and demographic characteristics; all utilization (encounters in primary care, inpatient, emergency, urgent care; pharmacy); completion of health risk assessments; beneficiary co-pay charges; and vaccine administration data from all providers (including pharmacies). Data will be extracted from the Data Warehouse via an existing secure line, and stored in encrypted files on a secure network with multiple layers of password protection.

The eligible population will include all Healthy Michigan Plan enrollees.

C. Measures

A broad range of measures will be generated each year of the demonstration project, and are noted below for specific focus areas. Measures include established indicators for clinical care (e.g., Healthcare Effectiveness Data and Information Set measures, Adult Core Quality Indicators) with identified measure stewards (e.g., National Quality Forum). Importantly, health plan-based measures offer useful but limited information, as they exclude enrollees who change health plans and do not allow a full assessment of outcomes for the entire population or for a target geographic area with multiple plans; moreover, some measures require a period of identification prior to measurement outcomes, which will be problematic with the Healthy Michigan population. HEDIS criteria for measures of chronic disease populations (Diabetes HbA1c, LDL testing, admission rate; COPD admission rate; CHF admission rate; asthma admission rate) require a year for identification of members who meet the chronic disease definition (i.e., the denominator), followed by a measurement year to assess utilization (i.e., the numerator). However, most HMP enrollees were not covered by Medicaid coverage prior to their HMP start date, and so the MDCH data warehouse will not provide pre-HMP data for identification of chronic disease status. To follow HEDIS criteria strictly, we would need to use the first full year of HMP as the identification year, followed by the second full year of HMP as the measurement year – delaying any results on these key outcome measures until midway through the third year of the demonstration project. Therefore, the evaluation plan will modify identification criteria where necessary, and will go beyond the plan-specific HEDIS measures by generating not only plan-level results, but also results across plans for key subgroups (e.g., by geographic region, urban v. rural, by race/ethnicity, by gender, by age group, and by chronic disease status).

Because most Healthy Michigan Plan enrollees will not have prior Medicaid coverage, baseline values for the selected measures will not be available for most new enrollees. Therefore, Year 1 (April 1, 2014-March 31, 2015) of the Healthy Michigan Plan will serve as a baseline from which to measure changes over the course of the demonstration project; in addition, comparison data from comparable populations will be gleaned from national data sources.

V. Plan for Analysis

Over the 5-year waiver period we will assess a targeted set of performance measures detailed below. Measure stewards are noted, as appropriate. In addition to the performance measures, we will generate annual data on the proportion of Healthy Michigan Plan enrollees who agree to address a behavior change, and the proportion who make at least one primary care visit.

A. Emergency Department (ED) Utilization

We hypothesize that:

1) Emergency department utilization among the Healthy Michigan Plan population will decrease from the Year 1 baseline;

2) Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not make primary care visits; and
3) Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of emergency department utilization compared to beneficiaries who do not agree to address behavior change.

To evaluate these hypotheses, we will calculate the following measures for the overall Healthy Michigan Plan population, by plan, by gender (where appropriate), by race/ethnicity, by county/geographic region, by chronic disease subgroups (diabetes, COPD, CHF, asthma), for beneficiaries who do vs. do not make regular primary care visits, for those who do vs. do not complete a health risk assessment, and for those who do vs. do not agree to address at least one behavior change. We will calculate measures for each year of the Healthy Michigan Plan demonstration period, and analyze trends over time. In addition, data from these analyses will be used to evaluate the association between emergency department utilization and the presence of cost-sharing requirements (Domain V/VI).

- **Healthcare Effectiveness Data and Information Set (HEDIS) Emergency Department Measure**: We will calculate the rate of emergency department visits per 1000 member months, and will calculate incidence rate ratios to assess the relative magnitude of emergency department utilization rates for subgroup comparisons. To provide additional information, we will calculate subgroup rates for key chronic disease populations (e.g., asthma, COPD, diabetes, CHF) at the plan level and by geographic region; this information will help the state to evaluate disease management programs and other services intended to encourage outpatient visits over emergency department use.
- **Emergency Department High-Utilizer Measure**: We will calculate the proportion of Healthy Michigan Plan beneficiaries who demonstrate high emergency department utilization (e.g., ≥5 emergency department visits within a 12-month period).

B. Healthy Behaviors/Preventive Health Services

We hypothesize that:
1) Receipt of preventive health services among the Healthy Michigan Plan population will increase from the Year 1 baseline;
2) Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have higher rates of general preventive services compared to beneficiaries who do not have primary care visits; and that
3) Healthy Michigan Plan beneficiaries who complete an annual health risk assessment will have higher rates of preventive services compared to beneficiaries who do not complete a health risk assessment.
4) Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will demonstrate improvement in self-reported health status compared to beneficiaries who do not agree to address behavior change.

5) Healthy Michigan Plan beneficiaries who are eligible to receive incentives for healthy behaviors will have higher rates of preventive services compared to beneficiaries who are not eligible to receive such incentives.

To evaluate these hypotheses, we will calculate the following measures for the overall Healthy Michigan Plan population, by plan, by gender (where appropriate), by race/ethnicity, by county/geographic region, for beneficiaries who do vs. do not make regular primary care visits for those who do vs. do not complete a health risk assessment, and for those who do vs. do not receive healthy behavior incentives. We will calculate measures for each year of the Healthy Michigan demonstration period, and analyze trends over time. In addition, data from these analyses will be used to evaluate the association between healthy behaviors and the presence of cost-sharing requirements (Domain V/VI).

- **Flu Shots for Adults**: We will calculate the proportion of beneficiaries aged 50-64 and aged 18-49 who received an influenza vaccine between July 1 and April 30. To supplement Consumer Assessment of Healthcare Providers and Systems self-reported data from a small sample of beneficiaries (NQF 0039), we will take advantage of Michigan's unique data environment by combining Medicaid utilization data with information found in the statewide immunization registry (Michigan Care Improvement Registry) to document rates of influenza vaccine receipt for the Healthy Michigan Plan population, and for individuals at high risk for influenza-related complications, such as those with diabetes, COPD, CHF, or asthma.
- **Colon Cancer Screening** (NQF 0034, measure steward NCQA): We will calculate the proportion of beneficiaries aged 50-64 who received colon cancer screening by high-sensitivity fecal occult blood test, sigmoidoscopy with FOBT, or colonoscopy (recommendation USPSTF).
- **Hemoglobin A1c Testing** (NQF 0057; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had hemoglobin a1c testing at least once during the measurement year.
- **LDL-C Screening** (NQF 0063; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had an LDL-C screening performed at least once during the measurement year.
- **Breast Cancer Screening** (modified NQF 0031; measure steward NCQA): We will calculate the proportion of women 40-64 who had a mammogram to screen for breast cancer. Modifications from the NQF standard include **age range** (NQF includes 40-69 years; we will use 40-64 years, to be consistent with Healthy Michigan Plan eligibility); **measurement time period** (NQF includes two years; initially, we will calculate this measure for a one-year period, to allow for early results, rather than wait until enrollees have 2 years of data, and then subsequently will use both a one-year and two-year measurement period).
- **Cervical Cancer Screening** (NQF 0032; measure steward NCQA): Among those women who have 3 or more years of continuous enrollment in the Healthy Michigan Plan, we will calculate the proportion of women 21-64 years of age who received a Pap test to screen for cervical cancer.

- **Smoking and Tobacco Use Cessation, Medical Assistance** (NQF 0037; measure steward NCQA): Among beneficiaries who report on smoking or tobacco use on their Health Risk Assessment (HRA), we will calculate the proportion who received tobacco cessation counseling or assistance.
- **Self-Reported Health Status:** As part of the Health Risk Assessment (HRA) to be completed annually, beneficiaries will rate their health status using a commonly used and validated tool. We will calculate the proportion of beneficiaries who rate their health status as Excellent or Very Good vs. Good or Fair or Poor. In addition, we will analyze each beneficiary's change in self-reported health status over time.

C. Hospital Admissions

We hypothesize that:
1) Adjusted hospital admission rates for Healthy Michigan Plan beneficiaries will decrease from the Year 1 baseline.
2) Healthy Michigan Plan beneficiaries who make regular primary care visits (at least once per year) will have lower adjusted rates of hospital admissions compared to beneficiaries who do not have primary care visits.
3) Healthy Michigan Plan beneficiaries who agree to address at least one behavior change will have lower adjusted rates of hospital admission compared to beneficiaries who do not agree to address behavior change.

To evaluate these hypotheses, we will calculate the following measures for the overall Healthy Michigan Plan population, by plan, by gender, by race/ethnicity, by county/geographic region, urban/rural, for beneficiaries who do vs. do not make regular primary care visits, and for those who are vs. are not eligible to receive healthy behavior incentives. We will calculate measures for each year of the Healthy Michigan demonstration period, and analyze trends over time. In addition, data from these analyses will be used to evaluate the association between hospital admission and the presence of cost-sharing requirements (Domain V/VI).

- **Overall Admission Rate**: We will calculate the proportion of enrollees with any inpatient admission, as well as the rate of inpatient admissions per 1000 member months. We will make the same calculations for medical admissions and surgical admissions.
- **Diabetes, Short-term Complications Admission Rate** (NQF 0272; measure steward AHRQ): We will calculate the number of discharges for diabetes short-term complications per 100,000 Healthy Michigan Plan enrollees age 18-64.
- **Chronic Obstructive Pulmonary Disease (COPD) Admission Rate** (NQF 0275; measure steward AHRQ): We will calculate the number of discharges for COPD per 100,000 Healthy Michigan Plan enrollees age 18-64.
- **Congestive Heart Failure Admission Rate** (NQF 0277; measure steward AHRQ): We will calculate the number of discharges for CHF per 100,000 Healthy Michigan Plan enrollees age 18-64.
- **Adult Asthma Admission Rate** (NQF 0283; measure steward AHRQ): We will calculate the number of discharges for asthma per 100,000 Healthy Michigan Plan enrollees age 18-64.

D. Baseline Data

Baseline data on prior healthcare utilization for Healthy Michigan Plan enrollees are not available except for those who were previously enrolled in the Adult Benefits Waiver (state fiscal years 2011-2013); therefore, direct comparison of performance measures pre- and post-implementation will not be possible for most Healthy Michigan Plan enrollees. Rather, Year 1 of the Healthy Michigan Plan will largely serve as baseline data, setting up an evaluation of changes over time.

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ATTACHMENT B
Demonstration Evaluation Plan

Domain IV: Participant Beneficiary Views of the Healthy Michigan Program

Participant Beneficiary Views on the Impact of the Healthy Michigan Program *– The Healthy Michigan Program will evaluate whether access to a low-cost (modest co- payments, etc.) primary and preventive health insurance benefit will encourage beneficiaries to maintain their health through the use of more basic health care services in order to avoid more costly acute care services.*

I. Aims

1) Aim IV.1: Describe Healthy Michigan Plan enrollees' consumer behaviors and health insurance literacy, including knowledge and understanding about the Healthy Michigan Plan, their health plan, benefit coverage, and cost-sharing aspects of their plan.
2) Aim IV.2: Describe Healthy Michigan Plan enrollees' self-reported changes in health status, health behaviors (including medication use), and facilitators and barriers to healthy behaviors (e.g. knowledge about health and health risks, engaged participation in care), and strategies that facilitate or challenge improvements in health behaviors.
3) Aim IV.3: Understand enrollee decisions about when, where and how to seek care, including decisions about emergency department utilization.
4) Aim IV.4: Describe primary care practitioners' experiences with Healthy Michigan Plan beneficiaries, practice approaches and innovation adopted or planned in response to the Healthy Michigan Plan, and future plans regarding care of Healthy Michigan Plan patients.

II. Management/Coordination of Evaluation

Domain IV will be led by Susan Dorr Goold, Professor of Internal Medicine and Health Management and Policy, with community co-director Zachary Rowe, Executive Director, Friends of Parkside and Founding Member of the board of Detroit Urban Research Center and the MICH-R Community Engagement Coordinating Council. Dr. Goold and Mr. Rowe co-direct two projects that engage members of underserved and minority communities in deliberations about health research priorities, including a statewide project funded by the National Institute on Aging and led by a Steering Committee of community leaders from throughout the state (decidersproject.org).

Additional faculty members working on this domain are described in Appendix A.

III. Performance Measures:

A. Specific measures and rationale

1. *Healthy Michigan Voices Survey of Healthy Michigan Plan enrollees (HMV)* (Goold, Clark, Kullgren, Kieffer, Haggins, Rosland and Tipirneni)

Evaluation of the Impact of the Healthy Michigan Plan requires understanding the experience of those who enroll: Do they establish primary care? Do they access care appropriately? Do they understand their cost-sharing parameters, their MI Health Account, and the incentives they have for particular behaviors? Do they gain knowledge about health risks and healthy behaviors? Do their health behaviors improve?

Understanding the overall health and economic impact of the Healthy Michigan Plan at a personal level requires learning about the experiences of participant beneficiaries. Tools typically used to track population experiences generally do not include a comprehensive list of items necessary for the purposes of this evaluation. The Medicaid Consumer Assessment of Healthcare Providers and Systems (CAHPS) and Behavioral Risk Factor Surveillance System (BRFSS) do not query respondents about specific knowledge, attitudes and experiences that relate to the impact of the Healthy Michigan Plan, such as incentives for healthy behaviors and an emphasis on primary care, and may not capture a sufficient number of respondents enrolled in the Healthy Michigan Plan to draw valid conclusions. We propose the **Healthy Michigan Voices** telephone survey of Healthy Michigan Plan beneficiaries on key topics related to the Healthy Michigan Plan.

