

# **Report on the 2016 Healthy Michigan Voices Enrollee Survey: Supplemental Analyses**

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## Introduction

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The University of Michigan Institute for Healthcare Policy & Innovation (IHPI) is conducting the evaluation of the Healthy Michigan Plan (HMP) as required by the Centers for Medicare & Medicaid Services (CMS) through a contract with the Michigan Department of Health and Human Services (MDHHS). Domain IV of the evaluation includes a series of surveys called *Healthy Michigan Voices*. This report presents supplementary findings from the 2016 *Healthy Michigan Voices* survey of individuals who were currently enrolled in HMP and who had at least 12 months total HMP enrollment, conducted during January-November 2016.

Supplemental analyses were conducted to further explore relationships between select variables of interest, including those using claims data, in order to describe relationships between enrollees' utilization of healthcare services and their survey responses. For all analyses of bivariate and multivariate relationships, the types of analyses, models, variables included and how they are defined or measured are described in detail in Appendices A and B of this report. The specific tests are described in the table footnotes.

## Supplemental Analyses Results

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### Section 1: Impact of pre-HMP insurance status on improvements in forgone care, access, and health

#### *Relationship between pre-HMP insurance status and forgone care, health status*

Enrollees without health insurance for any of the 12 months prior to HMP enrollment were about twice as likely to have forgone care during those 12 months (42.0% vs. 21.6%) as those who had insurance at some time during those 12 months (see Appendix A Table 1.1).

#### *Relationship between pre-HMP insurance status and forgone care, access to services, change in health, worry and stress*

Those who were insured all 12 months prior to enrollment in HMP were significantly less likely to report forgone care or forgone care due to cost during the 12 months prior to enrollment in HMP (see Appendix A Table 1.2a and 1.2b).

Respondents who lacked insurance for all 12 months before enrollment in HMP were significantly more likely than those who were insured all 12 months to report improvement in access to prescription medications, primary care, help with staying healthy, dental care, specialist care, mental health care, and cancer screening since enrollment in HMP. Compared to those with no insurance during the 12 months prior to HMP, individuals with some insurance were less likely to report improvements in access to primary care, specialty care, and cancer screening (see Appendix A Table 1.2a and 1.2b).

Respondents who had health insurance for all 12 months prior to enrollment in HMP were less likely to report improvement in mental, physical and dental health (see Appendix A Table 1.2a and 1.2b).

Those who lacked health insurance for the 12 months prior to enrollment in HMP were more likely to agree that they had less stress or worry about their health since enrollment in HMP (see Appendix A Table 1.2a and 1.2b).

## **Section 2: Primary care and use of preventive services**

### ***Receipt of preventive care***

Of enrollees who met criteria for breast, cervical, or colorectal cancer screening based on age and/or gender, rates of breast cancer screening were highest (71.7%) and colorectal cancer screening lowest (41.6%) based on claims data. More than half (53.9%) of women had cervical cancer screening (see Appendix A Table 2.1).

Nearly all (86.8%) enrollees had at least one preventive service based on claims data. More than half (59.5%) of enrollees had at least one dental visit, 43.9% had a vaccination, 32.5% had a flu vaccine, 18.0% of enrollees filled a prescription for a statin, and 11.3% of all enrollees filled a prescription for smoking cessation (see Appendix A Table 2.1).

### ***Relationship between enrollee knowledge about copays and incentives and use of preventive services***

Enrollee knowledge that some services have no copayments was significantly associated with greater utilization of all preventive services examined, with the exception of vaccinations other than flu and pneumonia, Diabetes Prevention Programs, and nutrition services (for which there were few claims in total). Of those who knew some services had no copays, 88.6% received at least one preventive service, compared to 81.6% of those who did not know (see Appendix A Table 2.2).

Enrollee knowledge that completing a Health Risk Assessment (HRA) could result in lower fees was not associated with any preventive service use (see Appendix A Table 2.2).

### ***Perceived impact of healthy behavior rewards and use of preventive services***

Enrollees who agreed that healthy behavior rewards affected their behavior seemed to have a greater likelihood of filling a prescription for a statin, but a lesser likelihood of filling a prescription for smoking cessation (see Appendix A Table 2.3).

### ***Relationship between primary care visit and use of preventive services***

Enrollees with a self-reported primary care visit in the past 12 months of HMP enrollment, or a primary care visit in their claims, were significantly more likely than enrollees without a visit to have claims for nearly all preventive services we examined when adjusted for demographic and

health variables, with the exception of nutrition services, Diabetes Prevention Programs, and pneumonia vaccines (see Appendix A Table 2.4a and 2.4b).

Over 90% of those with a primary care visit (self-reported or based on claims) had a claim for a preventive service (see Appendix A Table 2.4a and 2.4b).

### ***Demographic and health predictors of primary care visits in previous 12 months***

Older enrollees, women, white enrollees, those in worse health or with a chronic condition, and those who live in rural areas were more likely to report a primary care visit and to have a primary care visit claim (see Appendix A Table 2.6).

Neither self-reported primary care visits nor claims for primary care visits differed on the basis of employment, ethnicity, partnership status, FPL group, or health literacy (see Appendix A Table 2.6).

### ***Relationship between primary care visit and improved access to health care***

Enrollees who reported having a primary care visit were significantly more likely than those who did not to report improved access to help with staying healthy, dental care, specialty care and cancer screening, but not more likely to report improved access to mental health care (see Appendix A Table 2.7).

### ***Relationship between primary care visit and HRA completion, health behavior counseling***

Enrollees who reported having a primary care visit, or had a primary care visit in claims, were significantly more likely to report completing an HRA (see Appendix A Table 2.8).

Enrollees who reported having a primary care visit, or had a primary care visit in claims, were 3-4 times more likely to report being counseled about exercise, nutrition, tobacco cessation, or alcohol use (see Appendix A Table 2.8).

Enrollees who reported having a primary care visit, or had a primary care visit in claims, were more likely to report a new diagnosis of a chronic condition after HMP enrollment (see Appendix A Table 2.8).

### ***Predictors of claims-based smoking cessation prescriptions***

About one-third (37.7% of HMP survey respondents reported smoking or using tobacco in the last 30 days. (See STC report Appendix A Tables 4.45-4.47). About one-quarter (24.3%) of those who reported tobacco use in the past month filled a prescription for smoking cessation in the previous 12 months (see Appendix A Table 2.9a).

Nearly 100 respondents who had a claim for a prescription for smoking cessation in the year before the survey (18.2% of those with such claims) reported not smoking in the past 30 days (see Appendix A Table 2.9a).

Of those who said they chose to reduce or quit tobacco on the HRA, 33.0% had a claim for a prescription for smoking cessation. Those who reported choosing to quit using tobacco were six times more likely than other smokers to have a claim for a smoking cessation prescription (see Appendix A Table 2.9b).

Older respondents, those with poorer health or a chronic condition, and those with a self-reported or claims-based primary visit were more likely to have a claim for a smoking cessation prescription (see Appendix A Table 2.5k).

### ***Predictors of claims-based participation in Diabetes Prevention Program***

Those with a chronic condition were more likely to have a claim for a Diabetes Prevention Program, after controlling for demographics and any primary care visit (aOR=8.5) (see Appendix A Table 2.5e).

### ***Predictors of claims-based use of nutrition services***

Very few (2.1%) respondents had a claim for any nutrition service (Appendix A Table 2.1). Those who chose improved nutrition or losing weight on the HRA were not statistically more likely to have a nutrition service claim, although the small number of nutrition claims limited our ability to precisely measure associations between this outcome and other factors (see Appendix A Table 2.5g).

### ***Predictors of claims-based receipt of STI testing***

Those who reported seeing a PCP in the past 12 months were more likely to have a claim for testing for sexually transmitted infection (excluding HPV) (see Appendix A Table 2.5i).

Women, Black or African American enrollees, urban residents and those reporting a chronic condition were more likely to have a claim for STI testing (excluding HPV) (see Appendix A Table 2.5i).

## **Section 3: Health risk assessment completion**

### ***HRA completion for HMV respondents***

While 57.3% of HMV respondents had some HRA record in the Data Warehouse, only 31.3% had an HRA record with physician attestation, signaling completion of the HRA process. Almost half of those who reported in the survey, that they did NOT complete an HRA had an HRA record in the data warehouse, although only 18.8% had an HRA record with physician attestation. Those who recalled completing an HRA were more likely to have any HRA record

(68.3%) and to have an HRA record with physician attestation (44.1%) (see Appendix A Table 3.1).

### ***Demographic predictors of Data Warehouse record of completed HRA***

Older respondents, White enrollees, and those who reported seeing a PCP in the past 12 months were more likely to have an HRA record with physician attestation (see Appendix A Table 3.2).

### ***Demographic predictors of self-reported HRA completion***

Hispanics/Latinos, those of Arab/Chaldean/Middle Eastern descent, those with a preferred language of Arabic and urban residents were less likely to report completing an HRA. Those who reported seeing a PCP in the past 12 months were more likely to report completing an HRA (see Appendix A Table 3.3).

## **Section 4: Health behaviors**

### ***Relationship between frequency of social connections and health behaviors***

Of enrollees who connected with friends or relatives outside their home every day, 73.6% exercised at least 3 days in the previous week and 13.8% had not exercised at all. Of those who connected socially once a year or less, 64.7% exercised at least 3 times in the previous week, and 22.7% had not exercised at all (see Appendix A Table 4.1).

Of enrollees who connected with friends or relatives outside their home every day, 2.7% reported unsafe alcohol use every day and 79.2% reported no unsafe alcohol use during the previous week (see Appendix A Table 4.1).

Of those who connected socially once a month or less, nearly all (85.2% and 82.8%) reported no episodes of unsafe alcohol use in the previous week (see Appendix A Table 4.1).

### ***Relationship between change in frequency of social connections and health behaviors***

Enrollees who reported being less involved with family, friends and community since enrollment in HMP (4.4%) were more likely to report no exercise (33.1%) compared to those who reported being more involved (16.0%) or involved about the same (17.8%) (see Appendix A Table 4.2).

Enrollee reports of changes in involvement with family, friends and community had no relationship with the frequency of unsafe alcohol use (see Appendix A Table 4.2).

## **Section 5: Emergency department utilization**

### ***Characteristics of emergency department utilization***

Enrollees who were younger, female, and resided in regions with a higher proportion of uninsured were more likely to self-report any ER visits in the past 12 months. Other factors that were significantly associated with any self-reported ER use were a greater number of outpatient visits, 2 or more chronic conditions, a mental health or substance use disorder condition, fair or poor health, or perceived discrimination related to their insurance or ability to pay. The strongest predictors of self-reported ER use were a mental health/substance use diagnosis (aOR=1.71), 2 or more chronic conditions (aOR=1.71), experience of discrimination due to insurance/ability to pay (aOR=1.55) and fair/poor health status (aOR=1.46) (see Appendix A Table 5.1a).

Enrollees with at least one ER visit in the past 12 months, as defined by claims, were younger, female, had lower incomes, and lived in regions with a lower proportion of college-educated individuals. Enrollees with at least one ER visit were more likely to have 2 or more chronic conditions (aOR=1.79), mental health or substance use disorders (aOR=1.93) and more outpatient visits (aOR=1.07). They also were more likely to report perceived discrimination related to their insurance or ability to pay (aOR=1.39). Enrollees were less likely to have an ER visit in claims if their regular source of care was a clinic or doctor's office (aOR=0.73) (see Appendix A Table 5.1a).

Enrollees who were younger, female, had lower incomes, 2 or more chronic conditions, a mental health or substance use disorder condition and had more outpatient visits (based on claims) had a greater number of ER visits (by claims assessment). Enrollees who reported fair/poor health or perceived discrimination related to their insurance or ability to pay also had more ER visits. However, enrollees with a clinic or doctor's office as their regular source of care had fewer ER visits (see Appendix A Table 5.1b).

Enrollees who were younger, female, had lower incomes, 2 or more chronic conditions, a mental health or substance use disorder condition, and more outpatient visits were likely to have a greater number of high-complexity ER visits (by claims assessment). Enrollees who reported perceived discrimination related to their insurance or ability to pay, fair/poor health, and improved access to prescription medications were also likely to have a greater number of high-complexity ER visits (see Appendix A Table 5.1b).

Enrollees had a greater number of medium to low-complexity ER visits (by claims assessment) if they were younger, female, had 2 or more chronic conditions, or a mental health or substance use disorder condition, or if they reported perceived discrimination related to their health insurance or ability to pay. Enrollees with a clinic or doctor's office as their regular source of care had fewer medium/low-complexity ER visits (see Appendix A Table 5.1b).

## **Section 6: Impact of HMP premium contributions on cost-conscious behaviors**

### *Engagement in cost-conscious behaviors among subgroups of HMP enrollees*

Enrollees with incomes 100 to 133% of the FPL, and therefore subject to monthly contributions, were no more likely than enrollees with incomes 36 to 99% of the FPL who are not subject to monthly premium contributions to agree they carefully review their MI Health Account

statements (86.0% vs. 88.7%), inquire about costs of services before getting them (70.4% vs. 72.9%), talk to providers about costs of health services (67.8 vs. 68.6%), or ask for less costly medications (77.0% vs. 78.2%).

Enrollees age 51-64 were more likely than those age 19-34 to report carefully reviewing MI Health Account statements, enrollees with forgone care due to cost in the 12 months before HMP enrollment were more likely to inquire about costs of services before getting them, and enrollees from the UP/NW/NE region were less likely than enrollees from other regions in Michigan to check reviews or ratings of quality before seeking care. Women were more likely than men to find out the costs of services before getting them, ask doctors about less costly drugs, and check reviews or ratings of quality. Hispanic enrollees were less likely than non-Hispanic white enrollees to find out about costs of services before getting them, talk with doctors about costs, ask doctors about less costly drugs, or check reviews or ratings of quality (see Appendix A Table 6.2).

### *Health care affordability among subgroups of HMP enrollees*

Enrollees with incomes 100 to 133% of the FPL were less likely than enrollees with incomes 36 to 99% of the FPL without monthly premium contributions to agree their health care payments were affordable (84.9% vs. 90.8%), but were no more likely to report forgoing needed care due to cost in the past 12 months of HMP enrollment (10.4% vs. 12.0%).

Those with fair or poor health status were less likely than those with better health status to agree their payments were affordable, and were also more likely to report forgone care due to cost. Those with chronic conditions were also more likely than others to report forgone care due to cost (see Appendix A Table 6.3).

## **Section 7: Diagnosis and care of self-reported chronic health conditions among HMP enrollees**

### *Enrollee characteristics, by chronic health condition status*

Enrollees with chronic health conditions were more often older than 35 years old, White, and more often had an income of 0-35% FPL (see Appendix A Table 7.1).

Enrollees with chronic health conditions reported significant functional limitations in day to day life (24.4% reported they were physically limited in daily activities more than 14 of the last 30 days) more often than those without chronic health conditions (5.8%) (see Appendix A Table 7.1).

Over half (58.4%) of those with chronic health conditions had two or more chronic health conditions, 11.5% had four or more (see Appendix A Table 7.1).

Enrollees with chronic health conditions reported more days of poor health per month than those without chronic conditions, but also reported improved physical and mental health since

enrolling in HMP more often than enrollees without chronic health conditions (see Appendix A Table 7.1).

***Pre-HMP insurance status and access to care before and after HMP enrollment, by chronic health condition status***

Those with chronic conditions were more likely than those without chronic conditions to have a usual source of care in the 12 months prior to HMP enrollment, although they were equally likely to have gone more than 5 years without a PCP visit before HMP enrollment (see Appendix A Table 7.2).

More than half (51.9%) of enrollees with chronic conditions reported having problems paying medical bills in the 12 months prior to HMP enrollment, more often than those without chronic conditions, 29.7% of whom had trouble paying medical bills (see Appendix A Table 7.2).

After HMP enrollment, enrollees with chronic conditions reported seeing a PCP in the past 12 months more often than those without chronic conditions (89.8% vs. 75.5%), and more often reported a usual source of care in the past 12 months of HMP enrollment (95.2% vs. 85.8%) (see Appendix A Table 7.2).

***New chronic condition diagnosis since HMP enrollment, by pre-HMP insurance status and time since last PCP visit prior to HMP enrollment, among enrollees with chronic conditions***

Among enrollees with chronic disease, those reporting a new chronic disease diagnosis since enrolling in HMP were more likely to have lacked health insurance for all 12 months before enrollment (65.5% vs. 55.7%). However, 34.5% of those with a new diagnosis had health insurance some or all of the 12 months prior to HMP (see Appendix A Table 7.3a).

Among enrollees with chronic disease, those reporting a new chronic disease diagnosis since enrolling in HMP were less likely to have had a PCP visit in the 12 months prior to HMP enrollment (35.5% vs. 47.9%) than those reporting no new diagnoses since enrollment (see Appendix A Table 7.3b).

***Association between having a chronic health condition and improved physical and mental health after HMP enrollment, among all respondents***

Enrollees with chronic health conditions were significantly more likely to report improved physical and mental health status since HMP enrollment than enrollees without chronic health conditions, even when adjusted for other factors that can affect health status (see Appendix A Table 7.4).

***Associations between access to specific types of care and improved physical and mental health after HMP enrollment, among enrollees with chronic health conditions***

Among enrollees with chronic health conditions, when adjusted for other factors that can affect health status, seeing a PCP in the past 12 months of HMP enrollment and having improved access to prescription medications, were the strongest predictors of improved physical health since HMP enrollment (see Appendix A Table 7.5). Other significant predictors of improved physical health were improved access to specialty care and improved access to mental health care (see Appendix A Table 7.5).

Among enrollees with chronic health conditions, the strongest predictor of improved mental health in adjusted analyses was improved access to mental health care (aOR=3.40). Other significant predictors were improved access to prescription medications and improved access to specialty care, but not whether the enrollee saw a PCP in the past 12 months of HMP enrollment (see Appendix A Table 7.5).

## **Section 8: Diagnosis and care of chronic health conditions among HMP enrollees as measured by HEDIS criteria and claims-based diagnostic codes**

### **Chronic disease defined by HEDIS criteria**

In this section, the measure of chronic disease is defined by HEDIS criteria for asthma, cardiovascular disease, COPD or diabetes using claims data. See Appendix B for full definitions.

### ***Demographic and health characteristics for HMP enrollees with and without chronic disease defined by HEDIS criteria***

Compared to those with no chronic disease, individuals with one or more chronic conditions were more likely to be older, have an income of 0-35% FPL, report fair/poor health status, report functional impairment, and less likely to be of 'other' race or more than one race (see Appendix A Table 8.1).

Compared to those with no chronic disease, individuals with one or more chronic conditions were more likely to report that both their physical (56.7% vs. 45.2%), and mental health (41.5% vs. 37.3%) have gotten better since HMP enrollment (see Appendix A Table 8.1).

### ***Differences in access to care among HMP enrollees with and without chronic disease defined by HEDIS criteria before and after HMP***

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to have seen a PCP in the 12 months preceding their response to the survey (46.6% vs. 38.8%) (see Appendix A Table 8.2).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report a usual source of care (80.2% vs. 71.8%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.2).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report that their usual source of care was a clinic (20.4% vs. 16.0%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.2).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report problems paying bills (56.8% vs. 40.9%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.2).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to have seen a PCP (94.8% vs. 82.1%) and to report a usual source of care (98.1% vs. 90.2%), and less likely to report urgent care as a usual source of care (3.5% vs. 6.6%) in the past 12 months of HMP enrollment (see Appendix A Table 8.2).

No significant differences were evident between individuals with no chronic disease and individuals with one or more chronic diseases in their report of whether their ability to pay medical bills since HMP enrollment had changed (see Appendix A Table 8.2).

### ***Association between chronic disease defined by HEDIS criteria and improvements in physical and mental health outcomes among HMP enrollees***

Compared to individuals with no chronic disease, enrollees with one or more chronic diseases were more likely to report significant improvements in their physical health in the past 12 months preceding the survey, but no more likely to report significant improvements in their mental health after adjusting for coverage status prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.3).

### ***Association between improvements in access to specific types of care and physical and mental health outcomes among HMP enrollees with chronic disease defined by HEDIS criteria***

Among enrollees with one or more chronic diseases, individuals who reported improved access to mental health services, improved access to prescriptions, and improved access to specialty services were more likely to report improvements in their physical health when adjusting for health insurance status in the 12 months prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.4).

Among enrollees with one or more chronic diseases, individuals who reported improved access to mental health services were more likely, and individuals who reported improved access to specialty services were more likely, to report improvements in their mental health when adjusting for health insurance status in the 12 months prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.4).

### ***Differences in HRA behavior choice between HMP enrollees with and without chronic disease defined by HEDIS criteria***

Among enrollees who self-reported completing the HRA, no significant differences were evident among individuals with and without chronic disease in the behaviors selected on the HRA, including reducing/quitting smoking, getting the flu shot, exercising, or improving nutrition (see Appendix A Table 8.5).

### **Chronic disease defined by claims-based diagnostic codes**

In this section, the measure of chronic disease is defined by claims-based diagnosis codes including Alzheimer's disease and related dementia, anemia, asthma, atrial fibrillation, cancer, chronic kidney disease, COPD, cystic fibrosis, deep venous thrombosis, diabetes mellitus, glaucoma, heart failure, hemophilia, HIV, hyperlipidemia, hypertension, ischemic heart disease, liver disease and other liver disorders, osteoporosis, arthritis, and stroke/transient ischemic attack.

### ***Demographic and health characteristics for HMP enrollees with and without chronic disease defined by claims-based diagnosis codes***

Compared to those with no chronic disease, individuals with one or more chronic conditions were more likely to be older, female, report fair/poor health status, and report functional impairment (see Appendix A Table 8.6).

Compared to those with no chronic disease, individuals with one or more chronic conditions were more likely to report that both their physical (53.3% vs. 37.5%), and mental health (40.5% vs. 34.1%) have gotten better since HMP enrollment (see Appendix A Table 8.6).

### ***Differences in access to care among HMP enrollees with and without chronic disease defined by claims-based diagnosis codes before and after HMP***

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report a usual source of care (75.9% vs. 69.7%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.7). They were also more likely to report that their usual source of care was a clinic (18.4% vs. 14.4%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.7).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report having seen a PCP (93.1% vs. 68.3%) and to report a usual source of care (97.1% vs. 82.4%) in the 12 months preceding the survey and less likely to report urgent care as their usual source of care (4.2% vs. 9.6%) (see Appendix A Table 8.7).

Compared to individuals with no chronic disease, individuals with one or more chronic diseases were more likely to report problems paying medical bills (50.8% vs. 33.0%) in the 12 months prior to HMP enrollment (see Appendix A Table 8.7).

No significant differences were evident between individuals with no chronic disease and individuals with one or more chronic diseases in their report about whether their ability to pay medical bills had changed since HMP enrollment (see Appendix A Table 8.7).

### *Association between chronic disease defined by claims-based diagnosis codes and improvements in physical and mental health outcomes among HMP enrollees*

Compared to individuals with no chronic disease, enrollees with one or more chronic diseases were twice as likely to report significant improvements in their physical health since HMP enrollment, and more likely to report significant improvements in their mental health after adjusting for coverage status prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.8).

### *Association between improvements in access to specific types of care and physical and mental health outcomes among HMP enrollees with chronic disease defined by claims-based diagnosis codes*

Among enrollees with one or more chronic diseases, individuals who reported improved access to mental health services were more likely, individuals who reported improved access to prescriptions were twice more likely, and individuals who reported improved access to specialty services were more likely to report improvements in their physical health when adjusting for coverage status prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.9).

Among enrollees with one or more chronic diseases, individuals who reported improved access to mental health services were four times more likely, individuals who reported improved access to prescriptions were more likely, and individuals who reported improved access to specialty services were more likely, to report improvements in their mental health when adjusting for coverage status prior to HMP, smoking, age, gender, income, and race (see Appendix A Table 8.9).

### *Differences in HRA behavior selection among HMP enrollees with and without chronic disease defined by claims-based diagnosis codes*

Among enrollees who self-reported completing the HRA, no significant differences were evident among individuals with and without chronic disease in the behavior selected on the HRA of reduce/quit smoking, getting the flu shot, exercising or nutrition (see Appendix A Table 8.10).

Among all enrollees, individuals with one or more chronic disease were more likely to choose getting a flu shot (0.5% vs. 0.1%), exercise (22.9% vs. 17.0%), and nutrition (24.3% vs. 19.7%) compared to individuals with no chronic disease (see Appendix A Table 8.10).

## **Section 9: Impact of HMP on enrollees with mental health or substance use disorder conditions**

### *Changes in access to care and health, among enrollees with mental health or substance use disorder conditions*

In almost all measures of access to care, enrollees with mental health/substance use disorder conditions (MH/SUD) were significantly more likely than enrollees without MH/SUD conditions to report improved access. This included reported improvements in access to: primary care (1.5 times as likely), specialty care (1.6 times as likely), dental care (1.2 times as likely), mental health care (3.4 times as likely), substance use disorder treatment (2.9 times as likely), prescription medications (1.6 times as likely), cancer screening (1.2 times as likely), and preventive health care (1.3 times as likely). For all of these outcomes, enrollees with MH/SUD conditions who were uninsured in the 12 months prior to HMP enrollment were even more likely to report improved access than those who had health insurance prior to HMP (see Appendix A Table 9.1).

There was no significant difference between enrollees with MH/SUD conditions and enrollees without MH/SUD conditions with regard to reported changes in access to family planning services (see Appendix A Table 9.1).

Enrollees with MH/SUD conditions were significantly more likely to report improvements in health since HMP enrollment compared with enrollees without MH/SUD conditions: 1.7 times as likely to report improved mental health and 1.3 times as likely to report improved physical health (see Appendix A Table 9.1).

### ***Forgone care before and after HMP, among enrollees with mental health or substance use disorder conditions***

In the 12 months prior to HMP enrollment, enrollees with co-morbid mental and physical health conditions were significantly more likely to forgo needed health care services (41.1%) than enrollees with only MH/SUD (36.8%), only physical health conditions (32.9%), or no health conditions (27.1%). There were no significant differences in reasons for forgone care across these groups (see Appendix A Table 9.2).

In the past 12 months of HMP enrollment, rates of forgone care were much lower in all groups, though remained highest for enrollees with co-morbid mental and physical health conditions (18.1%) or only MH/SUD (17.8%), compared with enrollees who had only physical health conditions (13.7%) or no health conditions (13.5%). Again, there were no significant differences in reasons for forgone care across these groups (see Appendix A Table 9.2).

### ***Use of preventive services, among enrollees with mental health or substance use disorder conditions***

Enrollees with any physical or mental health condition, or both, were more likely to have a primary care visit than those without such conditions: co-morbid mental and physical health conditions (98.9%), MH/SUD only (93.4%), physical health only (99.0%), no health conditions (82.5%) (see Appendix A Table 9.3b).

Cancer screening was more common among enrollees with co-morbid mental and physical health conditions (49.6%), compared with other groups: MH/SUD only (46.5%), physical health only (40.9%), no health conditions (39.0%) (see Appendix A Table 9.3b).

Dental visits were more common among enrollees with mental health conditions: co-morbid mental and physical health conditions (64.0%), MH/SUD only (63.6%), physical health only (53.0%), no health conditions (56.0%) (see Appendix A Table 9.3b).

Nutrition services were an infrequent service overall, but there was significant variation among the sub-groups without a predominant pattern: co-morbid mental and physical health conditions (5.9%), MH/SUD only (1.1%), physical health only (5.5%), no health conditions (0.7%) (see Appendix A Table 9.3b).

STI screening was more common among enrollees with mental health conditions: co-morbid mental and physical health conditions (18.2%), MH/SUD only (18.1%), physical health only (10.0%), no health conditions (10.0%) (see Appendix A Table 9.3b).

Smoking cessation prescriptions were more commonly used among enrollees with co-morbid mental and physical health conditions (21.6%), compared with other groups: MH/SUD only (13.3%), physical health only (10.9%), no health conditions (5.1%) (see Appendix A Table 9.3b).

Vaccines were more commonly received by enrollees with physical health conditions: co-morbid mental and physical health conditions (59.0%), MH/SUD only (45.4%), physical health only (53.5%), no health conditions (35.1%) (see Appendix A Table 9.3b).

Use of any of the above preventive services was highly prevalent across all sub-groups, though more common among enrollees with either physical or mental health conditions vs. no health conditions: co-morbid mental and physical health conditions (94.9%), MH/SUD only (89.8%), physical health only (92.4%), no health conditions (81.1%) (see Appendix A Table 9.3b).

### ***Impact on work/employment for enrollees with mental health or substance use disorder conditions***

Enrollees with MH/SUD conditions were significantly less likely to be employed (43%) than enrollees without MH/SUD conditions (54%) (see Appendix A Table 9.4A). There was no statistically significant association between reported physical or mental health improvements and employment for either enrollees with MH/SUD conditions or enrollees without MH/SUD conditions (see Appendix A Table 9.4b).

Enrollees with MH/SUD conditions were significantly more likely to report that HMP helped them to do a better job at work (80%) than enrollees without MH/SUD conditions (67%) (see Appendix A Table 9.4a). Both groups were significantly more likely to report that HMP helped them do a better job at work if they reported physical or mental health improvements, though the association was more pronounced among enrollees with MH/SUD conditions (5.6 times as likely) (see Appendix A Table 9.4b) than for enrollees without MH/SUD conditions (3.3 times as likely) (see Appendix A Table 9.4c).

Among enrollees who were out of work, those with improved physical or mental health reported HMP made them better able to look for a job at similar rates across sub-groups: 59% of

enrollees with MH/SUD conditions and 56% of enrollees without MH/SUD conditions (see Appendix A Table 9.4a). Both groups were similarly more likely to report that HMP made them better able to look for a job if they reported physical or mental health improvements: 2.7 times as likely for enrollees with MH/SUD conditions (see Appendix A Table 9.4b) and 3.2 times as likely for enrollees without MH/SUD conditions (see Appendix A Table 9.4c).

Among enrollees who had a recent job change, those with improved physical or mental health reported HMP helped them get a better job at similar rates across sub-groups: 41% of enrollees with MH/SUD conditions and 35% of enrollees without MH/SUD conditions (see Appendix A Table 9.4a). Both groups were significantly more likely to report that HMP helped them get a better job if they reported physical or mental health improvements, though the association was more pronounced among enrollees with MH/SUD conditions (5.4 times as likely) (see Appendix A Table 9.4b) than for enrollees without MH/SUD conditions (2.7 times as likely) (see Appendix A Table 9.4c).

## **Section 10: Awareness of HMP dental coverage, perceived access to and use of dental services, oral health status and outcomes**

### *Awareness of HMP dental coverage*

Women were more likely to be aware of their HMP dental coverage than men (80.8% vs. 73.2%). No other differences in demographic characteristics were evident in awareness of HMP dental coverage (see Appendix A Table 10.1).

### *Perceived access to dental care*

The percentage of respondents who reported improved access to dental care since HMP enrollment was associated with duration of health insurance coverage in the 12 months prior to HMP enrollment, ranging from 32.6% of enrollees who had health insurance for all 12 months to 53.5% of those who were uninsured for all 12 months (see Appendix A Table 10.1).

Employed enrollees (48.2%) were more likely than unemployed people (44.0%) to report improved access to dental care since HMP enrollment (see Appendix A Table 10.1).

Respondents who were aware of their HMP dental coverage were more likely to report better access to dental care than those who were unaware (55.3% vs. 15.0%) (see Appendix A Table 10.2).

### *Dental care use*

Women were more likely than men to use dental care (62.9% vs. 55.9%). Enrollees who had health insurance for some of the 12 months prior to HMP enrollment were more likely to use dental care (68.7%) compared to those who had health insurance for all 12 months prior to HMP enrollment (59.0%) or who were uninsured all 12 months prior to HMP enrollment (58.2%) (see Appendix A Table 10.1).

Respondents who were aware of their HMP dental coverage were more likely to use dental care compared to those who were unaware (68.9% vs. 27.8%) (see Appendix A Table 10.2).

Respondents who reported better access to dental care since HMP enrollment were more likely to use dental care than those who did not report better access (77.4% vs. 44.3%) (see Appendix A Table 10.3).

Respondents who reported improved oral health since HMP enrollment were more likely to use dental care compared to those who did not report improved oral health (85.2% vs. 42.8%) (see Appendix A Table 10.3).

Enrollees who reported improved access to dental care were 4.7 times more likely to use dental care compared to those who reported no change or worse access to dental care after adjusting for age, gender, race, income, employment status, and insurance duration in the 12 months before HMP enrollment (see Appendix A Table 10.5).

Adjusting for improved access and other covariates in the multivariate model, women were 1.3 times more likely to use dental care. Enrollees who were uninsured for all 12 months prior to HMP enrollment were 70% as likely to use dental care than those who had health insurance for all of the 12 months prior to HMP (see Appendix A Table 10.5).

Enrollees who were aware of their HMP dental coverage were 5.9 times more likely to use dental services. Adjusting for awareness of HMP dental coverage and other respondent characteristics, women were 1.2 times more likely to use dental care. Respondents ages 35-50 years were 1.3 times more likely, and those with insurance coverage some of the year prior to enrolling in HMP were 1.5 times more likely to use dental care (see Appendix A Table 10.5).

### *Improved oral health*

Black or African American enrollees were the most likely (45.4%) and Hispanic enrollees the least likely (30.6%) to report improved oral health since HMP enrollment (see Appendix A Table 10.1).

The percentage of respondents who reported improved oral health since HMP enrollment was associated with the duration of health insurance coverage in the 12 months prior to HMP enrollment, ranging from 31.7% of enrollees who had health insurance for all 12 months to 44.1% of those who were uninsured for all 12 months (see Appendix A Table 10.1).

Respondents who were aware of their HMP dental coverage were more likely to report improved oral health since HMP enrollment than those who were unaware (47.3% vs. 13.3%) (see Appendix A Table 10.2).

Respondents who reported better access to dental care were more likely to report improved oral health since HMP enrollment than those who did not report better access (67.9% vs. 15.4%) (see Appendix A Table 10.4).

Respondents who used dental care were more likely to report improved oral health since HMP enrollment than those who did not use dental care services (56.5% vs. 14.4%) (see Appendix A Table 10.4).

Enrollees who used dental care were 8.3 times more likely to report improved oral health since HMP enrollment than those who had not used dental care after adjusting for age, gender, race, income, employment status, insurance duration in the 12 months before HMP enrollment (see Appendix A Table 10.6).

Adjusting for dental care use and other enrollee characteristics, Black or African American enrollees were 1.6 times more likely, and those who were uninsured all 12 months prior to HMP enrollment were 2.0 times more likely to report improved oral health since HMP enrollment (see Appendix A Table 10.6).

### *Job-related outcomes*

Among unemployed/out of work respondents, those who reported improved access to dental care since HMP enrollment were more likely than those who reported no change or worse access, to report that HMP had made them better able to look for a job (61.5% vs. 48.8%) (see Appendix A Table 10.7).

Among unemployed respondents, those who reported improved oral health since HMP enrollment were more likely than those who reported no change or worse oral health, to report that HMP had made them better able to look for a job (59.9% vs. 51.1%) (see Appendix A Table 10.7).

In multivariate analyses adjusting for characteristics of unemployed respondents:

Adjusting for dental care service use, those with improved oral health were 1.5 times more likely to report that HMP had made them better able to look for a job (see Appendix A Table 10.6; Model 2b).

Adjusting for improved oral health, unemployed enrollees ages 51-64 were 1.7 times more likely to report that HMP made them better able to look for a job (see Appendix A Table 10.6; Model 2b).

Among employed respondents, those who reported improved access to dental care since HMP enrollment were more likely than those who reported no change or worse access, to report that HMP had helped them do a better job at work (76.8% vs. 62.6%) (see Appendix A Table 10.7).

Among employed respondents, those who reported improved oral health since HMP enrollment were more likely than those who reported no change or worse oral health, to report that HMP had helped them do a better job at work (76.1% vs. 65.0%) (see Appendix A Table 10.7).

In multivariate analyses adjusting for characteristics of employed respondents:

Those who reported improved oral health were 1.6 times more likely to report that HMP helped them to do a better job at work (see Appendix A Table 10.6; Model 2a).

Adjusting for improved oral health and other covariates in the model, women were 1.4 times more likely, Black or African American enrollees were 1.5 times more likely, and enrollees with health insurance for some of the 12 months prior to HMP enrollment were 1.6 times more likely to report that HMP helped them to do a better job at work (see Appendix A Table 10.6; Model 2a).

Employed enrollees with incomes of 100-133% FPL were 65.0% as likely to report HMP helped them do a better job at work than those with lower income levels (see Appendix A Table 10.6; Model 2a).

Among employed respondents with a recent job change, respondents who reported better access to dental care since HMP enrollment, were more likely than those who reported no change or worse access, to report that HMP had helped them to get a better job (51.2% vs. 24.5%). Those with a dental care visit since HMP enrollment were more likely than those who had no visit to report that HMP had helped them to get a better job (30.0% vs. 34.1%) (see Appendix A Table 10.7).

In multivariate analyses adjusting for characteristics of employed respondents who had a recent job change:

Improved oral health was not associated with helping them to get a better job, although there was a trend in that direction. The low sample size in this population may have affected this model (see Appendix A Table 10.6; Model 2c).

Those who were uninsured all 12 months prior to HMP enrollment were 2.4 times more likely to report that HMP helped them get a better job (see Appendix A Table 10.6; Model 2c).

## **Section 11: Impact of HMP on reproductive health services**

### ***Demographic and health characteristics of female respondents ages 19-44***

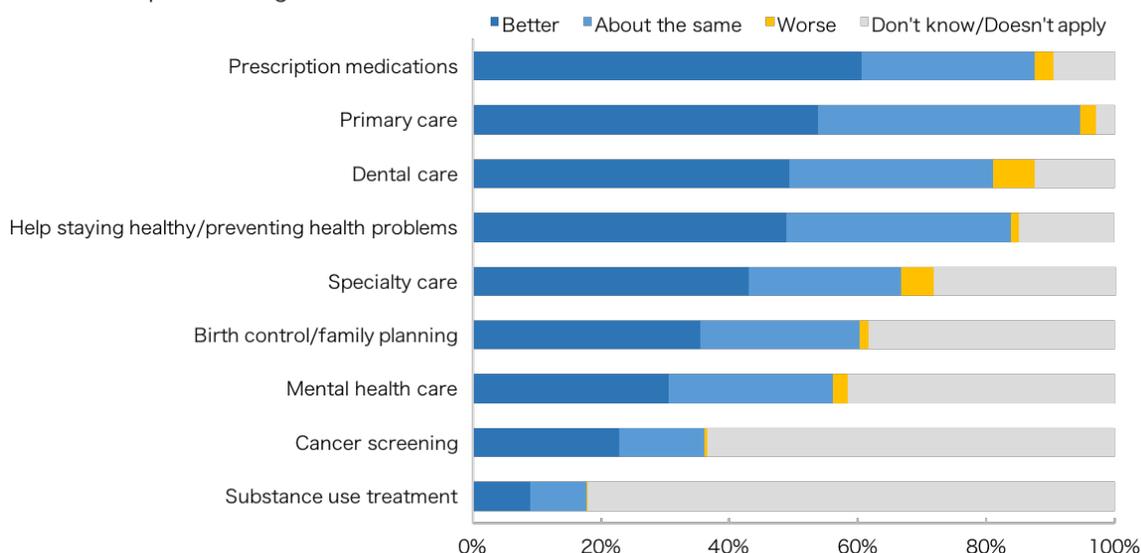
Women enrollees age 19-44 broadly reflected the racial-ethnic demographics of Michigan. Most (74.7%) were lower-income (<100% FPL) and nearly one in five (17.7%) lived in rural settings (see Appendix A Table 11.1).

Sixty-four percent reported at least one chronic medical condition and 23.5% reported fair or poor health (see Appendix A Table 11.1).

### *Perceived change in access to health care services after HMP enrollment*

Overall, 35.5% of respondents reported better ability to get birth control/family planning services through HMP compared to before they had HMP, while 24.8% reported about the same ability, and 1.4% reported worse ability. An additional 38.3% reported that they did not know or birth control/family planning access didn't apply to them (see Appendix A Table 11.3). The proportion reporting improved access to family planning services among female enrollees age 19-44 was lower than the proportion reporting improved access to primary care, specialist care, dental care, prescription medications, and help preventing health problems, but higher than the proportion reporting improved access to mental health, cancer screening, and substance use treatment (see Appendix A Table 11.2).

Figure 1. Self-reported change in access to health care services after HMP enrollment, among female respondents ages 19-44



### *Enrollee characteristics, by perceived change in access to birth control/family planning services*

Improved access to birth control/family planning services was more commonly reported by

- Younger women (age 19-24, 39.8%; age 25-34 years, 41.4%) compared to older women (age 35-44 years, 24.1%)
- Women who were uninsured in the 12 months prior to HMP enrollment (42.6%), compared to those who had health insurance for all 12 months prior to HMP (27.5%)
- Women who had seen a PCP in the past 12 months of HMP enrollment compared to those who had not (36.8% vs. 27.6%) (see Appendix A Table 11.3).

In adjusted multivariable logistic regression analysis, better access to birth control/family planning services was significantly associated with age, no health insurance in the 12 months

prior to HMP enrollment, and a visit with a PCP in the past 12 months of HMP enrollment (see Appendix A Table 11.4).

- Compared to enrollees age 35-44 years, women age 19-24 years were 2.8 times more likely to report better access to birth control/family planning services and women age 25-34 years were 2.4 times more likely to report better access to birth control/family planning services (see Appendix A Table 11.4).
- Compared to those with health insurance for all 12 months prior to HMP enrollment, women without health insurance in the 12 months prior to HMP were more than twice as likely to report that HMP improved their access to birth control/family planning services (see Appendix A Table 11.4).
- Enrollees who had seen a PCP in the past 12 months of HMP enrollment were 1.7 times more likely to report better access to birth control/family planning since HMP enrollment compared to those who had not (see Appendix A Table 11.4).

We did not observe differences in self-reported access across racial-ethnic groups, income categories, partnership status, urban/rural setting, self-reported health status, or presence of medical comorbidity (see Appendix A Table 11.4).

## **Section 12: Impact of HMP on employment, education and ability to work**

### ***Demographic and health characteristics for HMP enrollees who are out of work or unable to work***

Compared to employed enrollees, enrollees who were out of work or unable to work were more likely to be older, male, have an income of 0-35% FPL, veterans, in fair/poor health, and with chronic physical or mental health conditions or limitations (see Appendix A Table 12.1).

Black or African American enrollees were more likely to be out of work and White enrollees were more likely to be unable to work (see Appendix A Table 12.1).

### ***Association between HMP enrollee demographic and health characteristics and being out of work or unable to work***

Enrollees were 1.5 times more likely to report being out of work if they reported fair/poor health, 1.5 times as likely if they reported mental health conditions, and more likely if they reported functional limitations (1.4 times as likely if they reported a physical functional limitation; 2.0 times as likely if they reported a mental functional limitation) (see Appendix A Table 12.2)

Enrollees were 1.7 times more likely to report being out of work if older (aged 51-64), 1.8 times more likely if male, and 1.9 times more likely if Black or African American (see Appendix A Table 12.2).

Enrollees were 3.5 times more likely to report being unable to work if in fair/poor health, 1.7 times as likely if with chronic physical health condition(s), 2.6 times as likely if with chronic mental health condition(s), and more likely if they reported functional limitations (5.1 times as likely if they reported a physical limitation; 2.3 times as likely if they reported a mental limitation) (see Appendix A Table 12.2).

Enrollees were more likely to report being unable to work if older (2.3 times more likely for 35-50-year-olds; 4.2 times more likely for 51-64-year-olds) and 1.9 times as likely if male (see Appendix A Table 12.2).

### ***Employment status among HMP enrollees, by health status and presence of chronic health condition***

HMP enrollees were more likely to be employed if their health status was excellent, very good, or good vs. fair or poor (56.1% vs. 32.3%), or if they had no chronic conditions (59.8% vs. 44.1%) (see Appendix A Table 12.3).

However, a substantial number of enrollees with fair or poor health status (32.3%) or with chronic conditions (44.1%) were working (see Appendix A Table 12.3).

### ***Association of health changes with employment and ability to work among employed enrollees, and job seeking ability among enrollees who were out of work or had a recent job change***

There was no statistically significant association between improved physical or mental health since HMP enrollment and current employment status (see Appendix A Table 12.4).

Enrollees with improved physical or mental health since HMP enrollment were 4.1 times more likely to report that HMP helped them to do a better job at work (see Appendix A Table 12.4).

Among enrollees who were out of work, those with improved physical or mental health since HMP enrollment were 2.8 times more likely to report that HMP made them better able to look for a job (see Appendix A Table 12.4).

Among enrollees who had a recent job change, those with improved physical or mental health since HMP enrollment were 3.2 times more likely to report that HMP helped them get a better job (see Appendix A Table 12.4).

# 2016 Healthy Michigan Voices Enrollee Survey: Supplemental Analyses

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**Section 1: Impact of pre-HMP insurance status on improvements in forgone care, access, and health**

**Table 1.1. Bivariate relationship between pre-HMP insurance status and forgone care, health status**

	<b>No insurance during the 12 months before enrollment in HMP</b>	<b>Any insurance during the 12 months before enrollment in HMP</b>	
	Column %	Column %	<i>p</i> -value <sup>1</sup>
Any forgone care 12 months prior to HMP	42.0	21.6	< .001
Health status			NS
Excellent	9.4	9.6	
Very good	26.7	27.2	
Good	33.6	34.0	
Fair	22.5	22.0	
Poor	7.8	7.3	
<b>Column Total</b>	100%	100%	

<sup>1</sup>Pearson's chi-squared test

**Table 1.2a. Multivariate relationship between pre-HMP insurance status and forgone care, access to services, change in health, worry and stress**

	Uninsured all 12 months [REFERENCE]		Insured some of 12 months		Insured all of 12 months	
	%	95% CI	%	95% CI	%	95% CI
<b>Forgone care</b>						
Any forgone care 12 months prior to HMP	42.8	[40.2, 45.3]	32.8 ***	[27.2, 38.4]	17.4 ***	[14.9, 19.9]
Forgone care due to cost/no insurance/insurance not accepted/plan wouldn't pay in 12months prior to HMP	40.6	[38.1, 43.1]	30.7 *	[25.2, 36.2]	14.4 ***	[12.1, 16.7]
<b>Access to services</b>						
Improved access to prescriptions	67.8	[65.3, 70.3]	62.7	[56.6, 68.9]	43.0 ***	[39.6, 46.5]
Improved access to primary care	69.7	[66.2, 71.2]	57.3 ***	[50.9, 63.7]	37.7 ***	[50.9, 63.7]
Improved access to help with staying healthy	60.3	[57.8, 62.9]	55.7	[49.4, 62.0]	36.1 ***	[32.7, 39.5]
Improved access to dental care	54.1	[51.5, 56.7]	48.5	[42.1, 54.9]	32.1 ***	[28.8, 35.5]
Improved access to specialist care	51.8	[49.2, 54.4]	44.6 *	[38.4, 50.8]	31.5 ***	[28.2, 34.8]
Improved access to mental health care	32.0	[29.6, 34.5]	27.2	[21.3, 33.0]	18.5 ***	[15.7, 21.3]
Improved access to cancer screening	31.6	[29.2, 34.0]	23.1 **	[18.0, 28.3]	16.9***	[14.5, 19.3]
<b>Change in health</b>						
Improved physical health	54.5	[51.9, 57.1]	51.8	[45.2, 58.4]	34.7 ***	[31.2, 38.1]
Improved mental health	42.4	[39.8, 45.0]	37.0	[30.6, 43.3]	30.7 ***	[27.2, 34.1]
Improved oral health	46.4	[43.7, 49.1]	42.1	[35.9, 48.4]	32.8 ***	[29.4, 36.3]
<b>Worry and stress<sup>1</sup></b>						
I don't worry so much	72.6	[70.2, 74.9]	70.4	[64.3, 76.5]	63.8	[60.4, 67.2]
Having HMP has taken a lot of stress off me	90.6	[89.0, 92.1]	89.4	[85.2, 93.5]	84.6	[82.1, 87.0]

Logistic regression with predicted margins; each row is a separate model/outcome, adjusted for age, gender, federal poverty level, race and ethnicity, urbanicity, self-reported health status, and self-reported chronic conditions.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

<sup>1</sup>Respondents were asked to rate their worry and stress on a 5-point scale. Responses were dichotomized to reflect strongly agree/agree vs. neutral/disagree/strongly disagree.

**Table 1.2b. Multivariate relationship between pre-HMP insurance status and forgone care, access to services, change in health, worry and stress**

Independent variables	Uninsured all 12 months [REFERENCE] (n=2,374)	Insured some of 12 months (n=374)			Insured all of 12 months (n=1,235)		
		aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Forgone care</b>							
Any forgone care 12 months prior to HMP		0.6	[0.5, 0.8]	.002	0.3	[0.2, 0.3]	< .001
Forgone care due to cost/no insurance/insurance not accepted/plan wouldn't pay in 12months prior to HMP		0.8	[0.4, 1.5]	.516	0.3	[0.2, 0.5]	< .001
<b>Access to services</b>							
Improved access to prescriptions		0.8	[0.6, 1.1]	.126	0.3	[0.3, 0.4]	< .001
Improved access to primary care		0.6	[0.5, 0.8]	.001	0.3	[0.2, 0.3]	< .001
Improved access to help with staying healthy		0.8	[0.6, 1.1]	.180	0.4	[0.3, 0.4]	< .001
Improved access to dental care		0.8	[0.6, 1.1]	.110	0.4	[0.3, 0.5]	< .001
Improved access to specialist care		0.7	[0.6, 1.0]	.037	0.4	[0.3, 0.5]	< .001
Improved access to mental health care		0.8	[0.6, 1.1]	.144	0.5	[0.4, 0.6]	< .001
Improved access to cancer screening		0.6	[0.5, 0.9]	.006	0.4	[0.3, 0.5]	< .001
<b>Change in health</b>							
Improved physical health		0.9	[0.7, 1.2]	.456	0.4	[0.4, 0.5]	< .001
Improved mental health		0.8	[0.6, 1.1]	.126	0.6	[0.5, 0.7]	< .001
Improved oral health		0.8	[0.6, 1.1]	.218	0.6	[0.5, 0.7]	< .001
<b>Worry and stress<sup>1</sup></b>							
I don't worry so much		0.9	[0.7, 1.2]	.520	0.7	[0.5, 0.8]	< .001
Having HMP has taken a lot of stress off me		0.9	[0.5, 1.4]	.588	0.6	[0.4, 0.7]	< .001

Logistic regression with adjusted odds ratios; each row is a separate model/outcome, adjusted for age, gender, federal poverty level, race and ethnicity, urbanicity, self-reported health status, and self-reported chronic conditions.

<sup>1</sup>Respondents were asked to rate their worry and stress on a 5-point scale. Responses were dichotomized to reflect strongly agree/agree vs. neutral/disagree/strongly disagree.

## Section 2: Primary care and use of preventive services

Table 2.1. Descriptive statistics: receipt of preventive care

	%
Primary care visit	89.5
Cancer screening	43.5
Breast cancer screening <sup>1</sup>	71.7
Cervical cancer screening <sup>2</sup>	53.9
Colorectal cancer screening <sup>3</sup>	41.6
Diabetes Prevention Program	1.4
Dental visit	59.5
Any nutrition service	2.1
HPV testing	14.4
Test for STI	13.9
Statin prescription	18.0
Varenicline and/or nicotine replacement prescription	11.3
Vaccine (any)	43.9
Influenza vaccine	32.5
Pneumonia vaccine	6.3
Other vaccine (not influenza or pneumonia)	20.0
Any preventive service <sup>4</sup>	86.8

Weighted proportions of services based on claims analysis.

See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Analysis restricted to women 50 and older.

<sup>2</sup> Analysis restricted to women. Excludes HPV

<sup>3</sup> Analysis restricted to women and men 50 and older.

<sup>4</sup> Any of the above preventive services with the exception of primary care visit.

**Table 2.2. Bivariate relationship between enrollee knowledge about copays and incentives and use of preventive services**

	Some services have no copay			May get reduction in fees if complete HRA		
	% Yes	% No/DK	<i>p</i> -value <sup>1</sup>	% Yes	% No/DK	<i>p</i> -value <sup>1</sup>
Primary care visit	92.3	80.8	< .001	90.0	89.3	.670
Diabetes Prevention Program	1.5	0.95	.217	1.7	1.3	.396
Any nutrition service	2.3	1.4	.192	2.6	1.9	.306
Dental visit	60.7	56.0	.046	58.8	59.8	.650
Test for STI	15.0	10.4	.005	13.4	14.0	.724
Statin prescription	19.2	14.1	.003	19.2	17.4	.272
Varenicline and/or nicotine replacement prescription	12.5	7.5	< .001	9.9	11.8	.128
Breast cancer screening <sup>2</sup>	74.6	60.3	.002	74.1	70.9	.456
HPV testing	15.7	10.1	< .001	12.9	14.9	.172
Cervical cancer screening <sup>3</sup>	55.7	47.2	.009	54.4	53.8	.826
Colorectal cancer screening <sup>4</sup>	43.5	34.6	.021	43.7	40.7	.369
Any cancer screening	47.0	32.6	< .001	41.7	44.4	.262
Vaccine (any)	45.8	38.1	.001	47.0	42.7	.066
Influenza vaccine	34.5	26.7	< .001	34.4	31.8	.203
Pneumonia vaccine	6.9	4.7	.048	7.3	6.0	.267
Other vaccine (not influenza or pneumonia)	20.4	19.0	.473	20.8	19.8	.609
Any preventive service <sup>5</sup>	88.6	81.3	< .001	86.7	86.9	.934

Weighted proportions of enrollees who received preventive services (based on claims data) by knowledge of HMP cost structure. See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Pearson's chi-squared test

<sup>2</sup> Analysis restricted to women 50 and older.

<sup>3</sup> Analysis restricted to women. Excludes HPV

<sup>4</sup> Analysis restricted to women and men 50 and older.

<sup>5</sup> Includes any of the above preventive services with the exception of primary care visit.

**Table 2.3. Bivariate relationship between perceived impact of healthy behavior rewards and use of preventive services**

<b>Information about the healthy behavior rewards that I can earn has led me to do something I might not have done otherwise. (n=4,084)</b>						
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	<i>p</i> -value <sup>1</sup>
Primary care visit	88.2	89.5	87.8	89.3	84.9	.654
Diabetes Prevention Program	0.2	2.1	1.0	1.3	-	.094
Any nutrition service	2.7	2.7	1.6	1.9	-	.474
Dental visit	57.3	57.0	57.7	61.0	69.9	.161
Test for STI	11.3	14.0	12.0	15.2	15.8	.724
Statin prescription	22.6	20.1	10.9	17.4	20.4	.008
Varenicline and/or nicotine replacement prescription	10.5	11.1	6.8	11.5	13.8	.032
Breast cancer screening <sup>2</sup>	83.9	71.9	61.5	67.7	95.8	.046
HPV testing	11.4	14.3	14.2	13.3	14.4	.529
Cervical cancer screening <sup>3</sup>	48.9	53.4	56.1	54.7	51.3	.935
Colorectal cancer screening <sup>4</sup>	58.2	41.9	39.4	41.0	47.2	.191
Any cancer screening	44.5	42.9	40.3	41.2	38.8	.071
Vaccine (any)	46.2	45.0	46.5	40.2	34.9	.228
Influenza vaccine	35.6	32.5	35.5	30.2	31.1	.646
Pneumonia vaccine	6.9	6.0	5.4	7.8	5.7	.673
Other vaccine (not influenza or pneumonia)	16.4	20.6	20.3	17.3	4.9	.007
Any preventive service <sup>5</sup>	89.4	86.9	87.6	84.7	77.3	.139

Weighted proportions of enrollees who received preventive services (based on claims data) by perceived impact of healthy behavior rewards. See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Pearson's chi-square test

<sup>2</sup> Analysis restricted to women 50 and older.

<sup>3</sup> Analysis restricted to women. Excludes HPV

<sup>4</sup> Analysis restricted to women and men 50 and older.

<sup>5</sup> Includes any of the above preventive services with the exception of primary care visit.

**Table 2.4a. Multivariate relationship between primary care visit and use of preventive services**

Independent variables	Self-reported primary care visit				Primary care visit in claims data			
	aOR	95% CI	SE	p-value	aOR	95% CI	SE	p-value
Cancer screening	2.71	[2.04, 3.59]	.39	< .001	23.23	[12.59, 42.84]	7.25	< .001
Breast cancer screening <sup>1</sup>	6.57	[3.70, 11.68]	1.93	< .001	-	-	-	-
Cervical cancer screening <sup>2</sup>	2.15	[1.59, 2.91]	.33	< .001	11.86	[6.42, 21.90]	3.71	< .001
Colorectal cancer screening <sup>3</sup>	4.33	[2.60, 7.22]	1.13	< .001	-	-	-	-
Diabetes Prevention Program	1.31	[0.53, 3.20]	.60	.558	2.45	[0.35, 17.32]	2.45	.369
Dental visit	1.42	[1.14, 1.77]	.16	.002	2.13	[1.53, 2.96]	.36	< .001
Any nutrition service	1.88	[0.80, 4.39]	.81	.145	3.36	[0.48, 23.46]	3.33	.222
HPV testing	1.67	[1.17, 2.37]	.30	.005	5.26	[2.45, 11.32]	2.06	< .001
Test for STI	1.44	[1.02, 2.05]	.26	.038	5.10	[2.80, 9.29]	1.56	< .001
Statin prescription	3.88	[2.47, 6.10]	.90	< .001	13.75	[2.97, 63.56]	10.74	< .001
Varenicline and/or nicotine replacement prescription	1.97	[1.33, 2.92]	.40	.001	15.00	[4.64, 48.44]	8.97	< .001
Vaccine (any)	2.05	[1.62, 2.61]	.25	< .001	4.21	[2.73, 6.48]	.93	< .001
Influenza vaccine	2.20	[1.69, 2.87]	.30	< .001	6.96	[4.13, 11.73]	1.85	< .001
Pneumonia vaccine	1.49	[0.87, 2.54]	.41	.147	2.69	[0.85, 8.54]	1.59	.094
Other vaccine (not influenza or pneumonia)	1.28	[0.96, 1.72]	.19	.092	2.52	[1.50, 4.21]	.66	< .001

Logistic regression with adjusted odds ratios; each row is a separate model/outcome, adjusted for age, gender, race and ethnicity, urbanicity, self-reported health status, and self-reported chronic conditions. Dependent variables are receipt of preventive services based on claims data. See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Analysis restricted to women 50 and older.

<sup>2</sup> Analysis restricted to women. Excludes HPV

<sup>3</sup> Analysis restricted to women and men 50 and older.

**Table 2.4b. Bivariate relationship between primary care visit and use of preventive services**

	Self-reported primary care visit <sup>1</sup>		Primary care visit in claims data <sup>2</sup>	
	%	<i>p</i> -value <sup>3</sup>	%	<i>p</i> -value <sup>3</sup>
Cancer screening	49.3	< .001	48.2	< .001
Breast cancer screening <sup>4</sup>	75.2	< .001	73.8	< .001
Cervical cancer screening <sup>5</sup>	56.4	< .001	56.4	< .001
Colorectal cancer screening <sup>6</sup>	45.0	< .001	43.5	< .001
Diabetes Prevention Program	1.5	.178	1.5	.156
Dental visit	61.6	< .001	61.6	< .001
Any nutrition service	2.4	.013	2.3	.044
HPV testing	16.1	< .001	15.8	< .001
Test for STI	14.7	.029	15.1	< .001
Statin prescription	21.6	< .001	20.0	< .001
Varenicline and/or nicotine replacement prescription	12.9	< .001	12.5	< .001
Vaccine (any)	48.2	< .001	47.3	< .001
Influenza vaccine	36.7	< .001	35.6	< .001
Pneumonia vaccine	7.1	.003	6.9	.003
Other vaccine (not influenza or pneumonia)	20.7	.143	21.1	.002
Any of the above	90.8	< .001	90.5	< .001

Weighted proportions of enrollees who received preventive services (based on claims data) by receipt of PCP visits. See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Of those who reported a PCP visit in the past year, the proportion who had a claim for the preventive service.

<sup>2</sup> Of those with a claim for a primary care visit in the past year, the proportion who had a claim for the preventive service.

<sup>3</sup> Pearson's chi-squared test comparing proportions between those with and without a PCP visit.

<sup>4</sup> Analysis restricted to women 50 and older.

<sup>5</sup> Analysis restricted to women. Excludes HPV

<sup>6</sup> Analysis restricted to women and men 50 and older.

<sup>7</sup> Includes any of the above preventive services with the exception of primary care visit.

**Table 2.5a. Multivariate relationship between primary care visit and cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	2.71	[2.05, 3.59]	< .001			
<b>Primary care visit in claims data</b>				23.22	[12.59, 42.84]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	2.04	[1.61, 2.58]	< .001	2.10	[1.65, 2.66]	< .001
51-64	5.38	[4.08, 7.08]	< .001	5.57	[4.20, 7.38]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	17.43	[14.13, 21.51]	< .001	17.78	[14.36, 22.01]	< .001
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.18	[0.91, 1.54]	.214	1.19	[0.91, 1.56]	.202
Other	.88	[0.57, 1.36]	.551	.74	[0.47, 1.17]	.197
More than one	.82	[0.48, 1.40]	.467	.90	[0.52, 1.56]	.715
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.26	[0.79, 2.02]	.330	1.29	[0.79, 2.10]	.312
Don't know	.09	[0.02, 0.52]	.007	.07	[0.01, 0.52]	.009
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference					
Yes	1.21	[0.71, 2.06]	.477	1.27	[0.73, 2.22]	.389
Don't know	16.85	[2.33, 121.75]	.005	33.35	[6.12, 181.84]	< .001
<b>Health status</b>						
Excellent	Reference					
Very good	.73	[0.49, 1.09]	.119	.77	[0.52, 1.15]	.196
Good	.87	[0.59, 1.29]	.489	.87	[0.59, 1.29]	.493
Fair	1.04	[0.68, 1.59]	.846	1.06	[0.69, 1.61]	.798
Poor	.99	[0.59, 1.66]	.960	1.01	[0.60, 1.69]	.978
<b>Any chronic disease</b>						
No	Reference					
Yes	1.24	[0.98, 1.57]	.069	1.19	[0.93, 1.52]	.157
<b>Urbanicity</b>						
Rural	Reference					
Urban	.87	[0.69, 1.10]	.255	.90	[0.71, 1.14]	.380
<b>Constant</b>	.03	[0.02, 0.06]	< .001	.004	[0.001, 0.008]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is cancer screening based on claims data. See Appendix B for full definitions.

**Table 2.5b. Multivariate relationship between primary care visit and breast cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=942)			Primary care visit in claims data <sup>2</sup> (Model n=914)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	6.57	[3.70, 11.68]	< .001			
<b>Primary care visit in claims data<sup>3</sup></b>				-	-	-
<b>Age</b>						
19-34	Reference			Reference		
35-50	-	-	-	-	-	-
51-64	.78	[0.37, 1.62]	.505	.68	[0.32, 1.45]	.314
<b>Gender</b>						
Male	Reference			Reference		
Female	-	-	-	-	-	-
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.42	[0.86, 2.36]	.174	1.28	[0.72, 2.28]	.393
Other	.74	[0.27, 2.02]	.559	.75	[0.27, 2.03]	.567
More than one	1.34	[0.46, 3.92]	.598	.98	[0.33, 2.89]	.964
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.34	[0.51, 3.55]	.550	1.06	[0.39, 2.87]	.913
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.62	[0.16, 2.41]	.492	.55	[0.14, 2.16]	.393
Don't know	-	-	-	-	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.06	[0.49, 2.29]	.883	.90	[0.33, 2.45]	.837
Good	1.60	[0.75, 3.44]	.227	1.40	[0.52, 3.79]	.503
Fair	1.37	[0.62, 3.01]	.433	1.48	[0.54, 4.07]	.444
Poor	.92	[0.36, 2.34]	.867	.90	[0.30, 2.72]	.846
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.14	[0.68, 1.91]	.618	1.36	[0.80, 2.30]	.256
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.84	[0.57, 1.24]	.380	.94	[0.59, 1.49]	.793
<b>Constant</b>	.44	[0.14, 1.33]	.146	2.72	[0.72, 10.20]	.139

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is breast cancer screening based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to women 50 and older.

<sup>3</sup> Primary care visit predicts breast cancer perfectly (no individuals without a primary care visit had breast cancer screening).

**Table 2.5c. Multivariate relationship between primary care visit and cervical cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=2,375)			Primary care visit in claims data <sup>2</sup> (Model n=2,375)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	2.15	[1.59, 2.91]	< .001			
<b>Primary care visit in claims data</b>				11.86	[6.42, 21.90]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.09	[0.83, 1.42]	.528	1.09	[0.83, 1.42]	.549
51-64	.68	[0.52, 0.88]	.003	.68	[0.52, 88]	.003
<b>Gender</b>						
Male	Reference			Reference		
Female	-	-	-	-	-	-
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.29	[0.98, 1.70]	.074	1.27	[0.96, 1.68]	.094
Other	.87	[0.53, 1.42]	.572	.75	[0.45, 1.24]	.261
More than one	.57	[0.32, 1.04]	.068	.60	[0.33, 1.08]	.090
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.38	[0.83, 2.31]	.213	1.33	1.04	.298
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	1.31	[0.75, 2.28]	.348	1.31	[0.74, 2.32]	.360
Don't know	1.0	-	-	-	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	.83	[0.54, 1.28]	.408	.86	[0.56, 1.34]	.512
Good	.81	[0.53, 1.23]	.322	.82	[0.53, 1.25]	.355
Fair	.80	[0.51, 1.27]	.350	.82	[0.52, 1.30]	.404
Poor	.56	[0.31, .99]	.048	.57	[0.32, 1.03]	.062
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	.95	[0.73, 1.24]	.710	.90	[0.69, 1.18]	.443
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.84	[0.66, 1.06]	.135	.87	[0.68, 1.10]	.243
<b>Constant</b>	.92	[0.57, 1.49]	.733	.17	[0.08, 0.34]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is cervical cancer screening (excludes HPV testing) based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to women.

**Table 2.5d. Multivariate relationship between primary care visit and colorectal cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=1,550)			Primary care visit in claims data <sup>2</sup> (Model n=1,487)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	4.33	[2.60, 7.22]	< .001			
<b>Primary care visit in claims data<sup>3</sup></b>				-	-	-
<b>Age</b>						
19-34	Reference			Reference		
35-50	-	-	-	-	-	-
51-64	1.31	[0.77, 2.22]	0.314	1.24	[0.72, 2.13]	.44
<b>Gender</b>						
Male	Reference			Reference		
Female	1.19	[0.92, 1.54]	.190	1.24	[0.96, 1.61]	.102
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.28	[0.91, 1.80]	.164	1.18	[0.83, 1.66]	.356
Other	1.06	[0.59, 1.90]	.851	.99	[0.55, 1.79]	.975
More than one	.68	[0.30, 1.52]	.342	.75	[0.34, 1.66]	.477
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.86	[0.44, 1.65]	.641	.83	[0.42, 1.63]	.582
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	1.14	[0.49, 2.66]	.762	1.17	[0.49, 2.83]	.719
Don't know	1.0	-	-	1.0	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	2.59	[1.34, 5.00]	.004	2.48	[1.27, 4.85]	.008
Good	3.30	[1.74, 6.28]	< .001	3.01	[1.56, 5.80]	.001
Fair	2.75	[1.42, 5.35]	.003	2.61	[1.33, 5.12]	.005
Poor	3.57	[1.72, 7.37]	.001	3.47	[1.67, 7.23]	.001
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	.71	[0.49, 1.04]	.082	.84	[0.58, 1.23]	.380
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.85	[0.65, 1.11]	.236	.90	[0.69, 1.18]	.446
<b>Constant</b>	.07	[0.03, 0.16]	< .001	.25	[0.11, 0.56]	.001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is colorectal cancer screening based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to men and women ages 50 and over.

<sup>3</sup> Primary care visit predicts colorectal cancer perfectly (no individuals without a primary care visit had a colorectal cancer screening).

**Table 2.5e. Multivariate relationship between primary care visit and Diabetes Prevention Program<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.31	[0.53, 3.20]	.558			
<b>Primary care visit in claims data</b>				2.45	[0.35, 17.32]	.369
<b>Age</b>						
19-34	Reference			Reference		
35-50	2.03	[0.94, 4.36]	.071	2.01	[0.91, 4.46]	.085
51-64	1.98	[0.93, 4.21]	.075	1.95	[0.89, 4.28]	.096
<b>Gender</b>						
Male	Reference			Reference		
Female	.72	[0.40, 1.29]	.268	.70	[0.39, 1.27]	.244
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.74	[0.85, 3.60]	.129	1.76	[0.86, 3.62]	.124
Other	.85	[0.23, 3.20]	.811	.85	[0.23, 3.19]	.813
More than one	.28	[0.03, 2.22]	.227	.29	[0.04, 2.34]	.246
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	2.90	[1.01, 8.31]	.048	2.90	[1.01, 8.33]	.048
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.54	[0.06, 4.83]	.579	.53	[0.06, 4.71]	.568
Don't know	1.0	-	-	1.0	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.74	[0.21, 14.44]	.607	1.83	[0.23, 14.74]	.572
Good	1.29	[0.16, 10.50]	.813	1.30	[0.16, 10.50]	.807
Fair	1.45	[0.17, 12.12]	.730	1.46	[0.18, 11.97]	.726
Poor	1.57	[0.17, 14.39]	.690	1.58	[0.18, 14.18]	.683
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	8.50	[1.85, 39.01]	.006	8.21	[1.90, 35.60]	.005
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.58	[0.31, 1.09]	.089	0.58	[0.31, 1.09]	.089
<b>Constant</b>	.001	[0.000, 0.012]	< .001	.001	[0.000, 0.019]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is a claim for a diabetes prevention program. See Appendix B for full definitions.

**Table 2.5f. Multivariate relationship between primary care visit and dental care<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.42	[1.14, 1.77]	.002			
<b>Primary care visit in claims data</b>				2.13	[1.53, 2.96]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.15	[0.93, 1.42]	.185	1.14	[0.92, 1.40]	.227
51-64	1.05	[0.86, 1.28]	.638	1.03	[0.85, 1.26]	.762
<b>Gender</b>						
Male	Reference			Reference		
Female	1.30	[1.10, 1.53]	.002	1.26	[1.06, 1.48]	.007
<b>Race</b>						
White	Reference			Reference		
Black or African American	0.93	[0.75, 1.15]	.493	.95	[0.77, 1.18]	.659
Other	0.76	[0.52, 1.09]	.134	.75	[0.51, 1.09]	.130
More than one	.80	[0.52, 1.23]	.313	.86	[0.56, 1.32]	.495
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.94	[0.63, 1.41]	.769	.93	[0.62, 1.40]	.734
Don't know	.58	[0.15, 2.29]	.435	.60	[0.15, 2.35]	.465
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	2.71	[1.74, 4.20]	< .001	2.73	[1.75, 4.24]	< .001
Don't know	1.98	[0.28, 13.88]	.491	2.15	[0.36, 12.79]	.401
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	.62	[0.45, 0.86]	.005	.65	[0.46, 0.90]	.011
Good	.76	[0.55, 1.06]	.108	.77	[0.55, 1.07]	.121
Fair	.66	[0.47, 0.94]	.023	.66	[0.47, 0.95]	.024
Poor	.59	[0.38, 0.90]	.015	.59	[0.38, 0.90]	.015
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.03	[0.83, 1.27]	.798	1.00	[0.81, 1.24]	.964
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.87	[0.73, 1.05]	.142	.88	[0.73, 1.05]	.158
<b>Constant</b>	1.43	[0.99, 2.05]	.054	.98	[0.63, 1.52]	.914

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is a claim for dental services. See Appendix B for full definitions.

Table 2.5g. Multivariate relationship between primary care visit and any nutrition services<sup>1</sup>

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.88	[0.80, 4.39]	.145			
<b>Primary care visit in claims data</b>				3.36	[0.48, 23.46]	.222
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.97	[1.01, 3.84]	.047	1.98	[1.01, 3.90]	.048
51-64	1.42	[0.73, 2.76]	.305	1.44	[0.73, 2.84]	.291
<b>Gender</b>						
Male	Reference			Reference		
Female	1.03	[0.61, 1.76]	.899	1.03	[0.60, 1.75]	.923
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.35	[0.70, 2.57]	.367	1.35	[0.70, 2.57]	.369
Other	1.17	[0.38, 3.66]	.783	1.15	[0.37, 3.54]	.808
More than one	.83	[0.23, 3.02]	.779	.88	[0.24, 3.23]	.853
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.45	[0.52, 4.03]	.480	1.44	[0.52, 4.01]	.487
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.25	[0.03, 2.29]	.221	.26	[0.03, 2.28]	.222
Don't know	1.0	-	-	1.0	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	2.14	[0.27, 17.00]	.472	2.26	[0.29, 17.68]	.437
Good	1.96	[0.25, 15.26]	.519	2.00	[0.26, 15.46]	.506
Fair	2.83	[0.35, 22.95]	.329	2.90	[0.36, 23.26]	.316
Poor	3.12	[0.35, 28.11]	.310	3.21	[0.36, 28.60]	.296
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	6.94	[2.02, 23.90]	.002	6.90	[2.08, 22.94]	.002
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.91	[0.51, 1.60]	.734	.91	[0.52, 1.61]	.759
<b>Constant</b>	.001	[0.000, 0.007]	< .001	.000	[0.000, 0.009]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is a claim for any nutrition services. See Appendix B for full definitions.