Primary Care Practitioner Survey (PCPS) (Goold, Campbell, Tipirneni)

Evaluating the impact of the Healthy Michigan Plan will benefit greatly from the insights and experiences of primary care practitioners. We propose a survey of primary care practitioners to obtain empirically valid and timely data from a representative sample of primary care practitioners who have Healthy Michigan Plan enrollees assigned to their care. We plan to measure:

- Experiences caring for Healthy Michigan Plan beneficiaries, including access to and decision making about preventive health, basic health care services, specialty services and costly acute care services
- New practice approaches and innovations adopted or planned in response to the Healthy Michigan Plan
- Future plans regarding care of Healthy Michigan Plan patients

IV. Healthy Michigan Voices Survey (HMV)

1) *Sample*

The Healthy Michigan Voices survey sample will be limited to individuals who enrolled in the Healthy Michigan Plan between April 1, 2014 and March 31, 2016. Selection for the sample will be based on:

- Income level, proportionally selected across 4 bands of Healthy Michigan Plan eligibility (Federal Poverty Levels 0-35%, 36-75%, 76-99%, and ≥100%);
- County of residence, to ensure adequate representation of rural and urban beneficiaries; and
- Enrollment status – at least 10% of the sample will comprise early enrollees who disenrolled or failed to reenroll.

Age, gender and race/ethnicity will not be used as a selection variable, but are expected to be proportional to enrollment. The recruitment samples will be selected using Medicaid enrollment files in the Michigan Department of Community Health Data Warehouse. University of Michigan analysts approved to access the Data Warehouse will create unique sampling files that contain encrypted beneficiary identification numbers and required sampling variables, to enable selection of the recruitment sample by algorithm. The analysts will then generate mailing labels and a telephone contact file for selected beneficiaries. Recruitment staff will not have access to other beneficiary information.

With an estimated 50% recruitment rate, we will need to select and recruit 9000 Healthy Michigan Plan beneficiaries to achieve our target of 4500 Healthy Michigan Voices respondents. We plan to administer the survey using a method similar to a telephone survey of Medicaid parents conducted by CHEAR in 2005-6. (Dombkowski et al, 2012) In that survey, parents were mailed packets inviting participation and containing a stamped postcard indicating whether they wished to participate or opt out of the study. Those who indicated their willingness to participate had the option of providing a preferred telephone number and calling time. Parents acknowledging interest in participating were contacted first, followed by parents of eligible children who did not explicitly opt out. A working telephone number from Medicaid administrative data or parent response postcards was required for eligibility; consecutive phone calls were placed until the targeted number of interviews was completed. Of 523 parents who returned postcards, 127 (24%) did not have a working phone number or could not be reached and 3 refused participation when reached by phone; the remaining 393 (75%) had completed parent interviews. Of the 3279 parents who did not return postcards, 115 calls were randomly attempted until interview targets were reached; 58% had a nonworking number or could not be reached and were excluded; 47 interviews were completed from this group of parents (41%) for a total of 440 total completed interviews. The sample closely mirrored the eligible population by age and gender. However, participants were more frequently of white race ($P < .0001$). Since this survey was conducted, beneficiary contact information in the MDCH Data Warehouse has improved; however, increasing use of cellphones among lower income and young adults poses a challenge for response rates. Of the first 328,000 Healthy Michigan beneficiaries, 42% were 19-34 and 20% were 35-44.

If recruitment rates are lower than 50%, we will select and recruit more beneficiaries in order to achieve our target number of participants (e.g., with a 40% recruitment rate, we will need to select and recruit approximately 11,000 beneficiaries).

Recruitment will incorporate multiple contact methods. An invitation packet will be mailed to the selected beneficiaries, describing the Healthy Michigan Voices initiative and allowing them to indicate a desire to participate in Healthy Michigan Voices or opt out by either returning a postage-paid reply card or calling a toll-free number. In addition, 10 days after invitation packets are mailed, telephone calls will be placed to beneficiaries who have not yet responded, offering to answer any questions about Healthy Michigan Voices and asking people to participate. If they agree, the survey will preferentially take place during that telephone call or a future time will be scheduled to complete the telephone survey.

To avoid interfering with the Healthy Michigan Plan processes for enrollment, selecting a plan and provider, and completing the health risk assessment, no Healthy Michigan Voices recruitment will occur for 90 days after a person's enrollment, except for beneficiaries with documented plan and primary care practitioner selection and completion of a health risk assessment.

2) *Data Sources*

When possible, the Healthy Michigan Voices Survey will use existing items and scales. For example, questions about consumer behaviors will be drawn from the Employee Benefit Research Institute Consumer Engagement in Healthcare Survey. Questions about health behaviors will be drawn from the Behavioral Risk Factor Surveillance System and National Health and Nutrition Examination Survey questionnaires. Questions about access to care will be drawn from the Medical Expenditure Panel Survey and National Health Interview Survey questionnaires. To measure domains where existing items/scales are not available, or where the domain is specific to the Healthy Michigan Plan, new survey items and scales will be developed.. Survey measures will:

Aim 1: Describe Healthy Michigan Plan enrollees' consumer behaviors and health insurance literacy, including knowledge and understanding about the Healthy Michigan Plan, their health plan, benefit coverage, and cost-sharing aspects of their plan. Including:

- Knowledge and understanding of health insurance, the Healthy Michigan Plan, cost-sharing, incentives for healthy behaviors, MI Health accounts and value-based insurance design
- Health care spending, financial and nonfinancial obstacles to care
- Consumer Behaviors, including:
    - Checking cost-sharing before seeking care
    - Checking MI Health Account balance before seeking care
    - Talking with doctor about treatment options and costs
    - Seeking out and using quality information in health care decisions
    - Budgeting for health care expenses
    - Reasons for health risk assessment completion and non-completion
- Work ability, medical debt and other measures of economic impact of Healthy Michigan Plan
- Reason for failure to re-enroll, when applicable

Aim 2: Describe Healthy Michigan Plan enrollees' self-reported changes in health status, health behaviors (including medication use), and facilitators and barriers to healthy behaviors (e.g. knowledge about health and health risks, engaged participation in care), and strategies that facilitate or challenge improvements in health behaviors.

- Health status, including physical and mental health, physical function, and the presence of chronic health conditions
- Health behaviors and knowledge about healthy behaviors and health risks

- Medical self-management behaviors (e.g. medication adherence, self-monitoring when appropriate) and receipt of preventive care
- Patient activation and self-efficacy in managing health care and making healthy changes
- Strategies that facilitate healthy behaviors, including contact with community health workers and other community resources

Aim 3: Understand enrollee decisions about when, where and how to seek care, including decisions about emergency department utilization.

A unique feature of Healthy Michigan Voices is the ability to link to participants' Medicaid utilization and enrollment data. Data analysts working on the analysis of Medicaid utilization data (Domain III) will maintain the file of Healthy Michigan Voices participants and will query enrollment files to identify Healthy Michigan Voices participants who have left or failed to reenroll in the Healthy Michigan Plan. We will attempt to identify this group using contact information (address/telephone) stored in the MDCH Data Warehouse, and will supplement with other program information as needed. Categories of questions targeted to this group may include: enrollment in private insurance, cost barriers, and other areas identified in our survey development work.

Healthy Michigan Voices survey questions may be targeted to some important subgroups, including:

- Low utilizers of health care (e.g., those who have not had a primary care visit in the preceding 12 months) will be targeted to assess:
    - Financial and non-financial barriers to care
    - Views about health care providers and the health care system
    - Health insurance literacy
- High utilizers of health care (e.g., those with 5 or more ER visits in the preceding 12 months) will be targeted to assess:
    - Beneficiary decision-making about when, where and how to seek care
    - Contact with community health workers or other community resources
    - Views about and experiences with health care providers (especially primary care practitioners)
    - Financial and non-financial barriers to care
- Beneficiaries with mental and behavioral health conditions and substance use disorders
    - Beneficiary decision-making about when, where and how to seek care
    - Contact with community health workers or other community resources
    - Views about and experiences with health care providers (especially primary care practitioners)
- Beneficiaries with complex chronic conditions. These cases can be ascertained with inpatient or outpatient ICD-9 diagnosis codes and other claims information, or health risk assessment results when the full content of items assessed is known. Examples using the ICD-9/claims method are given below for 2 conditions:
    - *Diabetes*: At least 1 inpatient encounter or 2 outpatient encounters on separate days in the previous 2 years with a diabetes ICD-9 code (250.X, 357.2, 362.01-362.07, 366.41, 962.3, E932.3) or one outpatient fill of a diabetes prescription

(except metformin) with a day supply of 31 or greater or two outpatient fills with a day supply of 30 or less
- *Asthma*: At least 1 inpatient encounter or 2 outpatient encounters with ICD-9 code 493.x

3) *Measure stewards*

When possible, the Healthy Michigan Voices Survey will use existing items and scales from, among others, the Behavioral Risk Factor Surveillance System; Consumer Assessment of Healthcare Providers and Systems; Medical Expenditure Panel System; Employee Benefit Research Institute; Consumer Engagement in Healthcare Survey; National Health and Nutrition Examination Survey. When new measures are developed, the University of Michigan will serve as the measure steward.

4) *Baseline value for measures*

Although there is no true baseline to which results can be compared, results can be interpreted in light of results reported about those of similar income strata from the Behavioral Risk Factor Surveillance System in Michigan and other states, and Medicaid-specific Consumer Assessment of Healthcare Providers and Systems survey results.

5) *Analysis*

We will obtain descriptive statistics related to health insurance/health plan literacy, such as the proportion of Healthy Michigan Plan enrollees who understand use of their MI Health Accounts, and self-reported health status and healthy behaviors (e.g., current smoking, level of physical activity). We will link participants' survey data to Medicaid utilization and enrollment data available through the Michigan Department of Community Health Data Warehouse, as well as other existing secondary data on the characteristics of their communities through use of geocodes. Data analysts from Domain III will query enrollment and utilization files to identify important beneficiary sub-groups of interest (e.g., low utilizers of health care, high utilizers of health care, those with mental/behavioral health conditions and substance use disorders, and those with other complex chronic conditions). We will then use mixed effects regression to identify individual and community factors associated with Healthy Michigan Plan enrollees':

- Health insurance literacy, and knowledge and understanding about the Healthy Michigan Plan
- Knowledge about health and health risks, health behaviors, and engaged participation in care
- Decision making about when, where and how to seek care

V. Primary Care Practitioner Survey (PCPS)

1) *Sample*

Practitioners listed as the primary care provider of record for a minimum number of Healthy Michigan Plan enrollees (minimum number to be determined, based on the range and quartiles of numbers of Healthy Michigan Plan enrollees per practitioner) will be identified using the Michigan Department of Community Health Data Warehouse. From that frame we will draw a random sample of 2400 practitioners, anticipating we can obtain agreement from at least 1000 primary care practitioners to participate in the Survey. Sampling will be stratified by:

- Region as defined and used in the State Health Assessment and Improvement Plan. Regional sampling assures inclusion of primary care practitioners caring for patients in urban, suburban, rural and remote rural locations.
- Number of Healthy Michigan Plan enrollees for whom the practitioner is the primary care provider of record (by quartile). This will permit examination of whether primary care practitioners with greater and lesser experience caring for Healthy Michigan Plan enrollees report different experiences, innovations adaptations and future plans.
- Practice size

2) *Data Sources*

Surveys will include measures of primary care practitioner and practice characteristics, and measures related to the Healthy Michigan Plan such as, but not limited to:

- Plans to accept new Medicaid patients
- Anticipated, predicted barriers to care for the Healthy Michigan Plan patients (including barriers to specialty care)
- Experiences with Healthy Michigan Plan enrollees regarding decision making about emergency department use
- Experiences of caring for newly insured Medicaid patients, including ability to access non-primary care (specialty care, equipment, medication, dental care, mental health care)
- Experiences with care of special populations of newly insured Medicaid patients. Special populations (as reference in Domain III, Section V.A) include those that are a risk for overuse, under use, or inappropriate use of health care such as:
    - Key chronic disease populations (e.g., asthma, COPD, diabetes, CHF)
    - Beneficiaries who demonstrate high emergency department utilization (e.g., ≥5 emergency department visits within a 12-month period).
- New practice approaches adopted as a result of the newly insured Medicaid patients
- Future plans regarding care of Medicaid patients

Drs. Goold, Campbell and Tipirneni will develop the survey questions in collaboration with other members of the research team, informed by analysis of data collected in individual and group interviews. The development process will begin by identifying the key survey domains through an iterative process with the members of the evaluation team. Once the domains are identified we will scan the research literature to find existing survey items measuring the domains of interest (e.g., Backus *et al* 2001).

To develop and test measures for the Primary Care Practitioner Survey and the Healthy Michigan Voices Survey, we will conduct a set of individual and focus group interviews in 4 communities

(see below for selection criteria). Within each community, we plan to conduct 2 focus groups with ~10 Healthy Michigan Plan beneficiaries in each group; and individual or group interviews with 20 providers of medical, dental, mental health and substance use disorder care (including emergency department providers), community health workers, social service providers and key informants from health systems and community-based organizations serving Healthy Michigan Plan and other low-income clientele. Focus group interviews will be used more frequently in larger communities and individual interviews more frequently in rural areas and with some specific key health system, health provider and community organization informants. Individual interviews and focus groups will be conducted by trained interviewers and facilitators.
We will conduct all interviews during year 1, with development beginning in early fall 2014, first interviews by late fall and expected conclusion by early summer 2015. Analysis of results will be ongoing, aiming to first inform the development and testing of the Primary Care Practitioner Survey and, subsequently, the Healthy Michigan Voices Survey.

We will purposefully select four communities to assure inclusion of:

a) Medically underserved counties or populations,
b) Communities with a large proportion of high-utilizing beneficiaries,
c) Communities that have instituted innovations in care delivery or financing, for example the Michigan Pathways to Better Health initiative,
d) Racial and ethnic diversity,
e) A mix of urban, suburban and rural.

Dr. Campbell will take the lead in developing new survey items for the Practitioner Survey, which will be vetted thoroughly with members of the research team.