**Table 2.5h. Multivariate relationship between primary care visit and HPV testing<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.67	[1.17, 2.37]	.005			
<b>Primary care visit in claims data</b>				5.26	[2.45, 11.32]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.69	[1.28, 2.23]	< .001	1.70	[1.28, 2.24]	< .001
51-64	1.17	[0.88, 1.56]	.274	1.18	[0.89, 1.58]	.252
<b>Gender</b>						
Male	Reference			Reference		
Female	218.93	[64.19, 46.70]	< .001	210.87	[62.00, 717.22]	< .001
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.28	[0.96, 1.72]	.092	1.28	[0.95, 1.70]	.100
Other	.98	[0.57, 1.68]	.940	.90	[0.52, 1.55]	.701
More than one	.87	[0.45, 1.68]	.677	.89	[0.46, 1.71]	.727
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.94	[0.55, 1.61]	.826	.92	[0.54, 1.59]	.774
Don't know	.13	[0.03, 0.53]	.004	.12	[0.03, 0.51]	.004
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	1.32	[0.71, 2.48]	.379	1.32	[0.71, 2.45]	.337
Don't know	57.50	[13.65, 242.26]	< .001	69.64	[14.57, 332.89]	< .001
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	.69	[0.42, 1.12]	.131	.70	[0.43, 1.14]	.152
Good	.93	[0.58, 1.48]	.760	.95	[0.60, 1.50]	.818
Fair	1.03	[0.63, 1.68]	.918	1.05	[0.65, 1.72]	.831
Poor	.58	[0.30, 1.12]	.105	.60	[0.31, 1.15]	.125
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	.86	[0.65, 1.14]	.304	.83	[0.63, 1.10]	.202
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	1.20	[0.93, 1.56]	.165	1.23	[0.94, 1.60]	.131
<b>Constant</b>	.001	[0.000, 0.003]	< .001	.000	[0.000, 0.001]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is HPV testing based on claims data. See Appendix B for full definitions.

**Table 2.5i. Multivariate relationship between primary care visit and STI testing<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.44	[1.02, 2.05]	.038			
<b>Primary care visit in claims data</b>				5.10	[2.80, 9.29]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	.49	[0.36, 0.65]	< .001	.47	[0.35, 0.63]	< .001
51-64	.29	[0.21, 0.40]	< .001	.28	[0.21, 0.39]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	3.73	[2.80, 4.98]	< .001	3.47	[2.60, 4.62]	< .001
<b>Race</b>						
White	Reference			Reference		
Black or African American	2.39	[1.79, 3.18]	< .001	2.47	[1.86, 3.29]	< .001
Other	1.08	[0.58, 2.02]	.798	1.05	[0.57, 1.96]	.869
More than one	1.34	[0.75, 2.40]	.323	1.48	[0.82, 2.66]	.195
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.02	[0.58, 1.78]	.953	1.00	[0.57, 1.77]	1.00
Don't know	.24	[0.04, 1.42]	.115	.24	[0.04, 1.47]	.122
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.81	[0.41, 1.62]	.559	.80	[0.40, 1.60]	.530
Don't know	8.99	[1.33, 60.86]	.024	10.25	[1.41, 74.47]	.021
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	.85	[0.54, 1.33]	.480	.91	[0.58, 1.43]	.690
Good	.77	[0.50, 1.20]	.257	.79	[0.51, 1.23]	.305
Fair	.97	[0.61, 1.56]	.914	.98	[0.62, 1.57]	.948
Poor	.91	[0.48, 1.74]	.776	.92	[0.48, 1.76]	.806
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.46	[1.08, 1.98]	.013	1.39	[1.03, 1.87]	.030
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	1.87	[1.35, 2.58]	< .001	1.90	[1.38, 2.62]	< .001
<b>Constant</b>	.03	[0.02, 0.06]	< .001	.01	[0.00, 0.02]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is STI testing based on claims data. See Appendix B for full definitions.

**Table 2.5j. Multivariate relationship between primary care visit and prescribed HMG CoA Reductase inhibitor<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	3.88	[2.47, 6.10]	< .001			
<b>Primary care visit in claims data</b>				13.75	[2.97, 63.56]	.001
<b>Age</b>						
19-34	Reference			Reference		
35-50	10.21	[6.80, 15.31]	< .001	10.37	[6.92, 15.53]	< .001
51-64	20.09	[13.57, 29.76]	< .001	20.57	[13.88, 30.49]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	.57	[0.46, 0.71]	< .001	.57	[0.46, 0.71]	< .001
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.12	[0.83, 1.51]	.455	1.10	[0.82, 1.47]	.543
Other	.93	[0.59, 1.47]	.749	.90	[0.57, 1.42]	.642
More than one	.85	[0.47, 1.52]	.585	.96	[0.50, 1.84]	.894
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.05	[0.61, 1.81]	.865	1.01	[0.60, 1.71]	.973
Don't know	.47	[0.03, 6.74]	.581	14.17	[1.79, 112.31]	.012
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	1.88	[1.07, 3.28]	.027	1.93	[1.13, 3.32]	.017
Don't know	.47	[0.03, 6.74]	.581	.45	[0.03, 7.05]	.566
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	.99	[0.49, 1.99]	.974	1.07	[0.53, 2.14]	.852
Good	1.19	[0.61, 2.33]	.604	1.21	[0.62, 2.34]	.579
Fair	2.31	[1.17, 4.53]	.015	2.38	[1.22, 4.63]	.011
Poor	1.92	[0.93, 3.94]	.077	2.00	[0.98, 4.06]	.056
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	4.61	[3.07, 6.92]	< .001	4.84	[3.23, 7.27]	< .001
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	1.06	[0.84, 1.33]	.647	1.08	[0.86, 1.36]	.497
<b>Constant</b>	.001	[0.001, 0.004]	< .001	.000	[0.000, 0.002]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is Prescribed HMG CoA Reductase inhibitor based on claims data. See Appendix B for full definitions.

**Table 2.5k. Multivariate relationship between primary care visit and nicotine replacement and/or Varenicline prescription<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.97	[1.33, 2.92]	.001			
<b>Primary care visit in claims data</b>				15.00	[4.64, 48.44]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.69	[1.21, 2.37]	.002	1.68	[1.20, 2.35]	.003
51-64	1.94	[1.41, 2.67]	< .001	1.93	[1.40, 2.64]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	1.02	[0.80, 1.29]	.900	1.00	[0.79, 1.26]	.979
<b>Race</b>						
White	Reference			Reference		
Black or African American	.69	[0.49, 0.96]	.027	.70	[0.50, 0.98]	.036
Other	.79	[0.40, 1.58]	.511	.78	[0.39, 1.54]	.474
More than one	.59	[0.28, 1.25]	.167	.64	[0.30, 1.37]	.252
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.79	[0.39, 1.57]	.497	.78	[0.39, 1.55]	.477
Don't know	1.0	-	-	1.0	-	-
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.45	[0.16, 1.26]	.130	.46	[0.17, 1.26]	.129
Don't know	1.0	-	-	1.0	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.30	[0.69, 2.46]	.420	1.39	[0.73, 2.63]	.319
Good	1.66	[0.89, 3.09]	.111	1.69	[0.90, 3.16]	.100
Fair	2.09	[1.09, 4.00]	.027	2.13	[1.11, 4.10]	.024
Poor	3.40	[1.69, 6.83]	.001	3.46	[1.73, 6.94]	< .001
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.50	[0.99, 2.27]	.058	1.46	[0.96, 2.21]	.077
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.91	[0.71, 1.18]	.481	.92	[0.72, 1.19]	.541
<b>Constant</b>	.03	[0.01, 0.05]	< .001	.003	[0.001, 0.012]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup>Dependent variable is Nicotine replacement and/or Varenicline prescription based on claims data. See Appendix B for full definitions.

**Table 2.51. Multivariate relationship between primary care visit and vaccines (any)<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	2.05	[1.62, 2.61]	< .001			
<b>Primary care visit in claims data</b>				4.21	[2.73, 6.48]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.25	[1.02, 1.54]	.031	1.24	[1.01, 1.52]	.038
51-64	1.48	[1.21, 1.82]	< .001	1.47	[1.21, 1.80]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	1.05	[0.89, 1.24]	.576	1.01	[0.86, 1.19]	.899
<b>Race</b>						
White	Reference			Reference		
Black or African American	.79	[0.63, 0.98]	.034	.81	[0.65, 1.01]	.059
Other	1.23	[0.87, 1.74]	.250	1.20	[0.85, 1.70]	.303
More than one	.95	[0.61, 1.46]	.802	1.07	[0.69, 1.65]	.764
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.95	[0.64, 1.42]	.810	.94	[0.63, 1.39]	.744
Don't know	1.22	[0.29, 5.24]	.787	1.39	[0.33, 5.94]	.656
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.95	[0.64, 1.40]	.782	.96	[0.65, 1.43]	.847
Don't know	12.86	[1.04, 159.74]	.047	18.68	[0.98, 355.82]	.052
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.20	[0.86, 1.68]	.276	1.29	[0.92, 1.80]	.141
Good	1.25	[0.91, 1.73]	.173	1.27	[0.92, 1.76]	.151
Fair	1.70	[1.20, 2.40]	.003	1.72	[1.21, 2.43]	.002
Poor	1.73	[1.14, 2.64]	.010	1.76	[1.15, 2.68]	.009
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.36	[1.10, 1.68]	.005	1.34	[1.09, 1.66]	.005
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	1.03	[0.86, 1.23]	.762	1.04	[0.87, 1.25]	.670
<b>Constant</b>	.22	[0.15, 0.33]	< .001	.10	[0.06, 0.18]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is a claim for any vaccination. See Appendix B for full definitions.

**Table 2.5m. Multivariate relationship between primary care visit and Influenza vaccine<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	2.20	[1.69, 2.87]	< .001			
<b>Primary care visit in claims data</b>				6.96	[4.13, 11.73]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.29	[1.04, 1.61]	.023	1.28	[1.03, 1.60]	.028
51-64	1.70	[1.37, 2.10]	< .001	1.68	[1.36, 2.08]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	1.14	[0.96, 1.36]	.143	1.10	[0.93, 1.31]	.268
<b>Race</b>						
White	Reference			Reference		
Black or African American	.77	[0.62, 0.97]	.029	.79	[0.63, 1.00]	.044
Other	1.43	[1.00, 2.05]	.048	1.40	[0.98, 2.00]	.063
More than one	.80	[0.50, 1.27]	.337	.89	[0.56, 1.42]	.619
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.93	[0.62, 1.40]	.724	.91	[0.60, 1.38]	.670
Don't know	.82	[0.13, 5.19]	.830	.88	[.12, 6.41]	.903
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.97	[0.65, 1.46]	.896	.99	[0.65, 1.48]	.946
Don't know	12.70	[1.47, 109.99]	.021	21.38	[1.02, 448.78]	.049
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.27	[0.87, 1.84]	.213	1.34	[0.92, 1.96]	.123
Good	1.68	[1.17, 2.41]	.005	1.70	[1.18, 2.45]	.004
Fair	2.21	[1.51, 3.24]	< .001	2.23	[1.52, 3.28]	< .001
Poor	2.24	[1.42, 3.53]	.001	2.27	[1.44, 3.57]	< .001
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.57	[1.25, 1.98]	< .001	1.56	[1.24, 1.96]	< .001
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.94	[0.78, 1.14]	.536	.95	[0.79, 1.15]	.620
<b>Constant</b>	.09	[0.06, 0.14]	< .001	.03	[0.01, 0.05]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is receipt of influenza vaccination based on claims data. See Appendix B for full definitions.

**Table 2.5n. Multivariate relationship between primary care visit and Pneumonia vaccine<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,019)			Primary care visit in claims data (Model n=4,019)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.49	[0.87, 2.54]	.147			
<b>Primary care visit in claims data</b>				2.69	[0.85, 8.54]	.094
<b>Age</b>						
19-34	Reference			Reference		
35-50	3.27	[1.79, 5.98]	< .001	3.26	[1.79, 5.94]	< .001
51-64	4.54	[2.55, 8.09]	< .001	4.51	[2.55, 7.99]	< .001
<b>Gender</b>						
Male	Reference			Reference		
Female	.69	[0.50, 0.95]	.024	.68	[0.50, 0.94]	.021
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.09	[0.70, 1.71]	.696	1.10	[0.70, 1.73]	.672
Other	.84	[0.45, 1.57]	.574	.83	[0.44, 1.55]	.553
More than one	.41	[0.17, 1.00]	.051	.44	[0.18, 1.07]	.069
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	.99	[0.52, 1.90]	.987	.99	[0.52, 1.90]	.980
Don't know	3.27	[0.54, 19.82]	.197	3.44	[0.56, 21.09]	.182
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.29	[0.10, 0.79]	.016	.28	[0.10, 0.79]	.016
Don't know	1.0	-	-	1.0	-	-
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.73	[0.76, 3.92]	.190	1.82	[0.80, 4.13]	.155
Good	1.70	[0.74, 3.91]	.211	1.73	[0.75, 3.97]	.198
Fair	3.01	[1.34, 6.76]	.008	3.06	[1.36, 6.87]	.007
Poor	2.61	[1.04, 6.59]	.042	2.66	[1.06, 6.67]	.036
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	2.26	[1.18, 4.35]	.014	2.23	[1.16, 4.27]	.016
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	.82	[0.59, 1.15]	.253	.83	[0.60, 1.16]	.275
<b>Constant</b>	.01	[0.00, 0.02]	< .001	.004	[0.001, 0.016]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is receipt of pneumonia vaccine based on claims data. See Appendix B for full definitions.

**Table 2.5o. Multivariate relationship between primary care visit and other vaccines<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.28	[0.96, 1.72]	.092			
<b>Primary care visit in claims data</b>				2.52	[1.50, 4.21]	< .001
<b>Age</b>						
19-34	Reference			Reference		
35-50	.92	[0.72, 1.18]	.511	.90	[0.70, 1.16]	.418
51-64	.92	[0.72, 1.18]	.510	.90	[0.70, 1.14]	.379
<b>Gender</b>						
Male	Reference			Reference		
Female	.99	[0.81, 1.21]	.940	.95	[0.77, 1.16]	.612
<b>Race</b>						
White	Reference			Reference		
Black or African American	.85	[0.65, 1.11]	.224	.87	[0.67, 1.14]	.328
Other	1.11	[0.73, 1.69]	.630	1.11	[0.73, 1.69]	.634
More than one	.98	[0.58, 1.64]	.924	1.06	[0.63, 1.79]	.816
<b>Hispanic/Latino</b>						
No	Reference			Reference		
Yes	1.08	[0.66, 1.78]	.759	1.08	[0.65, 1.77]	.776
Don't know	.74	[0.15, 3.59]	.712	.78	[0.16, 3.86]	.760
<b>Arab/Chaldean/Middle Eastern</b>						
No	Reference			Reference		
Yes	.76	[0.47, 1.28]	.318	.77	[0.46, 1.26]	.297
Don't know	1.90	[0.25, 14.19]	.533	2.07	[0.20, 20.99]	.538
<b>Health status</b>						
Excellent	Reference			Reference		
Very good	1.01	[0.69, 1.49]	.948	1.06	[0.72, 1.56]	.780
Good	.90	[0.62, 1.31]	.586	.90	[0.62, 1.31]	.587
Fair	.94	[0.63, 1.41]	.769	.93	[0.62, 1.40]	.737
Poor	.98	[0.59, 1.63]	.943	.97	[0.59, 1.62]	.919
<b>Any chronic disease</b>						
No	Reference			Reference		
Yes	1.02	[0.78, 1.33]	.883	.99	[0.76, 1.28]	.916
<b>Urbanicity</b>						
Rural	Reference			Reference		
Urban	1.01	[0.81, 1.25]	.960	1.01	[0.81, 1.26]	.929
<b>Constant</b>	.23	[0.15, 0.36]	< .001	.13	[0.07, 0.23]	< .001

Logistic regression with adjusted odds ratios; independent variables are rows.

<sup>1</sup> Dependent variable is receipt of other vaccines based on claims data. See Appendix B for full definitions.

Table 2.6. Bivariate relationship between enrollee characteristics and primary care visit

	Self-reported primary care visit			Primary care visit in claims data		
	%	95% CI	Chi2	%	95% CI	Chi2
<b>Total (n=4,090)</b>	79.3	[77.5, 80.9]		89.5	[88.0, 90.9]	
<b>Age</b>						
19-34 (n=1,303)	72.1	[68.8, 75.1]	***	84.3	[81.3, 86.9]	***
35-50 (n=1,301)	81.0	[78.0, 83.7]		90.9	[88.3, 93.0]	
51-64 (n=1,486)	88.1	[85.8, 90.0]		95.8	[94.3, 96.9]	
<b>Gender</b>						
Male (n=1,681)	73.6	[70.6, 76.4]	***	84.3	[81.6, 86.7]	***
Female (n=2,409)	84.6	[82.7, 86.4]		94.4	[93.0, 95.6]	
<b>Income, % of federal poverty level</b>						
0-35% (n=1,600)	78.7	[75.9, 81.3]		88.1	[85.6, 90.3]	
36-99% (n=1,450)	81.0	[78.3, 83.5]		91.3	[89.0, 93.1]	
≥ 100% (n=1,040)	78.2	[74.9, 81.2]		90.7	[88.0, 92.8]	
<b>Race</b>						
White (n=2,784)	82.5	[80.5, 84.4]	***	92.5	[91.0, 93.8]	***
Black or African American (n=807)	74.4	[70.2, 78.3]		84.7	[80.5, 88.2]	
Other (n=306)	73.9	[67.4, 79.5]		88.2	[82.3, 92.3]	
More than one (n=142)	73.4	[62.5, 82.0]		77.0	[65.9, 85.2]	
<b>Hispanic/Latino</b>						
Yes (n=188)	74.4	[66.4, 81.0]		88.2	[81.7, 92.7]	
No (n=3,856)	79.5	[77.7, 81.3]		89.6	[88.0, 91.0]	
<b>Arab/Chaldean/Middle Eastern</b>						
Yes (n=204)	82.4	[74.6, 88.2]		90.5	[84.3, 94.4]	
No (n=3,842)	79.0	[77.2, 80.8]		89.5	[87.9, 90.9]	
<b>Health status</b>						
Excellent (n=337)	67.9	[61.3, 73.8]	***	84.7	[78.3, 89.5]	***
Very good (n=1,041)	71.9	[67.9, 75.7]		81.4	[77.5, 84.8]	
Good (n=1,448)	81.3	[78.3, 84.0]		91.7	[89.2, 93.7]	
Fair (n=931)	86.3	[83.3, 88.9]		95.2	[93.0, 96.7]	
Poor (n=324)	90.7	[86.4, 93.8]		98.0	[95.4, 99.1]	
<b>Any chronic disease</b>						
Yes (n=2,986)	85.1	[83.2, 86.8]	***	93.7	[92.2, 94.9]	***
No (n=1,104)	66.2	[62.5, 69.8]		80.3	[76.6, 83.5]	
<b>Urbanicity</b>						
Rural (n=1,198)	82.0	[79.0, 84.7]		92.8	[90.4, 94.6]	***
Urban (n=2,892)	78.6	[76.5, 80.6]		88.8	[87.0, 90.4]	
<b>Employment status<sup>1</sup></b>						
Yes (n=2,079)	77.8	[75.2, 80.2]		89.5	[87.3, 91.3]	
No (n=2,011)	80.7	[78.2, 82.9]		89.6	[87.4, 91.5]	
<b>Married or partnered</b>						
Yes (n=1,193)	81.6	[78.4, 84.5]		91.2	[88.5, 93.4]	
No (n=2,880)	78.5	[76.4, 80.5]		89.0	[87.1, 90.6]	
<b>How often do you need help with reading health materials?</b>						
Never/Rarely (n=3,444)	78.9	[76.9, 80.7]		89.2	[87.5, 90.7]	
Sometimes/Often/Always (n=641)	81.3	[76.8, 85.1]		91.3	[87.2, 94.2]	

<sup>1</sup>No=Out of work, Unable to work, Retired, Student, Homemaker

\*\*\*p<.001 Pearson's chi-squared test

**Table 2.7. Multivariate relationship between primary care visit and improved access to health care services**

	Self-reported primary care visit			Primary care visit in claims data		
	aOR	SE	<i>p</i> -value	aOR	SE	<i>p</i> -value
Improved access to help with staying healthy (n=4,027)	1.82	0.21	<0.001	1.52	0.25	0.012
Improved access to dental care (n=4,027)	1.31	0.15	0.016	0.99	0.16	0.964
Improved access to specialty care (n=4,028)	1.64	0.20	<0.001	1.35	0.24	0.089
Improved access to mental health care (n=4,027)	1.17	0.16	0.250	0.81	0.15	0.257
Improved access to cancer screening (n=4,027)	1.82	0.26	<0.001	1.21	0.25	0.363

Logistic regression models with adjusted odds ratios and linearized standard errors. Each row is a separate model. All models adjusted for age, gender, race, overall health status, presence of chronic disease, and urbanicity.

**Table 2.8. Multivariate relationship between primary care visit and HRA completion, health behavior counseling**

	Self-reported primary care visit			Primary care visit in claims data		
	aOR	SE	<i>p</i> -value	aOR	SE	<i>p</i> -value
Remembered completing an HRA (n=4,030)	1.91	0.22	< .001	1.85	0.32	< .001
Reported being counseled about exercise (n=4,031)	4.52	0.58	< .001	3.50	0.73	< .001
Reported being counseled about nutrition (n=4,030)	4.01	0.50	< .001	3.39	0.67	< .001
Reported being counseled about tobacco cessation (n=1,514)	4.64	0.92	< .001	3.58	1.14	< .001
Reported being counseled about alcohol (n=737)	3.27	1.04	< .001	3.24	1.42	.008
Reported being counseled about drug use (n=176)	1.77	0.88	.252	2.05	1.59	.356
New diagnosis of chronic condition (n=4,031)	1.77	0.28	< .001	2.97	0.82	< .001

Logistic regression models with adjusted odds ratios and linearized standard errors. Each row is a separate model. All models adjusted for age, gender, race, overall health status, presence of chronic disease, and urbanicity.

**Table 2.9a. Multivariate relationship between primary care visit and cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	46.2	[44.1, 48.2]	< .001			
Did not see PCP in past 12 months	31.0	[27.2, 34.9]				
<b>Primary care visit in claims data</b>						< .001
No primary care visit in claims data						
<b>Age</b>						
19-34	33.1	[30.3, 35.8]		33.0	[30.3, 35.7]	
35-50	43.9	[41.1, 46.8]	< .001	43.8	[41.0, 46.6]	< .001
51-64	58.6	[55.4, 61.8]	< .001	57.7	[54.7, 60.8]	< .001
<b>Gender</b>						
Male	15.8	[13.9, 17.7]		15.9	[14.0, 17.8]	
Female	68.4	[65.9, 70.9]	< .001	66.9	[64.5, 69.3]	< .001
<b>Race</b>						
White	43.1	[40.8, 45.3]		43.2	[40.9, 45.4]	
Black or African American	45.6	[42.0, 49.2]	.214	45.7	[42.2, 49.3]	.202
Other	41.1	[35.0, 47.2]	.551	38.9	[32.8, 45.1]	.197
More than one	40.1	[32.3, 47.9]	.467	41.7	[34.0, 49.5]	.715
<b>Hispanic/Latino</b>						
No	43.3	[41.4, 45.3]		43.3	[41.4, 45.3]	
Yes	46.8	[39.9, 53.7]	.330	46.9	[40.0, 53.8]	.312
Don't know	12.8		.007	11.2		.009
<b>Arab/Chaldean/Middle Eastern</b>						
No	43.2	[41.2, 45.1]		43.1	[41.2, 45.1]	
Yes	46.1	[38.4, 53.8]	.477	46.6	[38.9, 54.3]	.389
Don't know	81.8	[60.7, 102.8]	.005	85.2	[72.7, 97.6]	< .001
<b>Health status</b>						
Excellent	45.2	[39.8, 50.7]		44.8	[39.6, 50.1]	
Very good	40.5	[37.3, 43.7]	.119	41.1	[37.9, 44.3]	.196
Good	43.2	[40.5, 45.9]	.489	42.9	[40.2, 45.5]	.493
Fair	45.9	[42.4, 49.3]	.846	45.6	[42.3, 48.9]	.798
Poor	45.0	[39.4, 50.6]	.960	44.9	[39.5, 50.3]	.978
<b>Any chronic disease</b>						
No	41.1	[38.0, 44.2]		41.6	[38.5, 44.7]	
Yes	44.4	[42.2, 46.6]	.069	44.1	[42.0, 46.3]	.157
<b>Urbanicity</b>						
Rural	45.1	[41.9, 48.3]		44.7	[41.5, 47.8]	
Urban	43.0	[40.9, 45.2]	.255	43.1	[41.0, 45.2]	.380

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is cancer screening based on claims data. See Appendix B for full definitions.

**Table 2.9b. Multivariate relationship between primary care visit and breast cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=942)			Primary care visit in claims data <sup>2</sup> (Model n=914)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	75.4	[71.8, 79.1]	< .001			
Did not see PCP in past 12 months	32.8	[21.2, 44.4]				
<b>Primary care visit in claims data<sup>3</sup></b>						-
No primary care visit in claims data						
<b>Age</b>						
19-34						
35-50	75.9	[64.0, 87.8]	-	80.3	[68.8, 91.7]	-
51-64	71.5	[67.7, 75.3]	.505	73.5	[69.7, 77.4]	.314
<b>Gender</b>						
Male						
Female			-			-
<b>Race</b>						
White	70.4	[66.0, 74.8]		73.2	[68.7, 77.6]	
Black or African American	76.6	[69.2, 84.1]	.174	77.7	[68.9, 86.4]	.393
Other	64.4	[44.1, 84.6]	.559	67.2	[46.6, 87.7]	.567
More than one	75.6	[57.8, 93.3]	.598	72.7	[52.0, 93.3]	.964
<b>Hispanic/Latino</b>						
No	71.6	[67.8, 75.4]		74.0	[70.2, 77.7]	
Yes	76.7	[61.3, 92.2]	.550	75.0	[57.1, 92.9]	.913
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	72.2	[68.5, 75.8]		74.4	[70.8, 78.1]	
Yes	62.7	[33.8, 91.5]	.492	61.9	[30.8, 93.0]	.393
Don't know			-			-
<b>Health status</b>						
Excellent	67.1	[52.5, 81.6]		70.6	[51.3, 89.9]	
Very good	68.2	[59.7, 76.8]	.883	68.4	[59.6, 77.1]	.837
Good	75.9	[70.6, 81.2]	.227	77.0	[71.7, 82.4]	.503
Fair	73.1	[66.9, 79.4]	.433	78.0	[71.9, 84.0]	.444
Poor	65.4	[52.9, 77.9]	.867	68.3	[55.4, 81.2]	.846
<b>Any chronic disease</b>						
No	69.8	[60.7, 78.9]		69.0	[58.9, 79.0]	
Yes	72.3	[68.2, 76.3]	.618	75.0	[71.0, 78.9]	.256
<b>Urbanicity</b>						
Rural	74.3	[68.4, 80.1]		74.9	[67.7, 82.0]	
Urban	71.1	[66.7, 75.4]	.380	73.7	[69.4, 78.1]	.793

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup> Dependent variable is breast cancer screening based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to women 50 and older.

<sup>3</sup> Primary care visit predicts breast cancer perfectly (no individuals without a primary care visit had breast cancer screening).

**Table 2.9c. Multivariate relationship between primary care visit and cervical cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=2,375)			Primary care visit in claims data <sup>2</sup> (Model n=2,375)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	56.8	[54.0, 59.6]	< .001			
Did not see PCP in past 12 months	38.3	[31.9, 44.7]				
<b>Primary care visit in claims data</b>				56.6	[54.0, 59.2]	< .001
No primary care visit in claims data				10.3	[4.8, 15.7]	
<b>Age</b>						
19-34	55.8	[51.3, 60.4]		55.9	[51.4, 60.4]	
35-50	57.9	[53.5, 62.3]	.528	57.8	[53.5, 62.1]	.549
51-64	46.4	[42.3, 50.6]	.003	46.6	[42.5, 50.8]	.003
<b>Gender</b>						
Male						
Female			-			-
<b>Race</b>						
White	53.1	[49.9, 56.4]		53.4	[50.2, 56.6]	
Black or African American	59.1	[53.6, 64.7]	.074	58.9	[53.5, 64.4]	.094
Other	49.7	[38.4, 61.0]	.572	46.5	[35.1, 57.9]	.261
More than one	39.8	[26.3, 53.3]	.068	41.4	[28.1, 54.7]	.090
<b>Hispanic/Latino</b>						
No	53.5	[50.8, 56.1]		53.5	[50.9, 56.2]	
Yes	61.1	[49.7, 72.6]	.213	60.0	[48.5, 71.5]	.298
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	53.6	[50.9, 56.2]		53.6	[50.9, 56.2]	
Yes	59.9	[47.4, 72.4]	.348	59.7	[47.3, 72.1]	.360
Don't know			-			-
<b>Health status</b>						
Excellent	59.1	[50.0, 68.1]		58.5	[49.5, 67.4]	
Very good	54.7	[49.6, 59.9]	.408	55.1	[50.1, 60.1]	.512
Good	53.9	[49.8, 58.1]	.322	53.8	[49.8, 57.8]	.355
Fair	53.9	[48.5, 59.2]	.350	53.9	[48.7, 59.2]	.404
Poor	45.0	[35.1, 54.9]	.048	45.4	[35.6, 55.3]	.062
<b>Any chronic disease</b>						
No	54.8	[49.6, 59.9]		55.7	[50.6, 60.8]	
Yes	53.6	[50.4, 56.7]	.710.84	53.2	[50.1, 56.4]	.443
<b>Urbanicity</b>						
Rural	57.3	[52.7, 61.8]		56.5	[51.9, 61.1]	
Urban	53.0	[50.0, 56.0]	.135	53.2	[50.2, 56.2]	.243

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup> Dependent variable is cervical cancer screening (excludes HPV testing) based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to women.

**Table 2.9d. Multivariate relationship between primary care visit and colorectal cancer screening<sup>1</sup>**

Independent variables	Self-reported primary care visit <sup>2</sup> (Model n=1,550)			Primary care visit in claims data <sup>2</sup> (Model n=1,487)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	44.8	[41.5, 48.1]	< .001			
Did not see PCP in past 12 months	16.1	[9.6, 22.6]				
<b>Primary care visit in claims data<sup>3</sup></b>						-
No primary care visit in claims data						
<b>Age</b>						
19-34						
35-50	35.7	[24.4, 46.9]	-	38.5	[26.2, 50.8]	-
51-64	41.7	[38.6, 44.8]	0.314	43.6	[40.4, 46.8]	.44
<b>Gender</b>						
Male	39.1	[34.4, 43.7]		40.3	[35.4, 45.1]	
Female	43.0	[39.2, 46.8]	.190	45.5	[41.5, 49.5]	.102
<b>Race</b>						
White	40.1	[36.5, 43.6]		42.4	[38.7, 46.1]	
Black or African American	45.7	[38.6, 52.8]	.164	46.4	[38.9, 53.8]	.356
Other	41.3	[28.6, 54.1]	.851	42.2	[28.9, 55.5]	.975
More than one	31.5	[15.1, 47.9]	.342	35.7	[18.0, 53.3]	.477
<b>Hispanic/Latino</b>						
No	41.4	[38.4, 44.5]		43.4	[40.2, 46.6]	
Yes	37.9	[23.5, 52.3]	.641	38.9	[23.3, 54.4]	.582
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	41.2	[38.2, 44.2]		43.1	[40.0, 46.2]	
Yes	44.2	[24.8, 63.6]	.762	47.0	[25.9, 68.1]	.719
Don't know			-			-
<b>Health status</b>						
Excellent	20.4	[10.8, 29.9]		22.2	[11.6, 32.8]	
Very good	39.1	[32.7, 45.6]	.004	41.3	[34.4, 48.3]	.008
Good	44.8	[39.9, 49.7]	< .001	46.0	[40.9, 51.1]	.001
Fair	40.5	[34.8, 46.3]	.003	42.5	[36.5, 48.6]	.005
Poor	46.6	[37.6, 55.6]	.001	49.6	[40.2, 58.9]	.001
<b>Any chronic disease</b>						
No	47.9	[39.8, 55.9]		46.7	[38.2, 55.1]	
Yes	40.1	[36.9, 43.4]	.082	42.6	[39.2, 45.9]	.380
<b>Urbanicity</b>						
Rural	44.2	[38.9, 49.5]		45.2	[39.7, 50.7]	
Urban	40.4	[36.9, 43.9]	.236	42.6	[39.0, 46.3]	.446

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup> Dependent variable is colorectal cancer screening based on claims data. See Appendix B for full definitions.

<sup>2</sup> Model restricted to men and women ages 50 and over.

<sup>3</sup> Primary care visit predicts colorectal cancer perfectly (no individuals without a primary care visit had a colorectal cancer screening).

**Table 2.9e. Multivariate relationship between primary care visit and Diabetes Prevention Program<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	1.4	[1.0, 1.9]	.558			
Did not see PCP in past 12 months	1.1	[0.2, 2.0]				
<b>Primary care visit in claims data</b>				1.5	[1.0, 1.9]	.369
No primary care visit in claims data				0.6	[-0.5, 1.7]	
<b>Age</b>						
19-34	0.8	[0.3, 1.4]		0.8	[0.3, 1.4]	
35-50	1.7	[0.9, 2.4]	.071	1.7	[0.9, 2.4]	.085
51-64	1.6	[0.9, 2.3]	.075	1.6	[0.9, 2.3]	.096
<b>Gender</b>						
Male	1.6	[1.0, 2.3]		1.7	[1.0, 2.3]	
Female	1.2	[0.7, 1.6]	.268	1.2	[0.7, 1.6]	.244
<b>Race</b>						
White	1.3	[0.8, 1.7]		1.3	[0.8, 1.7]	
Black or African American	2.2	[0.9, 3.4]	.129	2.2	[0.9, 3.4]	.124
Other	1.1	[-0.2, 2.4]	.811	1.1	[-0.2, 2.4]	.813
More than one	0.4	[-0.4, 1.1]	.227	0.4	[-0.4, 1.1]	.246
<b>Hispanic/Latino</b>						
No	1.3	[0.9, 1.7]		1.3	[0.9, 1.7]	
Yes	3.7	[0.2, 7.1]	.048	3.7	[0.2, 7.1]	.048
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	1.4	[1.0, 1.8]		1.4	[1.0, 1.8]	
Yes	0.8	[-0.9, 2.4]	.579	0.8	[-0.9, 2.4]	.568
Don't know			-			-
<b>Health status</b>						
Excellent	1.0	[-1.0, 2.9]		1.0	[-1.0, 2.9]	
Very good	1.7	[0.7, 2.7]	.607	1.7	[0.7, 2.8]	.572
Good	1.2	[0.6, 1.9]	.813	1.2	[0.6, 1.9]	.807
Fair	1.4	[0.7, 2.1]	.730	1.4	[0.7, 2.1]	.726
Poor	1.5	[0.4, 2.6]	.690	1.5	[0.4, 2.6]	.683
<b>Any chronic disease</b>						
No	0.2	[-0.1, 0.5]		0.2	[-0.1, 0.5]	
Yes	1.8	[1.3, 2.4]	.006	1.8	[1.3, 2.3]	.005
<b>Urbanicity</b>						
Rural	2.1	[1.0, 3.2]		2.1	[1.0, 3.2]	
Urban	1.2	[0.8, 1.7]	.089	1.2	[0.8, 1.7]	.089

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is a claim for a diabetes prevention program. See Appendix B for full definitions.

Table 2.9f. Multivariate relationship between primary care visit and dental care<sup>1</sup>

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	61.2	[59.0, 63.4]	.002			
Did not see PCP in past 12 months	52.7	[48.0, 57.5]				
<b>Primary care visit in claims data</b>				61.3	[59.3, 63.4]	< .001
No primary care visit in claims data				43.1	[35.5, 50.7]	
<b>Age</b>						
19-34	58.0	[54.6, 61.5]		58.2	[54.8, 61.6]	
35-50	61.3	[57.9, 64.7]	.185	61.2	[57.8, 64.6]	.227
51-64	59.1	[56.0, 62.3]	.638	58.9	[55.8, 62.1]	.762
<b>Gender</b>						
Male	56.2	[53.2, 59.3]		56.7	[53.7, 59.7]	
Female	62.4	[59.9, 64.9]	.002	62.0	[59.5, 64.5]	.007
<b>Race</b>						
White	60.6	[58.1, 63.2]		60.4	[57.9, 62.9]	
Black or African American	58.9	[54.5, 63.2]	.493	59.3	[54.9, 63.6]	.659
Other	54.0	[45.8, 62.2]	.134	53.5	[45.1, 62.0]	.130
More than one	55.4	[45.4, 65.4]	.313	57.0	[47.3, 66.7]	.495
<b>Hispanic/Latino</b>						
No	59.6	[57.5, 61.6]		59.6	[57.5, 61.6]	
Yes	58.1	[48.9, 67.4]	.769	57.9	[48.6, 67.2]	.734
Don't know	46.4	[13.3, 79.5]	.435	47.4	[14.6, 80.2]	.465
<b>Arab/Chaldean/Middle Eastern</b>						
No	58.1	[56.0, 60.1]		58.1	[56.0, 60.1]	
Yes	78.6	[71.6, 85.6]	< .001	78.6	[71.6, 85.6]	< .001
Don't know	73.0	[35.4, 110.6]	.491	74.4	[41.4, 107.5]	.401
<b>Health status</b>						
Excellent	67.4	[61.2, 73.6]		67.0	[60.7, 73.4]	
Very good	56.5	[52.3, 60.6]	.005	57.1	[53.0, 61.3]	.011
Good	61.4	[58.1, 64.6]	.108	61.2	[57.9, 64.5]	.121
Fair	58.1	[53.9, 62.3]	.023	57.8	[53.6, 62.0]	.024
Poor	55.1	[47.9, 62.3]	.015	54.9	[47.8, 62.0]	.015
<b>Any chronic disease</b>						
No	59.0	[55.0, 63.0]		59.3	[55.4, 63.3]	
Yes	59.6	[57.2, 62.1]	.798	59.5	[57.0, 61.9]	.964
<b>Urbanicity</b>						
Rural	62.0	[58.4, 65.6]		61.9	[58.3, 65.4]	
Urban	58.8	[56.5, 61.1]	.142	58.8	[56.6, 61.1]	.158

Logistic regression with predicted marginal estimates; independent variables are rows.  
<sup>1</sup>Dependent variable is a claim for dental services. See Appendix B for full definitions.