It is essential that newly developed survey instruments be tested extensively prior to use. We will pre-test the practitioner instrument using cognitive interviews with 5-10 primary care practitioners (including a variety of types of clinicians and specialties), and pretest the beneficiaries survey with 5-10 adult low-income Michigan residents balanced in age, gender and educational attainment. The goals of the cognitive testing are to ensure that: 1) respondents understand the questions in the manner in which the researcher intends; and 2) that the questions are written in a manner answerable for respondents. Through cognitive interviewing, we can determine whether the respondents understand the questions and can identify problems in two specific areas: potential response errors and errors in question interpretation associated with vague wording, use of technical terms, inappropriate assumptions, sensitive content and item wording. (Fowler, 2002) We will use the interview results to ensure that our survey items are as free from error as possible.

The surveys will be administered by the University of Michigan Child Health Evaluation and Research Unit, which has extensive experience in physician studies. All data will be stored in secure, password-protected files.

3) *Measure stewards and baseline*

Although direct comparisons cannot be made, results can be compared to those from the Michigan Primary Care Physician Survey conducted by the University of Michigan Child Health Evaluation and Research Unit and the Center for Healthcare Research and Transformation (Davis *et al*, 2012), the Michigan Survey of Physicians from 2012, and studies of physicians nationally (e.g., Strouse *et* al 2009, Tilburt *et al* 2013, Decker 2013) and in other states (e.g., Long 2013, Yen and Mounts 2012, Bruen *et al* 2013).

4) *Analysis*

We will obtain various descriptive statistics such as proportion of primary care practitioners reporting difficulty accessing specialty care for Healthy Michigan Plan enrollees or experiences related to emergency department decision making. We will examine differences between primary care practitioners by rural vs. urban practice, gender, specialty, years in practice, size of practice, number of Healthy Michigan Plan enrollees (by quartile) and proportion of assigned enrollees with a primary care visit and/or emergency department visit in the preceding 12 months.

VI. Timeline

June 1 – September 30, 2014: Identify key domains for primary care practitioner survey and gaps in existing measures. Create sampling frame and finalize sampling strategy for primary care practitioner survey.

October 1, 2014 – September 30, 2015: Cognitive testing for primary care practitioner survey. Primary care practitioner survey fielded and data collection completed. Key domains identified for Healthy Michigan Voices survey and gaps in existing measures. New measures developed and tested for Healthy Michigan Voices survey. Finalize sampling strategy for Healthy Michigan Voices survey. Begin analysis of primary care practitioner survey data.

October 1, 2015 – September 30, 2016: Continue and complete analysis of primary care practitioner survey data and prepare interim reports. Healthy Michigan Voices survey fielded and data collection completed. Begin descriptive analysis and prepare interim report.

October 1, 2016 – September 30, 2017 Prepare Healthy Michigan Voices survey data for analysis, complete descriptive analyses and interim reporting. Begin subgroup analyses, analyses of relationships (e.g., individual and community factors associated with care-seeking) and multivariate analyses.

October 1, 2017 – September 30, 2018. Complete analysis of Healthy Michigan Voices survey and prepare reports.

VII. Outcomes (expected)

	porting Quarters	**ta Source**

ATTACHMENT B
Demonstration Evaluation Plan

	(state fiscal years)	
Key domains and existing measures identified for Primary Care Practitioner Survey	2015	ploratory interviews, literature review
Primary care practitioners' experiences caring for Healthy Michigan Plan patients including: • Experiences with Healthy Michigan Plan enrollees regarding decision making about emergency room use • Experiences of caring for Healthy Michigan Plan enrollees, including ability to access non-primary care (specialty care, equipment, medication, dental care, mental health care) • Experiences caring for special populations of Healthy Michigan Plan enrollees • New practice approaches adopted as a result of the newly insured Medicaid patients • Future plans regarding care of Medicaid patients	-Q4 2016	mary Care Practitioner Survey
Beneficiaries' Experiences and Views: • Health insurance literacy, knowledge and understanding about the Healthy Michigan Plan, their health plan, benefit coverage, cost-sharing, and consumer behaviors. • Health status, including physical and mental health and the presence of chronic health conditions • Knowledge about health, health risks and health behaviors; their reported changes in health status, health behaviors, and engaged participation in care; facilitators and barriers to healthy behaviors, and strategies that facilitate or challenge improvements in health behaviors • Decisions about when, where, and how to seek care, including decisions about emergency department utilization	2017 - Q4 2018	althy Michigan Voices Survey
lividual and Community factors associated with: o Knowledge and understanding or health insurance, Healthy Michigan Plan, health risks and health behaviors o Health behaviors, activation and engaged participation in care o Experiences of health plan enrollment and use; decision making about when, where, and how to seek care; consumer behaviors ctors associated with Healthy Michigan Plan beneficiaries' health behaviors and patient activation	2018	althy Michigan Voices Survey

VIII. Limitations/challenges/opportunities

This multi-faceted evaluation of the Healthy Michigan Plan from the perspective of beneficiaries provides an opportunity to understand the impact of insurance coverage for low-income adults in Michigan, and whether and how cost-sharing and incentives for healthy behavior and the use of high-value care affect their decisions and behavior. Although we will not be able to compare the impact of the Healthy Michigan Plan on enrollees to a control group without Healthy Michigan Plan, we will explore insights that could be gained from comparisons to historical data and to information from neighboring states, if available.

The primary challenge related to surveys of physicians is getting physicians to respond. The standard approaches that are essential to overcoming this challenge include:

1. Making the survey short (no-more than 10 to 15 minutes to complete),
2. Making the topic relevant to physicians personally,
3. Convincing subjects that their responses will be used to change policy or practice,
4. Providing the survey in a format that can be easily completed and returned,
5. Providing an incentive for participation,
6. Doing extensive follow-up.

These approaches have been shown over time to be associated with high response rates. Below are examples of surveys in which Dr. Campbell has used these techniques with physicians and other professionals (including Dr. Goold) in order to achieve high response rates:

Grant Title	Study Population	# (pages)	Response Rate
Data Withholding in Genetics, 2000	2,893 life scientists	15	64%
Medical Professionalism, 2004	3,000 physicians	7	58%
Academic Industry Relationships, 2006	2,941 life scientists	8	74%
IRB Industry Relationships, 2005	893 IRB members	8	67%
Government Industry Relationships, 2008	567 NIH scientists	8	70%
Physician Professionalism 2009	3,500 physicians	8	69%
IRB Members and Conflicts of Interest 2014	1,016 IRB members	6	68%

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ATTACHMENT B
Demonstration Evaluation Plan

Domains V & VI: Impact of Contribution Requirements & Impact of MI Health Accounts

Impact of Contribution Requirements *– The Healthy Michigan Program will evaluate whether requiring beneficiaries to make contributions toward the cost of their health care results in individuals dropping their coverage, and whether collecting an average utilization component from beneficiaries in lieu of copayments at point of service affects beneficiaries' propensity to use services.*

Impact of MI Health Accounts *– The Healthy Michigan Program will evaluate whether providing a MI Health Account into which beneficiaries' contributions are deposited, that provides quarterly statements detailing account contributions and health care utilization, and that allows for reductions in future contribution requirements when funds roll over, deters beneficiaries from receiving needed health care services, or encourages beneficiaries to be more cost conscious.*

I. Hypotheses

- **Hypothesis V/VI.1:** Cost-sharing implemented through the MI Health Account framework will be associated with beneficiaries making more efficient use of health care services, as measured by total costs of care over time relative to their initial year of enrollment, and relative to trends in the Healthy Michigan Plan's population below 100% of the Federal Poverty Level that face similar service-specific cost-sharing requirements but not additional contributions towards the cost of their care.
- **Hypothesis V/VI.2:** Cost-sharing implemented through the MI Health Account framework will be associated with beneficiaries making more effective use of health care services relative to their initial year of enrollment, as indicated by a change in the mix of services from low-value (e.g., non-urgent emergency department visits, low priority office visits) to higher-value categories (e.g., emergency-only emergency department visits, high priority office visits), and relative to trends in the Healthy Michigan Plan's population below 100% of the Federal Poverty Level that face similar service-specific cost-sharing requirements but not additional contributions towards the cost of their care. Several questions on the Healthy Michigan Voices Survey address this hypothesis.
- **Hypothesis V/VI.3:** Cost-sharing and contributions implemented through the MI Health Account framework will not be associated with beneficiaries dropping their coverage through the Healthy Michigan Plan.
    - Beneficiaries above 100% of FPL who have few health care needs may consider dropping coverage due to the required contributions. However, those contributions do not begin until 6 months after enrollment, and can be reduced by 50% based on healthy behaviors. Therefore, we expect most beneficiaries will have little incentive to let their enrollment lapse, despite continued eligibility. To determine the prevalence of coverage drops due to cost-sharing, we will monitor compliance with contribution requirements and use the Healthy Michigan Voices survey to assess reasons for failure to re-enroll.
- **Hypothesis V/VI.4:**
    A. Exemptions from cost-sharing for specified services for chronic illnesses and rewards implemented through the MI Health Account framework for completing a health risk assessment with a primary care provider and agreeing to behavior changes will be

associated with beneficiaries increasing their healthy behaviors and their engagement with healthcare decision-making relative to their initial year of enrollment. Several questions on the Healthy Michigan Voices Survey also address this hypothesis.

B. This increase in healthy behaviors and engagement will be associated with an improvement in enrollees' health status over time, as measured by changes in elements of their health risk assessments and changes in receipt of recommended preventive care (e.g., flu shots, cancer screening) and adherence to prescribed medications for chronic disease (e.g., asthma controller medications).

II. Management/Coordination of Evaluation

The evaluation will be conducted by a team of researchers led by University of Michigan faculty member Richard Hirth, Ph.D. Dr. Hirth is Professor and Associate Chair of Health Management and Policy and Professor of Internal Medicine. His expertise includes health insurance and healthcare costs. He recently received the 2014 AcademyHealth Health Services Research Impact Award for his work on designing the renal dialysis bundled payment system adopted by Medicare in 2011. He serves as Deputy Editor of *Medical Care*, Research Director of the Center for Value-Based Insurance Design, and Associate Director of the Kidney Epidemiology and Cost Center.

Additional faculty members working on this domain are described in Appendix A.

III. Timeline

Administrative data will be analyzed throughout the Healthy Michigan Plan demonstration project, in conjunction with timeline activities described in Domains III and IV.

Planning: 6/1/14 – 12/31/16: Work with Domain III leads to analyze administrative data for baseline measurement and to establish a control population. Work with Domain IV leads to establish baseline, identify gaps in existing measures to develop new Healthy Michigan Voices survey measures specific to Domains V/VI.

Pilot Testing: 1/1/15 – 8/31/15: Work with Domain IV to test Healthy Michigan Voices survey measures specific to Domains V/VI, analyze early utilization patterns and cost-sharing experiences.

Data Collection: 9/1/15 – 5/31/16: Healthy Michigan Voices survey field and data collection completed (domain IV). Work with Domain IV to begin analysis of Healthy Michigan Voices survey data. Continue to analyze trends over time in MI Health Account and cost-sharing experiences.

Data Analysis: 6/1/16 – 5/31/17: Continue and complete analysis of administrative data and Healthy Michigan Voices survey data specific to Domains V/VI. Analyze administrative data for evaluation of changes related to cost sharing requirements.

Reporting: 6/1/17 – 12/31/17: Complete analysis of administrative data and Healthy Michigan Voices survey data specific to Domains V/VI and prepare reports.

A. Development

During the initial phase of the project, we will focus on the acquisition of baseline data on the treatment and control populations. In addition, we will work with the other domains to incorporate questions into the Healthy Michigan Voices survey.

B. Implementation

Data acquisition, updating and analysis will be ongoing throughout the project. This will facilitate the provision of timely interim and final reports on the outcomes of the Healthy Michigan Plan and allow for informed decisions regarding modification of the program.

C. Reporting

Interim reporting will be completed during state fiscal year 2017, with final reporting occurring at the end of the demonstration period.

IV. Performance Measures

A. Specific measures and rationale

Cost, utilization, and outcome measures will come from Medicaid claims, health risk assessments, and the responses on the Healthy Michigan Voices Survey, as described in more detail in Domain III. Survey questions specific to the hypotheses in this domain will focus on two main areas: knowledge of program features and consumer behaviors. For each of these areas, it will be important to describe baseline levels and examine changes over time (i.e., with more experience in the Healthy Michigan Plan).

The survey questions developed to assess beneficiary knowledge of cost-sharing requirements will seek to evaluate the impact of the increased communication on behavior. We will design survey questions aimed at assessing beneficiary recall of cost-sharing information shared at the point of service as well as in the MI Health Account quarterly statements. Specifically, we will incorporate survey questions to understand whether and how this increased communication leads to beneficiaries becoming more aware of these program features, and whether there is an impact on behavior.

Beneficiary Knowledge of Specific Program Features

- Cost-Sharing:
    - Co-pays for different types of services, in particular services that are exempt from cost-sharing (such as preventive services, which has been a key area of confusion

in high deductible health plans) and services that cost-sharing aims to discourage (e.g., non-emergency emergency department visits)
    - How co-pays are paid, in light of the waiver specification that co-pays will not be collected at the point of service so as not to discourage needed care
    - If/how cost-sharing can be reduced (i.e., by health risk assessment completion and engagement in healthy behaviors)
- MI Health Accounts:
    - Purpose of account
    - Required beneficiary contributions
    - Whether account balances can be rolled over

Consumer Behaviors

- Checking cost-sharing before seeking care
- Checking MI Health Account balance before seeking care
- Talking with doctor about treatment options and costs
- Budgeting for health care expenses

B. Statistical reliability and validity

We will utilize standard descriptive and adjusted statistical techniques with appropriate attention to confounding and consideration of temporal trends through use of concurrent control groups.

C. Methodology and specifications

i. Eligible/target population

The target population is Healthy Michigan Plan enrollees on or after April 1, 2014. We expect 300,000-500,000 persons to be eligible for the Healthy Michigan Plan, all of whom will be subject to copay requirements. Only those with incomes between 100%-133% of the Federal Poverty Level will be subject to contribution requirements.

ii. Time period of study

Enrollees will be followed from the initiation of the Healthy Michigan Plan on April 1, 2014 and run through the most recent available data at the end of 2017. We anticipate following and evaluating enrollees until at least the end of 2016 and possibly through mid-2017.

iii. Measure steward

The Department of Community Health is the steward of Medicaid data on utilization, MI Health Accounts, and cost-sharing. We will assess how MI Health Accounts and cost-sharing are associated with specified measures from the Centers for Medicare & Medicaid Services' Core Set of Health Care Quality Measures for Medicaid Eligible Adults, as detailed in Domain III.

iv. Data Handling, Storage, and Confidentiality

Please refer to Domain III for information on the handling, storage and confidentiality of data on utilization, MI Health Accounts, and cost-sharing data from the Data Warehouse, and to Domain IV for comparable information on the Healthy Michigan Voices survey.

v. Rationale for approach

See Plan for Analysis below.

vi. Sampling methodology

Claims-based utilization and cost measures, MI Health Accounts, and cost-sharing data will be available for all Healthy Michigan Plan enrollees, so no sampling will be required for these data. Please refer to Domain IV for info on sampling strategy for Healthy Michigan Voices survey.

V. Plan for Analysis

A. Evaluation of performance

We propose to address the four study hypotheses by using Medicaid claims and MI Health Account statements to track resource utilization, both in terms of total spending (Medicaid spending plus patient obligations) and in terms of specific services (e.g., emergency department use, use of preventive services). This tracking will incorporate the first full 3 years of the Healthy Michigan Plan (4/1/2014 – 4/1/2017). Two populations will be tracked over this timeframe:

- The Healthy Michigan Plan population with incomes between 100% and 133% of the Federal Poverty Level,
- The Healthy Michigan Plan population with incomes less than 100% of the Federal Poverty Level,

The primary comparisons described in the hypotheses involve relative changes over time in different parts of the Healthy Michigan Plan population. These analyses will use a "differences in differences" model, comparing trends in the treatment group to trends in the control group(-s). Please see the limitations section below for further details.

For the Healthy Michigan Plan enrollees with incomes between 100% and 133% of the Federal Poverty Level, we will also assess changes in health and health risks over time based on the completed health risk assessments. Primary analyses of the health risk assessments data will occur under Domain III; that information will be integrated with Domains V and VI in order to support testing the hypotheses under these Domains.

In addition to tracking utilization for the entire population, we propose using the Healthy Michigan Voices to survey to provide supporting information regarding consumers' responses to cost-sharing and contribution requirements. The purpose of that survey will be to assess

enrollees' understanding of the program and their obligations and their engagement in health and healthcare decisions.

B. Outcomes (expected)

We expect the trend in total costs per enrollee to be no greater, or possibly lower, among those with higher contribution requirements. Underlying the total cost of care, we expect to see a shift in the composition of services from low value towards high-value uses among those in the MI Health Account program relative to the control populations. We also expect to see improvements on health risks, understanding of the program and engagement in health decisions over time in the MI Health Account enrollees.

C. Limitations/challenges/opportunities

There are four primary analytic challenges:

1) **Ensuring appropriate control populations against which to judge the trends observed among MI Health Account enrollees is necessary to draw compelling conclusions about the program's success.** The primary control populations will be different eligibility groups within the Healthy Michigan Plan (e.g., <100% of the Federal Poverty Level). Because those groups differ systematically from those who are eligible for the program, the levels of the outcome variables may be different but it is plausible that many of the factors causing changes over time are common to the control and treatment populations. One approach to limiting the effects of any residual differences in populations would be to focus on comparisons between narrower (and presumably more similar) subpopulations (e.g., 100-120% of the Federal Poverty Level vs. 80-100% of the Federal Poverty Level) rather than using the entire range of incomes

2) **Lack of data for population prior to their enrollment on or after April 1, 2014.** The initial data on enrollees with contribution requirements will come from their first six months to one year in the program rather than from a pre-program baseline period. We expect that the program's effects will take time to develop (e.g., MI Health Account contributions do not occur in the first six months of the program, learning how to use the program and better engage with the health system and changes in health behaviors subsequent to the initial health risk assessment will not be immediate). Therefore, using the first program year as the baseline may not be a substantial limitation.

3) **Given the relatively small incentives in an absolute sense (though not necessarily trivial to a low income population), the magnitude of behavior change may not be substantial across all outcome dimensions.** However, we expect the expected enrollment of 300,000 to 500,000 individuals to be sufficient to detect statistically significant changes even if their absolute magnitudes are not large.

4) **Changing program eligibility over time may result in households "churning" into and out of the Healthy Michigan program.** We anticipate that most, but not all, program

eligibility determinations will be on an annual basis, limiting the amount of month-to-month turnover. In addition, to the extent that incomes dropped below 100% of the Federal Poverty Level, we would be able to continue to track individuals who move below the income range required to make additional contributions to their MI Health Accounts.

Domain VII: Cost-effectiveness

I. Hypotheses

Hypothesis VII.1: Marketplace Option enrollees will not differ significantly from Healthy Michigan Plan enrollees in access to primary care providers.

Hypothesis VII.2: Marketplace Option enrollees will not differ significantly from Healthy Michigan Plan enrollees in access to specialty care providers.

Hypothesis VII.3: The quality of care and utilization of emergency department and hospital services will not differ significantly for Marketplace Option beneficiaries relative to enrollees in the same income range who remain in the Healthy Michigan Plan.

Hypothesis VII.4: The cost of covering Marketplace Option beneficiaries will not differ significantly from the cost of covering enrollees in the same income range who remain in the Healthy Michigan Plan.

II. Management/Coordination of Evaluation

A. Evaluation Team

The work on Domain VII of the evaluation will be conducted by John Ayanian, Sarah Clark, and Renu Tipirneni.

III. Timeline

The timeline will be adjusted depending on the availability of claims data for the analyses.

- *July 2018 - October 2018*: Conduct analyses of quality measures from HMP claims data from the prior year of HMP enrollment (April 1, 2017 to March 31, 2018) as the identification year/pre condition.

- *April 2019 - June 2019*: Field Healthy Michigan Voices survey of Marketplace Option enrollees.

- *July 2019 – December 2019:* Conduct analyses of primary care and specialist availability (Hypotheses VII.1 and VII.2) and quality and utilization measures (Hypothesis VII.3) from HMP and Marketplace Option utilization data for the first 12 months (April 1, 2018 through March 31, 2019) as the measurement period if the Marketplace Option data are available in a timely manner. Conduct analysis of overall cost data from HMP and Marketplace Option (Hypothesis VII.4). Conduct geo-mapping analysis.

- *December 2019*: Prepare summary of Domain VII findings for final evaluation report, to be submitted by February 1, 2020.

IV. Performance Measures/Data Sources

A. Specific measures and rationale

1. Hypothesis VII.1. Access to Primary Care Providers

To assess access to primary care for enrollees in the Healthy Michigan Plan and those who enroll in the Marketplace Option, we will use three measures. First, we will assess the overlap in primary care provider networks between the Healthy Michigan Plan and the Marketplace Option. Using provider NPI numbers, we will compare the list of available primary care providers for the Marketplace Option with the primary care network lists for plans of comparable region and size participating in the Healthy Michigan Plan.

Second, to assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network providers and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following three options: (1) the primary care providers (PCPs) enrollees have actually seen for their care, (2) their selected or assigned PCP, or (3) the nearest in-network PCP – based on the data available to the evaluation team.

Another source of data for exploring this hypothesis is the Healthy Michigan Voices Survey. A portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not meet the criteria to remain in a Medicaid Health Plan). The survey will include questions that address perceptions of access to primary care, including whether individuals were able to keep their primary care provider if they chose to do so, or were required to find a new PCP that was in network, after making the transition.

For beneficiaries who transition to the Marketplace Option, we will also compare primary care utilization in the final year of HMP to the first year in the Marketplace Option, assess changes in primary care provider, compare a measure of primary care utilization-vs-emergency department utilization in the final year of HMP to the first year in the Marketplace Option, and describe the characteristics of those who have a drop in primary care utilization after transitioning to the Marketplace Option. We will consider these analyses in light of changes in health plan carriers that occur for beneficiaries during the transition to the Marketplace Option.

2. Hypothesis VII.2. Access to Specialty Care Providers

We recognize that provider network lists may overstate the number of providers willing to see Medicaid patients (U.S. Department of Health and Human Services Office of the Inspector General, 2014). As a result, we will use three measures to assess access to specialty care for enrollees in the Healthy Michigan Plan and those who enroll in the Marketplace Option. First, we will assess the overlap in specialty care provider networks between the Healthy Michigan Plan and the Marketplace Option, Second, we will modify an existing measure designed to assess

the availability of specialty care for Medicaid-enrolled children. This measure focuses on specialists who have claims evidence of providing outpatient visits to enrollees. Using this method, we will assess the respective rates of participating cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists, otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists who have seen at least one enrolled adult in the measurement year for at least one outpatient visit. Specialist physicians are identified using taxonomy codes linked to a National Provider Identifier (NPI) using the National Plan & Provider Enumeration System (NPPES) registry (https://npiregistry.cms.hhs.gov). These measures are implemented with administrative claims data. They are adapted from a comparable set of measures recently developed by members of our HMP evaluation team and approved by the National Quality Measures Clearinghouse for assessing outpatient specialty care for children (Clark et al., 2016). To address concerns that this measure may partly reflect provider-patient relationships that pre-exist enrollment in either program, we will conduct a secondary analysis to look at rates of specialist visits among individuals newly enrolling in HMP (between April and December 2018) with incomes at or above 100 percent FPL and compare to utilization among Marketplace Option enrollees.

Second, to assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network specialist providers in a variety of categories (e.g. cardiologist, endocrinologist, obstetrician/gynecologist, ophthalmologist, rheumatologist, pulmonologist) and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following two options: (1) the specialists enrollees have actually seen for their care, or (2) the nearest in-network specialists – based on the data available to the evaluation team.

Another source of data for exploring this hypothesis is the Healthy Michigan Voices Survey. A portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not complete the Health Risk Assessment and agree to a healthy behavior). The survey will include questions that address perceptions of access to specialty care.

For beneficiaries who transition to the Marketplace Option, we will also compare specialty care utilization in the final year of HMP to the first year in the Marketplace Option, assess changes in specialty care providers, and describe the characteristics of those who have a drop in specialty care utilization after transitioning to the Marketplace Option. This analysis will be focused on key chronic disease populations (asthma, CHF, COPD, diabetes). We will consider these analyses in light of changes in health plan carriers that occur for beneficiaries during the transition to the Marketplace Option.

3. Hypothesis VII.3. Quality of Care & Health Care Utilization

If the Michigan Department of Health and Human Services (MDHHS) can obtain claims data from Marketplace Option plans for HMP enrollees who switch to these plans in 2018, we will compare claims-based quality and utilization measures between HMP and Marketplace Option

enrollees. If information is available on reasons for transitioning to the Marketplace Option, we will conduct a subgroup analysis of enrollees who chose the Marketplace Option as compared to those who were transferred by the state because they did not meet the criteria to remain in a Medicaid Health Plan. To address this hypothesis in our final evaluation report to be submitted by November 1, 2019, we will analyze HMP and Marketplace Option claims data for health services delivered during the first 12 months after the Marketplace Option becomes active (April 1, 2018 through March 31, 2019), anticipating that >90% of claims will be adjudicated and available in the data warehouse by the expected start date for this analysis in July 2019. We will re-run analyses in September 2019 to verify that claims with delayed adjudication do not affect the results. It should be noted that this analysis is of realized utilization via claims analysis, and as a result, it is not possible to draw conclusions about those who do not utilize care during this period.

Additionally, a portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not meet the criteria to remain in a Medicaid Health Plan) and will include questions that address perceptions of quality of care and health care utilization.

As outlined in Domain III of our HMP evaluation plan approved by CMS on October 21, 2014, a broad range of measures will be generated for each year of the evaluation project. These measures include established indicators for clinical care (e.g., Healthcare Effectiveness Data and Information Set measures, Adult Core Quality Indicators) with identified measure stewards (e.g., National Quality Forum). Importantly, health plan-based measures offer useful but limited information, as they exclude enrollees who change health plans and do not allow a full assessment of outcomes for the entire population or for a target geographic area with multiple plans; moreover, some measures require a period of identification prior to measurement outcomes. HEDIS criteria for measures of chronic disease populations (Diabetes HbA1c, LDL testing, admission rate; COPD admission rate; CHF admission rate; asthma admission rate) require a year for identification of members who meet the chronic disease definition (i.e., the denominator), followed by a measurement year to assess utilization (i.e., the numerator).

To follow HEDIS or NQF criteria for such measures among Marketplace Option enrollees, we will use the prior year of HMP enrollment (April 1, 2017 – March 31, 2018) as the identification year, followed by the ensuing 12 months of HMP or Marketplace Option enrollment as the measurement period. Assuming these claims data are available, we will complete this analysis during July through October of 2019. While we did consider modifications to established measures to accommodate a shortened time period and/or the use of claims-based utilization measures that do not require a pre-period, this approach would not offer a fruitful subgroup analysis, as the groups may not be subject to the same requirements, such as having an early primary care visit, so their results would not be comparable.

As outlined on pages 79-81 of our original evaluation plan, we will focus on the following claims-based quality and utilization measures that can be feasibly measured during a 12-month observation period (for which Marketplace Option claims data could become available) rather than a full-year measurement period (as needed for cancer screening, for example):

- **Healthcare Effectiveness Data and Information Set (HEDIS) Emergency Department Measure**: We will calculate the rate of emergency department visits per 1000 member months, and will calculate incidence rate ratios to assess the relative magnitude of emergency department utilization rates for subgroup comparisons. To provide additional information, we will calculate subgroup rates for key chronic disease populations (e.g., asthma, COPD, diabetes, CHF) at the plan level and by geographic region; this information will help the state to evaluate disease management programs and other services intended to encourage outpatient visits over emergency department use.