Table 2.9g. Multivariate relationship between primary care visit and any nutrition services<sup>1</sup>

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	2.3	[1.7, 2.9]	.145			
Did not see PCP in past 12 months	1.2	[0.3, 2.2]				
<b>Primary care visit in claims data</b>				2.2	[1.7, 2.8]	.222
No primary care visit in claims data				0.7	[-0.6, 2.0]	
<b>Age</b>						
19-34	1.5	[0.7, 2.2]		1.4	[0.7, 2.2]	
35-50	2.8	[1.7, 3.9]	.047	2.8	[1.7, 3.9]	.048
51-64	2.0	[1.3, 2.8]	.305	2.1	[1.3, 2.8]	.291
<b>Gender</b>						
Male	2.1	[1.3, 2.9]		2.1	[1.3, 2.9]	
Female	2.2	[1.5, 2.9]	.899	2.2	[1.4, 2.9]	.923
<b>Race</b>						
White	2.0	[1.3, 2.6]		2.0	[1.3, 2.6]	
Black or African American	2.6	[1.3, 4.0]	.367	2.6	[1.3, 3.9]	.369
Other	2.3	[-0.1, 4.7]	.783	2.3	[-0.1, 4.6]	.808
More than one	1.7	[-0.3, 3.7]	.779	1.8	[-0.4, 3.9]	.853
<b>Hispanic/Latino</b>						
No	2.1	[1.6, 2.6]		2.1	[1.6, 2.6]	
Yes	3.0	[0.2, 5.8]	.480	3.0	[0.2, 5.8]	.487
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	2.2	[1.7, 2.8]		2.2	[1.7, 2.8]	
Yes	0.6	[-0.7, 1.8]	.221	0.6	[-0.7, 1.8]	.222
Don't know			-			-
<b>Health status</b>						
Excellent	0.9	[-0.9, 2.8]		0.9	[-0.9, 2.7]	
Very good	2.0	[0.9, 3.1]	.472	2.0	[0.9, 3.1]	.437
Good	1.8	[1.1, 2.6]	.519	1.8	[1.1, 2.5]	.506
Fair	2.6	[1.5, 3.7]	.329	2.6	[1.5, 3.7]	.316
Poor	2.9	[0.6, 5.1]	.310	2.9	[0.6, 5.1]	.296
<b>Any chronic disease</b>						
No	0.4	[-0.1, 0.9]		0.4	[-0.1, 0.9]	
Yes	2.7	[2.0, 3.3]	.002	2.7	[2.0, 3.3]	.002
<b>Urbanicity</b>						
Rural	2.3	[1.3, 3.4]		2.3	[1.3, 3.3]	
Urban	2.1	[1.5, 2.7]	.734	2.1	[1.5, 2.7]	.759

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is a claim for any nutrition services. See Appendix B for full definitions.

**Table 2.9h. Multivariate relationship between primary care visit and HPV testing<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	15.0	[13.6, 16.5]	.005			
Did not see PCP in past 12 months	10.3	[7.6, 12.9]				
<b>Primary care visit in claims data</b>				14.9	[13.6, 16.3]	< .001
No primary care visit in claims data				3.8	[1.2, 6.4]	
<b>Age</b>						
19-34	12.1	[10.1, 14.1]		12.1	[10.1, 14.0]	
35-50	17.5	[15.3, 19.7]	< .001	17.5	[15.3, 19.7]	< .001
51-64	13.6	[11.7, 15.6]	.274	13.7	[11.7, 15.6]	.252
<b>Gender</b>						
Male	0.2	[0.0, 0.4]		0.2	[0.0, 0.4]	
Female	27.3	[25.0, 29.5]	< .001	26.7	[24.5, 28.9]	< .001
<b>Race</b>						
White	13.7	[12.2, 15.2]		13.8	[12.3, 15.3]	
Black or African American	16.3	[13.5, 19.1]	.092	16.3	[13.5, 19.0]	.100
Other	13.5	[8.5, 18.4]	.940	12.7	[8.0, 17.5]	.701
More than one	12.3	[6.4, 18.3]	.677	12.6	[6.7, 18.6]	.727
<b>Hispanic/Latino</b>						
No	14.4	[13.0, 15.7]		14.4	[13.1, 15.7]	
Yes	13.8	[8.6, 18.9]	.826	13.6	[8.4, 18.7]	.774
Don't know	2.6	[-0.8, 6.0]	.004	2.5	[-0.8, 5.8]	.004
<b>Arab/Chaldean/Middle Eastern</b>						
No	14.1	[12.8, 15.4]		14.1	[12.8, 15.4]	
Yes	17.1	[10.3, 23.9]	.379	17.0	[10.4, 23.6]	.337
Don't know	53.4	[45.6, 61.2]	< .001	54.4	[45.2, 63.5]	< .001
<b>Health status</b>						
Excellent	15.9	[11.2, 20.5]		15.6	[11.1, 20.2]	
Very good	12.1	[9.9, 14.3]	.131	12.1	[10.0, 14.3]	.152
Good	15.1	[13.1, 17.1]	.760	15.1	[13.1, 17.0]	.818
Fair	16.1	[13.6, 18.7]	.918	16.2	[13.7, 18.7]	.831
Poor	10.7	[6.6, 14.8]	.105	10.8	[6.6, 14.9]	.125
<b>Any chronic disease</b>						
No	15.4	[12.9, 17.9]		15.7	[13.1, 18.2]	
Yes	13.9	[12.4, 15.3]	.304	13.8	[12.3, 15.2]	.202
<b>Urbanicity</b>						
Rural	12.8	[10.7, 15.0]		12.7	[10.5, 14.9]	
Urban	14.7	[13.2, 16.1]	.165	14.7	[13.2, 16.1]	.131

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is HPV testing based on claims data. See Appendix B for full definitions.

**Table 2.9i. Multivariate relationship between primary care visit and STI testing<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	14.6	[13.0, 16.2]	.038			
Did not see PCP in past 12 months	10.9	[8.1, 13.7]				
<b>Primary care visit in claims data</b>				15.0	[13.5, 16.5]	< .001
No primary care visit in claims data				3.7	[1.7, 5.7]	
<b>Age</b>						
19-34	20.3	[17.5, 23.0]		20.5	[17.7, 23.3]	
35-50	11.6	[9.6, 13.7]	< .001	11.5	[9.5, 13.6]	< .001
51-64	7.6	[5.9, 9.2]	< .001	7.5	[5.9, 9.2]	< .001
<b>Gender</b>						
Male	6.9	[5.3, 8.4]		7.1	[5.6, 8.7]	
Female	20.4	[18.2, 22.6]	< .001	19.7	[17.6, 21.8]	< .001
<b>Race</b>						
White	10.9	[9.2, 12.5]		10.8	[9.2, 12.4]	
Black or African American	21.2	[17.9, 24.5]	< .001	21.5	[18.2, 24.8]	< .001
Other	11.6	[6.1, 17.2]	.798	11.3	[5.9, 16.7]	.869
More than one	13.8	[7.7, 19.8]	.323	14.7	[8.3, 21.2]	.195
<b>Hispanic/Latino</b>						
No	13.9	[12.4, 15.3]		13.9	[12.4, 15.3]	
Yes	14.1	[8.2, 19.9]	.953	13.9	[8.0, 19.7]	1.00
Don't know	4.0	[-2.6, 10.7]	.115	4.1	[-2.7, 10.9]	.122
<b>Arab/Chaldean/Middle Eastern</b>						
No	13.9	[12.4, 15.4]		13.9	[12.4, 15.4]	
Yes	11.8	[5.5, 18.1]	.559	11.7	[5.5, 17.9]	.530
Don't know	51.3	[11.8, 90.8]	.024	53.1	[13.4, 92.7]	.021
<b>Health status</b>						
Excellent	15.4	[10.9, 19.9]		15.0	[10.7, 19.4]	
Very good	13.6	[10.8, 16.4]	.480	14.0	[11.2, 16.9]	.690
Good	12.7	[10.6, 14.7]	.257	12.6	[10.5, 14.7]	.305
Fair	15.1	[12.2, 18.1]	.914	14.9	[12.0, 17.8]	.948
Poor	14.3	[8.8, 19.9]	.776	14.1	[8.7, 19.6]	.806
<b>Any chronic disease</b>						
No	11.2	[9.1, 13.4]		11.6	[9.4, 13.8]	
Yes	15.1	[13.2, 17.0]	.013	14.9	[13.1, 16.7]	.030
<b>Urbanicity</b>						
Rural	8.9	[6.7, 11.1]		8.9	[6.7, 11.0]	
Urban	14.8	[13.2, 16.4]	< .001	14.8	[13.2, 16.5]	< .001

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is STI testing based on claims data. See Appendix B for full definitions.

**Table 2.9j. Multivariate relationship between primary care visit and prescribed HMG CoA Reductase inhibitor<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	19.6	[18.0, 21.1]	< .001			
Did not see PCP in past 12 months	7.2	[4.6, 9.8]				
<b>Primary care visit in claims data</b>				18.8	[17.3, 20.3]	.001
No primary care visit in claims data				2.2	[-1.0, 5.4]	
<b>Age</b>						
19-34	2.8	[1.8, 3.8]		2.8	[1.8, 3.7]	
35-50	20.3	[17.7, 22.8]	< .001	20.3	[17.7, 22.8]	< .001
51-64	31.2	[28.4, 34.0]	< .001	31.4	[28.6, 34.2]	< .001
<b>Gender</b>						
Male	21.4	[19.2, 23.6]		21.4	[19.2, 23.5]	
Female	15.0	[13.4, 16.5]	< .001	15.0	[13.4, 16.6]	< .001
<b>Race</b>						
White	17.7	[16.1, 19.4]		17.8	[16.1, 19.4]	
Black or African American	19.0	[15.9, 22.1]	.455	18.8	[15.7, 21.9]	.543
Other	16.9	[12.1, 21.7]	.749	16.6	[11.9, 21.3]	.642
More than one	16.0	[10.0, 21.9]	.585	17.3	[10.2, 24.4]	.894
<b>Hispanic/Latino</b>						
No	17.8	[16.4, 19.2]		17.8	[16.4, 19.3]	
Yes	18.4	[12.3, 24.4]	.865	17.9	[12.1, 23.8]	.973
Don't know	51.0	[23.7, 78.2]	.581	53.6	[26.0, 81.2]	.012
<b>Arab/Chaldean/Middle Eastern</b>						
No	17.6	[16.2, 19.1]		17.6	[16.2, 19.0]	
Yes	25.3	[18.1, 32.5]	.027	25.7	[18.7, 32.8]	.017
Don't know	10.5	[-10.6, 31.5]	.581	10.0	[-11.2, 31.1]	.566
<b>Health status</b>						
Excellent	13.7	[7.3, 20.1]		13.4	[7.1, 19.6]	
Very good	13.6	[10.6, 16.5]	.974	14.0	[10.9, 17.1]	.852
Good	15.5	[13.5, 17.5]	.604	15.3	[13.3, 17.2]	.579
Fair	23.5	[20.9, 26.1]	.015	23.5	[20.9, 26.1]	.011
Poor	21.0	[17.1, 25.0]	.077	21.2	[17.2, 25.1]	.056
<b>Any chronic disease</b>						
No	6.5	[4.4, 8.7]		6.3	[4.2, 8.3]	
Yes	20.6	[18.9, 22.3]	< .001	20.7	[19.0, 22.4]	< .001
<b>Urbanicity</b>						
Rural	17.5	[15.2, 19.7]		17.2	[15.0, 19.5]	
Urban	18.1	[16.5, 19.6]	.647	18.1	[16.5, 19.7]	.497

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is Prescribed HMG CoA Reductase inhibitor based on claims data. See Appendix B for full definitions.

**Table 2.9k. Multivariate relationship between primary care visit and nicotine replacement and/or Varenicline prescription<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,012)			Primary care visit in claims data (Model n=4,012)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	12.2	[10.9, 13.6]	.001			
Did not see PCP in past 12 months	6.7	[4.5, 9.0]				
<b>Primary care visit in claims data</b>				12.1	[10.9, 13.4]	< .001
No primary care visit in claims data				1.0	[-0.1, 2.0]	
<b>Age</b>						
19-34	7.9	[6.0, 9.8]		7.9	[6.0, 9.8]	
35-50	12.5	[10.3, 14.6]	.002	12.4	[10.3, 14.5]	.003
51-64	14.0	[12.0, 16.0]	< .001	13.9	[11.9, 15.9]	< .001
<b>Gender</b>						
Male	11.3	[9.5, 13.0]		11.4	[9.6, 13.1]	
Female	11.4	[9.9, 12.9]	.900	11.3	[9.8, 12.8]	.979
<b>Race</b>						
White	12.5	[11.0, 14.1]		12.5	[10.9, 14.0]	
Black or African American	9.1	[6.8, 11.4]	.027	9.2	[6.8, 11.5]	.036
Other	10.3	[4.4, 16.2]	.511	10.1	[4.4, 15.8]	.474
More than one	7.9	[2.7, 13.1]	.167	8.5	[3.0, 14.1]	.252
<b>Hispanic/Latino</b>						
No	11.4	[10.2, 12.7]		11.5	[10.2, 12.7]	
Yes	9.3	[3.9, 14.8]	.497	9.3	[3.9, 14.6]	.477
Don't know			-			-
<b>Arab/Chaldean/Middle Eastern</b>						
No	11.6	[10.4, 12.9]		11.6	[10.4, 12.9]	
Yes	5.8	[0.4, 11.1]	.130	5.8	[0.5, 11.1]	.129
Don't know			-			-
<b>Health status</b>						
Excellent	6.8	[3.2, 10.5]		6.7	[3.1, 10.2]	
Very good	8.6	[6.2, 11.1]	.420	8.9	[6.4, 11.5]	.319
Good	10.7	[9.0, 12.5]	.111	10.6	[8.9, 12.4]	.100
Fair	13.0	[10.4, 15.6]	.027	12.9	[10.4, 15.5]	.024
Poor	19.3	[14.2, 24.5]	.001	19.1	[14.1, 24.1]	< .001
<b>Any chronic disease</b>						
No	8.5	[5.7, 11.4]		8.7	[5.9, 11.6]	
Yes	12.1	[10.7, 13.6]	.058	12.0	[10.6, 13.5]	.077
<b>Urbanicity</b>						
Rural	12.0	[9.9, 14.2]		12.0	[9.9, 14.0]	
Urban	11.2	[9.8, 12.5]	.481	11.2	[9.8, 12.6]	.541

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is Nicotine replacement and/or Varenicline prescription based on claims data. See Appendix B for full definitions.

**Table 2.91. Multivariate relationship between primary care visit and vaccines (any)<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	47.2	[45.0, 49.4]	< .001			
Did not see PCP in past 12 months	30.8	[26.3, 35.3]				
<b>Primary care visit in claims data</b>				46.7	[44.6, 48.8]	< .001
No primary care visit in claims data				17.8	[11.8, 23.8]	
<b>Age</b>						
19-34	39.7	[36.3, 43.1]		39.8	[36.4, 43.2]	
35-50	44.9	[41.6, 48.3]	.031	44.8	[41.5, 48.1]	.038
51-64	49.0	[45.7, 52.2]	< .001	48.8	[45.6, 52.0]	< .001
<b>Gender</b>						
Male	43.4	[40.4, 46.4]		43.8	[40.8, 46.8]	
Female	44.5	[42.0, 47.0]	.576	44.1	[41.6, 46.5]	.899
<b>Race</b>						
White	45.0	[42.5, 47.5]		44.8	[42.3, 47.2]	
Black or African American	39.6	[35.3, 43.8]	.034	40.0	[35.7, 44.2]	.059
Other	49.8	[42.1, 57.5]	.250	49.0	[41.5, 56.5]	.303
More than one	43.7	[33.9, 53.5]	.802	46.3	[36.5, 56.1]	.764
<b>Hispanic/Latino</b>						
No	44.0	[42.0, 46.0]		44.0	[42.0, 46.0]	
Yes	42.9	[34.0, 51.7]	.810	42.5	[33.7, 51.3]	.744
Don't know	48.7	[14.6, 82.8]	.787	51.6	[18.2, 85.1]	.656
<b>Arab/Chaldean/Middle Eastern</b>						
No	43.9	[41.9, 46.0]		43.9	[41.9, 46.0]	
Yes	42.7	[34.0, 51.3]	.782	43.0	[34.3, 51.8]	.847
Don't know	89.8	[67.6, 112.1]	.047	92.1	[71.9, 112.3]	.052
<b>Health status</b>						
Excellent	37.3	[30.7, 43.8]		36.7	[30.2, 43.2]	
Very good	41.5	[37.4, 45.6]	.276	42.4	[38.3, 46.5]	.141
Good	42.4	[39.2, 45.6]	.173	42.1	[39.0, 45.3]	.151
Fair	49.6	[45.5, 53.8]	.003	49.2	[45.2, 53.3]	.002
Poor	50.1	[43.1, 57.1]	.010	49.7	[42.9, 56.6]	.009
<b>Any chronic disease</b>						
No	38.9	[35.0, 42.9]		39.1	[35.1, 43.0]	
Yes	46.0	[43.6, 48.5]	.005	45.9	[43.5, 48.4]	.005
<b>Urbanicity</b>						
Rural	43.4	[39.8, 47.0]		43.2	[39.6, 46.8]	
Urban	44.1	[41.8, 46.3]	.762	44.1	[41.9, 46.4]	.670

Logistic regression with predicted marginal estimates; independent variables are rows.  
<sup>1</sup>Dependent variable is a claim for any vaccination. See Appendix B for full definitions.

**Table 2.9m. Multivariate relationship between primary care visit and Influenza vaccine<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	35.2	[33.1, 37.3]	< .001			
Did not see PCP in past 12 months	20.4	[16.6, 24.3]				
<b>Primary care visit in claims data</b>				34.8	[32.8, 36.7]	< .001
No primary care visit in claims data				7.6	[4.1, 11.1]	
<b>Age</b>						
19-34	27.7	[24.6, 30.9]		27.8	[24.7, 31.0]	
35-50	32.8	[29.7, 35.9]	.023	32.7	[29.7, 35.7]	.028
51-64	38.6	[35.7, 41.6]	< .001	38.5	[35.5, 41.4]	< .001
<b>Gender</b>						
Male	31.1	[28.4, 33.8]		31.4	[28.7, 34.2]	
Female	33.7	[31.4, 36.1]	.143	33.4	[31.1, 35.7]	.268
<b>Race</b>						
White	33.3	[31.1, 35.6]		33.2	[30.9, 35.4]	
Black or African American	28.3	[24.5, 32.1]	.029	28.5	[24.8, 32.3]	.044
Other	41.0	[33.6, 48.5]	.048	40.3	[33.0, 47.5]	.063
More than one	28.8	[20.2, 37.5]	.337	30.8	[21.9, 39.7]	.619
<b>Hispanic/Latino</b>						
No	32.6	[30.7, 34.5]		32.6	[30.7, 34.5]	
Yes	31.1	[23.3, 39.0]	.724	30.8	[23.0, 38.6]	.670
Don't know	28.6	[-6.3, 63.5]	.830	30.2	[-8.1, 68.4]	.903
<b>Arab/Chaldean/Middle Eastern</b>						
No	32.4	[30.6, 34.3]		32.4	[30.5, 34.3]	
Yes	31.9	[24.1, 39.7]	.896	32.1	[24.3, 40.0]	.946
Don't know	82.8	[54.5, 111.2]	.021	87.0	[58.0, 115.9]	.049
<b>Health status</b>						
Excellent	23.0	[17.4, 28.6]		22.6	[17.1, 28.2]	
Very good	27.2	[23.6, 30.8]	.213	27.9	[24.2, 31.6]	.123
Good	32.8	[29.9, 35.8]	.005	32.5	[29.6, 35.5]	.004
Fair	38.7	[34.9, 42.6]	< .001	38.3	[34.5, 42.1]	< .001
Poor	39.0	[32.4, 45.7]	.001	38.7	[32.2, 45.2]	< .001
<b>Any chronic disease</b>						
No	25.9	[22.4, 29.5]		26.0	[22.5, 29.6]	
Yes	34.9	[32.6, 37.2]	< .001	34.8	[32.6, 37.1]	< .001
<b>Urbanicity</b>						
Rural	33.5	[30.2, 36.8]		33.3	[30.0, 36.5]	
Urban	32.3	[30.2, 34.4]	.536	32.3	[30.2, 34.4]	.620

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is receipt of influenza vaccination based on claims data. See Appendix B for full definitions.

**Table 2.9n. Multivariate relationship between primary care visit and Pneumonia vaccine<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,019)			Primary care visit in claims data (Model n=4,019)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	6.6	[5.5, 7.7]	.147			
Did not see PCP in past 12 months	4.6	[2.5, 6.7]				
<b>Primary care visit in claims data</b>				6.5	[5.5, 7.5]	.094
No primary care visit in claims data				2.6	[-0.2, 5.4]	
<b>Age</b>						
19-34	2.3	[1.1, 3.5]		2.3	[1.2, 3.5]	
35-50	7.1	[5.3, 9.0]	< .001	7.1	[5.3, 9.0]	< .001
51-64	9.6	[7.8, 11.3]	< .001	9.5	[7.8, 11.3]	< .001
<b>Gender</b>						
Male	7.4	[5.7, 9.1]		7.4	[5.7, 9.1]	
Female	5.3	[4.3, 6.3]	.024	5.3	[4.3, 6.3]	.021
<b>Race</b>						
White	6.3	[5.1, 7.5]		6.3	[5.1, 7.5]	
Black or African American	6.8	[4.5, 9.2]	.696	6.9	[4.5, 9.2]	.672
Other	5.4	[2.4, 8.3]	.574	5.3	[2.4, 8.2]	.553
More than one	2.8	[0.5, 5.1]	.051	2.9	[0.5, 5.3]	.069
<b>Hispanic/Latino</b>						
No	6.3	[5.3, 7.2]		6.3	[5.3, 7.2]	
Yes	6.2	[2.7, 9.7]	.987	6.2	[2.7, 9.7]	.980
Don't know	16.6	[-5.3, 38.5]	.197	17.2	[-5.4, 39.8]	.182
<b>Arab/Chaldean/Middle Eastern</b>						
No	6.4	[5.4, 7.4]		6.4	[5.4, 7.4]	
Yes	2.0	[0.0, 3.9]	.016	2.0	[0.0, 3.9]	.016
Don't know			-			-
<b>Health status</b>						
Excellent	3.1	[0.9, 5.4]		3.1	[0.9, 5.2]	
Very good	5.2	[3.0, 7.5]	.190	5.4	[3.0, 7.7]	.155
Good	5.2	[3.7, 6.6]	.211	5.1	[3.7, 6.6]	.198
Fair	8.6	[6.5, 10.7]	.008	8.6	[6.5, 10.6]	.007
Poor	7.6	[4.4, 10.8]	.042	7.6	[4.4, 10.8]	.036
<b>Any chronic disease</b>						
No	3.3	[1.4, 5.2]		3.3	[1.4, 5.2]	
Yes	7.0	[5.8, 8.2]	.014	7.0	[5.8, 8.2]	.016
<b>Urbanicity</b>						
Rural	7.2	[5.5, 8.8]		7.1	[5.5, 8.8]	
Urban	6.0	[4.9, 7.2]	.253	6.0	[4.9, 7.2]	.275

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup>Dependent variable is receipt of pneumonia vaccine based on claims data. See Appendix B for full definitions.

**Table 2.9o. Multivariate relationship between primary care visit and other vaccines<sup>1</sup>**

Independent variables	Self-reported primary care visit (Model n=4,026)			Primary care visit in claims data (Model n=4,026)		
	Marginal Estimate (%)	95% CI	p-value	Marginal Estimate (%)	95% CI	p-value
<b>Saw PCP in past 12 months</b>	20.8	[19.0, 22.6]	.092			
Did not see PCP in past 12 months	17.0	[13.3, 20.7]				
<b>Primary care visit in claims data</b>				21.3	[19.5, 23.0]	< .001
No primary care visit in claims data				9.7	[5.3, 14.1]	
<b>Age</b>						
19-34	20.8	[17.9, 23.7]		21.0	[18.1, 23.9]	
35-50	19.5	[16.7, 22.2]	.511	19.4	[16.7, 22.1]	.418
51-64	19.5	[16.9, 22.0]	.510	19.3	[16.8, 21.8]	.379
<b>Gender</b>						
Male	20.1	[17.5, 22.6]		20.4	[17.9, 23.0]	
Female	19.9	[17.9, 21.9]	.940	19.6	[17.6, 21.6]	.612
<b>Race</b>						
White	20.5	[18.4, 22.6]		20.3	[18.3, 22.4]	
Black or African American	18.0	[14.6, 21.4]	.224	18.3	[14.8, 21.7]	.328
Other	22.3	[15.6, 29.0]	.630	22.0	[15.4, 28.6]	.634
More than one	20.1	[12.1, 28.2]	.924	21.4	[12.9, 29.8]	.816
<b>Hispanic/Latino</b>						
No	19.9	[18.3, 21.6]		19.9	[18.3, 21.6]	
Yes	21.2	[13.2, 29.2]	.759	21.1	[13.1, 29.1]	.776
Don't know	15.6	[-5.0, 36.3]	.712	16.3	[-5.3, 37.9]	.760
<b>Arab/Chaldean/Middle Eastern</b>						
No	20.2	[18.5, 21.9]		20.2	[18.5, 21.9]	
Yes	16.4	[9.8, 23.1]	.318	16.3	[9.7, 22.9]	.297
Don't know	32.4	[-11.4, 76.2]	.533	34.2	[-17.1, 85.5]	.538
<b>Health status</b>						
Excellent	20.7	[15.3, 26.1]		20.6	[15.2, 26.0]	
Very good	20.9	[17.4, 24.5]	.948	21.5	[17.9, 25.1]	.780
Good	19.1	[16.6, 21.6]	.586	19.0	[16.5, 21.5]	.587
Fair	19.8	[16.4, 23.1]	.769	19.5	[16.2, 22.8]	.737
Poor	20.4	[14.5, 26.4]	.943	20.2	[14.3, 26.0]	.919
<b>Any chronic disease</b>						
No	19.8	[16.5, 23.1]		20.1	[16.9, 23.4]	
Yes	20.1	[18.0, 22.2]	.883	19.9	[17.9, 22.0]	.916
<b>Urbanicity</b>						
Rural	19.9	[17.0, 22.8]		19.9	[17.0, 22.8]	
Urban	20.0	[18.1, 21.9]	.960	20.0	[18.2, 21.9]	.929

Logistic regression with predicted marginal estimates; independent variables are rows.

<sup>1</sup> Dependent variable is receipt of other vaccines based on claims data. See Appendix B for full definitions.

### Section 3: Health risk assessment completion

**Table 3.1. Bivariate association between self-reported HRA completion and Data Warehouse records for HMV respondents**

<b>Of those who self-reported....</b>	<b>Any HRA record<sup>1</sup></b>	<b>Completed HRA<sup>2</sup></b>
That they did not complete the HRA	46.7	18.8
That they did complete the HRA	68.3	44.1
All	57.3	31.3

Weighted proportions

<sup>1</sup> Data warehouse record of HRA being started. See Appendix B for full definition.

<sup>2</sup> Data warehouse record for a completed HRA.

**Table 3.2. Bivariate and multivariate demographic predictors of Data Warehouse record of completed HRA**

Independent variables	HRA Completion--Attestation Date in DW				
	Weighted proportion (%)	95% CI	<i>p</i> -value <sup>1</sup>	Adjusted OR	<i>p</i> -value <sup>2</sup>
<b>Age</b>			< .001		
19-34 (n=1,303)	25.6	[22.8, 28.5]		[ref]	
35-50 (n=1,301)	31.0	[28.0, 34.2]		1.20	.105
51-64 (n=1,486)	40.5	[37.5, 43.6]		1.68	< .001
<b>Gender</b>			.203		
Male (n=1,681)	30.1	[27.6, 32.8]		[ref]	
Female (n=2,409)	32.4	[30.1, 34.8]		0.98	0.796
<b>Race</b>			<.001		
White (n=2,784)	34.5	[32.3, 36.8]		[ref]	
Black or African American (n=807)	27.5	[24.0, 31.3]		0.75	.015
Other (n=306)	21.0	[16.3, 26.7]		0.60	.022
More than one (n=142)	28.2	[20.4, 37.6]		0.86	.492
<b>Ethnicity<sup>3</sup></b>					
Hispanic/Latino (n=188)	24.4	[18.2, 31.9]	.066	0.84	.455
Arab/Chaldean/Middle Eastern (n=204)	24.9	[18.6, 32.6]	.09	0.90	.679
<b>Income, % of federal poverty level</b>			.264		
0-35% (n=1,600)	32.3	[29.6, 35.2]		[ref]	
36-99% (n=1,450)	29.3	[26.6, 32.0]		0.84	.068
≥ 100% (n=1,040)	31.7	[28.6, 35.0]		0.94	.595
<b>Urbanicity</b>			.26		
Rural (n=1,198)	33.0	[30.0, 36.2]		[ref]	
Urban (n=2,892)	30.9	[28.9, 33.0]		1.07	.492
<b>Preferred language</b>			.097		
English (n=4,008)	31.5	[29.8, 33.3]		[ref]	
Arabic (n=59)	20.5	[12.0, 32.9]		0.91	.827
Spanish (n=21)	19.6	[7.8, 41.2]		1.36	.631
<b>PCP visit</b>			< .001		
Did not see PCP in past 12 months (n=704)	12.6	[10.0, 15.8]		[ref]	
Saw PCP in past 12 months (n=3,386)	36.2	[34.2, 38.3]		3.61	< .001

Weighted bivariate proportions and logistic regression model with adjusted odds ratio of associations between demographic characteristics and HRA completion.

<sup>1</sup> Pearson's chi-squared test

<sup>2</sup> Logistic regression with adjusted odds ratios

<sup>3</sup> Odds ratios for ethnic groups are calculated using dummy variables, with everyone not included in the ethnic group as reference.

**Table 3.3 Bivariate and multivariate demographic predictors of self-reported HRA completion**

Independent variables	Self-reported HRA completion				
	% Yes	95% CI	<i>p</i> -value <sup>1</sup>	Adjusted OR	<i>p</i> -value <sup>2</sup>
<b>Age</b>			.188		
19-34 (n=1,303)	47.3	[43.9, 50.7]		[ref]	
35-50 (n=1,301)	49.7	[46.3, 53.1]		1.01	.924
51-64 (n=1,486)	51.7	[48.6, 54.8]		1.02	.849
<b>Gender</b>			.034		
Male (n=1,681)	47.1	[44.0, 50.1]		[ref]	
Female (n=2,409)	51.4	[48.8, 53.9]		1.06	.517
<b>Race</b>			< .001		
White (n=2,784)	53.0	[50.6, 55.4]		[ref]	
Black or African American (n=807)	47.5	[43.2, 51.9]		0.84	.110
Other (n=306)	28.0	[22.5, 34.2]		0.57	.004
More than one (n=142)	50.8	[40.7, 60.8]		1.10	.657
<b>Ethnicity<sup>3</sup></b>					
Hispanic/Latino (n=188)	39.6	[31.5, 48.4]	.026	0.82	.355
Arab/Chaldean/Middle Eastern (n=204)	27.5	[20.8, 35.4]	< .001	0.61	.027
<b>Income, % of federal poverty level</b>			.185		
0-35% (n=1,600)	49.7	[46.6, 52.8]		[ref]	
36-99% (n=1,450)	46.9	[43.8, 50.0]		0.92	.405
≥ 100% (n=1,040)	51.6	[48.1, 55.1]		1.08	.447
<b>Urbanicity</b>			.007		
Rural (n=1,198)	53.9	[50.5, 57.3]		[ref]	
Urban (n=2,892)	48.2	[45.9, 50.5]		0.93	.427
<b>Preferred language</b>			< .001		
English (n=4,008)	50.1	[48.1, 52.1]		[ref]	
Arabic (n=59)	2.2	[0.5, 8.4]		0.05	< .001
Spanish (n=21)	17.9	[5.3, 46.1]		0.51	.372
<b>PCP visit</b>			< .001		
Did not see PCP in past 12 months (n=704)	36.2	[31.7, 41.1]		[ref]	
Saw PCP in past 12 months (n=3,386)	52.7	[50.5, 54.8]		1.89	< .001

Weighted bivariate proportions and logistic regression model with adjusted odds ratio of associations between demographic characteristics and self-reported HRA completion.

<sup>1</sup> Pearson's chi-squared test

<sup>2</sup> Logistic regression with adjusted odds ratios

<sup>3</sup> Odds ratios for ethnic groups are calculated using dummy variables, with everyone not included in the ethnic group as reference.

## Section 4: Health behaviors

**Table 4.1. Bivariate relationship between frequency of social connections and health behaviors**

	How often do you get together socially with friends or relatives who live outside your home?					<i>p</i> -value <sup>1</sup>
	Every day (Column %)	Every few days (Column %)	Every week (Column %)	Every month (Column %)	Once a year or less (Column %)	
<b>In the last 7 days, how many days did you exercise for at least 20 minutes?</b>						< .001
Every day	43.2	34.5	28.3	26.4	33.4	
3-6 days	30.4	36.6	36.4	30.0	31.3	
1-2 days	12.6	14.7	16.8	20.3	12.6	
0 days	13.8	14.2	18.5	23.4	22.7	
<b>In the last 7 days, on how many days did you have 5 or more alcoholic drinks (males) or 4 or more alcoholic drinks (females)?</b>						.006
Every day	2.7	0.9	0.9	0.8	0.7	
3-6 days	5.6	4.1	3.5	3.1	4.9	
1-2 days	12.5	16.6	17.4	11.0	11.6	
0 days	79.2	78.5	78.3	85.2	82.8	

Weighted proportions of the association between social connectedness and health behaviors.

<sup>1</sup> Pearson's chi-squared test

**Table 4.2. Bivariate relationship between change in frequency of social connections and health behaviors**

	<b>Since enrolling in the Healthy Michigan Plan are you involved with your family, friends or community more, less, or about the same?</b>			
	More (Column %)	Less (Column %)	About the same (Column %)	<i>p</i> -value <sup>1</sup>
<b>In the last 7 days, how many days did you exercise for at least 20 minutes?</b>				.002
Every day	32.1	25.5	32.5	
3-6 days	36.4	22.3	33.9	
1-2 days	15.5	19.0	15.9	
0 days	16.0	33.1	17.8	
<b>In the last 7 days, on how many days did you have 5 or more alcoholic drinks (males) or 4 or more alcoholic drinks (females)?</b>				NS
Every day	1.3	-	1.1	
3-6 days	2.6	4.8	4.3	
1-2 days	13.6	14.8	14.7	
0 days	82.8	80.4	79.9	

Weighted proportions of the association between social connectedness and health behaviors.