- **Emergency Department High-Utilizer Measure**: We will calculate the proportion of Healthy Michigan Plan beneficiaries who demonstrate high emergency department utilization (e.g., ≥5 emergency department visits within a 12-month period).
    - We will also account for clustering of visits among frequent users to examine the degree to which a small number of frequent emergency department users drive observed utilization rates among HMP and Marketplace Option enrollees including sensitivity tests to examine the probability of having any emergency room visit at all.

- **Hemoglobin A1c Testing** (NQF 0057; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had hemoglobin a1c testing at least once during the measurement year.

- **LDL-C Screening** (NQF 0063; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had an LDL-C screening performed at least once during the measurement year.

- **Overall Admission Rate**: We will calculate the proportion of enrollees with any inpatient admission, as well as the rate of inpatient admissions per 1000 member months. We will make the same calculations for medical admissions and surgical admissions.

- **Diabetes, Short-term Complications Admission Rate** (NQF 0272; measure steward AHRQ): We will calculate the number of discharges for diabetes short-term complications per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Chronic Obstructive Pulmonary Disease (COPD) Admission Rate** (NQF 0275; measure steward AHRQ): We will calculate the number of discharges for COPD per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Congestive Heart Failure Admission Rate** (NQF 0277; measure steward AHRQ): We will calculate the number of discharges for CHF per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Adult Asthma Admission Rate** (NQF 0283; measure steward AHRQ): We will calculate the number of discharges for asthma per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Flu Shots for Adults:** We will calculate the proportion of beneficiaries aged 50-64 and aged 18-49 who received an influenza vaccine between July 1 and March 31. To supplement Consumer Assessment of Healthcare Providers and Systems self-reported data from a small sample of beneficiaries (NQF 0039), we will take advantage of Michigan's unique data environment by combining Medicaid utilization data with information found in the statewide immunization registry (Michigan Care Improvement Registry) to document rates of influenza vaccine receipt for the HMP and Marketplace Option enrollees, and for individuals at high risk for influenza-related complications, such as those with diabetes, COPD, CHF, or asthma.

4. Hypothesis VII.4. Costs of Care

For this hypothesis we will assess the total state and federal costs of Marketplace Option coverage on a per-member-per-month basis for former HMP enrollees who move to a Qualified Health Plan (QHP). These costs include four main components:

1. Costs of Marketplace Option premiums
2. MDHHS costs of Medicaid wraparound coverage
3. MDHHS administrative costs to oversee the Marketplace Option

The total of these four components will be compared to the capitated payments and costs outside the cap made for an age/sex/comorbidity matched group of enrollees with incomes above 100% of the Federal poverty level (FPL) who remain in HMP health plans. This analysis assumes that MDHHS can provide the University of Michigan evaluation team with the four components of Marketplace Option cost data listed above by June 30, 2019, thereby enabling the cost analyses to be conducted during July through October 2019. For this analysis, we will conduct a subgroup analysis to minimize the influence of selection bias by separately examining costs for those Marketplace Option enrollees who willingly switched from HMP and those that the state transferred because they did not meet the criteria to stay in a Medicaid Health Plan controlled for age and sex.

Given the limited 12-month time period of data that we expect to be available for analysis of Marketplace Option enrollees in Michigan during April 2018 through March 2019, we propose the following measures of incremental cost-effectiveness ratios (ICER) that employ the utilization and cost data described above for this time period:

Overall emergency department (ED) use

$$\frac{\text{Total Cost (Marketplace Option) - Total Cost(HMP)}}{\text{ED Use (Marketplace Option) - ED Use(HMP)}}$$

Overall admission rates

Total Cost (Marketplace Option) - Total Cost(HMP)
Admission Rate (Marketplace Option) - Admission Rate(HMP)

Admission rates for COPD, diabetes short-term complications, CHF and asthma

Total Cost (Marketplace Option) - Total Cost(HMP)
Admission Rate (Marketplace Option) - Admission Rate(HMP)

Breast Cancer Screening

Total Cost (Marketplace Option) - Total Cost(HMP)
Breast Cancer Screening (Marketplace Option) - Breast Cancer Screening(HMP)

LDL-C Screening

Total Cost (Marketplace Option) - Total Cost(HMP)
LDL-C Screening (Marketplace Option) - LDL-C Screening(HMP)

Hemoglobin A1c Testing

Total Cost (Marketplace Option) - Total Cost(HMP)
Hemoglobin A1c Testing (Marketplace Option) - Hemoglobin A1c Testing(HMP)

We will also incorporate select measures from HMV survey data in our analysis of the ICERs in order to understand how the relative costs relate to perceptions of access to care.

B. Methodology and specifications

i. Eligible/target population

The eligible population will include all Marketplace Option and Healthy Michigan Plan beneficiaries with incomes above 100% FPL and who are not deemed medically frail by MDHHS. The Healthy Michigan Plan participants who move to the Marketplace Option beginning in April 2018 will include enrollees in this income range who have not completed a Health Risk Assessment and agreed to a healthy behavior, as well as some enrollees who may choose the Marketplace Option because of a preference for private insurance coverage. Relative to Healthy Michigan Plan enrollees who complete the Health Risk Assessment, the former group may be less interested pursuing healthy behaviors and thus be less healthy, which could be associated with greater medical needs and higher costs. We will account for these differences as described in Section V below.

ii. Time period of study

The main period of study will begin April 1, 2018, after the Marketplace Option is implemented and extend for 12 months through March 31, 2019. Baseline data on prior health care use and costs will be collected during April 1, 2017 through March 31, 2018. The Healthy Michigan Voices survey of Marketplace Option enrollees will be conducted April through June 2019.

C. Measure steward

The Michigan Department of Health and Human Services is the measure steward.

D. Baseline values for measures

Information available at baseline includes primary care and specialist availability, healthcare utilization and cost data from the Healthy Michigan Plan available through the Michigan Department of Health and Human Services Data Warehouse.

E. Data Sources

The data source for information on utilization within the Healthy Michigan Plan will be the MDHHS Data Warehouse. Under the authority of a Business Associates' Agreement between the Department of Health and Human Services and the University of Michigan, individual-level data for Healthy Michigan Plan enrollees will be extracted from the Data Warehouse, to include enrollment and demographic characteristics, as well as all utilization (encounters in primary care, inpatient, emergency, urgent care; pharmacy). Data will be extracted from the Data Warehouse via an existing secure line, and stored in encrypted files on a secure network with multiple layers of password protection.

Healthy Michigan Plan and Marketplace Option provider and enrollee address data are the minimum necessary to perform the GIS mapping, Therefore, this component of the evaluation is contingent on access to accurate and timely electronic data on provider network lists, including practice location, and information about the beneficiaries enrolled in the Marketplace Option through Qualified Health Plans (QHPs). Because geographic access does not equate to realized access, we favor analyzing claims data to ascertain the distance traveled by beneficiaries for actual visits with PCPs, if these data from the QHPs can be provided to our evaluation team in a timely manner. The secondary preference is to use PCP of record, and the default plan will be to use the nearest in-network PCP. For the analysis of access to specialists, our preference is to use actual visits to specialty care providers and focus on high-volume specialty areas. Alternatively, depending on the volume of specialty care during the evaluation period (April 1, 2018-March 31, 2019), we would use the nearest in-network specialists.

We anticipate the data source for information on utilization and quality of care in Marketplace Option plans will come from data reporting by QHPs in Michigan to MDHHS. *The details of these new data reporting systems remain to be determined, so we will revisit the feasibility of these analyses with MDHHS in 2018 when we expect further information about the Marketplace Option plans and their data reporting to MDHHS will become available*.

The data source for information on costs of the Healthy Michigan Plan and Marketplace Option will be MDHHS. This information will include the capitated payments made to HMP health plans, the state payments made to Marketplace Option health plans for former HMP enrollees, the costs of wraparound Medicaid coverage for these enrollees, and the administrative costs associated with state oversight of the Marketplace Option for former HMP enrollees.

V. Plan for Analysis

Our evaluation of the cost effectiveness of the Marketplace Option as compared to the Healthy Michigan Plan will employ several types of analyses. To understand demographic and clinical characteristics of enrollees in these categories, we will compare the characteristics of Marketplace Option enrollees with those who have incomes above 100% FPL who remain in the Healthy Michigan Plan. These analyses will be based on HMP enrollment and encounter data during the year prior to the start of the Marketplace Option (April 1, 2017-March 31, 2018).

For the analysis of primary care access in Hypothesis VII.1, we will assess the overlap in primary care provider networks for HMP and the Marketplace Option. Using provider NPI numbers, we will compare the list of available primary care providers for the Marketplace Option with the primary care network lists for plans of comparable region and size participating in the Healthy Michigan Plan. For each Healthy Michigan Plan network assessed, we will calculate the proportion of primary care providers from the HMP network that appear on the Marketplace Option primary care provider network, to yield the percent overlap. We will also quantify the number of providers listed on the Healthy Michigan Plan network only and the number listed on the Marketplace Option network only. Finally, we will calculate the number of total primary care providers listed for each network and the ratio of primary care providers to enrolled members.

For the analysis of specialist availability in Hypothesis VII.2, we will compare the provider networks for Marketplace Option and comparable HMP plans for key specialties, specifically cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists, otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists. As described above, we will calculate the overlap in specialists, as well as those unique to the Marketplace Option and those unique to the HMP plan network.

In addition, we will use administrative claims to calculate the respective rates of participating cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists, otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists who have seen at least one enrolled adult in the measurement year for at least one outpatient visit will be expressed in terms of the numbers of participating specialists in each category per 1,000 eligible enrollees (number of providers/1,000 eligible enrollees), where the eligible population includes adults 18 years of age and older who have been enrolled in the Healthy Michigan Plan or the Marketplace Option for at least one 90-day period (or 3 consecutive months) within the measurement year.

For the analysis of quality and utilization measures for Hypothesis VII.3, we will compare the measures for Healthy Michigan Plan enrollees and Marketplace Option enrollees with incomes above 100% of FPL by gender, by race/ethnicity, and by urban/rural areas. For each of these measures, we will be building on analyses conducted for 2014 through 2017 as part of our original HMP evaluation. With risk-adjustment to account for baseline demographic and health status differences between these two groups prior to April 2018, we will use difference-in-difference methods to compare overall changes in quality and utilization measures for Marketplace Option enrollees with changes in these measures for comparable enrollees who remain in the Healthy Michigan Plan. This difference-in-difference approach will account for potential inherent differences between these two groups.

For Hypothesis VII.4, costs per-enrollee-per-month in HMP and the Marketplace Option during April 1, 2018 through March 31, 2019 will be compared after risk-adjustment based on enrollees' demographic characteristics and on their comorbid conditions and utilization using HMP data for the year prior to April 1, 2018. Incremental cost-effectiveness ratios will be calculated based on cost and utilization data as detailed above. We will also use difference-in-difference methods for these cost analyses. We will incorporate data from the high-utilizer ED measure to assess the extent to which ED costs are driven by high utilizers. Similarly, we will incorporate data from the inpatient quality measures to estimate the proportion of inpatient care attributable to the four chronic disease groups.

Geomapping Analysis Plan

Before conducting the geomapping, we will randomly select a sample of age- and sex-matched Healthy Michigan Plan enrollees who meet the same criteria as those enrolled in the Marketplace Option (income >100% FPL and not deemed medically frail) in equal number to the Marketplace Option enrollees within each prosperity region in the state.

To assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network providers and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following three options: (1) the primary care providers (PCPs) enrollees have actually seen for their care, (2) their selected or assigned PCP, or (3) the nearest in-network PCP – based on the data available to the evaluation team.

The geographic method we choose to assess distance/travel time to provider will depend on the data source available. For options 1 and 2 above (last PCP seen based on claims data or PCP of record), we will use existing street centerline networks to compute miles traveled. For this method, each enrollee will have a two pairs of geographic coordinates (home and health care provider office), and distance/travel time will involve a single calculation using minimum distance methods available. If information about enrollees' unique PCP is not available, we will replicate the method described in Appendix 1 of Arkansas Health Care Independence Program ("Private Option") Section 1115 Demonstration Waiver Interim Report (Arkansas Center for Health Improvement, 2016), in which we will define incremental "ringed" polygons for each network PCP, and we will also use this approach to assess access to specialists. These polygons

will define regions based on the number of miles from the PCP or specialist (0-5, 5-10, 10-15, etc.). Similar polygons will also be constructed based on travel time in in 15-minute intervals rather than miles. For each enrollee in the dataset, we will find the closest PCP or specialist, and assign the distance value of that ring to the participant (e.g. if the smallest ring overlapping with that individual in a rural area is 15-20 miles, they will be assigned that value).

We will conduct statistical analyses to examine whether the level of access differs for enrollees in the Healthy Michigan Plan and those with a Marketplace Option. We will compare Marketplace enrollees with their matched counterparts enrolled in HMP based on the following:

1. Distance/travel time to PCP
2. Distance/travel time to specialist

We will use logistic regression to calculate p-values for differences in access by enrollment type. Because Healthy Michigan Plan and Marketplace Option enrollees will be matched on income, age, sex, and prosperity region within Michigan, we do not anticipate needing to adjust these analyses for additional covariates.

Results for the full analysis of access in the state of Michigan will be presented in tabular form. We will also conduct sub-analyses of each of the 10 prosperity regions within the state, producing map-based graphics to illustrate the differences in levels of access between the regions, if differences are present.

References

Arkansas Center for Health Improvement. Arkansas Health Care Independence Program ("Private Option") Section 1115 Demonstration Waiver Interim Report. Appendix 1 Arkansas Evaluation Hypotheses: Proposed & Final Test Indicators. Little Rock (AR): Arkansas Center for Health Improvement. June 16, 2016.

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ATTACHMENT B
Demonstration Evaluation Plan

Appendix A: Researcher Bios

I. Faculty Leadership Profiles

Project Director: John Z. Ayanian, M.D., M.P.P.

John Z. Ayanian, M.D., M.P.P., Director of the University of Michigan Institute for Healthcare Policy & Innovation, will lead the interdisciplinary team of faculty members and staff conducting the Healthy Michigan Plan evaluation. In addition to serving as the Institute's director, Dr. Ayanian is the Alice Hamilton professor of medicine in the University of Michigan Medical School, professor of health management and policy in the School of Public Health, and professor of public policy in the Gerald R. Ford School of Public Policy. Dr. Ayanian's research focuses on the effects of race, ethnicity, gender, and insurance coverage on access to care and clinical outcomes, and the impact of physician specialty and organizational characteristics on the quality of care for cardiovascular disease, cancer, diabetes, and other major health conditions. He has published over 200 studies and over 50 editorials and chapters assessing access to care, quality of care, and health care disparities.

Dr. Ayanian joined the University of Michigan in 2013 from Harvard Medical School, where he served as professor of medicine and of health care policy. He also was a professor in health policy and management at the Harvard School of Public Health, and a practicing primary care physician at Brigham and Women's Hospital in Boston. From 2008-2013, he directed the Health Disparities Research Program of Harvard Catalyst (Harvard's National Institutes of Health-funded Clinical and Translational Sciences Center), Outcomes Research Program of the Dana-Farber/Harvard Cancer Center, and Harvard Medical School Fellowship in General Medicine and Primary Care.

Elected to the Institute of Medicine, the American Society for Clinical Investigation and the Association of American Physicians, he is also a Fellow of the American College of Physicians. In 2012, he received the John M. Eisenberg Award for Career Achievement in Research from the Society of General Internal Medicine, and his past honors include the Generalist Physician Faculty Scholar Award from the Robert Wood Johnson Foundation, Alice Hersch Young Investigator Award from AcademyHealth, and Best Published Research Article of the Year from the Society of General Internal Medicine in 2000 and in 2008.

Project Co-Director: Sarah J. Clark, M.P.H.

Sarah J. Clark, M.P.H., is Associate Research Scientist in the Department of Pediatrics, and Associate Director of the Child Health Evaluation and Research (CHEAR) Unit at the University of Michigan. She also serves as Associate 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 Program Staff on projects evaluating Medicaid programs and policies, utilizing both the analysis of Medicaid administrative data and/or primary data collection

involving Medicaid beneficiaries and providers. Areas of inquiry have included trends in emergency department visits after implementation of Medicaid managed care; trends in dental visits associated with expansion of a dental demonstration project; availability of appointments with medical specialists for Medicaid-enrolled children; and the impact of auto-assignment on children's receipt of primary care services. Under her leadership, the Child Health Evaluation and Research Unit researchers have published more than 30 manuscripts related to the Michigan Medicaid program and more than 25 reports to Department of Community Health officials.

II. Faculty Leads, Domains I & II: Thomas Buchmueller, Ph.D. and Helen Levy, Ph.D.

The work on Domains I and II of the evaluation will be conducted by a team of researchers co-led by two University of Michigan faculty members, Thomas Buchmueller Ph.D. and Helen Levy Ph.D. Buchmueller's primary appointment is in the Ross School of Business, where he holds the Waldo O. Hildebrand Endowed Chair in Risk Management and Insurance and currently serves as the Chair of the Business Economics Area. He has a secondary appointment in the Department of Health Management and Policy in the School of Public Health. Levy is a tenured Research Associate Professor with appointments in the Institute for Social Research, Ford School of Public Policy and Department of Health Management and Policy at the School of Public Health. She is a co-investigator on the Health and Retirement Survey, a national longitudinal survey supported by the National Institute on Aging. Buchmueller and Levy are experts on the economics of health insurance and health reform. In 2010-2011, Levy served as the Senior Health Economist at the White House Council of Economic Advisers. Buchmueller succeeded her in this position in 2011-2012.

Domains I & II: Sayeh Nikpay (M.P.H; Ph.D. expected 2014), a Research Investigator at the UM Institute for Healthcare Policy and Innovation (IHPI), will serve as evaluation manager and lead data analyst for Domains I and II. In 2010-2011, Nikpay served as a Staff Economist at the White House Council of Economic Advisers (Levy was her supervisor). In addition to collaborating with Buchmueller and Levy on the design of the evaluation analysis, her responsibilities will include managing the acquisition and maintenance of large data sets, conducting periodic interim analyses and generating reports based on these analyses, and coordinating activities among team members.

Domain I: Professors Daniel Lee, Ph.D. and Simone Singh, Ph.D. from the Department of Health Management and Policy in the University of Michigan School of Public Health will participate in the evaluation activities related to Domain I. Professors Lee and Singh are experts in hospital organization and finance and have conducted research on the determinants of uncompensated care. Their expertise will be essential for compiling the necessary data resources and designing the analysis.

A graduate student researcher will also assist the faculty team.

III. Faculty Leads, Domain III: Sarah Clark, John Ayanian

The work on Domain III will be led by Sarah Clark, M.P.H., and John Ayanian, M.D., M.P.P.as described in Section I of Appendix A above.

IV. Faculty Lead, Domain IV: Susan Goold, M.D., M.H.S.A., M.A.

The work on Domain IV will be led by Susan Dorr Goold, M.D., M.H.S.A., M.A., Professor of Internal Medicine and Health Management and Policy at the University of Michigan. Dr. Goold studies the allocation of scarce healthcare resources, especially the perspectives of patients and citizens. The results from projects using the CHAT (Choosing Healthplans All Together) allocation game, which she pioneered, have been published and presented in national and international venues. CHAT won the 2003 Paul Ellwood Award, and Dr. Goold's research using CHAT received the 2002 Mark S. Ehrenreich Prize for Research in Healthcare Ethics. CHAT has been used by educators, community-based organizations, employer groups, and others in over 20 U.S. states and several countries to engage the public in deliberations on health spending priorities. Dr. Goold serves on several editorial boards and as Chair of the American Medical Association Council on Ethical and Judicial Affairs. She has also held leadership positions in the American Society for Bioethics and Humanities and the International society on Healthcare Priority Setting.

Edith Kieffer (Social Work) brings extensive experience using longitudinal epidemiological studies, qualitative formative research, intervention research, CBPR and CHW-led approaches to design, conduct and evaluate programs addressing health disparities.

Jeffrey Kullgren (Internal Medicine) brings expertise in behavioral economics and experience conducting research on decision making, cost-related access barriers, financial incentives for patients and cost transparency.

Adrianne Haggins (Emergency Medicine) brings knowledge and experience related to patient decision-making about when and where to seek care. She has experience analyzing national data on the impact of expansion of insurance coverage on use of emergency department and non-emergency outpatient services and has completed a review of the state-level effects of healthcare reform initiatives on utilization of outpatient services.

Renuka Tipirneni (Internal Medicine) studies the impact of health care reform on access to and quality of care for low-income and other vulnerable populations, and is currently conducting a study of access to primary care practices for Medicaid enrollees in the state of Michigan.

Ann-Marie Rosland (Internal Medicine) brings experience studying self-management and organization of clinical care for chronic diseases.

Eric Campbell (Mongan Institute for Health Policy), will consult on the project, and will bring extensive experience and expertise with high-profile surveys of physicians on health policy topics.

V. Faculty Lead, Domains V & VI: Richard Hirth, Ph.D.

Richard Hirth, Ph.D. will lead a team of researchers on the work of Domains V and VI. Dr. Hirth is Professor and Associate Chair of Health Management and Policy at the School of Public Health and Professor of Internal Medicine. His expertise includes health insurance and healthcare costs, and his research interests include the role of not-for-profit providers in health care markets, health insurance, the relationship between managed care and the adoption and utilization of medical technologies, long-term care, and the economics of end stage renal disease care.

Dr. Hirth has received several awards, including the Kenneth J. Arrow Award in Health Economics, awarded annually by the American Public Health Association and the International Health Economics Association to the best paper in health economics (1993); the Excellence in Research Award in Health Policy from the Blue Cross/Blue Shield of Michigan Foundation (1998 and 2009); and the Thompson Prize for Young Investigators from the Association of University Programs in Health Administration (1999); Listing in Top 20 Most Read Articles of 2009, Health Affairs (2010); Outstanding abstract (consumer decision-making theme), AcademyHealth Annual Meeting (2007); and Outstanding abstract (long-term care theme), Academy for Health Services Research and Health Policy Annual Meeting (2001).

Most recently, Dr. Hirth received the 2014 AcademyHealth Health Services Research Impact Award for his work on designing the renal dialysis bundled payment system adopted by Medicare for the End-Stage Renal Disease Program in 2011.

Jeff Kullgren, M.D., M.S., M.P.H., is an Assistant Professor of Internal Medicine at the University of Michigan Medical School and a Research Scientist in the VA Ann Arbor HSR&D Center for Clinical Management Research. His research aims to improve patient decisions about healthcare utilization and health behaviors. Most recently his work has examined decision-making and cost-related access barriers among families enrolled in high-deductible health plans as well as the growth of state-based initiatives to publicly report health care prices to consumers. He currently leads a project examining the potential value of state prescription drug price comparison tools for patients who take commonly prescribed prescription drugs and face high levels of out-of-pocket expenditures. In another study, he is testing a provider-focused intervention to decrease overuse of low-value health care services that can often trigger high out-of-pocket expenditures for patients. He has studied the effects of community-based programs to improve access for low-income uninsured adults and the relationship between financial and nonfinancial access barriers, and studies the effects of financial incentives for healthy behaviors such as weight loss, physical activity, and colorectal cancer screening.

A. Mark Fendrick, M.D. is a Professor of Internal Medicine and Professor of Health Management and Policy at the University of Michigan. He directs the Center for Value-Based Insurance Design at the University of Michigan [www.vbidcenter.org], the leading advocate for development, implementation, and evaluation of innovative health benefit plans. Dr. Fendrick's research focuses on how financial incentives impact care-seeking behavior, clinical outcomes and health care costs. Dr. Fendrick is the Co-editor in chief of the *American Journal of Managed Care*. He serves on the Medicare Coverage Advisory Committee and has won numerous awards

for his role for the creation and implementation of value-based insurance design. Dr. Fendrick remains clinically active in the practice of general internal medicine.

Additional staff will include a part time programmer/analyst and a 0.5 FTE Graduate Student Research Assistant, to be identified.

ATTACHMENT B
Demonstration Evaluation Plan

Appendix B: Description of Data Sources

1. Michigan Department of Community Health Data Warehouse

A key data source for the Healthy Michigan Plan evaluation will be the Michigan Department of Community Health Data Warehouse. Components of the data warehouse that will contain data for the Healthy Michigan Plan population include Medicaid beneficiary eligibility, enrollment and demographic characteristics; Medicaid provider enrollment; managed care encounters, payments and provider networks; Medicaid fee-for-service claims; pharmacy claims, including National Drug Codes; community mental health, including managed mental health plans; substance abuse; immunizations; third-party liability; and vital records. A unique client identifier links person-level records across Department of Community Health program areas. The Data Warehouse also links to the statewide Enterprise Data Warehouse, which contains records for human services, corrections, treasury, secretary of state, federal-state programs, and other program areas. The Enterprise Data Warehouse is the nation's most sophisticated and highly utilized state government data warehouse, supporting evaluation of state policies across programmatic lines.

For nearly 15 years, the University of Michigan's Child Health Evaluation and Research (CHEAR) Unit has utilized the Data Warehouse for numerous collaborative projects with Department officials. A Business Associates' Agreement between the Department and the University was enacted to allow CHEAR to extract and analyze information from the Data Warehouse in response to requests from MDCH officials; for other project types, specific Data Use Agreements are prepared and approved by the MDCH Privacy Office, as well as the MDCH Institutional Review Board. CHEAR data analysts participate in training and educational sessions related to the Data Warehouse, and communicate frequently with MDCH staff on data quality issues.

As part of the University's Institute for Healthcare Policy and Innovation (IHPI), the CHEAR Unit will play a central role in the Healthy Michigan Plan evaluation, bringing its experience in extracting and analyzing Medicaid data from the MDCH Data Warehouse. Data extraction will be conducted via VPN connection using a RSA SecurID password token. Using a second password, CHEAR analysts will access data models using Open Text BI-Query, writing specific queries to download demographic, eligibility, health care utilization and provider information records. To protect enrollee confidentiality, CHEAR analysts encrypt the beneficiary IDs using SAS, and use the encrypted datasets for data analysis. The analytic datasets are stored on password protected external hard drives, which are stored in locked cabinets at night. Office doors are locked when unoccupied during the day. The raw data and final analytic files are backed up to a server location that is only accessible to CHEAR analysts and specific faculty leads through secured network sign-on. The server folders are reviewed periodically and data files not accessed in over 5 years are removed unless a longer storage timeframe is requested by MDCH officials.

2. Public Use Data Sets

Hospital Cost Reports & Filings (Domain I)

We intend to use Medicare cost reports, which Medicare-certified hospitals are required to submit annually to a Medicare Administrative Contractor. The cost report contains provider information such as facility characteristics, utilization data, cost and charges by cost center (in total and for Medicare), Medicare settlement data, and financial data. As part of the financial data, hospitals are required to provide detailed data on uncompensated care and indigent care provided. These include charity care and bad debt (both in terms of full charges and cost) as well as the unreimbursed cost for care provided to patients covered under Medicaid, SCHIP, and state and local indigent care programs. Medicare cost reports (Form CMS-2552-10) for hospitals in Michigan and other states will be obtained from the CMS website.

We will also use Medicaid cost reports as well as supplementary forms compiled by the Michigan Department of Community Health. These reports have the advantage of providing more detail than the CMS reports, but are only available for Michigan hospitals.