<sup>1</sup> Pearson's chi-squared test

## Section 5: Emergency department utilization

**Table 5.1a. Multivariate analysis of individual and community factors' relationship to any emergency department utilization**

Independent variables	Self-reported ER visit past 12 months (Yes/no)			Any ER visit past 12 months <sup>1</sup>		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Age (continuous)</b>	.97	[0.96, 0.98]	< .001	.97	[0.96, 0.97]	< .001
<b>Female</b>	1.24	[1.03, 1.49]	.026	1.34	[1.11, 1.61]	.002
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.19	[0.93, 1.52]	.166	1.27	[1.00, 1.62]	.057
Other	.93	[0.65, 1.34]	.712	1.09	[0.77, 1.54]	.638
More than one	1.23	[0.77, 1.97]	.382	1.32	[0.83, 2.09]	.243
<b>Ethnicity</b>						
Hispanic/Latino	1.20	[0.77, 1.86]	.431	1.29	[0.84, 1.98]	.243
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	.92	[0.74, 1.15]	.472	.74	[0.60, .91]	.005
≥ 100%	.98	[0.77, 1.24]	.855	.86	[0.69, 1.08]	.201
<b>Employed</b>	.84	[0.68, 1.04]	.107	.98	[0.80, 1.20]	.879
<b>Health and Healthcare</b>						
≥2 Chronic disease <sup>2</sup>	1.71	[1.38, 2.14]	<.001	1.79	[1.44, 2.23]	< .001
Any MHSA diagnosis <sup>2</sup>	1.71	[1.38, 2.14]	< .001	1.93	[1.58, 2.37]	< .001
Fair/poor health status	1.46	[1.19, 1.80]	< .001	1.16	[0.94, 1.44]	.154
Experienced discrimination race/ethnicity	1.62	[0.93, 2.83]	.089	1.14	[0.60, 2.17]	.684
Experienced discrimination insurance/payment	1.55	[1.18, 2.05]	.002	1.39	[1.06, 1.83]	.019
RSOC=doctor office or clinic	.84	[0.63, 1.12]	.236	.73	[0.55, 0.96]	.024
MHSA visits (continuous) <sup>2</sup>	1.00	[1.00, 1.00]	.076	1.00	[1.00, 1.00]	.184
Total outpatient visits (including primary care) (continuous) <sup>2</sup>	1.05	[1.03, 1.08]	< .001	1.07	[1.05, 1.10]	< .001
<b>Improved access to...</b>						
Primary care	1.08	[0.85, 1.36]	.545	1.02	[0.82, 1.27]	.865
Prescription	1.00	[0.80, 1.23]	.920	1.01	[0.81, 1.25]	.942
MH	.95	[0.74, 1.21]	.681	1.04	[0.83, 1.32]	.719
SUD treatment	1.32	[0.94, 1.86]	.113	1.03	[0.72, 1.45]	.887
Specialty care	1.08	[0.86, 1.34]	.515	1.11	[0.90, 1.38]	.33
<b>Community factors</b>						
% uninsured <sup>3</sup>	1.03	[1.00, 1.06]	.034	1.00	[0.97, 1.03]	.930
% college educated <sup>3</sup>	1.00	[0.98, 1.00]	.047	.98	[0.97, .99]	.001
Ratio of PCP <sup>4</sup>	1.00	[1.00, 1.00]	.888	1.00	[1.00, 1.00]	.359
<b>Constant</b>	.61	[0.31, 1.21]	.161	1.35	[0.67, 2.72]	.400

Abbreviations: MHSA mental health/substance abuse diagnosis; RSOC regular source of care; SUD substance use disorder  
 Logistic regression with adjusted odds ratios and 95% confidence intervals. If no reference group is listed, and the independent variable is not marked "continuous," variable is dichotomous.

<sup>1</sup> Any ER visit based on claims for emergency department services. See Appendix B.

<sup>2</sup> Variable is based on Data Warehouse/claims data. See Appendix B.

<sup>3</sup> Community factor is obtained from US Census data/ACS, and is grouped at the ZIP code level. See Appendix B.

<sup>4</sup> Community factor is from Robert Wood Johnson, and grouped at the county level. See Appendix B.

**Table 5.1b. Multivariate analysis of individual and community factors' relationship to number and complexity of emergency department visits**

Independent variables	# ER visits past 12 months <sup>1</sup>			# High complexity ER visits past 12 months <sup>1</sup>			# Low-medium complexity ER visits past 12 months <sup>1</sup>		
	Coef	95% CI	p-value	Coef	95% CI	p-value	Coef	95% CI	p-value
Age	-.04	[-0.04, -0.03]	< .001	-.04	[-0.04, -0.03]	< .001	-.04	[-0.05, -0.02]	< .001
Female	.33	[0.18, .49]	< .001	.33	[0.16, 0.50]	< .001	.36	[0.13, 0.58]	.002
<b>Race</b>									
White	Reference			Reference			Reference		
Black or African American	.16	[-0.03, 0.34]	.097	.15	[-0.06, 0.37]	.157	.18	[-0.09, 0.44]	.197
Other	-.18	[-0.44, 0.08]	.170	-.21	[-0.06, 0.37]	.190	-.13	[-0.53, 0.28]	.541
More than one	-.03	[-0.41, 0.36]	.896	.02	[-0.30, 0.34]	.917	-.10	[-0.75, 0.55]	.763
<b>Ethnicity</b>									
Hispanic/Latino	-.03	[-0.32, 0.27]	.860	.04	[-0.27, 0.36]	.771	-.14	[-0.61, 0.33]	.564
<b>Income, % of federal poverty level</b>									
0-35%	Reference			Reference			Reference		
36-99%	-.17	[-0.34, 0.00]	.054	-.25	[-0.45, -0.06]	.012	.001	[-0.25, 0.25]	.991
≥ 100%	-.22	[-0.38, -0.05]	.013	-.20	[-0.40, -0.00]	.045	-.25	[-0.51, 0.01]	.061
Employed	-.01	[-0.17, 0.16]	.939	-.04	[-0.24, 0.17]	.045	.05	[-0.19, 0.28]	.687
<b>Health and Healthcare</b>									
≥2 Chronic disease <sup>2</sup>	.61	[0.43, 0.80]	< .001	.70	[0.50, 0.89]	< .001	.50	{0.23, 0.77}	< .001
Any MH/SA diagnosis <sup>2</sup>	0.53	[0.38, 0.69]	< .001	.54	[0.37, 0.71]	< .001	.54	[0.30, 0.77]	< .001
Fair/poor health status	.17	[0.00, 0.33]	.044	.24	[0.05, 0.42]	.013	.009	[-0.22, 0.24]	.942
Experienced discrimination race/ethnicity	-.02	[-0.43, 0.40]	.933	.03	[-0.35, 0.40]	.897	-.11	[-0.78, 0.57]	.757
Experienced discrimination insurance/payment	.29	[0.07, 0.51]	.009	.23	[0.00, 0.46]	.047	0.42	[0.09, 0.75]	.014
RSOC=doctor office or clinic	-.30	[-0.54, -0.07]	.011	-.24	[-0.50, 0.02]	.070	-.37	[-0.71, -0.03]	.033
#MHSA visits <sup>2</sup>	.002	[-0.00, 0.00]	.083	.001	[-0.00, 0.00]	.142	.001	[-0.00, 0.00]	.269
#TOTAL outpatient visits (including Primary care) <sup>2</sup>	.03	[0.02, 0.05]	< .001	.04	[0.03, 0.06]	< .001	.01	[-0.01, 0.03]	.236
<b>Improved access to...</b>									
Primary care	-.07	[-0.25, 0.10]	.412	-.09	[-0.30, 0.13]	.426	-.04	[-0.30, 0.23]	.781
Prescription	.12	[-0.06, 0.30]	.176	.22	[0.02, 0.42]	.032	-.06	[-0.33, 0.21]	.667
MH	.03	[-0.14, 0.20]	.725	.11	[-0.08, 0.30]	.268	-.15	[-0.42, 0.12]	.282
SUD treatment	.18	[-0.08, 0.44]	.185	.14	[-0.15, 0.42]	.355	.26	[-0.11, 0.64]	.165
Specialty care	.10	[-0.09, 0.29]	.305	.06	[-0.13, 0.25]	.521	.17	[-0.16, 0.50]	.312

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<b>Community factors</b>									
% uninsured <sup>3</sup>	.003	[-0.02, 0.03]	.742	.004	[-0.03, 0.03]	.814	.003	[-0.24, 0.030]	.827
% college educated <sup>3</sup>	-.009	[-0.02, 0.00]	.056	-.008	[-0.02, 0.00]	.132	-.009	[-0.02, 0.00]	.124
Ratio of PCP <sup>4</sup>	.00	[-0.00, 0.00]	.339	.00	[-0.00, 0.00]	.987	.00	[-0.00, 0.00]	.069
<b>Constant</b>	.45	[-0.08, 0.99]	.098	-.11	[-0.75, 0.53]	.739	-.39	[-1.18, 0.40]	.331

Abbreviations: MHSA mental health/substance abuse diagnosis; RSOC regular source of care; SUD substance use disorder

Multiple linear regression coefficients and 95% confidence intervals

<sup>1</sup> Count of ER visits (total and by complexity) based on claims for emergency department services. See Appendix B for full definition.

<sup>2</sup> Variable is based on Data Warehouse/claims data. See Appendix B.

<sup>3</sup> Community factor is obtained from US Census data/ACS, and is grouped at the ZIP code level. See Appendix B.

<sup>4</sup> Community factor is from Robert Woods Johnson, and grouped at the county level. See Appendix B.

**Table 5.1c. Multivariate analysis of individual and community factors' relationship to any emergency department utilization**

Independent variables	Self-reported ER visit past 12 months (Yes/no)			Any ER visit past 12 months <sup>1</sup>		
	Marginal Estimate (%)	95% CI	p-value <sup>5</sup>	Marginal Estimate (%)	95% CI	p-value <sup>5</sup>
<b>Female</b>	39.7	[37.1, 42.2]	.026	44.1	[41.5, 46.7]	.002
<b>Race</b>						
White	36.6	[34.0, 39.1]		39.5	[36.9, 42.0]	
Black or African American	40.1	[35.9, 44.3]	.166	44.4	[40.1, 48.7]	.057
Other	35.2	[28.6, 41.8]	.712	41.2	[34.5, 47.8]	.638
More than one	40.9	[31.3, 50.4]	.382	45.2	[35.8, 54.6]	.243
<b>Ethnicity</b>						
Hispanic/Latino	41.1	[32.0, 50.1]	.431	46.2	[37.4, 55.0]	.243
<b>Income, % of federal poverty level</b>						
0-35%	38.1	[35.0, 41.2]		43.6	[40.4, 46.7]	
36-99%	36.5	[33.3, 39.6]	.472	37.3	[34.2, 40.4]	.005
≥ 100%	37.7	[34.1, 41.3]	.855	40.5	[36.9, 44.0]	.201
<b>Employed</b>	35.8	[32.8, 38.7]	.107	41.0	[38.1, 44.0]	.879
<b>Health and Healthcare</b>						
≥2 Chronic disease <sup>2</sup>	43.5	[40.3, 46.7]	<.001	47.7	[44.6, 50.9]	<.001
Any MHSA diagnosis <sup>2</sup>	44.4	[41.1, 47.8]	<.001	49.9	[46.5, 53.2]	<.001
Fair/poor health status	43.1	[39.5, 46.8]	<.001	43.4	[39.8, 47.0]	.154
Experienced discrimination race/ethnicity	47.5	[35.6, 59.5]	.089	43.9	[30.6, 57.1]	.684
Experienced discrimination insurance/payment	45.8	[40.1, 51.5]	.002	47.3	[41.8, 52.8]	.019
RSOC=doctor office or clinic	37.1	[35.0, 39.2]	.236	40.2	[38.1, 42.3]	.024
<b>Improved access to...</b>						
Primary care	38.2	[35.5, 40.9]	.545	41.3	[38.6, 44.1]	.865
Prescription	37.5	[34.9, 40.1]	.920	41.2	[38.6, 43.9]	.942
MH	36.8	[32.7, 40.9]	.681	41.8	[37.8, 45.9]	.719
SUD treatment	42.7	[35.9, 49.6]	.113	41.6	[34.9, 48.4]	.887
Specialty care	38.4	[35.3, 41.5]	.515	42.4	[39.2, 45.5]	.33
<b>Age (continuous)<sup>6</sup></b>			<.001			<.001
43.42 years	35.7	[33.8, 37.6]		38.9	[36.9, 40.8]	
31.75 years	42.8	[40.2, 45.4]		47.3	[44.7, 49.9]	
45.25 years	34.7	[32.7, 36.6]		37.6	[35.6, 39.6]	
54.75 years	29.4	[26.9, 31.9]		31.3	[28.8, 33.8]	
<b>Total outpatient visits (including primary care; continuous)<sup>2, 6</sup></b>			<.001			<.001
5.95	37.7	[35.6, 39.7]		41.5	[39.5, 43.6]	
2	33.4	[30.9, 35.8]		35.6	[33.2, 38.0]	
5	36.6	[34.6, 38.6]		40.1	[38.0, 42.1]	
8	40.0	[37.6, 42.3]		44.7	[42.3, 47.1]	
<b>MHSA visits (continuous)<sup>2, 7</sup></b>			.076			.184
0	37.3	[35.4, 39.3]		41.0	[39.0, 43.0]	
2	37.5	[35.5, 39.4]		41.1	[39.1, 43.1]	
4	37.6	[35.6, 39.5]		41.2	[39.2, 43.2]	
6	37.9	[35.7, 39.7]		41.3	[39.3, 43.3]	

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<b>Community factors</b>						
% uninsured <sup>3,6</sup>				.034		.930
13.1	37.3	[35.3, 39.2]		41.2	[39.2, 43.2]	
10.3	35.6	[33.1, 38.1]		41.1	[38.5, 43.7]	
12.8	37.1	[35.1, 39.1]		41.2	[39.2, 43.2]	
15.3	38.6	[36.3, 40.9]		41.2	[38.9, 43.5]	
% college educated <sup>3,6</sup>				.047		.001
21.4	37.5	[35.5, 39.4]		41.0	[39.0, 43.0]	
12.5	39.1	[36.6, 41.7]		44.1	[41.4, 46.7]	
18.4	38.0	[36.0, 40.0]		42.0	[40.0, 44.1]	
26.1	36.6	[34.4, 38.7]		39.4	[37.2, 41.7]	
Ratio of PCP <sup>4,6</sup>				.888		.359
1,643.02	37.6	[35.6, 39.5]		41.2	[39.2, 43.2]	
1,123	37.7	[35.4, 40.0]		40.6	[38.3, 43.0]	
1,528	37.6	[35.6, 39.6]		41.1	[39.1, 43.1]	
1,874	37.5	[35.5, 39.6]		41.5	[39.4, 43.5]	

Abbreviations: MHSA mental health/substance abuse diagnosis; RSOC regular source of care; SUD substance use disorder  
 Logistic regression with adjusted odds ratios and 95% confidence intervals. If no reference group is listed, and the independent variable is not marked "continuous," variable is dichotomous.

<sup>1</sup> Any ER visit based on claims for emergency department services. See Appendix B.

<sup>2</sup> Variable is based on Data Warehouse/claims data. See Appendix B.

<sup>3</sup> Community factor is obtained from US Census data/ACS, and is grouped at the ZIP code level. See Appendix B.

<sup>4</sup> Community factor is from Robert Wood Johnson, and grouped at the county level. See Appendix B.

<sup>5</sup> p-values reported are from logistic regression

<sup>6</sup> Variable is originally continuous, margins are estimated at specific cut shown; in order, mean, the 25<sup>th</sup> percentile, the 50<sup>th</sup> percentile, and the 75<sup>th</sup> percentile

<sup>7</sup> Variable is originally continuous, margins are estimated at specific cut shown

**Table 5.1d. Multivariate analysis of individual and community factors' relationship to number and complexity of emergency department visits**

	# ER visits past 12 months <sup>1</sup>			# High complexity ER visits past 12 months <sup>1</sup>			# Low-medium complexity ER visits past 12 months <sup>1</sup>		
	Percent	Standard Error	Number of observations	Percent	Standard Error	Number of observations	Percent	Standard Error	Number of observations
<b>Number of ER visits<sup>2, 8</sup></b>									
1 or more ER visits	41.4	.0099	1,576	32.6	.0096	1,208	19.8	.0081	767
1 ER visit	20.5	.0082	798	18.6	.008	698	13.5	.0068	531
2-4 ER	16.6	.0076	622	11.8	.0067	431	5.8	.0051	212
5 or more	4.4	.0044	156	2.2	.0031	79	0.6	.0013	24
<b>Independent variables</b>	Predicted number of events	95% CI	<i>p</i> -value <sup>5</sup>	Predicted number of events	95% CI	<i>p</i> -value <sup>5</sup>	Predicted number of events	95% CI	<i>p</i> -value <sup>5</sup>
<b>Female</b>	1.1	[1.00, 1.25]	< .001	0.7	[.66, .84]	< .001	0.4	[.31, .43]	.002
<b>Race</b>									
White	0.9	[.84, 1.05]		0.6	[.55, .72]		0.3	[.26, .35]	
Black or African American	1.1	[.94, 1.27]	.097	0.7	[.61, .87]	.157	0.4	[.29, .44]	.197
Other	0.8	[.60, .97]	.170	0.5	[.37, .66]	.190	0.3	[.17, .37]	.541
More than one	0.9	[.58, 1.26]	.896	0.6	[.44, .85]	.917	0.3	[.10, .45]	.763
<b>Ethnicity</b>									
Hispanic/Latino	0.9	[.68, 1.22]	.860	0.7	[.48, .89]	.771	0.3	[.15, .40]	.564
<b>Income, % of federal poverty level</b>									
0-35%	1.1	[.93, 1.17]		0.7	[.61, .81]		0.3	[.27, .38]	
36-99%	0.9	[.77, 1.01]	.054	0.6	[.47, .64]	.012	0.3	[.27, .39]	.991
≥ 100%	0.8	[.74, .95]	.013	0.6	[.49, .67]	.045	0.3	[.21, .30]	.061
Employed	1.0	[.83, 1.11]	.939	0.6	[.52, .75]	.045	0.3	[.27, .38]	.687
<b>Health and Healthcare</b>									
≥2 Chronic disease <sup>2</sup>	1.3	[1.12, 1.43]	< .001	0.9	[.75, .99]	< .001	0.4	[.33, .48]	< .001
Any MH/SA diagnosis <sup>2</sup>	1.2	[1.11, 1.37]	< .001	0.8	[.72, .91]	< .001	0.4	[.35, .48]	< .001
Fair/poor health status	1.1	[.94, 1.21]	.044	0.7	[.64, .85]	.013	0.3	[.26, .38]	.942
Experienced discrimination race/ethnicity	1.0	[.57, 1.35]	.933	0.7	[.42, .92]	.897	0.3	[.10, .47]	.757
Experienced discrimination insurance/payment	1.2	[.99, 1.50]	.009	0.8	[.63, .95]	.047	0.5	[.31, .59]	.014
RSOC=doctor office or clinic	0.9	[.85, 1.02]	.011	0.6	[.56, .70]	.070	0.3	[.26, .33]	.033

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<b>Improved access to...</b>									
Primary care	1.0	[.86, 1.03]	.412	0.6	[.57, .70]	.426	0.3	[.27, .35]	.781
Prescription MH	1.0	[.90, 1.13]	.176	0.7	[.61, .80]	.032	0.3	[.26, .35]	.667
SUD treatment	1.0	[.85, 1.14]	.725	0.7	[.58, .82]	.268	0.3	[.22, .34]	.282
Specialty care	1.1	[.86, 1.41]	.185	0.7	[.54, .92]	.355	0.4	[.26, .53]	.165
	1.0	[.88, 1.16]	.305	0.7	[.57, .77]	.521	0.3	[.27, .42]	.312
<b>Age<sup>6</sup></b>			< .001			< .001			< .001
43.42 years	0.9	[.79, .93]		0.6	[.53, .64]		0.3	[.24, .30]	
31.75 years	1.3	[1.16, 1.43]		0.9	[.77, .99]		0.4	[.35, .46]	
45.25 years	0.8	[.74, .87]		0.5	[.50, .60]		0.3	[.23, .28]	
54.75 years	0.6	[.51, .64]		0.4	[.34, .44]		0.2	[.15, .21]	
<b>Total outpatient visits (including primary care)<sup>2,6</sup></b>			< .001			< .001			.236
5.95	0.9	[.84, 1.00]		0.6	[.54, .65]		0.3	[.28, .35]	
2	0.8	[.72, .89]		0.5	[.45, .56]		0.3	[.25, .35]	
5	0.9	[.81, .97]		0.6	[.52, .63]		0.3	[.27, .35]	
8	1.0	[.91, 1.07]		0.6	[.59, .71]		0.3	[.28, .35]	
<b>MHSA visits<sup>2,7</sup></b>			.083			.142			.269
0	1.0	[.88, 1.05]		0.6	[.58, .71]		0.3	[.28, .35]	
2	1.0	[.88, 1.05]		0.6	[.58, .72]		0.3	[.28, .35]	
4	1.0	[.89, 1.06]		0.6	[.58, .72]		0.3	[.28, .35]	
6	1.0	[.89, 1.06]		0.7	[.58, .72]		0.3	[.28, .35]	
<b>Community factors</b>									
<b>% uninsured<sup>3,6</sup></b>			.742			.814			.827
13.1	1.0	[.89, 1.06]		0.7	[.58, .72]		0.3	[.28, .35]	
10.3	1.0	[.85, 1.07]		0.6	[.56, .73]		0.3	[.27, .36]	
12.8	1.0	[.88, 1.05]		0.6	[.58, .72]		0.3	[.28, .35]	
15.3	1.0	[.88, 1.07]		0.7	[.58, .74]		0.3	[.28, .35]	
<b>% college educated<sup>3,6</sup></b>			.056			.132			.124
21.4	1.0	[.88, 1.04]		0.6	[.58, .71]		0.3	[.28, .34]	
12.5	1.0	[.93, 1.14]		0.7	[.60, .78]		0.3	[.29, .38]	
18.4	1.0	[1.00, 1.07]		0.7	[.59, .73]		0.3	[.28, .35]	
26.1	0.9	[.83, 1.02]		0.6	[.54, .70]		0.3	[.26, .34]	

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Ratio of PCP <sup>4, 6</sup>			.339			.987			.069
1,643.02	1.0	[.89, 1.06]		0.7	[.58, .72]		0.3	[.28, .35]	
1,123	1.0	[.86, 1.05]		0.7	[.57, .73]		0.3	[.26, .33]	
1,528	1.0	[.88, 1.06]		0.7	[.58, .72]		0.3	[.28, .35]	
1,874	1.0	[.90, 1.07]		0.7	[.58, .72]		0.3	[.29, .36]	

Abbreviations: MHSA mental health/substance abuse diagnosis; RSOC regular source of care; SUD substance use disorder

Multiple linear regression coefficients and 95% confidence intervals

<sup>1</sup> Count of ER visits (total and by complexity) based on claims for emergency department services. See Appendix B for full definition.

<sup>2</sup> Variable is based on Data Warehouse/claims data. See Appendix B.

<sup>3</sup> Community factor is obtained from US Census data/ACS, and is grouped at the ZIP code level. See Appendix B.

<sup>4</sup> Community factor is from Robert Woods Johnson, and grouped at the county level. See Appendix B.

<sup>5</sup> p-values reported are from poisson regression

<sup>6</sup> Variable is originally continuous, margins are estimated at specific cut shown; in order, mean, the 25<sup>th</sup> percentile, the 50<sup>th</sup> percentile, and the 75<sup>th</sup> percentile

<sup>7</sup> Variable is originally continuous, margins are estimated at specific cut shown

<sup>8</sup> The total percent may not add up to 100% do to rounding

## Section 6: Impact of HMP premium contributions on cost-conscious behaviors

Table 6.1. Enrollee characteristics, by Federal Poverty Level

Respondent Characteristic <sup>1</sup>	Federal poverty level 0-35%		Federal poverty level 36-99%		Federal poverty level ≥ 100%		Total		p-value <sup>2</sup>
	Col%	95% CI	Col%	95% CI	Col%	95% CI	Col%	95% CI	
<b>Age</b>									.035
19-34 (n=1,303)	38.1	[35.0, 41.3]	40.5	[37.4, 43.7]	44.0	[40.4, 47.6]	40.0	[38.0, 42.0]	
35-50 (n=1,301)	36.1	[33.1, 39.1]	33.6	[30.7, 36.6]	29.2	[26.1, 32.5]	34.0	[32.1, 35.9]	
51-64 (n=1,486)	25.9	[23.5, 28.3]	25.9	[23.5, 28.5]	26.8	[24.1, 29.7]	26.0	[24.5, 27.6]	
<b>Gender</b>									< .001
Male (n=1,681)	57.2	[54.1, 60.2]	39.1	[36.0, 42.3]	39.0	[35.5, 42.6]	48.4	[46.5, 50.4]	
Female (n=2,409)	42.8	[39.8, 45.9]	60.9	[57.7, 64.0]	61.0	[57.4, 64.5]	51.6	[49.6, 53.5]	
<b>Race/ethnicity</b>									< .001
White, non-Hispanic (n=2,714)	54.4	[51.4, 57.4]	62.9	[59.9, 65.9]	66.7	[63.4, 69.9]	59.3	[57.3, 61.1]	
Black, non-Hispanic (n=800)	32.6	[29.7, 35.6]	18.2	[15.8, 21.0]	19.3	[16.7, 22.1]	25.9	[24.1, 27.7]	
Hispanic/Latino (n=78)	1.9	[1.2, 2.9]	2.4	[1.6, 3.5]	2.4	[1.4, 4.0]	2.1	[1.6, 2.8]	
Other (n=448)	11.2	[9.3, 13.3]	16.4	[14.1, 19.1]	11.7	[9.5, 14.3]	12.8	[11.5, 14.2]	
<b>Region</b>									< .001
UP/NW/NE (n=746)	6.7	[6.2, 7.2]	10.9	[10.1, 11.7]	12.3	[11.5, 13.2]	9.0	[8.6, 9.4]	
W/E Central/E (n=1,265)	26.2	[25.1, 27.5]	30.5	[29.1, 31.9]	32.1	[30.4, 33.8]	28.6	[27.8, 29.4]	
S Central/SW/SE (n=837)	17.4	[16.2, 18.7]	19.2	[18.2, 20.3]	20.6	[19.2, 22.1]	18.6	[17.8, 19.3]	
Detroit Metro (n=1,242)	49.6	[48.1, 51.2]	39.4	[37.6, 41.2]	35.0	[33.3, 36.7]	43.8	[42.8, 44.9]	
<b>Married or partnered</b>									< .001
Yes (n=1,193)	13.8	[11.9, 16.0]	34.6	[31.7, 37.5]	38.7	[35.4, 42.2]	24.6	[23.2, 26.2]	
No (n=2,880)	86.2	[84.0, 88.1]	65.4	[62.5, 68.3]	61.3	[57.8, 64.6]	75.4	[73.8, 76.8]	
<b>Health status</b>									< .001
Excellent, very good, or good (n=2,826)	64.1	[61.1, 66.9]	75.7	[73.1, 78.2]	78.6	[75.6, 81.3]	70.2	[68.5, 72.0]	
Fair or poor (n=1,255)	35.9	[33.1, 38.9]	24.3	[21.8, 26.9]	21.4	[18.7, 24.4]	29.8	[28.0, 31.5]	
<b>Any chronic disease</b>									< .001
Yes (n=2,986)	72.9	[69.8, 75.7]	66.2	[63.1, 69.1]	63.9	[60.4, 67.2]	69.2	[67.3, 71.0]	
No (n=1,104)	27.1	[24.3, 30.2]	33.8	[30.9, 36.9]	36.1	[32.8, 39.6]	30.8	[29.0, 32.7]	
<b>Any health insurance in 12 months before HMP enrollment</b>									< .001
Yes (n=1,667)	35.4	[32.5, 38.4]	44.8	[41.7, 48.0]	48.6	[45.0, 52.1]	40.7	[38.8, 42.6]	
No (n=2,374)	62.6	[59.6, 65.6]	54.1	[50.9, 57.2]	50.9	[47.3, 54.4]	57.9	[55.9, 59.8]	

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<b>Cost-related access barriers in 12 months before HMP enrollment<sup>3</sup></b>										.666
Yes (n=1,341)	32.4	[29.6, 35.4]	31.2	[28.4, 34.2]	30.6	[27.5, 33.9]	31.7	[29.9, 33.6]		
No (n=2,706)	67.6	[64.6, 70.4]	68.8	[65.8, 71.6]	69.4	[66.1, 72.5]	68.3	[66.4, 70.1]		
<b>Carefully review MIHA statements<sup>4</sup></b>										.387
Yes (n=2,675)	88.7	[86.2, 90.8]	89.1	[86.4, 91.3]	86.5	[83.4, 89.1]	88.3	[86.8, 89.7]		
No (n=330)	11.3	[9.2, 13.8]	10.9	[8.7, 13.6]	13.5	[10.9, 16.6]	11.7	[10.3, 13.2]		
<b>Find out about service costs<sup>5</sup></b>										.232
Yes (n=2,912)	70.3	[67.4, 73.0]	73.5	[70.7, 76.1]	72.1	[68.8, 75.1]	71.5	[69.7, 73.3]		
No (n=1,164)	29.7	[27.0, 32.6]	26.5	[23.9, 29.3]	27.9	[24.9, 31.2]	28.5	[26.7, 30.3]		
<b>Talk with doctor about costs<sup>6</sup></b>										.736
Yes (n=2,746)	67.3	[64.3, 70.1]	68.7	[65.7, 71.6]	68.4	[65.0, 71.6]	67.9	[66.0, 69.7]		
No (n=1,330)	32.7	[29.9, 35.7]	31.3	[28.4, 34.3]	31.6	[28.4, 35.0]	32.1	[30.3, 34.0]		
<b>Ask doctor about less costly drug<sup>7</sup></b>										< .001
Yes (n=3,143)	71.6	[68.7, 74.4]	79.0	[76.4, 81.4]	79.3	[76.2, 82.0]	75.2	[73.4, 76.9]		
No (n=931)	28.4	[25.6, 31.3]	21.0	[18.6, 23.6]	20.7	[18.0, 23.8]	24.8	[23.1, 26.6]		
<b>Check reviews or ratings of quality<sup>8</sup></b>										.058
Yes (n=3,142)	76.4	[73.7, 79.0]	79.6	[77.0, 82.0]	80.4	[77.6, 82.9]	78.1	[76.4, 79.7]		
No (n=932)	23.6	[21.0, 26.3]	20.4	[18.0, 23.0]	19.6	[17.1, 22.4]	21.9	[20.3, 23.6]		
<b>Fewer medical bill problems in previous 12 months of HMP enrollment<sup>9</sup></b>										.191
Yes (n=1,629)	84.4	[80.9, 87.4]	88.3	[84.6, 91.2]	86.9	[82.9, 90.1]	85.9	[83.7, 87.9]		
No (n=240)	15.6	[12.6, 19.1]	11.7	[8.8, 15.4]	13.1	[9.9, 17.1]	14.1	[12.1, 16.3]		
<b>Payments affordable for HMP<sup>10</sup></b>										.015
Yes (n=3,679)	88.6	[86.4, 90.5]	91.1	[88.9, 92.9]	85.9	[83.2, 88.2]	88.8	[87.4, 90.0]		
No (n=405)	11.4	[9.5, 13.6]	8.9	[7.1, 11.1]	14.1	[11.8, 16.8]	11.2	[10.0, 12.6]		
<b>Forgone care due to cost in previous 12 months of HMP enrollment<sup>3</sup></b>										.589
Yes (n=439)	11.2	[9.3, 13.3]	11.8	[9.9, 14.1]	10.1	[8.2, 12.4]	11.1	[10.0, 12.5]		
No (n=3,623)	88.8	[86.7, 90.7]	88.2	[85.9, 90.1]	89.9	[87.6, 91.8]	88.9	[87.5, 90.0]		

Weighted proportions of demographic, health, and HMP-specific variables, by Federal Poverty Level (FPL)

<sup>1</sup>n does not sum to 4,090 for every characteristic due to skip patterns, "don't know" responses, or non-responses for individual items.

<sup>2</sup>Pearson's chi-squared test

<sup>3</sup>Going without health care because 'you were worried about the cost,' 'you did not have health insurance,' 'the doctor or hospital wouldn't accept your health insurance,' or 'your health plan wouldn't pay for the treatment.'

<sup>4</sup>Strongly agree or agree that carefully review MIHA statements.

<sup>5</sup>Very or somewhat likely to find out about the costs of services before receiving them.

<sup>6</sup>Very or somewhat likely to talk with doctors about how much services will cost.

<sup>7</sup>Very or somewhat likely to ask doctors about a less costly prescription drug.

<sup>8</sup>Very or somewhat likely to check quality reviews or ratings before getting care.

<sup>9</sup>Among individuals with problems paying medical bills in the 12 months before enrolling in HMP.

<sup>10</sup>Strongly agree or agree that payments for HMP are affordable.

**Table 6.2. Multivariate associations: Engagement in cost-conscious behaviors among subgroups of HMP enrollees**

	Dependent variables <sup>1</sup>									
	Carefully review MIHA statements <sup>3</sup> (n=2,924)		Find out about service costs <sup>4</sup> (n=3,979)		Talk with doctor about costs <sup>5</sup> (n=3,978)		Ask doctor about less costly drug <sup>6</sup> (n=3,978)		Check reviews or ratings of quality <sup>7</sup> (n=3,977)	
Subgroup <sup>2</sup>	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Income, % of federal poverty level</b>										
0-35%	89.3	[87.0, 91.5]	71.6	[68.8, 74.4]	68.1	[65.2, 71.0]	73.8*	[71.0, 76.6]	77.8	[75.2, 80.4]
36-99% [ref]	88.7	[86.0, 91.3]	72.9	[70.0, 75.8]	68.6	[65.5, 71.6]	78.2	[75.4, 80.9]	79.0	[76.3, 81.6]
≥ 100%	86.0	[83.0, 89.0]	70.4	[67.0, 73.8]	67.8	[64.3, 71.3]	77.0	[73.7, 80.2]	78.4	[75.4, 81.4]
<b>Gender</b>										
Male [ref]	87.4	[85.1, 89.8]	69.7	[67.0, 72.4]	67.2	[64.3, 70.1]	71.5	[68.7, 74.2]	75.0	[72.4, 77.6]
Female	89.2	[87.3, 91.1]	73.6*	[71.3, 76.0]	69.1	[66.7, 71.5]	79.6***	[77.3, 81.8]	81.3***	[79.1, 83.4]
<b>Age</b>										
19-34 [ref]	86.2	[83.5, 88.9]	76.9	[74.0, 79.8]	72.0	[68.9, 75.1]	77.6	[74.6, 80.6]	82.3	[79.5, 85.0]
35-50	88.2	[85.5, 90.9]	67.0***	[63.5, 70.2]	64.8**	[61.5, 68.2]	72.7*	[69.5, 75.8]	75.7**	[72.7, 78.8]
51-64	91.4**	[89.3, 93.5]	70.0**	[67.0, 73.0]	66.6*	[63.5, 69.7]	76.2	[73.4, 79.0]	75.3**	[72.6, 78.1]
<b>Race/ethnicity</b>										
White, non-Hispanic [ref]	89.1	[87.3, 90.9]	72.7	[70.2, 75.2]	68.8	[66.2, 71.3]	78.9	[76.5, 81.2]	78.4	[76.1, 80.7]
Black, non-Hispanic	88.4	[85.0, 91.8]	71.8	[67.9, 75.7]	69.3	[65.2, 73.4]	73.3*	[69.4, 77.2]	81.3	[77.9, 84.7]
Hispanic/Latino	83.9	[73.3, 94.5]	51.3**	[37.0, 65.6]	51.9*	[37.8, 66.0]	59.9**	[46.0, 73.8]	64.1*	[50.1, 78.1]
Other	85.5	[80.3, 90.6]	70.2	[65.0, 75.4]	65.6	[59.9, 71.2]	68.0***	[62.7, 73.3]	72.8*	[67.3, 78.2]
<b>Marital status</b>										
Not married or partnered [ref]	88.1	[86.3, 89.9]	71.6	[69.5, 73.6]	67.9	[65.8, 70.1]	74.7	[72.7, 76.7]	77.1	[75.1, 79.0]
Married or partnered	89.4	[86.8, 92.1]	72.2	[68.7, 75.7]	68.9	[65.3, 72.6]	78.3	[75.0, 81.7]	81.6	[78.8, 84.4]
<b>Region</b>										
UP/NW/NE [ref]	86.7	[82.9, 90.6]	68.0	[63.8, 72.2]	66.8	[62.6, 71.0]	76.2	[72.2, 80.2]	70.3	[66.2, 74.5]
W/E Central/E	90.2	[87.8, 92.5]	72.2	[69.2, 75.2]	69.6	[66.5, 72.6]	76.7	[73.8, 79.6]	79.8***	[77.2, 82.4]
S Central/SW/SE	87.5	[84.4, 90.7]	71.5	[67.7, 75.3]	67.8	[64.1, 71.5]	78.0	[74.7, 81.4]	79.0**	[75.9, 82.1]
Detroit Metro	88.0	[85.3, 90.7]	72.3	[69.1, 75.5]	67.7	[64.3, 71.2]	73.8	[70.6, 77.0]	78.5**	[75.4, 81.6]

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<b>Health status</b>										
Excellent, very good, or good [ref]	89.3	[87.5, 91.0]	72.5	[70.3, 74.7]	68.4	[66.1, 70.7]	76.6	[74.4, 78.8]	79.1	[77.0, 81.2]
Fair or poor	86.1	[82.9, 89.4]	69.9	[66.6, 73.2]	67.7	[64.3, 71.0]	73.1	[69.9, 76.3]	76.3	[73.3, 79.4]
<b>Any chronic disease</b>										
No [ref]	86.9	[83.4, 90.4]	74.2	[70.8, 77.6]	70.7	[67.2, 74.3]	75.1	[71.6, 78.6]	81.6	[78.5, 84.7]
Yes	89.0	[87.3, 90.7]	70.7	[68.4, 72.9]	67.1	[64.8, 69.4]	75.8	[73.6, 77.9]	76.8*	[74.7, 78.9]
<b>Any health insurance in 12 months before HMP enrollment</b>										
No [ref]	88.9	[87.0, 90.8]	70.8	[68.5, 73.2]	69.1	[66.8, 71.5]	75.5	[73.2, 77.8]	76.7	[74.5, 78.9]
Yes	87.7	[85.3, 90.1]	73.0	[70.2, 75.8]	66.7	[63.7, 69.8]	75.7	[72.9, 78.5]	80.5*	[78.0, 83.1]
<b>Forgone care due to cost in 12 months before HMP enrollment<sup>8</sup></b>										
No [ref]	89.2	[87.5, 90.9]	70.1	[67.9, 72.4]	67.9	[65.6, 70.2]	74.5	[72.4, 76.7]	77.5	[75.4, 79.5]
Yes	87.0	[83.8, 89.8]	75.0*	[72.0, 78.0]	68.8	[65.4, 72.1]	77.8	[74.7, 80.9]	79.7	[76.9, 82.6]

\* denotes  $P < 0.05$ , \*\* denotes  $P < 0.01$ , and \*\*\* denotes  $P < 0.001$ .

<sup>1</sup>The columns for each outcome depict marginal estimates from a logistic regression model in which the dependent variable is the respective outcome and the independent variables are all of the characteristics in the table rows.

<sup>2</sup>Subgroups denoted by [ref] are the reference for statistical tests.

<sup>3</sup>Strongly agree or agree that carefully review MIHA statements.

<sup>4</sup>Very or somewhat likely to find out about the costs of services before receiving them.

<sup>5</sup>Very or somewhat likely to talk with doctors about how much services will cost.

<sup>6</sup>Very or somewhat likely to ask doctors about a less costly prescription drug.

<sup>7</sup>Very or somewhat likely to check quality reviews or ratings before getting care.

<sup>8</sup>Going without health care because 'you were worried about the cost,' 'you did not have health insurance,' 'the doctor or hospital wouldn't accept your health insurance,' or 'your health plan wouldn't pay for the treatment.'

**Table 6.3. Multivariate associations: Health care affordability among subgroups of HMP enrollees**

Subgroup <sup>2</sup>	Dependent variables <sup>1</sup>					
	Fewer medical bill problems <sup>3</sup> (n=1,816)		Payments affordable <sup>4</sup> (n=3,982)		Forgone care due to cost <sup>5</sup> (n=3,967)	
	%	95% CI	%	95% CI	%	95% CI
<b>Income, % of federal poverty level</b>						
0-35%	84.8	[81.7, 88.0]	89.2	[87.1, 91.2]	10.9	[9.0, 12.9]
36-99% [ref]	88.3	[84.7, 91.9]	90.8	[88.7, 92.3]	12.0	[9.7, 14.2]
≥ 100%	85.3	[81.1, 89.5]	84.9**	[82.1, 87.7]	10.4	[8.2, 12.7]
<b>Gender</b>						
Male [ref]	84.4	[81.0, 87.8]	89.1	[87.0, 91.1]	10.2	[8.3, 12.2]
Female	87.0	[84.5, 89.6]	88.5	[86.8, 90.3]	11.9	[10.2, 13.6]
<b>Age</b>						
19-34 [ref]	83.4	[79.2, 87.6]	88.3	[86.0, 90.6]	13.7	[11.2, 16.2]
35-50	85.3	[82.0, 88.6]	87.9	[85.5, 90.3]	9.9*	[8.1, 11.8]
51-64	89.4*	[86.6, 92.3]	90.8	[88.8, 92.8]	9.2**	[7.3, 11.1]
<b>Race/ethnicity</b>						
White, non-Hispanic [ref]	87.4	[84.7, 90.1]	91.7	[90.3, 93.2]	10.3	[8.8, 11.8]
Black, non-Hispanic	84.8	[80.6, 89.1]	84.0***	[80.7, 87.3]	10.5	[7.7, 13.3]
Hispanic/Latino	91.5	[79.1, 100.0]	86.8	[87.3, 95.3]	18.4	[7.1, 29.7]
Other	79.7	[71.0, 88.4]	85.3**	[80.8, 89.7]	14.9*	[10.5, 19.3]
<b>Marital status</b>						
Not married or partnered [ref]	85.7	[83.3, 88.1]	88.9	[87.4, 90.4]	11.1	[9.7, 12.6]
Married or partnered	86.2	[81.7, 90.6]	88.6	[86.0, 91.3]	11.1	[8.6, 13.6]
<b>Region</b>						
UP/NW/NE [ref]	82.1	[76.8, 87.3]	90.9	[87.9, 94.0]	8.3	[6.0, 10.6]
W/E Central/E	87.8*	[84.3, 91.2]	88.6	[86.3, 90.9]	10.8	[8.7, 12.9]
S Central/SW/SE	86.4	[82.2, 90.7]	88.9	[86.3, 91.4]	11.3	[8.9, 13.8]
Detroit Metro	85.1	[81.4, 88.8]	88.6	[86.4, 90.8]	11.9*	[9.5, 14.2]
<b>Health status</b>						
Excellent, very good, or good [ref]	87.4	[84.8, 90.0]	90.0	[88.4, 91.6]	10.2	[8.7, 11.7]
Fair or poor	83.2	[79.5, 86.8]	85.8**	[83.0, 88.6]	13.1*	[10.6, 15.6]

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<b>Any chronic disease</b>							
No [ref]	85.7	[80.7, 90.7]	88.4	[85.7, 91.0]	7.7	[5.6, 9.8]	
Yes	85.8	[83.4, 88.3]	89.0	[87.4, 90.6]	12.5**	[10.9, 14.2]	
<b>Any health insurance in 12 months before HMP enrollment</b>							
No [ref]	86.9	[84.5, 89.4]	89.8	[88.3, 91.4]	9.7	[8.2, 11.2]	
Yes	83.3	[79.4, 87.3]	87.3	[84.9, 89.6]	13.4**	[11.2, 15.6]	
<b>Forgone care due to cost in 12 months before HMP enrollment<sup>6</sup></b>							
No [ref]	83.2	[80.2, 86.2]	89.6	[88.1, 91.0]	8.1	[6.8, 9.5]	
Yes	88.8**	[85.9, 91.7]	87.0	[84.2, 89.8]	17.6***	[14.8, 20.5]	

\* denotes  $P < 0.05$ , \*\* denotes  $P < 0.01$ , and \*\*\* denotes  $P < 0.001$ .

<sup>1</sup>The columns for each outcome depict marginal estimates from a logistic regression model in which the dependent variable is the respective outcome and the independent variables are all of the characteristics in the table rows.

<sup>2</sup>Subgroups denoted by [ref] are the reference for statistical tests.

<sup>3</sup>Among individuals with problems paying medical bills in the 12 months before enrolling in HMP.

<sup>4</sup>Strongly agree or agree that payments for HMP are affordable.

<sup>5</sup>Going without health care in the previous 12 months of HMP enrollment because 'you were worried about the cost,' 'you did not have health insurance,' 'the doctor or hospital wouldn't accept your health insurance,' or 'your health plan wouldn't pay for the treatment'.

<sup>6</sup>Going without health care in the 12 months before HMP enrollment because 'you were worried about the cost,' 'you did not have health insurance,' 'the doctor or hospital wouldn't accept your health insurance,' or 'your health plan wouldn't pay for the treatment'.

## Section 7: Diagnosis and care of self-reported chronic health conditions among HMP enrollees

Table 7.1. Enrollee characteristics, by self-reported chronic health condition status

	Enrollees without a chronic condition (n=1,151)		Enrollees with any chronic condition <sup>1</sup> (n=2,939)		p-value <sup>2</sup>
	Col %	95% CI	Col %	95% CI	
<b>Age</b>					< .001
19-34	55.9	[52.3, 59.6]	32.5	[30.3, 34.8]	
35-50	28.2	[25.0, 31.5]	36.7	[34.5, 39.0]	
51-64	15.9	[13.8, 18.3]	30.8	[28.9, 32.8]	
<b>Gender</b>					.015
Male	52.1	[48.5, 55.8]	46.7	[44.4, 49.0]	
Female	47.9	[44.2, 51.5]	53.3	[51.0, 55.6]	
<b>Race</b>					< .001
White	54.2	[50.4, 57.9]	64.4	[62.2, 66.6]	
Black or African American	28.8	[25.3, 32.5]	24.8	[22.8, 26.9]	
Other	13.1	[10.8, 15.8]	6.8	[5.7, 8.0]	
More than one	4.0	[2.8, 5.6]	4.0	[3.1, 5.1]	
<b>Income, % of federal poverty level</b>					< .001
0-35%	45.9	[42.6, 49.4]	54.6	[53.1, 56.1]	
36-99%	31.0	[28.3, 33.8]	27.2	[25.9, 28.5]	
≥ 100%	23.1	[20.8, 25.4]	18.2	[17.2, 19.3]	
<b>Number of self-reported chronic conditions</b>					< .001
1			41.6	[39.3, 43.9]	
2			30.2	[28.1, 32.4]	
3			16.7	[15.1, 18.5]	
≥4			11.5	[10.2, 12.9]	
		N/A			
<b>Major functional limitation</b>					< .001
None	94.2	[91.7, 95.9]	75.6	[73.6, 77.5]	
Functional impairment (≥14 of past 30 days)	5.8	[4.1, 8.3]	24.4	[22.5, 26.4]	
<b>Health status</b>					
Excellent	20.2	[17.3, 23.3]	4.5	[3.7, 5.6]	
Very good	42.5	[38.8, 46.2]	19.5	[17.6, 21.5]	
Good	27.0	[23.9, 30.3]	37.1	[34.9, 39.4]	
Fair	9.2	[7.3, 11.7]	28.3	[26.3, 30.4]	
Poor	1.1	[0.6, 2.1]	10.5	[9.2, 12.0]	
<b>Physical health better since HMP enrollment</b>					< .001
Gotten better	39.5	[35.9, 43.2]	52.1	[49.7, 54.4]	
Stayed the same	59.2	[55.4, 62.8]	40.4	[38.2, 42.7]	
Gotten worse	1.4	[0.8, 2.4]	7.5	[6.5, 8.7]	
<b>Mental health better since HMP enrollment</b>					< .001
Gotten better	29.2	[25.8, 32.8]	42.6	[40.3, 44.9]	
Stayed the same	69.6	[66.0, 72.9]	51.2	[48.9, 53.5]	
Gotten worse	1.3	[0.7, 2.2]	6.2	[5.1, 7.4]	

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	Mean	95% CI	SE	Mean	95% CI	SE	
<b># of last 30 days physical health not good</b>	3.0	[2.4, 3.5]	0.3	8.6	[8.1, 9.1]	0.3	
<b># of last 30 days mental health not good</b>	2.1	[1.6, 2.6]	0.3	7.8	[7.3, 8.3]	0.3	

Weighted proportions of demographic characteristics by self-reported chronic conditions

<sup>1</sup> Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as “other” diagnoses; 68.1% of the total population reported a chronic condition.

<sup>2</sup> Pearson's chi-squared test

**Table 7.2. Bivariate associations between self-reported chronic health condition status and pre-HMP insurance status and access to care before and after HMP enrollment**

	Respondents without a chronic condition		Respondents with any chronic condition <sup>1</sup>		<i>p</i> -value <sup>2</sup>
	Column %	95% CI	Column %	95% CI	
<b>Insurance duration prior to HMP</b>					.24
Entire year	30.0	[26.8, 33.5]	31.3	[29.2, 33.6]	
Part of year	11.0	[8.8, 13.7]	8.8	[7.6, 10.2]	
None of year	59.0	[55.2, 62.6]	59.6	[57.5, 62.1]	
<b>Years since last PCP visit prior to HMP</b>					.02
Less than 1 year	36.7	[33.1, 40.4]	42.6	[40.4, 45.0]	
1-5 years	42.1	[38.4, 45.8]	36.6	[34.5, 38.9]	
More than 5 years	21.3	[18.5, 24.3]	20.7	[18.8, 22.8]	
<b>Saw PCP in past 12 months</b>	75.5	[71.8, 78.8]	89.8	[88.0, 91.3]	< .001
<b>Problems paying medical bills in 12 months prior to HMP enrollment</b>	29.7	[26.5, 33.2]	51.9	[49.6, 54.2]	< .001
<b>Ability to pay medical bills improved after HMP</b>	85.4	[79.8, 89.6]	87.0	[84.6, 89.1]	.048
<b>Access to mental health care since HMP enrollment</b>					< .001
Improved	17.4	[14.8, 20.4]	32.2	[30.0, 34.4]	
Same	25.8	[22.5, 29.5]	22.1	[20.2, 24.1]	
Worse	0.4	[0.2, 1.0]	3.4	[2.7, 4.4]	
Don't know	56.3	[52.5, 60.0]	42.3	[40.1, 44.6]	
<b>Access to prescriptions since HMP enrollment</b>					< .001
Improved	48.0	[44.3, 51.7]	64.6	[62.3, 66.8]	
Same	28.8	[25.4, 32.5]	24.6	[22.6, 26.6]	
Worse	1.5	[0.9, 2.6]	3.9	[3.0, 4.9]	
Don't know	21.7	[18.9, 24.8]	7.0	[5.9, 8.3]	
<b>Access to specialty care since HMP enrollment</b>					< .001
Improved	33.0	[29.8, 36.5]	49.7	[47.4, 52.0]	
Same	24.9	[21.8, 28.3]	21.5	[19.7, 23.4]	
Worse	3.1	[2.1, 4.5]	4.8	[3.9, 5.8]	
Don't know	39.0	[35.3, 42.7]	24.0	[22.0, 26.1]	
<b>Had regular source of medical care in 12 months prior to HMP</b>	66.6	[63.0, 70.0]	77.3	[75.3, 79.2]	< .001
<b>Had regular source of medical care in 12 months since HMP enrollment</b>	85.8	[82.6, 88.4]	95.2	[93.8, 96.3]	< .001
<b>Regular source of care in 12 months prior to HMP enrollment is doctor's office or clinic<sup>3</sup></b>	66.3	-	64.7	-	.30
<b>Regular source of care in 12 months after HMP enrollment is doctor's office or clinic<sup>3</sup></b>	88.7	-	93.1	-	.005

Weighted proportions of pre-HMP insurance status and access to care by self-reported chronic conditions

<sup>1</sup> Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as "other" diagnoses.

<sup>2</sup> Pearson's chi-squared test

<sup>3</sup> Only asked of those reporting a regular source of medical care during that time period

**Table 7.3a. Bivariate relationship between new chronic condition diagnosis since HMP enrollment, by pre-HMP insurance status, among enrollees with self-reported chronic conditions<sup>1</sup>**

	Insurance duration in the year prior to HMP						
	All year		Some of the year		None of the year		Total %
	Row %	95% CI	Row %	95% CI	Row %	95% CI	
<b>Any new diagnoses since HMP</b>							
No new diagnoses (n=1,653)	34.9	[32.0, 37.9]	9.4	[7.8, 11.4]	55.7	[52.5, 58.7]	100.0
One or more new diagnoses (n=1,211)	26.5	[23.4, 29.8]	8.0	[6.3, 10.0]	65.5	[62.0, 68.8]	100.0

Weighted proportions with Pearson chi-squared analysis. P < 0.001

<sup>1</sup>Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as “other” diagnoses

**Table 7.3b. Bivariate relationship between new chronic condition diagnosis since HMP enrollment, by time since last PCP visit prior to HMP enrollment, among enrollees with chronic conditions<sup>1</sup>**

	Number of years since last PCP visit						
	Less than 1 year		1-5 years		More than 5 years		Total %
	Row %	95% CI	Row %	95% CI	Row %	95% CI	
<b>Any new diagnoses since HMP</b>							
No new diagnoses (n=1,674)	47.9	[44.8, 51.1]	35.4	[32.5, 38.3]	16.7	[14.4, 19.3]	100.0
One or more new diagnoses (n=1,232)	35.5	[32.2, 38.9]	38.4	[35.1, 41.8]	26.1	[23.1, 29.4]	100.0

Weighted proportions with Pearson's chi-squared test  $p < 0.001$

<sup>1</sup> Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as "other" diagnoses.

**Table 7.4. Multivariate association between self-reported chronic health conditions and improved physical and mental health after HMP enrollment, among all respondents**

Independent variables	Physical health improved since HMP enrollment		Mental health improved since HMP enrollment	
	aOR	95% CI	aOR	95% CI
<b>Any chronic physical or mental health condition<sup>1</sup></b>	1.70	[1.40, 2.07]*	1.75	[1.43, 2.15]*
<b>Insurance duration prior to HMP</b>				
Entire year	Ref		Ref	
Part of year	2.06	[1.51, 2.81]*	1.32	[0.96, 1.83]
None of year	2.34	[1.94, 2.82]*	1.66	[1.36, 2.02]*
<b>Current smoker</b>	0.76	[0.64, 0.91]*	0.97	[0.81, 1.16]
<b>Age</b>				
19-34	Ref		Ref	
35-50	1.24	[1.01, 1.52]*	1.05	[0.85, 1.30]
51-64	1.19	[0.97, 1.45]	1.05	[0.85, 1.29]
<b>Female</b>	0.93	[0.78, 1.1]	1.00	[0.84, 1.20]
<b>Income, % of federal poverty level</b>				
0-35%	Ref		Ref	
36-99%	1.07	[0.88, 1.30]	0.99	[0.81, 1.20]
≥ 100%	0.93	[0.76, 1.14]	0.88	[0.71, 1.08]
<b>Race</b>				
White	Ref		Ref	
Black or African American	1.22	[0.99, 1.50]	1.00	[0.81, 1.23]
Other	1.02	[0.74, 1.40]	0.92	[0.67, 1.28]
More than one	1.27	[0.81, 1.20]	0.95	[0.60, 1.52]

Logistic regression with adjusted odds ratios. Models adjusted for all variables listed in the table.

<sup>1</sup>Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as “other” diagnoses.

\* denotes  $P < 0.05$

**Table 7.5. Multivariate associations between access to specific types of care and improved physical and mental health after HMP enrollment, among enrollees with self-reported chronic conditions<sup>1</sup>**

Independent variables	Physical health improved since HMP enrollment		Mental health improved since HMP enrollment	
	aOR	95% CI	aOR	95% CI
<b>Saw PCP in past 12 months</b>	1.86*	[1.20, 2.89]	1.02	[0.66, 1.59]
<b>Insurance duration prior to HMP</b>				
Entire year	Ref		Ref	
Part of year	1.52*	[1.05, 2.20]	0.86	[0.59, 1.27]
None of year	2.15*	[1.70, 2.70]	1.30*	[1.02, 1.65]
<b>Improved access to mental health care<sup>2</sup></b>	1.53*	[1.19, 1.96]	3.40*	[2.67, 4.34]
<b>Improved access to prescription medications<sup>2</sup></b>	2.10*	[1.65, 2.68]	1.56*	[1.21, 2.02]
<b>Improved access to specialty care<sup>2</sup></b>	1.63*	[1.39, 2.05]	1.48*	[1.17, 1.88]
<b>Current smoker</b>	0.77*	[0.62, 0.96]	0.94	[0.76, 1.18]
<b>Age</b>				
19-34	Ref		Ref	
35-50	1.11	[0.84, 1.46]	0.92	[0.69, 1.22]
51-64	1.05	[0.81, 1.37]	1.13	[0.86, 1.47]
<b>Female</b>	0.78*	[0.63, 0.97]	0.92	[0.74, 1.15]
<b>Income, % of federal poverty level</b>				
0-35%	Ref		Ref	
36-99%	1.19	[0.93, 1.51]	1.02	[0.80, 1.30]
≥ 100%	1.13	[0.88, 1.46]	1.03	[0.79, 1.34]
<b>Race</b>				
White	Ref		Ref	
Black or African American	1.34*	[1.02, 1.76]	0.92	[0.70, 1.20]
Other	0.91	[0.58, 1.43]	0.82	[0.52, 1.28]
More than one	1.39	[0.81, 2.37]	0.83	[0.43, 1.62]

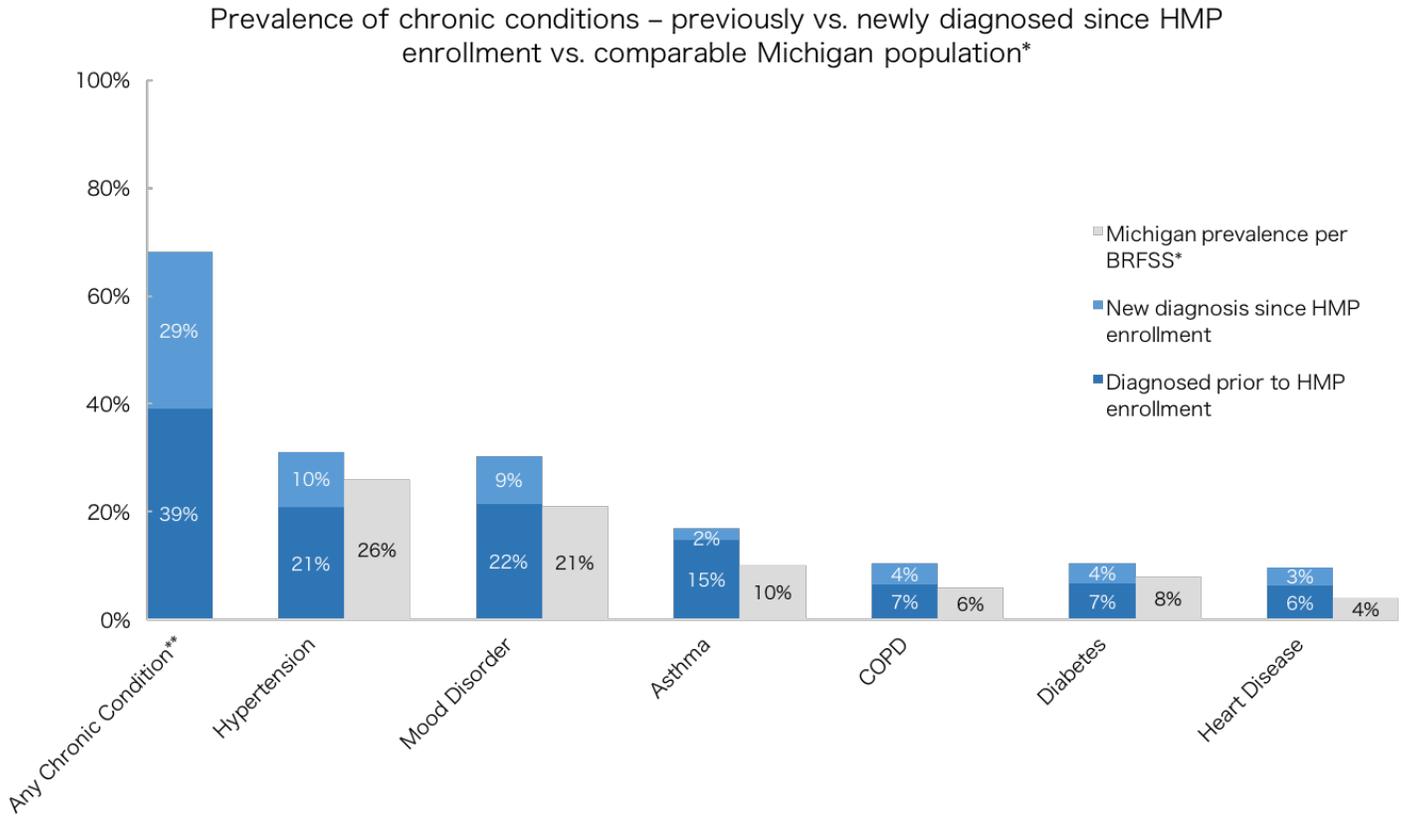
Logistic regression with adjusted odds ratios. Models adjusted for all variables listed in the table.

<sup>1</sup>Chronic conditions are self-reported, and include hypertension, mood disorder, asthma, heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and chronic health conditions among those listed by respondents as “other” diagnoses.

<sup>2</sup>Participants reported that since enrolling in HMP, access to this service has improved (reference group is those who said it got worse, stayed the same, or don’t know).

\* denotes  $P < 0.05$

**Figure 7.1. Prevalence of chronic conditions – previously vs. newly diagnosed since HMP enrollment vs. comparable Michigan population**



\*Comparable Michigan Prevalence estimated using 2015 Michigan BRFSS results among respondents age 19-64 years old who did not report being pregnant or enrolled in Medicare, adjusted for BRFSS survey weights to more closely reflect the general Michigan population.  
 \*\*Any Chronic Condition includes respondents who reported any of the following conditions: hypertension, heart disease, diabetes, mood disorders, stroke, asthma, COPD, or other. Write-in responses for "other" were verified and coded by two clinicians. Of all respondents with any chronic disease, 39.4% reported some "other" chronic disease, but only 8.9% of those with a chronic disease only selected "other." Among all enrollees, a total of 6,657 chronic disease were indicated, including 1,538 classified as "other" (23% of reported chronic conditions).

**Section 8: Diagnosis and care of chronic health conditions among HMP enrollees as measured by HEDIS criteria and claims-based diagnostic codes**

**Table 8.1. Demographic and health characteristics for HMP enrollees with and without chronic disease (HEDIS 2016<sup>1</sup>)**

Respondent Characteristics	1+ Chronic disease (N= 1,161) 25.1% [23.5, 26.8]		No chronic disease (N= 2,929) 74.9% [73.2, 76.5]		p-value <sup>2</sup>
	Column %	95% CI	Column %	95% CI	
<b>Age</b>					< .001
19-34	17.8	[15.0, 21.1]	47.4	[45.0, 49.7]	
35-50	39.1	[35.6, 42.7]	32.3	[30.1, 34.5]	
51-64	43.1	[39.7, 46.5]	20.3	[18.8, 22.0]	
<b>Male</b>	48.7	[45.1, 52.3]	48.4	[46.0, 50.7]	.893
<b>Race</b>					.032
White	63.0	[59.4, 66.5]	60.5	[58.2, 62.8]	
Black or African American	27.2	[23.9, 30.6]	25.7	[23.6, 27.9]	
Other	7.4	[5.7, 9.5]	9.2	[7.9, 10.7]	
More than one	2.4	[1.7, 3.6]	4.5	[3.6, 5.6]	
<b>Income, % of federal poverty level</b>					.013
0-35%	56.2	[53.2, 59.2]	50.4	[48.7, 52.0]	
36-99%	25.9	[23.4, 28.4]	29.3	[27.9, 30.6]	
≥ 100%	17.9	[15.8, 20.2]	20.4	[19.3, 21.5]	
<b>Health status</b>					< .001
Excellent	2.8	[1.8, 4.2]	11.8	[10.3, 13.4]	
Very good	13.8	[11.3, 16.7]	31.2	[29.0, 33.5]	
Good	34.3	[31.0, 37.8]	33.7	[31.6, 35.9]	
Fair	34.4	[31.1, 37.8]	18.2	[16.4, 20.0]	
Poor	14.7	[12.4, 17.3]	5.1	[4.2, 6.3]	
<b>Functional impairment (≥14 of past 30 days)</b>	29.2	[26.1, 32.6]	14.9	[13.3, 16.6]	< .001
<b>Physical health better since HMP</b>	56.7	[53.2, 60.2]	45.2	[42.8, 47.5]	< .001
<b>Mental health better since HMP</b>	41.5	[38.0, 45.1]	37.3	[35.0, 39.6]	< .052

Weighted demographic characteristics of HMP enrollees, by presence of chronic disease defined by HEDIS 2016.

<sup>1</sup> HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>2</sup> Pearson's chi-squared test comparing proportions between those with and without chronic disease.

**Table 8.2. Bivariate association between chronic disease (HEDIS 2016<sup>1</sup>) and access to care among HMP enrollees before and after HMP**

	Before HMP					After HMP				
	1+ Chronic disease (N=1,161)		No chronic disease (N=2,929)		p- value <sup>2</sup>	1+ Chronic disease (N=1,161)		No chronic disease (N=2,929)		p- value <sup>2</sup>
	Col %	[95% CI]	Col %	[95% CI]		Col %	[95% CI]	Col %	[95% CI]	
<b>Insurance duration prior to HMP</b>					.662					
All year	31.8	[28.5, 35.2]	30.6	[28.5, 32.9]						
Some of the year	8.7	[7.0, 10.9]	9.8	[8.5, 11.3]						
None of the year	59.5	[55.9, 63.0]	59.6	[57.2, 61.9]						
<b>Years since last PCP visit prior to HMP</b>					.001					
Less than 1 year	46.6	[43.0, 50.2]	38.8	[36.5, 41.1]						
1-5 years	32.7	[29.5, 36.1]	40.3	[38.0, 42.6]						
More than 5 years	20.7	[17.7, 24.1]	20.9	[19.1, 22.9]						
<b>Problems paying medical bills in 12 months prior to HMP enrollment</b>	56.8	[53.2, 60.4]	40.9	[38.6, 43.2]	< .001					
<b>Usual source of care</b>	80.2	[77.0, 83.0]	71.8	[69.6, 73.8]	< .001	98.1	[96.9,98.8]	90.2	[88.5,91.8]	< .001
<b>Type of usual source of care</b>					.048					.037
Clinic	20.4	[17.4, 23.7]	16.0	[14.0, 18.1]		17.0	[14.3,20.1]	16.3	[14.6,18.2]	
Doctor's office	48.9	[44.9, 52.8]	47.6	[44.9, 50.4]		77.5	[74.2,80.6]	74.4	[72.2,76.5]	
Urgent care/walk-in	13.8	[11.3, 16.7]	18.0	[16.0, 20.2]		3.5	[2.3,5.3]	6.6	[5.4,8.1]	
Emergency room	15.1	[12.5, 18.2]	16.7	[14.6, 19.0]		1.3	[0.7,2.5]	1.8	[1.3,2.5]	
Other place	1.9	[1.0, 3.6]	1.7	[1.2, 2.5]		0.6	[0.3,1.4]	0.8	[0.5,1.4]	
<b>Saw PCP in past 12 months</b>						94.8	[92.6,96.4]	82.1	[80.0,84.0]	< .001
<b>Ability to pay medical bills<sup>3</sup></b>										.690
Gotten worse						3.1	[1.8,5.2]	2.5	[1.6,3.7]	
Stayed the same						9.8	[7.1,13.5]	11.1	[8.9,13.6]	
Gotten better						87.1	[83.2,90.1]	86.5	[83.8,88.8]	

Weighted proportion of HMP enrollees' access to care, by presence of chronic disease defined by HEDIS 2016. See Appendix B for full definitions.

<sup>1</sup>HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>2</sup>Pearson's chi-squared test comparing proportions between those with and without chronic disease.

<sup>3</sup>Analysis is limited to enrollees who reported problems paying medicals bills before enrollment in HMP

**Table 8.3. Multivariate association between chronic disease (HEDIS 2016<sup>1</sup>) and improvements in physical and mental health outcomes among HMP enrollees**

Independent variables	Dependent variables					
	Improvements in physical health			Improvements in mental health		
	aOR	[95% CI]	<i>p</i> -value	aOR	[95% CI]	<i>p</i> -value
<b>1+ Chronic disease<sup>1</sup></b>	1.58	[1.31, 1.90]	< .001	1.15	[.95, 1.39]	.139
<b>Insurance duration prior to HMP</b>						
All year	Reference			Reference		
Some of the year	2.01	[1.48, 2.74]	< .001	1.28	[.93, 1.76]	.120
None of the year	2.32	[1.93, 2.80]	< .001	1.62	[1.33, 1.97]	< .001
<b>Current smoker</b>	.78	[.66, .93]	.007	1.00	[.84, 1.20]	.925
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.24	[1.00, 1.52]	.040	1.12	[.90, 1.38]	.278
51-64	1.16	[.95, 1.42]	.139	1.13	[.91, 1.39]	.242
<b>Female</b>	.95	[.80, 1.13]	.626			
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	1.04	[.86, 1.27]	.624	.95	[.78, 1.16]	.668
≥ 100%	.90	[.73, 1.10]	.320	.84	[.68, 1.03]	.106
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.16	[.94, 1.43]	.148	.95	[.77, 1.18]	.698
Other	.94	[.69, 1.29]	.742	.85	[.61, 1.18]	.340
More than one	1.30	[.83, 2.03]	.241	.95	[.60, 1.51]	.854

Logistic regression with adjusted odds ratios; each model is adjusted for coverage status prior to HMP, smoking status, age, gender, federal poverty level, and race.

<sup>1</sup>HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

**Table 8.4. Multivariate association between improvements in access to specific types of care and physical and mental health outcomes among HMP enrollees with chronic disease (HEDIS 2016<sup>1</sup>)**

Independent variables	Dependent variables					
	Improvements in physical health (Model n=1,090)			Improvements in mental health (Model n=1,085)		
	aOR	[95% CI]	p-value	aOR	[95% CI]	p-value
<b>Saw PCP in past 12 months</b>	.99	[.47, 2.10]	.999	1.84	[.77, 4.39]	.164
<b>Improved access to mental health services</b>	1.66	[1.13, 2.45]	.009	3.39	[2.32, 4.95]	< .001
<b>Improved access to prescriptions</b>	1.81	[1.26, 2.61]	.001	1.36	[.91, 2.04]	.127
<b>Improved access to specialty services</b>	1.83	[1.30, 2.58]	.001	1.43	[1.00, 2.04]	.048
<b>Insurance duration prior to HMP</b>						
All year	Reference			Reference		
Some of the year	.966	[.54, 1.70]	.907	1.23	[.68, 2.22]	.475
None of the year	2.01	[1.43, 2.81]	< .001	1.48	[1.02, 2.16]	.038
<b>Current smoker</b>	.73	[.53, 1.00]	.051	1.22	[.87, 1.70]	.230
<b>Age</b>						
19-34	Reference			Reference		
35-50	.94	[.57, 1.56]	.832	.93	[.54, 1.60]	.805
51-64	.97	[.60, 1.58]	.925	1.11	[.65, 1.89]	.684
<b>Female</b>	.73	[.53, 1.02]	.069	.81	[.58, 1.14]	.232
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	1.07	[.75, 1.54]	.673	1.30	[.91, 1.85]	.148
≥ 100%	1.33	[.89, 2.00]	.162	1.01	[.64, 1.57]	.965
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.51	[1.02, 2.23]	.037	1.46	[.98, 2.16]	.058
Other	1.13	[.61, 2.11]	.684	1.20	[.64, 2.2]	.559
More than one	1.26	[.54, 2.95]	.581	.76	[.24, 2.35]	.638

Logistic regression with adjusted odds ratios; each model is adjusted for coverage status prior to HMP, smoking status, age, gender, federal poverty level, and race. Models are limited to HMP enrollees with chronic disease.

<sup>1</sup>HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

**Table 8.5. Bivariate relationship between chronic disease (HEDIS 2016<sup>1</sup>) and self-reported HRA behavior choices among HMP enrollees**

	Among enrollees who reported completing the HRA <sup>2</sup>			Among all HMP respondents <sup>3</sup>		
	1+ Chronic disease (N=543)	No chronic disease (N=1,147)		1+ Chronic disease (N=1,161)	No chronic disease (N=2,929)	
	%	%	<i>p</i> -value <sup>4</sup>	%	%	<i>p</i> -value <sup>4</sup>
<b>HRA behaviors</b>						
Reduce/quit smoking	21.4	17.2	.092	9.6	6.6	.006
Get the influenza shot	0.9	0.8	.773	0.4	0.4	.980
Exercise	53.1	52.4	.846	23.7	20.0	.034
Nutrition	58.1	56.9	.725	25.9	21.7	.022

Weighted proportion of HMP enrollees self-reporting choosing a health behavior goal as part of the Health Risk Assessment, by presence of chronic disease as defined by HEDIS 2016. See Appendix B for full definitions.

<sup>1</sup>HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>2</sup>Analysis limited to enrollees who self-reported completing the Health Risk Assessment (N=1,690).

<sup>3</sup>For this analysis, denominator was changed to all HMP respondents, regardless of HRA completion status. Individuals who did not complete the HRA were coded as 0, and only those who completed the HRA and chose the selected behavior were coded as 1.

<sup>4</sup>Pearson's chi-squared test comparing proportions between those with and without chronic disease.

**Table 8.6. Demographic and health characteristics for HMP enrollees with and without chronic disease (DX codes<sup>1</sup>)**

Respondent Characteristics	1+ Chronic disease <sup>1</sup> (N= 2,940) 66.8 [64.8,68.7]		No chronic disease (N= 1,150) 33.2 [31.3,35.2]		p-value <sup>2</sup>
	Col %	[95% CI]	Col %	[95% CI]	
<b>Age</b>					< .001
19-34	27.9	[25.8, 30.2]	64.1	[60.6, 67.5]	
35-50	38.0	[35.8, 40.3]	26.0	[22.9, 29.3]	
51-64	34.1	[32.1, 36.1]	9.9	[8.3, 11.8]	
<b>Male</b>	45.5	[43.2, 47.8]	54.4	[50.7, 58.0]	< .001
<b>Race</b>					.109
White	61.3	[59.0, 63.4]	61.0	[57.2, 64.7]	
Black or African American	27.1	[25.0, 29.2]	24.1	[20.7, 27.7]	
Other	8.2	[7.0, 9.6]	9.9	[7.9, 12.4]	
More than one	3.5	[2.8, 4.4]	5.1	[3.6, 7.1]	
<b>Income, % of federal poverty level</b>					.056
0-35%	53.4	[51.9, 54.9]	48.7	[45.3, 52.1]	
36-99%	27.2	[25.9, 28.4]	30.9	[28.2, 33.8]	
≥ 100%	19.4	[18.4, 20.5]	20.4	[18.2, 22.7]	
<b>Health status</b>					< .001
Excellent	5.7	[4.7, 6.9]	17.2	[14.6, 20.2]	
Very good	19.9	[18.1, 21.9]	40.7	[37.0, 44.5]	
Good	35.8	[33.7, 38.0]	30.0	[26.7, 33.5]	
Fair	28.4	[26.4, 30.5]	9.8	[8.0, 12.0]	
Poor	10.1	[8.8, 11.6]	2.3	[1.4, 3.7]	
<b>Functional impairment (≥14 of past 30 days)</b>	23.4	[21.6, 25.4]	8.5	[6.5, 11.0]	< .001
<b>Physical health better since HMP</b>	53.3	[51.0, 55.6]	37.5	[33.9, 41.3]	< .001
<b>Mental health better since HMP</b>	40.5	[38.2, 42.8]	34.1	[30.5, 37.8]	.004

Weighted demographic characteristics of HMP enrollees, by presence of chronic disease.