We also plan to use Schedule H of IRS Form 990. Since 2009, federally tax-exempt hospitals have been required to complete the revised IRS Form 990 Schedule H, which requires hospitals to annually report their expenditures for activities and services that the IRS has classified as community benefits. These include charity care (i.e., subsidized care for persons who meet the criteria for charity care established by a hospital), unreimbursed costs for means-tested government programs (such as Medicaid), subsidized health services (i.e., clinical services provided at a financial loss), community health improvement services and community-benefit operations (i.e., activities carried out or supported for the express purpose of improving community health), research, health professions education, and financial and in-kind contributions to community groups. In addition to community benefits, Schedule H asks hospitals to report on their bad debt expenditures.

Hospitals' IRS filings will be obtained from GuideStar, a company that obtains, digitizes, and sells data that organizations report on IRS Form 990 and related Schedules. Data will be obtained for all hospitals that file Form 990 with the IRS at the individual hospital-level. (For 2009 to 2011, Form 990 Schedule H is available for 85 federally tax-exempt hospitals in Michigan.) Members of our research team have extensive experience working with these data.[13]

US Census Bureau Surveys (Domain II)

The analysis of insurance coverage will be based on data from two annual national surveys conducted by the Census Bureau: the Current Population Survey (CPS) and the American Community Survey (ACS). Each survey has specific strengths related to this evaluation. The CPS is the most commonly cited data source for state-level estimates of insurance coverage. It provides a detailed breakdown by source of coverage. The ACS provides less detail on source of coverage but with a much larger sample size than the CPS. The larger sample size means it is possible to make estimates for subgroups not supported by the CPS, such as geographic areas

[13] Young, G.J., Chou, C, Alexander, J, Lee, S.D. and Raver, E. 2013. "Provision of Community Benefits by Tax-Exempt U.S. Hospitals, *New England Journal of Medicine*, 368(16): 1519-1527.

within a state. In each case, our analysis will be based on public use files disseminated by Census.

3. Primary Data Collection

Healthy Michigan Voices Survey (Domains II, III, IV, V, VI)

Evaluation of the impact of the Healthy Michigan Plan requires tracking the experience of those who enroll: Do they establish primary care? Do they access care appropriately? Do they gain knowledge about health risks and healthy behaviors? Do their health behaviors improve? Identifying trends, assessing the impact of strategies to overcome barriers, and understanding the overall health and economic impact of the Healthy Michigan Plan at a personal level requires learning about the experiences of participant beneficiaries. Tools typically used to track population experiences generally do not include a comprehensive list of items necessary to measure for the purposes of this evaluation.

Researchers at the University of Michigan have established that measuring public experiences, attitudes, and actions through longitudinal population surveys is a timely and informative way to track progress and identify challenges. Such efforts provide objective evaluations of the impact of health programs, and offer timely results that enable stakeholders to identify the need for targeted action. We propose the **Healthy Michigan Voices** (HMV) project, a survey of Healthy Michigan enrollees on key topics related to the Healthy Michigan program.

The Healthy Michigan Voices survey will be limited to those enrolled in the Healthy Michigan Plan, and will include one cohort of approximately 4500 participants, recruited at strategic intervals after enrollment opens in April 2014. The survey will be fielded during state fiscal year 2016, administered by telephone. The survey methodology and specifications are described in greater detail in Domain IV.

Primary Care Practitioner Survey (Domain IV)

To measure primary care practitioners' expectations, experiences, and innovative responses for caring for the Healthy Michigan Plan population, we propose the Primary Care Practitioner Survey (PCPS) to obtain empirically valid and timely data from a small, but generalizable sample of primary care practitioners in Michigan. This will be accomplished through the use of multiple, short surveys (10 items or less) administered during state fiscal year 2015, asking relevant questions about the Healthy Michigan Plan. The surveys will be self-administered and distributed via Priority Mail (with an option to complete online).

As described in greater detail in Domain IV, we will identify primary care practitioners using the Michigan Department of Community Health Data Warehouse, drawing a random sample of 2400 practitioners actively engaging in primary care in Michigan, anticipating we can obtain agreement from at least 1000 primary care practitioners for participation. The surveys will be administered by CHEAR, which has extensive experience in physician studies. All data will be stored in secure, password-protected files.

Domain VII Cost Effectiveness
Draft Demonstration Evaluation Plan for FY17-FY19

Draft Evaluation Proposal Prepared by
The Institute for Healthcare Policy & Innovation
University of Michigan

June 2017

Centers for Medicare & Medicaid Services
Evaluation Design

I. Hypotheses

Hypothesis VII.1: Marketplace Option enrollees will not differ significantly from Healthy Michigan Plan enrollees in access to primary care providers.

Hypothesis VII.2: Marketplace Option enrollees will not differ significantly from Healthy Michigan Plan enrollees in access to specialty care providers.

Hypothesis VII.3: The quality of care and utilization of emergency department and hospital services will not differ significantly for Marketplace Option beneficiaries relative to enrollees in the same income range who remain in the Healthy Michigan Plan.

Hypothesis VII.4: The cost of covering Marketplace Option beneficiaries will not differ significantly from the cost of covering enrollees in the same income range who remain in the Healthy Michigan Plan.

II. Management/Coordination of Evaluation

A. Evaluation Team

The work on Domain VII of the evaluation will be conducted by John Ayanian, Sarah Clark, and Renu Tipirneni.

III. Timeline

The timeline will be adjusted depending on the availability of claims data for the analyses.

- *July 2018 - October 2018*: Conduct analyses of quality measures from HMP claims data from the prior year of HMP enrollment (April 1, 2017 to March 31, 2018) as the identification year/pre condition.

- *April 2019 - June 2019*: Field Healthy Michigan Voices survey of Marketplace Option enrollees.

- *July 2019 – December 2019:* Conduct analyses of primary care and specialist availability (Hypotheses VII.1 and VII.2) and quality and utilization measures (Hypothesis VII.3) from HMP and Marketplace Option utilization data for the first 12 months (April 1, 2018 through March 31, 2019) as the measurement period if the Marketplace Option data are available in a timely manner. Conduct analysis of overall cost data from HMP and Marketplace Option (Hypothesis VII.4). Conduct geo-mapping analysis.

- *December 2019*: Prepare summary of Domain VII findings for final evaluation report, to be submitted by February 1, 2020.

IV. Performance Measures/Data Sources

A. Specific measures and rationale

1. Hypothesis VII.1. Access to Primary Care Providers

To assess access to primary care for enrollees in the Healthy Michigan Plan and those who enroll in the Marketplace Option, we will use three measures. First, we will assess the overlap in primary care provider networks between the Healthy Michigan Plan and the Marketplace Option. Using provider NPI numbers, we will compare the list of available primary care providers for the Marketplace Option with the primary care network lists for plans of comparable region and size participating in the Healthy Michigan Plan.

Second, to assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network providers and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following three options: (1) the primary care providers (PCPs) enrollees have actually seen for their care, (2) their selected or assigned PCP, or (3) the nearest in-network PCP – based on the data available to the evaluation team.

Another source of data for exploring this hypothesis is the Healthy Michigan Voices Survey. A portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not meet the criteria to remain in a Medicaid Health Plan). The survey will include questions that address perceptions of access to primary care, including whether individuals were able to keep their primary care provider if they chose to do so, or were required to find a new PCP that was in network, after making the transition.

For beneficiaries who transition to the Marketplace Option, we will also compare primary care utilization in the final year of HMP to the first year in the Marketplace Option, assess changes in primary care provider, compare a measure of primary care utilization-vs-emergency department utilization in the final year of HMP to the first year in the Marketplace Option, and describe the characteristics of those who have a drop in primary care utilization after transitioning to the Marketplace Option. We will consider these analyses in light of changes in health plan carriers that occur for beneficiaries during the transition to the Marketplace Option.

2. Hypothesis VII.2. Access to Specialty Care Providers

We recognize that provider network lists may overstate the number of providers willing to see Medicaid patients (U.S. Department of Health and Human Services Office of the Inspector General, 2014). As a result, we will use three measures to assess access to specialty care for enrollees in the Healthy Michigan Plan and those who enroll in the Marketplace Option. First, we will assess the overlap in specialty care provider networks between the Healthy Michigan Plan and the Marketplace Option, Second, we will modify an existing measure designed to assess the availability of specialty care for Medicaid-enrolled children. This measure focuses on specialists who have claims evidence of providing outpatient visits to enrollees. Using this method, we will assess the respective rates of participating cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists,

otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists who have seen at least one enrolled adult in the measurement year for at least one outpatient visit. Specialist physicians are identified using taxonomy codes linked to a National Provider Identifier (NPI) using the National Plan & Provider Enumeration System (NPPES) registry (https://npiregistry.cms.hhs.gov). These measures are implemented with administrative claims data. They are adapted from a comparable set of measures recently developed by members of our HMP evaluation team and approved by the National Quality Measures Clearinghouse for assessing outpatient specialty care for children (Clark et al., 2016). To address concerns that this measure may partly reflect provider-patient relationships that pre-exist enrollment in either program, we will conduct a secondary analysis to look at rates of specialist visits among individuals newly enrolling in HMP (between April and December 2018) with incomes at or above 100 percent FPL and compare to utilization among Marketplace Option enrollees.

Second, to assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network specialist providers in a variety of categories (e.g. cardiologist, endocrinologist, obstetrician/gynecologist, ophthalmologist, rheumatologist, pulmonologist) and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following two options: (1) the specialists enrollees have actually seen for their care, or (2) the nearest in-network specialists – based on the data available to the evaluation team.

Another source of data for exploring this hypothesis is the Healthy Michigan Voices Survey. A portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not complete the Health Risk Assessment and agree to a healthy behavior). The survey will include questions that address perceptions of access to specialty care.

For beneficiaries who transition to the Marketplace Option, we will also compare specialty care utilization in the final year of HMP to the first year in the Marketplace Option, assess changes in specialty care providers, and describe the characteristics of those who have a drop in specialty care utilization after transitioning to the Marketplace Option. This analysis will be focused on key chronic disease populations (asthma, CHF, COPD, diabetes). We will consider these analyses in light of changes in health plan carriers that occur for beneficiaries during the transition to the Marketplace Option.

3. Hypothesis VII.3. Quality of Care & Health Care Utilization

If the Michigan Department of Health and Human Services (MDHHS) can obtain claims data from Marketplace Option plans for HMP enrollees who switch to these plans in 2018, we will compare claims-based quality and utilization measures between HMP and Marketplace Option enrollees. If information is available on reasons for transitioning to the Marketplace Option, we will conduct a subgroup analysis of enrollees who chose the Marketplace Option as compared to those who were transferred by the state because they did not meet the criteria to remain in a Medicaid Health Plan. To address this hypothesis in our final evaluation report to be submitted by November 1, 2019, we will analyze HMP and Marketplace Option claims data for health

services delivered during the first 12 months after the Marketplace Option becomes active (April 1, 2018 through March 31, 2019), anticipating that >90% of claims will be adjudicated and available in the data warehouse by the expected start date for this analysis in July 2019. We will re-run analyses in September 2019 to verify that claims with delayed adjudication do not affect the results. It should be noted that this analysis is of realized utilization via claims analysis, and as a result, it is not possible to draw conclusions about those who do not utilize care during this period.

Additionally, a portion of the sample of the Healthy Michigan Voices survey in 2019 will include beneficiaries enrolled in the Marketplace Option (either by choice or through state transfer because they did not meet the criteria to remain in a Medicaid Health Plan) and will include questions that address perceptions of quality of care and health care utilization.

As outlined in Domain III of our HMP evaluation plan approved by CMS on October 21, 2014, a broad range of measures will be generated for each year of the evaluation project. These measures include established indicators for clinical care (e.g., Healthcare Effectiveness Data and Information Set measures, Adult Core Quality Indicators) with identified measure stewards (e.g., National Quality Forum). Importantly, health plan-based measures offer useful but limited information, as they exclude enrollees who change health plans and do not allow a full assessment of outcomes for the entire population or for a target geographic area with multiple plans; moreover, some measures require a period of identification prior to measurement outcomes. HEDIS criteria for measures of chronic disease populations (Diabetes HbA1c, LDL testing, admission rate; COPD admission rate; CHF admission rate; asthma admission rate) require a year for identification of members who meet the chronic disease definition (i.e., the denominator), followed by a measurement year to assess utilization (i.e., the numerator).

To follow HEDIS or NQF criteria for such measures among Marketplace Option enrollees, we will use the prior year of HMP enrollment (April 1, 2017 – March 31, 2018) as the identification year, followed by the ensuing 12 months of HMP or Marketplace Option enrollment as the measurement period. Assuming these claims data are available, we will complete this analysis during July through October of 2019. While we did consider modifications to established measures to accommodate a shortened time period and/or the use of claims-based utilization measures that do not require a pre-period, this approach would not offer a fruitful subgroup analysis, as the groups may not be subject to the same requirements, such as having an early primary care visit, so their results would not be comparable.

As outlined on pages 79-81 of our original evaluation plan, we will focus on the following claims-based quality and utilization measures that can be feasibly measured during a 12-month observation period (for which Marketplace Option claims data could become available) rather than a full-year measurement period (as needed for cancer screening, for example):

- **Healthcare Effectiveness Data and Information Set (HEDIS) Emergency Department Measure**: We will calculate the rate of emergency department visits per 1000 member months, and will calculate incidence rate ratios to assess the relative magnitude of emergency department utilization rates for subgroup comparisons. To provide additional information, we will calculate subgroup rates for key chronic disease

populations (e.g., asthma, COPD, diabetes, CHF) at the plan level and by geographic region; this information will help the state to evaluate disease management programs and other services intended to encourage outpatient visits over emergency department use.

- **Emergency Department High-Utilizer Measure**: We will calculate the proportion of Healthy Michigan Plan beneficiaries who demonstrate high emergency department utilization (e.g., ≥5 emergency department visits within a 12-month period).
    - We will also account for clustering of visits among frequent users to examine the degree to which a small number of frequent emergency department users drive observed utilization rates among HMP and Marketplace Option enrollees including sensitivity tests to examine the probability of having any emergency room visit at all.

- **Hemoglobin A1c Testing** (NQF 0057; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had hemoglobin a1c testing at least once during the measurement year.