<sup>1</sup> Definition of chronic disease from claims-based diagnosis codes. See Appendix B for full definitions.

<sup>2</sup> Pearson's chi-squared test comparing proportions between those with and without chronic disease.

**Table 8.7. Bivariate association between chronic disease (DX codes<sup>1</sup>) and access to care among HMP enrollees before and after HMP**

	Before HMP					After HMP				
	1+ Chronic disease <sup>1</sup> (N= 2,940)		No chronic disease (N= 1,150)		<i>p</i> -value <sup>2</sup>	1+ chronic disease <sup>1</sup> (N= 2,940)		No chronic disease (N= 1,150)		<i>p</i> -value <sup>2</sup>
	Col %	[95% CI]	Col %	[95% CI]		Col %	[95% CI]	Col %	[95% CI]	
<b>Insurance duration prior to HMP</b>					.690					
All year	30.7	[28.6, 32.9]	31.3	[27.9, 35.0]						
Some of the year	9.2	[8.0, 10.6]	10.2	[8.0, 12.8]						
None of the year	60.1	[57.8, 62.3]	58.5	[54.7, 62.2]						
<b>Years since last PCP visit prior to HMP</b>					.001					
Less than 1 year	43.4	[41.2, 45.7]	35.3	[31.8, 39.0]						
1-5 years	36.2	[34.0, 38.4]	42.7	[39.0, 46.5]						
More than 5 years	20.4	[18.5, 22.3]	22.0	[19.0, 25.2]						
<b>Problems paying bills</b>	50.8	[48.5, 53.0]	33.0	[29.6, 36.6]	< .001					
<b>Usual source of care</b>	75.9	[73.9, 77.9]	69.7	[66.2, 73.0]	.005	97.1	[96.1, 97.8]	82.4	[79.0, 85.3]	< .001
<b>Type of usual source of care</b>					.036					< .001
Clinic	18.4	[16.5, 20.5]	14.4	[11.6, 17.8]		16.5	[14.8, 18.3]	16.5	[13.9, 19.6]	
Doctor's office	47.9	[45.3, 50.5]	48.1	[43.5, 52.6]		77.3	[75.2, 79.3]	70.4	[66.7, 73.8]	
Urgent care/walk-in	15.1	[13.4, 17.0]	20.6	[17.2, 24.5]		4.2	[3.2, 5.4]	9.6	[7.4, 12.3]	
Emergency room	16.7	[14.8, 18.8]	15.3	[12.2, 19.0]		1.5	[1.0, 2.1]	2.2	[1.4, 3.3]	
Other place	1.8	[1.3, 2.6]	1.7	[0.9, 3.1]		0.5	[0.3, 0.9]	1.4	[0.7, 2.6]	
<b>Saw PCP in past 12 months</b>						93.1	[91.7, 94.2]	68.3	[64.3, 72.1]	< .001
<b>Ability to pay medical bills<sup>3</sup></b>										.877
Gotten worse						2.7	[1.9, 3.9]	2.4	[1.1, 5.1]	
Stayed the same						10.4	[8.5, 12.7]	11.4	[7.8, 16.4]	
Gotten better						86.8	[84.4, 88.9]	86.2	[81.0, 90.1]	

Weighted proportion of HMP enrollees' access to care, by presence of chronic disease.

<sup>1</sup> Definition of chronic disease from claims-based diagnosis codes. See Appendix B for full definitions.

<sup>2</sup> Pearson's chi-squared test comparing proportions between those with and without chronic disease.

<sup>3</sup> Analysis is limited to enrollees who reported problems paying medicals bills before enrollment in HMP

**Table 8.8. Multivariate association between chronic disease (DX codes<sup>1</sup>) and improvements in physical and mental health outcomes among HMP enrollees**

Independent variables	Dependent variables					
	Improved physical health			Improved mental health		
	aOR	[95% CI]	<i>p</i> -value	aOR	[95% CI]	<i>p</i> -value
<b>1+ Chronic disease<sup>1</sup></b>	1.95	[1.59, 2.39]	.000	1.29	[1.05, 1.58]	.014
<b>Insurance duration prior to HMP</b>						
All year	Reference			Reference		
Some of the year	2.02	[1.48, 2.77]	.000	1.28	[.93, 1.76]	.119
None of the year	2.34	[1.94, 2.82]	.000	1.62	[1.33, 1.97]	.000
<b>Current smoker</b>	.78	[.65, .93]	.006	1.00	[.84, 1.20]	.938
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.12	[.90, 1.38]	.291	1.07	[.86, 1.33]	.503
51-64	1.02	[.83, 1.26]	.810	1.06	[.86, 1.32]	.533
<b>Female</b>	.90	[.75, 1.0]	.255	1.01	[.84, 1.20]	.904
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	1.06	[.87, 1.30]	.500	.96	[.79, 1.17]	.727
≥ 100%	.90	[.73, 1.10]	.327	.84	[.68, 1.04]	.111
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.15	[.93, 1.42]	.195	.95	[.77, 1.17]	.651
Other	.94	[.68, 1.29]	.703	.85	[.61, 1.17]	.333
More than one	1.31	[.85, 2.02]	.212	.96	[.60, 1.51]	.871

Logistic regression with adjusted odds ratios; each model is adjusted for coverage status prior to HMP, smoking status, age, gender, federal poverty level, and race.

<sup>1</sup>Definition of chronic disease from claims-based diagnosis codes. See Appendix B for full definitions.

**Table 8.9. Multivariate association between improvements in access to specific types of care and physical and mental health outcomes among HMP enrollees with chronic disease (DX codes<sup>1</sup>)**

Independent variables	Dependent variables					
	Improved physical health (Model n=2,725)			Improved mental health (Model n=2,718)		
	aOR	[95% CI]	p-value	aOR	[95% CI]	p-value
<b>Saw PCP in past 12 months</b>	1.10	[.72, 1.67]	.635	1.15	[.75, 1.77]	.503
<b>Improved access to mental health services</b>	1.84	[1.43, 2.35]	< .001	3.74	[2.94, 4.77]	< .001
<b>Improved access to prescriptions</b>	1.96	[1.54, 2.49]	< .001	1.63	[1.27, 2.09]	< .001
<b>Improved access to specialty services</b>	1.60	[1.28, 2.00]	< .001	1.54	[1.23, 1.94]	< .001
<b>Insurance duration prior to HMP</b>						
All year	Reference			Reference		
Some of the year	1.64	[1.14, 2.35]	.007	.99	[.68, 1.44]	.985
None of the year	2.09	[1.67, 2.62]	< .001	1.18	[.93, 1.50]	.151
<b>Current smoker</b>	.74	[.60, .91]	.006	1.00	[.81, 1.24]	.949
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.15	[.87, 1.52]	.298	1.13	[.85, 1.50]	.373
51-64	1.14	[.87, 1.49]	.325	1.32	[1.00, 1.73]	.046
<b>Female</b>	.79	[.63, .98]	.034	.89	[.71, 1.10]	.296
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	1.16	[.92, 1.48]	.200	1.07	[.85, 1.35]	.527
≥ 100%	1.17	[.91, .51]	.200	.98	[.75, 1.28]	.907
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.30	[1.00, 1.68]	.044	1.13	[.87, 1.45]	.338
Other	.95	[.64, 1.39]	.799	1.02	[.67, 1.54]	.913
More than one	2.01	[1.18, 3.41]	.009	1.19	[.68, 2.08]	.532

Logistic regression with adjusted odds ratios; each model is adjusted for coverage status prior to HMP, smoking status, age, gender, federal poverty level, and race. Models are limited to HMP enrollees with chronic disease.

<sup>1</sup> Definition of chronic disease from claims-based diagnosis codes. See Appendix B for full definitions.

**Table 8.10. Bivariate relationship between chronic disease (DX codes<sup>1</sup>) and self-reported HRA behavior choices among HMP enrollees**

	Enrollees who completed the HRA <sup>2</sup>			All respondents <sup>3</sup>		
	1+ Chronic disease (N=1,297)	No chronic disease (N=393)		1+ Chronic disease (N=2,940)	No chronic disease (N=1,150)	
HRA behaviors	%	%	<i>p</i> -value <sup>4</sup>	%	%	<i>p</i> -value <sup>4</sup>
Reduce/quit smoking	18.5	18.3	.938	7.9	6.3	.187
Get the influenza shot	1.1	0.4	.099	0.5	0.1	.042
Exercise	53.8	49.6	.262	22.9	17.0	.001
Nutrition	57.1	57.6	.883	24.3	19.7	.021

Weighted proportion of HMP enrollees self-reporting choosing a health behavior goal as part of the Health Risk Assessment, by presence of chronic disease as defined DX codes.

<sup>1</sup> Definition of chronic disease from claims-based diagnosis codes. See Appendix B for full definitions.

<sup>2</sup> Analysis limited to enrollees who self-reported completing the Health Risk Assessment (N=1690).

<sup>3</sup> For this analysis, denominator was changed to all HMP respondents, regardless of HRA completion status. Individuals who did not complete the HRA were coded as 0, and only those who completed the HRA and chose the selected behavior were coded as 1.

<sup>4</sup> Pearson's chi-squared test comparing proportions between those with and without chronic disease.

## Section 9: Impact of HMP on enrollees with mental health or substance use disorder conditions

**Table 9.1 Multivariate association between mental health/substance use disorder, insurance pre-HMP and changes in access to care and health**

Independent variables	Dependent variables					
	Enrollees with mental health/ substance use disorder <sup>1</sup>			No insurance pre-HMP <sup>2</sup>		
	aOR	[95% CI]	<i>p</i> -value	aOR	[95% CI]	<i>p</i> -value
<b>Improved access to</b>						
Primary care	1.5	[1.3, 1.8]	< .001	2.9	[2.5, 3.5]	< .001
Specialty care	1.6	[1.4, 1.9]	< .001	2.0	[1.7, 2.4]	< .001
Dental care	1.2	[1.0, 1.4]	.034	2.1	[1.8, 2.5]	< .001
Mental health care	3.4	[2.8, 4.1]	< .001	1.8	[1.4, 2.1]	< .001
Substance use disorder treatment	2.9	[2.1, 4.0]	< .001	1.7	[1.2, 2.4]	< .001
Prescription medication	1.6	[1.4, 2.0]	< .001	2.3	[2.0, 2.7]	< .001
Cancer screening	1.2	[1.0, 1.5]	.036	2.1	[1.7, 2.5]	< .001
Preventive health care	1.3	[1.1, 1.6]	.002	2.2	[1.9, 2.6]	< .001
Family planning	1.1	[0.8, 1.4]	ns	2.1	[1.6, 2.7]	< .001
<b>Mental health improved</b>	1.7	[1.5, 2.1]	< .001	1.5	[1.2, 1.8]	< .001
<b>Physical health improved</b>	1.3	[1.1, 1.5]	.003	1.9	[1.6, 2.2]	< .001

Logistic regression with adjusted odds ratios; each row represents a separate model adjusted for mental health/substance use disorder, coverage status prior to HMP, race, ethnicity, gender, federal poverty level, and any chronic disease (HEDIS 2016). See Appendix B for full definitions. Two independent predictors are shown in the table – presence of mental health/substance use and no insurance prior to HMP.

<sup>1</sup> Reference group for all analyses were enrollees that did not have a mental health/substance use disorder based on HEDIS mental health definition. See Appendix B for full definition.

<sup>2</sup> Reference group enrollees that had insurance pre-HMP

**Table 9.2. Bivariate relationship between various combinations of mental and physical health conditions and forgone care before and after HMP**

	<b>Mental<sup>1</sup> and physical<sup>2</sup> health conditions</b>	<b>MH/ SUD conditions only<sup>1</sup></b>	<b>Physical health conditions only<sup>2</sup></b>	<b>No health conditions</b>	
	% Yes	% Yes	% Yes	% Yes	<i>p</i> -value <sup>3</sup>
<b>Any forgone care prior to HMP</b>	41.1	36.8	32.9	27.1	< .001
<b>Reasons for forgone care prior to HMP</b>					
Cost	77.7	75.0	79.1	79.5	.552
No insurance	66.2	67.4	69.9	67.2	.948
Insurance not accepted	7.0	2.4	3.0	4.4	.062
Plan wouldn't pay	8.4	9.1	7.1	6.5	.598
No appointment	4.5	3.4	3.0	3.3	.843
No transportation	4.8	2.3	0.8	2.6	.143
Other	6.4	8.4	5.3	7.3	.716
<b>Any forgone care past 12 months</b>	18.1	17.8	13.7	13.5	.039
<b>Reasons for forgone care past 12 months</b>					
Cost	18.5	30.2	14.5	26.4	.098
No insurance	9.5	6.7	6.3	10.4	.672
Insurance not accepted	26.1	24.2	32.2	20.6	.554
Plan wouldn't pay	46.1	39.5	29.5	38.9	.416
No appointment	7.9	11.3	10.1	13.7	.589
No transportation	8.1	5.1	-	7.5	.409
Other	22.4	32.3	26.5	31.7	.380

Weighted proportions of forgone care before and after enrollment in HMP by presence of mental and physical health conditions.

<sup>1</sup> Mental conditions include mental and substance use disorder conditions defined by HEDIS. See Appendix B for full definition.

<sup>2</sup> HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>3</sup> Pearson's chi-squared test

**Table 9.3a. Bivariate relationship between various combinations of mental and physical health conditions and use of preventive services**

	<b>Mental<sup>1</sup> and physical<sup>2</sup> health conditions</b>	<b>MH/ SUD conditions only<sup>1</sup></b>	<b>Physical health conditions only<sup>2</sup></b>	<b>No health conditions</b>	
	Unadjusted %	Unadjusted %	Unadjusted %	Unadjusted %	<i>p</i> -value <sup>3</sup>
Primary care visit	99.1	93.6	99.3	80.7	< .001
Any cancer screening	54.0	46.5	49.8	35.9	< .001
Dental visit	63.9	63.9	53.9	55.8	< .001
Any nutrition service	6.0	1.1	5.6	0.7	< .001
Test for STI	15.5	18.6	8.3	10.9	< .001
Statin prescription	44.3	10.4	43.6	8.4	< .001
Varenicline and/or nicotine replacement prescription	25.3	12.9	12.8	4.5	< .001
Vaccine (any)	61.1	44.7	55.8	34.3	< .001
Any preventive service	95.6	89.9	93.8	79.6	< .001

Weighted percent of HMP enrollees with claims for preventive services. See Appendix B for full definitions.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Mental conditions include mental and substance use disorder conditions defined by HEDIS. See Appendix B for full definition.

<sup>2</sup> HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>3</sup> Pearson's chi-squared test

**Table 9.3b. Multivariate associations between various combinations of mental and physical health conditions and use of preventive services**

	Mental <sup>1</sup> and physical <sup>2</sup> health conditions			MH/SUD conditions only <sup>1</sup>			Physical health conditions only <sup>2</sup>			No health conditions		
	%	95% CI	<i>p</i> -value	%	95% CI	<i>p</i> -value	%	95% CI	<i>p</i> -value	%	95% CI	<i>p</i> -value
Primary care visit	98.9	[97.8, 1.00]	REF	93.4	[91.1, 95.5]	0.001	99.0	[97.9, 1.00]	0.881	82.5	[79.9, 85.1]	<0.001
Any cancer screening	49.6	[46.7, 53.4]	REF	46.5	[43.7, 49.3]	0.185	40.9	[36.1, 45.7]	0.004	39.0	[36.3, 41.7]	<0.001
Dental visit	64.0	[59.5, 68.4]	REF	63.6	[60.2, 67.0]	0.895	53.0	[46.7, 59.2]	0.004	56.0	[52.9, 59.2]	0.006
Any nutrition service	5.9	[3.6, 8.3]	REF	1.1	[0.4, 1.9]	<0.001	5.5	[2.7, 8.2]	0.782	0.7	[0.2, 1.1]	<0.001
Test for STI	18.2	[14.5, 21.8]	REF	18.1	[15.5, 20.8]	0.992	10.0	[6.3, 13.7]	0.003	10.0	[8.1, 11.6]	<0.001
Statin prescription	34.8	[31.2, 38.4]	REF	12.7	[10.6, 14.7]	<0.001	30.2	[25.6, 35.0]	0.127	9.4	[7.6, 11.2]	<0.001
Varenicline and/or nicotine replacement prescription	21.6	[18.1, 25.0]	REF	13.3	[11.0, 15.6]	<0.001	10.9	[7.9, 13.9]	<0.001	5.1	[3.8, 6.4]	<0.001
Vaccine (any)	59.0	[54.4, 63.5]	REF	45.4	[41.9, 48.9]	<0.001	53.5	[47.1, 60.0]	0.164	35.1	[32.0, 38.1]	<0.001
Any preventive service <sup>3</sup>	94.9	[92.5, 97.2]	REF	89.8	[87.7, 92.0]	0.006	92.4	[88.7, 96.1]	0.240	81.1	[78.6, 83.5]	<0.001

Logistic regression analysis with marginal estimates. Each row is a separate model adjusted for age, gender, race, ethnicity, and income.

STI is an acronym for sexually transmitted infection.

<sup>1</sup> Mental conditions include mental and substance use disorder conditions defined by HEDIS. See Appendix B for full definition.

<sup>2</sup> HEDIS definition of chronic disease includes diagnoses of COPD, asthma, cardiovascular disease, and diabetes. See Appendix B for full definitions.

<sup>3</sup> Any of the above preventive services, except for PCP visit. This includes any cancer screening, dental visit, any nutrition service, STI screening, statin prescription, any smoking cessation aid, or any vaccine

**Table 9.4a. Bivariate relationship between mental health and substance use disorder and impact on work/employment among HMP enrollees**

	Employed		Better job at work <sup>1</sup>		Better look for job <sup>2</sup>		Get better job <sup>3</sup>	
	%	<i>p</i> -value <sup>4</sup>	%	<i>p</i> -value <sup>4</sup>	%	<i>p</i> -value <sup>4</sup>	%	<i>p</i> -value <sup>4</sup>
<b>Enrollees</b>		< .001		< .001		.515		.329
MH/SUD enrollees <sup>5</sup>	43.1		80.1		59.1		40.9	
Non-MH/SUD enrollees	53.7		67.3		56.3		34.7	

Weighted proportions

<sup>1</sup>Employed enrollees who responded “Yes” to the question, “Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?”

<sup>2</sup>Out of work enrollees who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan has made me better able to look for a job.”

<sup>3</sup>Enrollees with a recent job change who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan helped me get a better job.”

<sup>4</sup>Pearson's chi-squared test

<sup>5</sup>Mental health/substance use disorder based on HEDIS mental health definition. See Appendix B for full definition.

**Table 9.4b Multivariate association between health improvements and impact of HMP on work/employment among HMP enrollees with mental health or substance use disorder conditions<sup>1</sup>**

Independent Variables	Dependent Variables											
	Employed/Self-Employed (Model n=1,993)			Better job at work <sup>2</sup> (Model n=862)			Better able to look for job <sup>3</sup> (Model n=477)			Helped get a better job <sup>4</sup> (Model n=211)		
	aOR	[95% CI]	p- value	aOR	[95% CI]	p- value	aOR	[95% CI]	p- value	aOR	[95% CI]	p- value
<b>Physical or mental health better since HMP enrollment</b>	1.11	[0.83, 1.48]	.482	5.62	[3.68, 8.59]	< .001	2.71	[1.61, 4.59]	< .001	5.38	[2.24, 12.94]	< .001
<b>Age</b>												
19-34	Reference			Reference			Reference			Reference		
35-50	.82	[0.60, 1.14]	.235	.90	[0.55, 1.47]	.684	1.13	[0.64, 1.99]	.680	.55	[0.23, 1.30]	.172
51-64	.56	[0.41, 0.78]	< .001	.99	[0.58, 1.71]	.976	1.40	[0.79, 2.46]	.248	.68	[0.23, 1.97]	.476
<b>Female</b>	1.21	[0.92, 1.60]	.179	1.86	[1.19, 2.91]	.006	.71	[0.44, 1.16]	.173	1.58	[0.65, 3.86]	.316
<b>Race</b>												
White	Reference			Reference			Reference			Reference		
Black or African American	.95	[0.67, 1.35]	.778	1.04	[0.57, 1.89]	.894	1.17	[0.66, 2.05]	.591	1.65	[0.58, 4.66]	.346
Other	1.31	[0.71, 2.43]	.391	1.25	[0.49, 3.20]	.637	1.58	[0.43, 5.75]	.488	1.97	[0.42, 9.26]	.392
More than one	1.05	[0.52, 2.12]	.887	2.16	[0.49, 9.44]	.306	.89	[0.30, 2.63]	.826	.11	[0.01, 1.49]	.096
<b>Income, % of federal poverty level</b>												
0-35%	Reference			Reference			Reference			Reference		
36-99%	3.25	[2.40, 4.40]	< .001	.63	[0.36, 1.10]	.105	.73	[0.39, 1.38]	.333	.59	[0.24, 1.48]	.261
≥ 100%	3.75	[2.69, 5.22]	< .001	.56	[0.32, 0.98]	.044	.82	[0.37, 1.80]	.617	.30	[0.11, 0.83]	.020
<b>Fair or poor health</b>	.66	[0.49, 0.89]	.006	.64	[0.38, 1.10]	.104	.82	[0.50, 1.35]	.429	.85	[0.31, 2.30]	.747
<b>Any chronic disease</b>	.76	[0.51, 1.14]	.184	1.34	[0.80, 2.25]	.260	1.05	[0.43, 2.56]	.923	1.40	[0.41, 4.85]	.592
<b>Functional impairment</b>												
0-13 days	Reference			Reference			Reference			Reference		
14-30 days	.20	[0.13, 0.29]	< .001	1.03	[0.48, 2.20]	.945	.62	[0.37, 1.05]	.075	.55	[0.09, 3.27]	.510
Don't know	.17	[0.06, 0.52]	.002	2.68	[0.33, 21.61]	.355	2.49	[0.45, 13.58]	.295	-	-	-
<b>Constant</b>	.98	[0.59, 1.61]	0.926	1.35	[0.62, 2.94]	.444	.98	[0.38, 2.52]	.960	.23	[0.04, 1.25]	.089

Logistic regression with adjusted odds ratios predicting employment outcomes for HMP enrollees with mental health conditions or substance abuse disorder. Each column is a separate model, each adjusted for the variables shown.

<sup>1</sup> Mental health/substance use disorder based on HEDIS mental health definition. See Appendix B for full definition.

<sup>2</sup> Employed enrollees who responded "Yes" to the question, "Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?"

<sup>3</sup> Out of work enrollees who strongly agreed or agreed that "Having health insurance through the Healthy Michigan Plan has made me better able to look for a job."

<sup>4</sup> Enrollees with a recent job change who strongly agreed or agreed that "Having health insurance through the Healthy Michigan Plan helped me get a better job."

**Table 9.4c. Multivariate association between health improvements and impact of HMP on work/employment among HMP enrollees WITHOUT mental health or substance use disorder conditions<sup>1</sup>**

Independent Variables	Dependent Variables											
	Employed/Self-Employed (Model n=2,030)			Better job at work <sup>2</sup> (Model n=1,095)			Better able to look for job <sup>3</sup> (Model n=415)			Helped get a better job <sup>4</sup> (Model n=224)		
	aOR	[95% CI]	p- value	aOR	[95% CI]	p- value	aOR	[95% CI]	p value	aOR	[95% CI]	p- value
<b>Physical or mental health better since HMP enrollment</b>	1.03	[0.80, 1.34]	.796	3.27	[2.33, 4.60]	< .001	3.16	[1.78, 5.61]	< .001	2.65	[1.23, 5.69]	.013
<b>Age</b>												
19-34	Reference			Reference			Reference			Reference		
35-50	1.18	[0.86, 1.63]	.308	.96	[0.64, 1.43]	.843	1.71	[0.87, 3.37]	.123	1.79	[0.73, 4.41]	.206
51-64	.58	[0.44, 0.78]	< .001	1.28	[0.86, 1.92]	.229	2.27	[1.16, 4.43]	.017	2.99	[1.04, 8.56]	.042
<b>Female</b>	.84	[0.65, 1.09]	.198	1.12	[0.79, 1.57]	.528	.75	[0.42, 1.35]	.340	.31	[0.15, 0.66]	.002
<b>Race</b>												
White	Reference			Reference			Reference			Reference		
Black or African American	1.00	[0.74, 1.36]	.988	2.15	[1.41, 3.27]	< .001	.64	[0.34, 1.19]	.156	1.72	[0.71, 4.18]	.228
Other	.70	[0.46, 1.06]	.095	1.27	[0.64, 2.53]	.486	1.37	[0.53, 3.56]	.517	1.87	[0.63, 5.54]	.256
More than one	1.26	[0.61, 2.61]	.534	1.78	[0.74, 4.27]	.200	.30	[0.09, 1.08]	.065	.97	[0.22, 4.31]	.965
<b>Income, % of federal poverty level</b>												
0-35%	Reference			Reference			Reference			Reference		
36-99%	4.37	[3.27, 5.83]	< .001	1.02	[0.61, 1.68]	.952	.92	[0.49, 1.72]	.796	1.51	[0.64, 3.56]	.342
≥ 100%	5.19	[3.80, 7.09]	< .001	0.75	[0.46, 1.22]	.244	.58	[0.23, 1.48]	.253	1.15	[0.45, 2.94]	.778
<b>Fair or poor health</b>	.70	[0.51, 0.96]	.025	1.62	[0.99, 2.65]	.053	1.95	[1.01, 3.75]	.045	1.20	[0.41, 3.53]	.746
<b>Any chronic disease</b>	.85	[0.63, 1.13]	.257	1.34	[0.94, 1.90]	.105	.63	[0.34, 1.18]	.146	1.07	[0.48, 2.36]	.874
<b>Functional impairment</b>												
0-13 days	Reference			Reference			Reference			Reference		
14-30 days	.41	[0.26, 0.66]	< .001	1.51	[0.64, 3.55]	.345	1.31	[0.57, 2.98]	.525	2.75	[0.46, 16.31]	.266
Don't know	.54	[0.18, 1.65]	.277	1.77	[0.31, 10.06]	.521	1.0	-	-	9.82	[0.51, 188.53]	.129
<b>Constant</b>	.80	[0.56, 1.15]	.231	.72	[0.42, 1.25]	.246	.67	[0.35, 1.29]	.234	.22	[0.09, 0.56]	.001

Logistic regression with adjusted odds ratios predicting employment outcomes for HMP enrollees with mental health conditions or substance abuse disorder. Each column is a separate model, each adjusted for the variables shown.

<sup>1</sup> Mental health/substance use disorder based on HEDIS mental health definition. See Appendix B for full definition.

<sup>2</sup> Employed enrollees who responded “Yes” to the question, “Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?”

<sup>3</sup> Out of work enrollees who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan has made me better able to look for a job.”

<sup>4</sup> Enrollees with a recent job change who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan helped me get a better job.”

## Section 10: Awareness of HMP dental coverage, perceived access to and use of dental services, oral health status and outcomes

**Table 10.1. Bivariate associations between respondent characteristics and awareness of HMP dental coverage, perceived access to dental care, dental care use and perceived oral health after HMP enrollment**

Respondent Characteristic	Awareness HMP covers dental <sup>1</sup>			Improved access to dental care <sup>2</sup>			Any dental care visit <sup>3</sup>			Improved oral health <sup>4</sup>		
	% Yes	95% CI	<i>p</i> -value <sup>5</sup>	% Better	95% CI	<i>p</i> -value <sup>5</sup>	% Yes	95% CI	<i>p</i> -value <sup>5</sup>	% Better	95% CI	<i>p</i> -value <sup>5</sup>
<b>Gender</b>			< .001			.117			< .001			.073
Female	80.8	[78.8, 82.7]		47.6	[45.1, 50.1]		62.9	[60.4, 65.4]		41.2	[38.8, 43.7]	
Male	73.2	[70.4, 75.9]		44.4	[41.4, 47.5]		55.9	[52.8, 58.9]		37.7	[34.8, 40.7]	
<b>Age</b>			.747			.336			.380			.824
19-34	76.9	[73.8, 79.8]		44.4	[41.1, 47.8]		58.0	[54.5, 61.3]		38.8	[35.6, 42.1]	
35-50	76.7	[73.6, 79.5]		47.7	[44.3, 51.1]		61.0	[57.6, 64.3]		39.9	[36.6, 43.3]	
51-64	78.2	[75.6, 80.6]		46.4	[43.3, 49.6]		59.9	[56.8, 63.0]		40.1	[37.1, 43.3]	
<b>Race</b>			.162			.963			.263			.004
White	77.2	[75.1, 79.2]		46.4	[44.0, 48.8]		61.1	[58.7, 63.5]		37.6	[35.3, 39.9]	
Black or African American	79.7	[75.9, 83.1]		46.5	[42.1, 50.8]		56.8	[52.4, 61.1]		45.4	[41.1, 49.8]	
Hispanic/Latino	70.5	[54.8, 82.5]		47.8	[34.7, 61.1]		55.2	[41.3, 68.3]		30.6	[20.3, 43.3]	
Other	73.5	[68.1, 78.2]		44.9	[39.3, 50.6]		57.7	[52.0, 63.2]		37.4	[32.1, 43.0]	
<b>Employment status</b>			.392			.033			.822			.587
Employed/self-employed	77.9	[75.5, 80.2]		48.2	[45.5, 51.0]		59.7	[57.0, 62.4]		40.1	[37.4, 42.8]	
Not employed	76.5	[73.9, 78.8]		44.0	[41.2, 46.8]		59.3	[56.5, 62.1]		39.0	[36.3, 41.8]	
<b>Insurance duration prior to HMP</b>			.207			< .001			.010			< .001
All year	77.7	[74.7, 80.4]		32.6	[29.4, 36.0]		59.0	[55.5, 62.5]		31.7	[28.5, 35.0]	
Some of the year	82.0	[76.7, 86.3]		48.0	[41.6, 54.4]		68.7	[62.5, 74.3]		40.7	[34.5, 47.2]	
None of the year	76.9	[74.5, 79.1]		53.5	[50.8, 56.1]		58.2	[55.6, 60.8]		44.1	[41.5, 46.7]	
<b>Help reading health materials</b>			.066			.124			.638			.573
Sometimes/Often/Always	73.5	[68.8, 77.8]		42.6	[37.9, 47.4]		60.5	[55.6, 65.2]		38.3	[33.7, 43.0]	
Never/Rarely	77.9	[76.0, 79.6]		46.7	[44.6, 48.9]		59.3	[57.1, 61.4]		39.7	[37.7, 41.9]	
<b>Income, % of federal poverty level</b>			.369			.406			.917			.245
0-35%	77.1	[74.3, 79.7]		46.8	[43.7, 49.9]		59.2	[56.0, 62.2]		40.0	[37.0, 43.1]	
36-99%	78.5	[75.9, 80.9]		46.3	[43.2, 49.4]		59.9	[56.8, 63.0]		40.7	[37.7, 43.8]	
≥ 100%	75.3	[72.0, 78.3]		43.6	[40.2, 47.2]		59.8	[56.2, 63.3]		36.6	[33.3, 40.0]	

Weighted proportions of HMP enrollees' knowledge and use of dental coverage, by demographic and health characteristics.

<sup>1</sup> Awareness of HMP coverage of dental services, self-reported

<sup>2</sup> HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same)

<sup>3</sup> Dental care use based on claims data. See Appendix B for full definition.

<sup>4</sup> Improved health of teeth and gums reported by HMP enrollees

<sup>5</sup> Pearson's chi-squared test

**Table 10.2. Bivariate associations between awareness of HMP dental coverage and improved access to dental care, dental care use with HMP and improved oral health after HMP enrollment**

	Awareness HMP covers dental <sup>1</sup>				
	Yes		No		<i>p</i> -value <sup>2</sup>
	Column %	95% CI	Column %	95% CI	
<b>Access to dental care<sup>3</sup></b>					< .001
Better	55.3	[53.0, 57.5]	15.0	[12.3, 18.3]	
Same/Worse/DK	44.7	[42.5, 47.0]	85.0	[81.7, 87.7]	
<b>Oral health<sup>4</sup></b>					< .001
Better	47.3	[45.1, 49.5]	13.3	[10.8, 16.2]	
Same/Worse/DK	52.7	[50.5, 54.9]	86.7	[83.8, 89.2]	
<b>Any dental visit<sup>5</sup></b>					< .001
Yes	68.9	[66.8, 70.9]	27.8	[24.2, 31.7]	
No	31.1	[29.1, 33.2]	72.2	[68.3, 75.8]	

Weighted proportions of dental care use and outcomes, by awareness of HMP dental coverage.

<sup>1</sup> Awareness of HMP coverage of dental services, self-reported

<sup>2</sup> Pearson's chi-squared test

<sup>3</sup> HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same)

<sup>4</sup> Dental care use based on claims data. See Appendix B for full definition.

<sup>5</sup> Improved health of teeth and gums reported by HMP enrollees

**Table 10.3. Bivariate associations between improved access to dental care with HMP, improved oral health and dental care use**

	Any dental visit <sup>1</sup>				<i>p</i> -value <sup>2</sup>
	Yes		No		
	Row %	95% CI	Row %	95% CI	
<b>Access to dental care<sup>3</sup></b>					< .001
Better	77.4	[74.7, 79.8]	22.6	[20.2, 25.3]	
Worse/Same/DK	44.3	[41.6, 47.0]	55.7	[53.0, 58.4]	
<b>Oral health<sup>4</sup></b>					< .001
Better	85.2	[82.8, 87.3]	14.8	[12.7, 17.2]	
Worse/Same/DK	42.8	[40.3, 45.4]	57.2	[54.6, 59.7]	

Weighted proportions of dental care use by perceived access and improved oral health.

<sup>1</sup>Dental care use based on claims data. See Appendix B for full definition.

<sup>2</sup>Pearson's chi-squared test

<sup>3</sup>HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same)

<sup>4</sup>Improved health of teeth and gums reported by HMP enrollees

**Table 10.4. Bivariate associations between improved access to dental care with HMP, dental care use and improved oral health**

	Oral health <sup>1</sup>				<i>p</i> -value <sup>2</sup>
	Better		Worse		
	Row %	95% CI	Row %	95% CI	
<b>Access to dental care<sup>3</sup></b>					< .001
Better	67.9	[65.2, 70.6]	32.1	[29.4, 34.8]	
Worse/Same/DK	15.4	[13.5, 17.6]	84.6	[82.4, 86.5]	
<b>Any dental visit<sup>4</sup></b>					< .001
Yes	56.5	[54.0, 59.0]	43.5	[41.0, 46.0]	
No	14.4	[12.4, 16.8]	85.6	[83.2, 87.5]	

Weighted proportions of dental care use by perceived access and improved oral health.

1 Improved health of teeth and gums reported by HMP enrollees

2 Pearson's chi-squared test

3 HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same)

4 Dental care use based on claims data. See Appendix B for full definition.

**Table 10.5. Multivariate logistic regression analysis of the association between HMP enrollee characteristics and dental care use after HMP enrollment**

Independent variables	Dependent variables <sup>1</sup>					
	Any dental visit <sup>2</sup> (Weighted N= 3,931)			Any dental visit <sup>2</sup> (Weighted N= 3,933)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Awareness HMP covers dental<sup>3</sup></b>						
No	Reference			Reference		
Yes	5.89	[4.72, 7.35]	< .001			
<b>Improved access to dental care<sup>3</sup></b>						
No	Reference					
Yes	4.71	[3.87, 5.73]	< .001			
<b>Gender</b>						
Male	Reference			Reference		
Female	1.28	[1.07, 1.55]	.008	1.21	[1.01, 1.45]	.035
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.20	[0.95, 1.50]	.118	1.25	[1.00, 1.56]	.048
51-64	1.10	[0.89, 1.36]	.398	1.09	[0.88, 1.34]	.424
<b>Race</b>						
White	Reference			Reference		
Black or African American	0.88	[0.70, 1.10]	.260	0.81	[0.65, 1.02]	.078
Hispanic/Latino	0.76	[0.42, 1.40]	.380	0.86	[0.50, 1.49]	.599
Other	0.94	[0.71, 1.26]	.697	0.99	[0.76, 1.30]	.967
<b>Income, % of federal poverty level</b>						
0-35%	Reference			Reference		
36-99%	0.96	[0.77, 1.20]	.747	0.96	[0.76, 1.20]	.735
≥ 100%	0.98	[0.77, 1.24]	.842	1.00	[0.79, 1.26]	.980
<b>Employment status</b>						
Employed/self-employed	Reference			Reference		
Not employed	1.06	[0.87, 1.30]	.560	1.02	[0.84, 1.24]	.870
<b>Insurance duration prior to HMP</b>						
All of the year	Reference			Reference		
Some of the year	1.23	[0.88, 1.73]	.216	1.50	[1.09, 2.07]	.013
None of the year	0.70	[0.56, 0.87]	.001	1.01	[0.83, 1.23]	.941
<b>Constant</b>	0.77	[0.56, 1.06]	.104	0.31	[0.22, 0.44]	< .001

aOR = adjusted odds ratio; CI = confidence interval; HMP = Healthy Michigan Plan

<sup>1</sup> Each column represents a different multivariable logistic regression model, adjusted for age, gender, race, income, employment status, insurance duration in the 12 months before HMP enrollment

<sup>2</sup> Dental care use based on claims data. See Appendix B for full definition.