- **LDL-C Screening** (NQF 0063; measure steward NCQA): We will calculate the proportion of beneficiaries aged 18-64 with type 1 or type 2 diabetes who had an LDL-C screening performed at least once during the measurement year.

- **Overall Admission Rate**: We will calculate the proportion of enrollees with any inpatient admission, as well as the rate of inpatient admissions per 1000 member months. We will make the same calculations for medical admissions and surgical admissions.

- **Diabetes, Short-term Complications Admission Rate** (NQF 0272; measure steward AHRQ): We will calculate the number of discharges for diabetes short-term complications per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Chronic Obstructive Pulmonary Disease (COPD) Admission Rate** (NQF 0275; measure steward AHRQ): We will calculate the number of discharges for COPD per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Congestive Heart Failure Admission Rate** (NQF 0277; measure steward AHRQ): We will calculate the number of discharges for CHF per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Adult Asthma Admission Rate** (NQF 0283; measure steward AHRQ): We will calculate the number of discharges for asthma per 100,000 Healthy Michigan Plan enrollees age 18-64.

- **Flu Shots for Adults:** We will calculate the proportion of beneficiaries aged 50-64 and aged 18-49 who received an influenza vaccine between July 1 and March 31. To supplement Consumer Assessment of Healthcare Providers and Systems self-reported data from a small sample of beneficiaries (NQF 0039), we will take advantage of Michigan's unique data environment by combining Medicaid utilization data with

information found in the statewide immunization registry (Michigan Care Improvement Registry) to document rates of influenza vaccine receipt for the HMP and Marketplace Option enrollees, and for individuals at high risk for influenza-related complications, such as those with diabetes, COPD, CHF, or asthma.

4. Hypothesis VII.4. Costs of Care

For this hypothesis we will assess the total state and federal costs of Marketplace Option coverage on a per-member-per-month basis for former HMP enrollees who move to a Qualified Health Plan (QHP). These costs include four main components:

1. Costs of Marketplace Option premiums
2. MDHHS costs of Medicaid wraparound coverage
3. MDHHS administrative costs to oversee the Marketplace Option

The total of these four components will be compared to the capitated payments and costs outside the cap made for an age/sex/comorbidity matched group of enrollees with incomes above 100% of the Federal poverty level (FPL) who remain in HMP health plans. This analysis assumes that MDHHS can provide the University of Michigan evaluation team with the four components of Marketplace Option cost data listed above by June 30, 2019, thereby enabling the cost analyses to be conducted during July through October 2019. For this analysis, we will conduct a subgroup analysis to minimize the influence of selection bias by separately examining costs for those Marketplace Option enrollees who willingly switched from HMP and those that the state transferred because they did not meet the criteria to stay in a Medicaid Health Plan controlled for age and sex.

Given the limited 12-month time period of data that we expect to be available for analysis of Marketplace Option enrollees in Michigan during April 2018 through March 2019, we propose the following measures of incremental cost-effectiveness ratios (ICER) that employ the utilization and cost data described above for this time period:

Overall emergency department (ED) use

$$\frac{\text{Total Cost (Marketplace Option)} - \text{Total Cost(HMP)}}{\text{ED Use (Marketplace Option)} - \text{ED Use(HMP)}}$$

Overall admission rates

$$\frac{\text{Total Cost (Marketplace Option)} - \text{Total Cost(HMP)}}{\text{Admission Rate (Marketplace Option)} - \text{Admission Rate(HMP)}}$$

Admission rates for COPD, diabetes short-term complications, CHF and asthma

$$\frac{\text{Total Cost (Marketplace Option)} - \text{Total Cost(HMP)}}{\text{Admission Rate (Marketplace Option)} - \text{Admission Rate(HMP)}}$$

Breast Cancer Screening

Total Cost (Marketplace Option) - Total Cost(HMP)
Breast Cancer Screening (Marketplace Option) - Breast Cancer Screening(HMP)

LDL-C Screening

Total Cost (Marketplace Option) - Total Cost(HMP)
LDL-C Screening (Marketplace Option) - LDL-C Screening(HMP)

Hemoglobin A1c Testing

Total Cost (Marketplace Option) - Total Cost(HMP)
Hemoglobin A1c Testing (Marketplace Option) - Hemoglobin A1c Testing(HMP)

We will also incorporate select measures from HMV survey data in our analysis of the ICERs in order to understand how the relative costs relate to perceptions of access to care.

B. Methodology and specifications

i. Eligible/target population

The eligible population will include all Marketplace Option and Healthy Michigan Plan beneficiaries with incomes above 100% FPL and who are not deemed medically frail by MDHHS. The Healthy Michigan Plan participants who move to the Marketplace Option beginning in April 2018 will include enrollees in this income range who have not completed a Health Risk Assessment and agreed to a healthy behavior, as well as some enrollees who may choose the Marketplace Option because of a preference for private insurance coverage. Relative to Healthy Michigan Plan enrollees who complete the Health Risk Assessment, the former group may be less interested pursuing healthy behaviors and thus be less healthy, which could be associated with greater medical needs and higher costs. We will account for these differences as described in Section V below.

ii. Time period of study

The main period of study will begin April 1, 2018, after the Marketplace Option is implemented and extend for 12 months through March 31, 2019. Baseline data on prior health care use and costs will be collected during April 1, 2017 through March 31, 2018. The Healthy Michigan Voices survey of Marketplace Option enrollees will be conducted April through June 2019.

C. Measure steward

The Michigan Department of Health and Human Services is the measure steward.

D. Baseline values for measures

Information available at baseline includes primary care and specialist availability, healthcare utilization and cost data from the Healthy Michigan Plan available through the Michigan Department of Health and Human Services Data Warehouse.

E. Data Sources

The data source for information on utilization within the Healthy Michigan Plan will be the MDHHS Data Warehouse. Under the authority of a Business Associates' Agreement between the Department of Health and Human Services and the University of Michigan, individual-level data for Healthy Michigan Plan enrollees will be extracted from the Data Warehouse, to include enrollment and demographic characteristics, as well as all utilization (encounters in primary care, inpatient, emergency, urgent care; pharmacy). Data will be extracted from the Data Warehouse via an existing secure line, and stored in encrypted files on a secure network with multiple layers of password protection.

Healthy Michigan Plan and Marketplace Option provider and enrollee address data are the minimum necessary to perform the GIS mapping, Therefore, this component of the evaluation is contingent on access to accurate and timely electronic data on provider network lists, including practice location, and information about the beneficiaries enrolled in the Marketplace Option through Qualified Health Plans (QHPs). Because geographic access does not equate to realized access, we favor analyzing claims data to ascertain the distance traveled by beneficiaries for actual visits with PCPs, if these data from the QHPs can be provided to our evaluation team in a timely manner. The secondary preference is to use PCP of record, and the default plan will be to use the nearest in-network PCP. For the analysis of access to specialists, our preference is to use actual visits to specialty care providers and focus on high-volume specialty areas. Alternatively, depending on the volume of specialty care during the evaluation period (April 1, 2018-March 31, 2019), we would use the nearest in-network specialists.

We anticipate the data source for information on utilization and quality of care in Marketplace Option plans will come from data reporting by QHPs in Michigan to MDHHS. *The details of these new data reporting systems remain to be determined, so we will revisit the feasibility of these analyses with MDHHS in 2018 when we expect further information about the Marketplace Option plans and their data reporting to MDHHS will become available*.

The data source for information on costs of the Healthy Michigan Plan and Marketplace Option will be MDHHS. This information will include the capitated payments made to HMP health plans, the state payments made to Marketplace Option health plans for former HMP enrollees, the costs of wraparound Medicaid coverage for these enrollees, and the administrative costs associated with state oversight of the Marketplace Option for former HMP enrollees.

V. Plan for Analysis

Our evaluation of the cost effectiveness of the Marketplace Option as compared to the Healthy Michigan Plan will employ several types of analyses. To understand demographic and clinical characteristics of enrollees in these categories, we will compare the characteristics of Marketplace Option enrollees with those who have incomes above 100% FPL who remain in the

Healthy Michigan Plan. These analyses will be based on HMP enrollment and encounter data during the year prior to the start of the Marketplace Option (April 1, 2017-March 31, 2018).

For the analysis of primary care access in Hypothesis VII.1, we will assess the overlap in primary care provider networks for HMP and the Marketplace Option. Using provider NPI numbers, we will compare the list of available primary care providers for the Marketplace Option with the primary care network lists for plans of comparable region and size participating in the Healthy Michigan Plan. For each Healthy Michigan Plan network assessed, we will calculate the proportion of primary care providers from the HMP network that appear on the Marketplace Option primary care provider network, to yield the percent overlap. We will also quantify the number of providers listed on the Healthy Michigan Plan network only and the number listed on the Marketplace Option network only. Finally, we will calculate the number of total primary care providers listed for each network and the ratio of primary care providers to enrolled members.

For the analysis of specialist availability in Hypothesis VII.2, we will compare the provider networks for Marketplace Option and comparable HMP plans for key specialties, specifically cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists, otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists. As described above, we will calculate the overlap in specialists, as well as those unique to the Marketplace Option and those unique to the HMP plan network.

In addition, we will use administrative claims to calculate the respective rates of participating cardiologists, dermatologists, endocrinologists, gastroenterologists, hematologists/oncologists, nephrologists, neurologists, otolaryngologists, pulmonologists, rheumatologists, general surgeons, orthopedic surgeons, and obstetrician-gynecologists who have seen at least one enrolled adult in the measurement year for at least one outpatient visit will be expressed in terms of the numbers of participating specialists in each category per 1,000 eligible enrollees (number of providers/1,000 eligible enrollees), where the eligible population includes adults 18 years of age and older who have been enrolled in the Healthy Michigan Plan or the Marketplace Option for at least one 90-day period (or 3 consecutive months) within the measurement year.

For the analysis of quality and utilization measures for Hypothesis VII.3, we will compare the measures for Healthy Michigan Plan enrollees and Marketplace Option enrollees with incomes above 100% of FPL by gender, by race/ethnicity, and by urban/rural areas. For each of these measures, we will be building on analyses conducted for 2014 through 2017 as part of our original HMP evaluation. With risk-adjustment to account for baseline demographic and health status differences between these two groups prior to April 2018, we will use difference-in-difference methods to compare overall changes in quality and utilization measures for Marketplace Option enrollees with changes in these measures for comparable enrollees who remain in the Healthy Michigan Plan. This difference-in-difference approach will account for potential inherent differences between these two groups.

For Hypothesis VII.4, costs per-enrollee-per-month in HMP and the Marketplace Option during April 1, 2018 through March 31, 2019 will be compared after risk-adjustment based on

enrollees' demographic characteristics and on their comorbid conditions and utilization using HMP data for the year prior to April 1, 2018. Incremental cost-effectiveness ratios will be calculated based on cost and utilization data as detailed above. We will also use difference-in-difference methods for these cost analyses. We will incorporate data from the high-utilizer ED measure to assess the extent to which ED costs are driven by high utilizers. Similarly, we will incorporate data from the inpatient quality measures to estimate the proportion of inpatient care attributable to the four chronic disease groups.

Geomapping Analysis Plan

Before conducting the geomapping, we will randomly select a sample of age- and sex-matched Healthy Michigan Plan enrollees who meet the same criteria as those enrolled in the Marketplace Option (income >100% FPL and not deemed medically frail) in equal number to the Marketplace Option enrollees within each prosperity region in the state.

To assess geographic access of Healthy Michigan Plan and Marketplace Option enrollees to in-network providers and enable analytic comparisons between groups, we will use GIS mapping techniques to calculate travel distances from enrollees' residence to one of the following three options: (1) the primary care providers (PCPs) enrollees have actually seen for their care, (2) their selected or assigned PCP, or (3) the nearest in-network PCP – based on the data available to the evaluation team.

The geographic method we choose to assess distance/travel time to provider will depend on the data source available. For options 1 and 2 above (last PCP seen based on claims data or PCP of record), we will use existing street centerline networks to compute miles traveled. For this method, each enrollee will have a two pairs of geographic coordinates (home and health care provider office), and distance/travel time will involve a single calculation using minimum distance methods available. If information about enrollees' unique PCP is not available, we will replicate the method described in Appendix 1 of Arkansas Health Care Independence Program ("Private Option") Section 1115 Demonstration Waiver Interim Report (Arkansas Center for Health Improvement, 2016), in which we will define incremental "ringed" polygons for each network PCP, and we will also use this approach to assess access to specialists. These polygons will define regions based on the number of miles from the PCP or specialist (0-5, 5-10, 10-15, etc.). Similar polygons will also be constructed based on travel time in in 15-minute intervals rather than miles. For each enrollee in the dataset, we will find the closest PCP or specialist, and assign the distance value of that ring to the participant (e.g. if the smallest ring overlapping with that individual in a rural area is 15-20 miles, they will be assigned that value).

We will conduct statistical analyses to examine whether the level of access differs for enrollees in the Healthy Michigan Plan and those with a Marketplace Option. We will compare Marketplace enrollees with their matched counterparts enrolled in HMP based on the following:

1. Distance/travel time to PCP
2. Distance/travel time to specialist

We will use logistic regression to calculate p-values for differences in access by enrollment type. Because Healthy Michigan Plan and Marketplace Option enrollees will be matched on income,

age, sex, and prosperity region within Michigan, we do not anticipate needing to adjust these analyses for additional covariates.

Results for the full analysis of access in the state of Michigan will be presented in tabular form. We will also conduct sub-analyses of each of the 10 prosperity regions within the state, producing map-based graphics to illustrate the differences in levels of access between the regions, if differences are present.

References

Arkansas Center for Health Improvement. Arkansas Health Care Independence Program ("Private Option") Section 1115 Demonstration Waiver Interim Report. Appendix 1 Arkansas Evaluation Hypotheses: Proposed & Final Test Indicators. Little Rock (AR): Arkansas Center for Health Improvement. June 16, 2016.

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