<sup>3</sup> HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same)

**Table 10.6. Multivariate logistic regression analysis of the associations between HMP enrollee characteristics, dental care use, improved oral health and employment-related outcomes**

	Dependent variables <sup>1</sup>											
	Model 1 Improved oral health (N= 3,930)			Model 2a Better job at work <sup>2</sup> (N= 2,006)			Model 2b Better able to look for job <sup>3</sup> (N= 919)			Model 2c Helped get a better job <sup>4</sup> (N= 433)		
Independent variables	aOR	95% CI	p-value	aOR	95% CI	p-value	aOR	95% CI	p-value	aOR	95% CI	p-value
<b>Any dental visit</b>												
No	Reference											
Yes	8.25	[6.65, 10.24]	< .001									
<b>Improved oral health</b>												
No				Reference			Reference			Reference		
Yes				1.62	[1.25, 2.12]	< .001	1.49	[1.06, 2.10]	.022	1.60	[0.93, 2.75]	.092
<b>Gender</b>												
Male	Reference			Reference			Reference			Reference		
Female	1.12	[0.92, 1.35]	.249	1.42	[1.11, 1.82]	.005	0.81	[0.57, 1.14]	.223	0.78	[0.45, 1.35]	.380
<b>Age</b>												
19-34	Reference			Reference			Reference			Reference		
35-50	0.90	[0.72, 1.13]	.381	1.04	[0.78, 1.38]	.799	1.25	[0.83, 1.88]	.288	0.87	[0.48, 1.60]	.662
51-64	0.99	[0.79, 1.23]	.905	1.28	[0.96, 1.71]	.097	1.69	[1.12, 2.54]	.012	1.33	[0.68, 2.62]	.406
<b>Race</b>												
White	Reference			Reference			Reference			Reference		
Black or African American	1.61	[1.28, 2.03]	< .001	1.51	[1.09, 2.10]	.013	0.85	[0.58, 1.25]	.409	1.41	[0.74, 2.66]	.295
Hispanic/Latino	0.65	[0.35, 1.22]	.179	1.56	[0.68, 3.56]	.291	0.54	[0.16, 1.82]	.323	2.75	[0.68, 11.10]	.154
Other	1.09	[0.81, 1.46]	.565	1.31	[0.87, 1.97]	.203	1.02	[0.59, 1.75]	.955	1.26	[0.60, 2.61]	.542
<b>Income, % of federal poverty level</b>												
0-35%	Reference			Reference			Reference			Reference		
36-99%	1.11	[0.89, 1.38]	.349	0.77	[0.55, 1.07]	.124	0.86	[0.57, 1.30]	.471	0.89	[0.48, 1.63]	.703
≥ 100%	0.90	[0.711, 1.15]	.405	0.65	[0.46, 0.91]	.011	0.75	[0.42, 1.32]	.315	0.53	[0.27, 1.03]	.059
<b>Employment status</b>												
Employed/self-employed	Reference											
Not employed	0.93	[0.76, 1.13]	.483									
<b>Insurance duration prior to HMP</b>												
All of the year	Reference			Reference			Reference			Reference		
Some of the year	1.28	[0.92, 1.78]	.137	1.58	[1.00, 2.50]	.049	0.74	[0.57, 1.30]	.471	1.64	[0.65, 4.16]	.297
None of the year	1.96	[1.58, 2.43]	< .001	1.18	[0.89, 1.56]	.247	1.06	[0.42, 1.32]	.315	2.39	[1.29, 4.44]	.006
<b>Constant</b>	0.09	[0.06, 0.14]	< .001	1.41	[0.92, 2.18]	.113	0.99	[0.60, 1.62]	.955	0.33	[0.15, 0.73]	.006

aOR = adjusted odds ratio; CI = confidence interval; HMP = Healthy Michigan Plan

<sup>1</sup>Each column represents a different multivariable logistic regression model, adjusted for age, gender, race, income, employment status, insurance duration in the 12 months before HMP enrollment

<sup>2</sup>Employed enrollees who responded “Yes” to the question, “Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?”

<sup>3</sup>Out of work enrollees who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan has made me better able to look for a job.”

<sup>4</sup>Enrollees with a recent job change who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan helped me get a better job.”

**Table 10.7. Bivariate association between improved access to dental care, dental care use after HMP enrollment, improved oral health and job-related outcomes**

	Better job at work <sup>1</sup>					HMP helped me look for a job <sup>2</sup>					HMP helped me get a better job <sup>3</sup>				
	Yes		No		<i>p</i> -value <sup>4</sup>	Agree/Strongly agree		Neutral/Disagree/Strongly disagree		<i>p</i> -value <sup>4</sup>	Agree/Strongly agree		Neutral/Disagree/Strongly disagree		<i>p</i> -value <sup>4</sup>
Row %	95% CI	Row %	95% CI	Row %		95% CI	Row %	95% CI	Row %		95% CI	Row %	95% CI	Row %	
<b>Access to dental care<sup>5</sup></b>					< .001					.002					< .001
Better	76.8	[73.2, 80.0]	23.2	[20.0,26.8]		61.5	[55.7, 67.0]	38.5	[33.0,44.3]		51.2	[42.0, 60.4]	48.8	[39.6, 58.0]	
Worse/Same/DK	62.6	[58.8, 66.1]	37.4	[33.9,41.2]		48.8	[43.1, 54.5]	51.2	[45.5,56.9]		24.5	[18.2, 32.2]	75.5	[67.8, 81.8]	
<b>Any dental visit<sup>6</sup></b>					.114					.988					< .001
Yes	71.0	[67.7, 74.2]	29.0	[25.8,32.3]		54.5	[49.3, 59.6]	45.5	[40.4,50.7]		39.0	[31.4, 47.2]	61.0	[52.8, 68.6]	
No	66.9	[62.8, 70.8]	33.1	[29.2,37.3]		54.6	[48.0, 61.0]	45.4	[39.0,52.0]		34.1	[25.2, 44.3]	65.9	[55.7, 74.8]	
<b>Oral health<sup>7</sup></b>					< .001					.038					.111
Better	76.1	[72.1, 79.7]	23.9	[20.3,27.9]		59.9	[53.5, 66.1]	40.1	[33.9,46.5]		43.2	[33.7, 53.2]	56.8	[46.8, 66.3]	
Worse/Same/DK	65.0	[61.6, 68.2]	35.0	[31.8,38.4]		51.1	[45.8, 56.4]	48.9	[43.6,54.2]		33.0	[25.7, 41.2]	67.0	[58.8, 74.3]	

Weighted proportions of employment outcomes by dental care use, perceived access, and improved oral health.

<sup>1</sup>Employed enrollees who responded “Yes” to the question, “Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?”

<sup>2</sup>Out of work enrollees who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan has made me better able to look for a job.”

<sup>3</sup>Enrollees with a recent job change who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan helped me get a better job.”

<sup>4</sup>Pearson's chi-squared test

<sup>5</sup>HMP enrollees reported improved access to dental care after enrollment (compared with Worse/Same).

<sup>6</sup>Dental care use based on claims data. See Appendix B for full definition.

<sup>7</sup>Improved health of teeth and gums reported by HMP enrollees.

## Section 11: Impact of HMP on reproductive health services

Table 11.1. Demographic and health characteristics of female respondents ages 19-44

	%	[95% CI]
<b>Age (n=1,166)</b>		
19-24	23.8	[20.8, 27.1]
25-34	44.4	[40.9, 47.9]
35-44	31.8	[28.6, 35.2]
<b>Race/ethnicity (n=1,160)</b>		
White, non-Hispanic	59.9	[56.4, 63.4]
Black, non-Hispanic	24.6	[21.5, 27.9]
Hispanic/Latino	2.2	[1.4, 3.3]
Other	13.4	[11.1, 16.0]
<b>Income, % of federal poverty level (n=1,166)</b>		
0-35%	40.2	[36.8, 43.6]
36-99%	34.5	[31.8, 37.3]
≥ 100%	25.3	[23.1, 27.8]
<b>Married or partnered (n=1,164)</b>		
Yes	23.7	[21.2, 26.4]
No	76.3	[73.6, 78.8]
<b>Urbanicity (n=1,166)</b>		
Rural	17.7	[15.7, 19.9]
Urban	82.3	[80.1, 84.3]
<b>Health status (n=1,166)</b>		
Excellent, very good, or good health	76.5	[73.4, 79.4]
Fair or poor health	23.5	[20.6, 26.6]
<b>Any chronic disease (n=1,666)</b>		
Yes	64	[60.5, 67.3]
No	36	[32.7, 39.5]
<b>Insurance duration prior to HMP (n=1,131)</b>		
Insured all 12 months	37.7	[34.2, 41.2]
Insured some of year	12.4	[10.1, 15.1]
Uninsured all 12 months	50	[46.4, 53.6]
<b>Saw PCP in past 12 months (n=1,091)</b>		
Yes	85.9	[83.1, 88.2]
No	14.1	[11.8, 16.9]

Weighted proportions of demographic and health characteristics of female HMP enrollees between the ages of 19 and 44.

**Table 11.2. Perceived change in access to health care services after HMP enrollment among female respondents ages 19-44**

<b>Would you say that your ability to get [listed service] through the Healthy Michigan Plan is better, worse, or about the same, compared to before? You can also say if you don't know, or if that type of care doesn't apply to you.</b>				
	<b>Better</b>		<b>Same/Worse/Don't know</b>	
	<b>%</b>	<b>95% CI</b>	<b>%</b>	<b>95% CI</b>
<b>Birth control/family planning (n=1,164)</b>	35.5	[32.2, 39.0]	64.5	[61.0, 67.8]
<b>Primary care (n=1,165)</b>	53.8	[50.3, 57.4]	46.2	[42.6, 49.7]
<b>Specialty care (n=1,165)</b>	43.0	[39.5, 46.5]	57.0	[53.5, 60.5]
<b>Dental care (n=1,165)</b>	49.4	[45.9, 53.0]	50.6	[47.0, 54.1]
<b>Mental health services (n=1,164)</b>	30.6	[27.4, 34.0]	69.4	[66.0, 72.6]
<b>Substance abuse treatment (n=1,164)</b>	9.0	[7.0, 11.5]	91.0	[88.5, 93.0]
<b>Prescription medications (n=1,165)</b>	60.6	[57.1, 64.0]	39.4	[36.0, 42.9]
<b>Cancer screenings (n=1,165)</b>	22.8	[20.0, 26.0]	77.2	[74.0, 80.0]
<b>Preventive care (n=1,165)</b>	48.8	[45.3, 52.4]	51.2	[47.6, 54.7]

Weighted proportions of perceptions of access changes since HMP enrollment among female HMP enrollees between the ages of 19 and 44.

**Table 11.3. Bivariate relationship between enrollee characteristics and perceived access to birth control/family planning services, among female respondents ages 19-44**

Respondent Characteristic	Better		Worse		About the same		Don't know		p-value <sup>1</sup>
	Row %	95% CI	Row %	95% CI	Row %	95% CI	Row %	95% CI	
<b>Age</b>									
19-24 (n=244)	39.8	[32.7, 47.4]	1.1	[0.3, 3.7]	26.7	[20.3, 34.2]	32.4	[25.4, 40.3]	< .001
25-34 (n=509)	41.4	[36.3, 46.8]	2.3	[1.1, 4.6]	27.1	[22.9, 31.7]	29.2	[24.5, 34.4]	
35-44 (n=411)	24.1	[19.4, 29.6]	0.3	[0.0, 2.4]	20.2	[15.4, 26.0]	55.3	[49.1, 61.3]	
Total (n=1,164)	35.5	[32.2, 39.0]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.3	[34.9, 41.8]	
<b>Race/ethnicity</b>									
White, non-Hispanic (n=746)	34.1	[30.0, 38.4]	1.9	[1.0, 3.7]	22.9	[19.4, 26.8]	41.1	[36.7, 45.6]	.291
Black, non-Hispanic (n=249)	35.3	[28.2, 43.1]	0.5	[0.1, 3.1]	29.7	[23.2, 37.0]	34.6	[27.7, 42.2]	
Hispanic/Latino (n=24)	46.3	[26.5, 67.3]	-		25.2	[11.1, 47.8]	28.5	[12.8, 51.9]	
Other (n=139)	42.5	[33.2, 52.4]	0.9	[0.1, 6.3]	25.3	[17.3, 35.4]	31.3	[22.8, 41.1]	
Total (n=1,158)	35.8	[32.4, 39.3]	1.4	[0.8, 2.5]	24.9	[22.0, 28.2]	37.9	[34.5, 41.5]	
<b>Income, % of federal poverty level</b>									
0-35% (n=311)	34.8	[28.7, 41.4]	1.9	[0.8, 4.7]	21.4	[16.1, 27.7]	41.9	[35.3, 48.8]	.272
36-99% (n=488)	37	[32.1, 42.3]	0.5	[0.2, 1.8]	26.3	[22.1, 30.9]	36.2	[31.5, 41.2]	
≥ 100% (n=365)	34.7	[29.4, 40.4]	1.7	[0.7, 4.1]	28.2	[23.3, 33.6]	35.5	[30.2, 41.1]	
Total (n=1,164)	35.5	[32.2, 39.0]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.3	[34.9, 41.8]	
<b>Married or partnered</b>									
Yes (n=336)	34.2	[28.6, 40.2]	1.1	[0.4, 2.9]	25.3	[20.4, 31.0]	39.5	[33.9, 45.4]	.893
No (n=826)	36.1	[32.1, 40.3]	1.5	[0.7, 3.0]	24.7	[21.2, 28.6]	37.7	[33.6, 42.0]	
Total (n=1,162)	35.6	[32.3, 39.1]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.2	[34.7, 41.7]	
<b>Urbanicity</b>									
Rural (n=299)	35.6	[29.7, 41.9]	1.6	[0.5, 4.5]	28.6	[23.1, 34.7]	34.3	[28.6, 40.6]	.494
Urban (n=865)	35.5	[31.7, 39.6]	1.3	[0.7, 2.7]	24	[20.6, 27.7]	39.2	[35.2, 43.3]	
Total (n=1,164)	35.5	[32.2, 39.0]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.3	[34.9, 41.8]	
<b>Health status</b>									
Excellent, very good, or good health (n=902)	35.3	[31.6, 39.3]	1.0	[0.5, 1.9]	26.4	[23.0, 30.2]	37.3	[33.4, 41.4]	.115
Fair or poor health (n=262)	36.2	[29.2, 43.9]	2.7	[0.9, 7.3]	19.5	[14.4, 25.9]	41.6	[34.6, 48.9]	
Total (n=1,164)	35.5	[32.2, 39.0]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.3	[34.9, 41.8]	
<b>Any chronic disease</b>									
Yes (n=754)	35.5	[31.3, 40.0]	1.7	[0.8, 3.3]	22.3	[18.8, 26.2]	40.5	[36.2, 45.0]	.094
No (n=410)	35.6	[30.3, 41.2]	0.9	[0.3, 2.7]	29.3	[24.2, 34.9]	34.3	[28.9, 40.1]	
Total (n=1,164)	35.5	[32.2, 39.0]	1.4	[0.8, 2.5]	24.8	[21.9, 28.0]	38.3	[34.9, 41.8]	
<b>Insurance status prior to HMP</b>									
Insured all 12 months (n=434)	27.5	[22.3, 33.2]	2.5	[1.1, 5.5]	35.3	[30.2, 40.9]	34.7	[29.4, 40.3]	< .001
Insured some of year (n=127)	33.8	[24.4, 44.7]	1.0	[0.1, 6.5]	21.9	[14.5, 31.8]	43.3	[33.0, 54.2]	
Uninsured all 12 months (n=568)	42.6	[37.7, 47.6]	0.5	[0.2, 1.3]	18	[14.1, 22.6]	38.9	[34.0, 44.1]	
Total (n=1,129)	35.8	[32.4, 39.3]	1.3	[0.7, 2.5]	25	[22.0, 28.3]	37.8	[34.4, 41.4]	
<b>Saw PCP in past 12 months</b>									
Yes (n=943)	36.8	[33.1, 40.8]	1.2	[0.6, 2.3]	24.8	[21.5, 28.4]	37.1	[33.3, 41.1]	.178
No (n=146)	27.6	[19.9, 36.7]	1.2	[0.3, 5.2]	24.3	[17.4, 33.0]	46.9	[37.5, 56.6]	
Total (n=1,089)	35.5	[32.1, 39.1]	1.2	[0.7, 2.1]	24.8	[21.7, 28.1]	38.5	[35.0, 42.2]	

<sup>1</sup> Pearson's chi-squared test

**Table 11.4. Bivariate and multivariate association between enrollee characteristics and perceived change in access to birth control/family planning services, among female respondents ages 19-44**

Independent Variables	Reported Improved Access to Family Planning		Odds Ratio Adjusted Multivariable	
	%	[95% CI]	aOR	95% CI
<b>Age<sup>1</sup></b>				
19-24 (n=244)	39.8	[32.7, 47.4]	2.80	[1.75, 4.50]
25-34 (n=509)	41.4	[36.3, 46.8]	2.35	[1.6, 3.45]
35-44 (n=411)	24.1	[19.4, 29.6]	Reference	
Total (n=1,164)	35.5	[32.2, 39.0]		
<b>Race/ethnicity</b>				
White, non-Hispanic (n=746)	34.1	[30.0, 38.4]	Reference	
Black, non-Hispanic (n=249)	35.3	[28.2, 43.1]	1.11	[0.71, 1.73]
Hispanic/Latino (n=24)	46.3	[26.5, 67.3]	1.39	[0.55, 3.49]
Other (n=139)	42.5	[33.2, 52.4]	1.38	[0.84, 2.28]
Total (n=1,158)	35.8	[32.4, 39.3]		
<b>Income, % of federal poverty level</b>				
0-35% (n=311)	34.8	[28.7, 41.4]	Reference	
36-99% (n=488)	37.0	[32.1, 42.3]	1.20	[0.80, 1.80]
≥ 100% (n=365)	34.7	[29.4, 40.4]	1.13	[0.74, 1.72]
Total (n=1,164)	35.5	[32.2, 39.0]		
<b>Married or Partnered</b>				
Yes (n=336)	34.2	[28.6, 40.2]	Reference	
No (n=826)	36.1	[32.1, 40.3]	1.00	[0.70, 1.42]
Total (n=1,162)	35.6	[32.3, 39.1]		
<b>Urbanicity</b>				
Rural (n=299)	35.6	[29.7, 41.9]	Reference	
Urban (n=865)	35.5	[31.7, 39.6]	1.03	[0.71, 1.49]
Total (n=1,164)	35.5	[32.2, 39.0]		
<b>Health status</b>				
Excellent, very good, or good health (n=902)	35.3	[31.6, 39.3]	Reference	
Fair or poor health (n=262)	36.2	[29.2, 43.9]	1.09	[0.72, 1.65]
Total (n=1,164)	35.5	[32.2, 39.0]		
<b>Any chronic disease</b>				
Yes (n=754)	35.5	[31.3, 40.0]	Reference	
No (n=410)	35.6	[30.3, 41.2]	1.19	[0.82, 1.72]
Total (n=1,164)	35.5	[32.2, 39.0]		
<b>Insurance status prior to HMP<sup>1</sup></b>				
Insured all 12 months (n=434)	27.5	[22.3, 33.2]	Reference	
Insured some of year (n=127)	33.8	[24.4, 44.7]	1.29	[0.74, 2.25]
Uninsured all 12 months (n=568)	42.6	[37.7, 47.6]	2.02	[1.41, 2.89]
Total (n=1,129)	35.8	[32.4, 39.3]		

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<b>Saw PCP in past 12 Months<sup>2</sup></b>				
Yes (n=943)	36.8	[33.1, 40.8]	Reference	
No (n=146)	27.6	[19.9, 36.7]	1.69	[1.03, 2.76]
Total (n=1,089)	35.5	[32.1, 39.1]		

Bivariate relationship between respondent characteristics and perceptions of improved family planning services, and multivariate logistic regression predicting improved family planning, among female respondents ages 19-44.

<sup>1</sup> Pearson's chi-squared test  $p \leq 0.001$

<sup>2</sup> Pearson's chi-squared test  $p = 0.06$

## Section 12: Impact of HMP on employment, education and ability to work

**Table 12.1. Demographic and health characteristics for HMP enrollees who are out of work or unable to work**

Respondent Characteristics	Out of work (Weighted N=104,534)		Unable to work (Weighted N=42,720)		Employed (Weighted N=185,435)		p-value <sup>1</sup>	Total (Weighted N=379,627)	
	%	[95% CI]	%	[95% CI]	%	[95% CI]		%	[95% CI]
<b>Age</b>									
19-34	34.8	[30.9, 38.9]	14.8	[10.6, 20.2]	45.8	[43.0, 48.6]	< .001	39.9	[37.9, 41.9]
35-50	37.7	[33.8, 41.8]	43.1	[37.6, 48.8]	34.2	[31.6, 36.8]		34.0	[32.2, 36.0]
51-64	27.5	[24.4, 30.8]	42.1	[36.8, 47.5]	20.0	[18.3, 21.9]		26.1	[24.6, 27.6]
<b>Male</b>	57.2	[53.3, 61.1]	53.9	[48.3, 59.4]	45.5	[42.7, 48.3]	< .001	48.4	[46.5, 50.4]
<b>Race</b>									
White	55.2	[51.1, 59.2]	70.3	[64.7, 75.4]	62.2	[59.5, 64.9]	< .001	61.3	[59.4, 63.2]
Black or African American	34.4	[30.6, 38.5]	21.9	[17.3, 27.3]	24.2	[21.8, 26.8]		25.9	[24.2, 27.7]
Other	5.9	[4.4, 7.9]	4.3	[2.5, 7.3]	9.4	[7.9, 11.2]		8.8	[7.7, 10.0]
More than one	4.4	[3.0, 6.5]	3.6	[2.1, 6.1]	4.1	[3.1, 5.5]		4.0	[3.3, 4.9]
<b>Ethnicity</b>									
Hispanic/Latino	4.6	[3.1, 6.6]	3.3	[1.8, 6.0]	6.1	[4.9, 7.6]	.429	5.2	[4.4, 6.2]
Arab/Chaldean/Middle Eastern	2.7	[1.7, 4.1]	1.2	[0.3, 4.8]	7.3	[5.9, 9.0]	< .001	6.2	[5.3, 7.2]
<b>Income, % of federal poverty level</b>									
0-35%	79.1	[76.5, 81.5]	73.8	[69.4, 77.8]	33.7	[31.3, 36.3]	< .001	51.7	[50.7, 52.7]
36-99%	15.0	[12.9, 17.3]	13.9	[10.9, 17.6]	38.1	[36.1, 40.1]		28.5	[27.6, 29.3]
≥ 100%	5.9	[4.7, 7.4]	12.2	[9.6, 15.4]	28.1	[26.5, 29.8]		19.8	[19.2, 20.5]
<b>Veteran</b>	3.9	[2.6, 5.8]	5.9	[3.7, 9.2]	2.3	[1.6, 3.3]	.001	3.4	[2.7, 4.2]
<b>Health status</b>									
Excellent, very good, or good	66.1	[62.3, 69.6]	26.2	[21.5, 31.5]	80.3	[78.1, 82.4]	< .001	70.1	[68.4, 71.9]
Fair or poor	33.7	[30.1, 37.4]	73.4	[68.1, 78.1]	19.6	[17.5, 21.9]		29.7	[28.0, 31.5]
<b>Any chronic disease</b>	74.0	[69.9, 77.6]	94.0	[90.6, 96.2]	62.3	[59.5, 65.0]	< .001	69.2	[67.3, 71.0]
<b>Physical health condition</b>	65.1	[60.9, 69.0]	87.5	[82.6, 91.2]	53.8	[51.0, 56.6]	< .001	60.8	[58.8, 62.8]
Diabetes	11.4	[9.3, 13.9]	22.3	[17.9, 27.4]	8.8	[7.5, 10.4]	< .001	10.8	[9.7, 12.1]
Hypertension	37.6	[33.8, 41.5]	54.2	[48.5, 59.8]	24.9	[22.7, 27.3]	< .001	31.3	[29.6, 33.1]
Cardiovascular disease	10.4	[8.2, 13.2]	22.9	[18.3, 28.2]	7.1	[5.9, 8.6]	< .001	9.8	[8.7, 11.0]
Asthma	16.1	[13.5, 19.1]	26.6	[21.9, 31.9]	14.7	[12.9, 16.6]	< .001	17.1	[15.7, 18.6]
COPD	11.2	[9.2, 13.6]	23.7	[19.3, 28.8]	7.6	[6.2, 9.1]	< .001	10.5	[9.5, 11.7]
Cancer	2.7	[1.8, 4.1]	10.2	[7.4, 14.0]	2.8	[2.1, 3.6]	< .001	3.7	[3.2, 4.4]
<b>Mental health condition</b>	35.3	[31.7, 39.1]	61.7	[56.1, 66.9]	25.2	[22.9, 27.7]	< .001	32.2	[30.4, 34.0]
Mood disorder	33.7	[30.1, 37.4]	59.6	[54.1, 65.0]	23.5	[21.2, 25.9]	< .001	30.5	[28.7, 32.3]
Other	0.2	[0.0, 1.1]	1.2	[0.5, 2.8]	0.8	[0.4, 1.8]	.008	0.8	[0.4, 1.3]

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Days physical or mental health poor (≥14 of past 30 days)									
Physical	24.4	[21.2, 27.9]	68.8	[63.2, 73.8]	13.3	[11.6, 15.3]	< .001	22.9	[21.3, 24.5]
Mental	25.0	[21.7, 28.7]	48.4	[42.7, 54.1]	11.6	[10.1, 13.4]	< .001	19.9	[18.3, 21.5]

Weighted proportions of employment outcomes by demographic and health characteristics of HMP enrollees.

<sup>1</sup>*p*-value generated from  $\chi^2$  analyses that included all categories of employment, including employed/self-employed, out of work, unable to work, homemaker, student, and retired.

**Table 12.2. Multivariate association between HMP enrollee demographic and health characteristics and being out of work or unable to work**

Independent variables	Dependent variables					
	Out of work			Unable to work		
	aOR	[95% CI]	<i>p</i> -value	aOR	[95% CI]	<i>p</i> -value
<b>Age</b>						
19-34	Reference			Reference		
35-50	1.29	[0.99, 1.67]	.056	2.34	[1.45, 3.75]	< .001
51-64	1.67	[1.29, 2.17]	< .001	4.20	[2.64, 6.65]	< .001
<b>Male [reference = Female]</b>	1.80	[1.45, 2.23]	< .001	1.88	[1.35, 2.63]	< .001
<b>Race</b>						
White	Reference			Reference		
Black or African American	1.93	[1.50, 2.49]	< .001	1.16	[0.76, 1.78]	.483
Other	0.75	[0.50, 1.11]	.148	0.51	[0.25, 1.06]	.072
More than one	1.25	[0.72, 2.18]	.423	1.02	[0.49, 2.15]	.954
<b>Fair or poor health</b>	1.47	[1.15, 1.89]	.003	3.52	[2.42, 5.11]	< .001
<b>Any chronic disease<sup>1</sup> [reference = none]</b>						
Physical	1.11	[0.88, 1.42]	.378	1.73	[1.08, 2.79]	.023
Mental	1.47	[1.16, 1.87]	.001	2.61	[1.82, 3.73]	< .001
<b>Days physical or mental health poor (≥14 of past 30 days) [reference = none]</b>						
Physical	1.43	[1.07, 1.92]	.016	5.10	[3.54, 7.33]	< .001
Mental	1.95	[1.46, 2.60]	< .001	2.29	[1.56, 3.37]	< .001

Logistic regression with adjusted odds ratios predicting HMP enrollee work status as out of work or unable to work, and adjusted for the variables shown.

<sup>1</sup> Physical and mental chronic health conditions based on self-report.

**Table 12.3. Bivariate predictors of employment status among HMP enrollees, by health status and presence of chronic health condition**

	TOTAL	Health status			Chronic health condition present		
		% Excellent, very good, or good	% Fair or poor	<i>p</i> -value	% No	% Yes	<i>p</i> -value
<b>Employment status</b>				< .001			< .001
Employed/self-employed	48.9	56.1	32.3		59.8	44.1	
Out of work	27.6	26.0	31.3		23.3	29.5	
Unable to work	11.2	4.2	27.8		2.2	15.3	
Retired	2.5	2.7	2.0		1.8	2.8	
Student	5.2	6.0	3.3		8.0	3.9	
Homemaker	4.5	5.0	3.4		5.0	4.3	

Weighted proportions of employment status by self-reported overall health and self-reported chronic disease, among HMP enrollees.

**Table 12.4. Multivariate association of health changes with employment and ability to work among employed enrollees, and job seeking ability among enrollees who were out of work or had a recent job change**

Independent variables	Dependent variables <sup>1</sup>											
	Employed/Self-employed <sup>2</sup> (Weighted N=106,619)			Better job at work <sup>3</sup> (Weighted N=75,282)			Better able to look for job <sup>4</sup> (Weighted N=35,711)			Helped get a better job <sup>5</sup> (Weighted N=9,275)		
	aOR	[95% CI]	p-value	aOR	[95% CI]	p-value	aOR	[95% CI]	p-value	aOR	[95% CI]	p-value
<b>Physical or mental health better since HMP enrollment</b>	1.08	[0.89, 1.30]	.44	4.08	[3.11, 5.35]	< .001	2.82	[1.93, 4.10]	< .001	3.20	[1.69, 6.09]	< .001
<b>Age</b>												
19-34	Reference			Reference			Reference			Reference		
35-50	0.98	[0.78, 1.24]	.89	0.96	[0.70, 1.31]	.78	1.36	[0.87, 2.11]	.17	1.01	[0.55, 1.87]	.97
51-64	0.56	[0.45, 0.70]	< .001	1.10	[0.80, 1.51]	.57	1.76	[1.14, 2.72]	.01	1.30	[0.65, 2.59]	.46
<b>Female</b>	1.00	[0.83, 1.21]	.98	1.42	[1.08, 1.85]	.01	0.73	[0.50, 1.07]	.10	0.72	[0.41, 1.25]	.24
<b>Race</b>												
White	Reference			Reference			Reference			Reference		
Black or African American	0.96	[0.77, 1.21]	.74	1.55	[1.10, 2.19]	.01	0.80	[0.53, 1.22]	.30	1.31	[0.68, 2.55]	.42
Other	0.87	[0.61, 1.23]	.44	1.24	[0.69, 2.21]	.47	1.52	[0.73, 3.19]	.27	1.69	[0.65, 4.41]	.28
More than one	1.10	[0.67, 1.82]	.71	1.70	[0.79, 3.67]	.18	0.51	[0.22, 1.23]	.13	0.46	[0.13, 1.67]	.24
<b>Income, % of federal poverty level</b>												
0-35%	Reference			Reference			Reference			Reference		
36-99%	3.72	[3.02, 4.58]	< .001	0.79	[0.54, 1.15]	.22	0.83	[0.53, 1.29]	.40	0.90	[0.47, 1.73]	.76
≥ 100%	4.40	[3.51, 5.52]	< .001	0.62	[0.42, 0.90]	.01	0.74	[0.41, 1.36]	.33	0.60	[0.31, 1.17]	.13
<b>Fair or poor health</b>	0.67	[0.53, 0.83]	< .001	1.09	[0.76, 1.57]	.64	1.17	[0.79, 1.74]	.42	1.17	[0.56, 2.45]	.67
<b>Any chronic disease</b>	0.84	[0.67, 1.06]	.14	1.57	[1.18, 2.09]	.002	0.87	[0.54, 1.40]	.57	1.31	[0.72, 2.36]	.37
<b>Days physical or mental health poor (≥14 of past 30 days)</b>	0.26	[0.19, 0.34]	< .001	1.20	[0.69, 2.09]	.53	0.85	[0.56, 1.30]	.46	1.51	[0.47, 4.89]	.49

aOR = adjusted odds ratio; CI = confidence interval; HMP = Healthy Michigan Plan. Associations with  $p < 0.05$  are bolded.

<sup>1</sup> Each column represents a different multivariable logistic regression model, adjusted for age, gender, race, income, health status, presence of chronic health condition, and functional limitation.

<sup>2</sup> Employment status was dichotomized as employed/self-employed vs. all other responses.

<sup>3</sup> Employed enrollees who responded “Yes” to the question, “Has getting health insurance through the Healthy Michigan Plan helped you do a better job at work?”

<sup>4</sup> Out of work enrollees who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan has made me better able to look for a job.”

<sup>5</sup> Enrollees with a recent job change who strongly agreed or agreed that “Having health insurance through the Healthy Michigan Plan helped me get a better job.”

## Appendix B: Utilization and Community Factors Variable Definitions

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### Receipt of Preventive Care

Utilization measures were based on administrative claims data drawn directly from the MDHHS Data Warehouse.

#### Primary care visits

Identification of primary care visits was based on any visit with a procedure or revenue code included in the Healthcare Effectiveness Data and Information Set (HEDIS) Outpatient value set, with two additional elements:

1. A procedure code on the MDHHS Physician Primary Care Rate Increase Initiative list; and
2. A billing or rendering provider who was a Primary Care Provider of record for  $\geq 1$  Medicaid enrollee in the MDHHS data warehouse PCP table; or who had participated in Michigan's Primary Care Transformation (MiPCT) project and thus had been verified as a primary care provider; or who had a primary care specialty classification in both the Michigan Medicaid provider specialty table and the NPPES taxonomy table. NPIs known to be inaccurate from prior analyses were excluded.

#### Cancer screening

Identification of cancer screening was based on the following procedure codes.

1. **Breast cancer screening:** Mammography procedure codes (77055, 77056, 77057, G0202, G0204, G0206)
2. **Cervical cancer screening:** Cervical cytology procedure codes (88141, 88142, 88143, 88150, 88164, 88175, G0123, G0124, G0143, G0145, P3000, Q0091)
3. **Colorectal cancer screening:** Flexible sigmoidoscopy procedure codes (45340, 45349, G0104), FOBT procedure codes (82270, 82274, G0328), and colonoscopy procedure codes (44388, 44389, 44394, 45378, 45380, 45381, 45382, 45383, 45384, 45385, 45388, 45391, 45398, G0105, G0121)

#### Diabetes prevention program

Identification of diabetes care management/prevention programs was based on the following procedure codes.

1. G0108- Diab manage trn per indiv
2. G0109- Diab manage trn ind/group
3. 0403T- Diabetes prev standard curr- Health and behavior intervention for prevention of diabetes, minimum 60 minutes, per day

#### Any dental visit

Identification of dental visits was based on any procedure code beginning with D in procedure code field.

### **Any nutrition service**

Identification of nutrition service was based on the claim having 1 of the following 3 characteristics:

1. Billing or rendering provider with Weight Watchers NPI= 1891941415
2. Billing or rendering provider NPI that matched taxonomy codes for "Diet" or "Nutrition"
3. Procedure Code **S9470**-Nutritional counseling, diet

### **HPV testing**

Identification of HPV testing was based on the following procedure codes. **87621**-Hpv dna amp probe

1. **87623**-Hpv low-risk types
2. **87624**-Hpv high-risk types
3. **87625**-Hpv types 16 & 18 only

### **STI testing**

Identification of STI testing was based on the following procedure codes.

1. **86631**-Chlamydia antibody
2. **87110**-Chlamydia culture
3. **3511F**-Chlmyd/gonrh tst docd done
4. **86694**-HERPES SIMPLEX NES ANTBDY
5. **86695**-HERPES SIMPLEX TYPE 1 TEST
6. **86696**-HERPES SIMPLEX TYPE 2 TEST
7. **86703**-HIV-1/HIV-2 1 RESULT ANTBDY
8. **86701**-HIV-1ANTIBODY
9. **86702**-HIV-2 ANTIBODY
10. **87806**-Hiv antigen w/hiv antibodies
11. **86689**-Htlv/hiv confirmj antibody
12. **87850**-N. gonorrhoeae assay w/optic
13. **80081**-Obstetric panel
14. **87808**-Trichomonas assay w/optic
15. **87661**-Trichomonas vaginalis amplify

### **Prescribed HMG CoA Reductase inhibitor (statin)**

Identification of statin therapy was based on pharmacy records for drug class: **M4D**-ANTIHYPERLIPIDEMIC - HMG COA REDUCTASE INHIBITORS.

### **Nicotine replacement therapy (NRT) or varenicline prescription**

Identification of NRT was based on pharmacy records for drug classes: **H7N**- SMOKING DETERRENTS, OTHER, **J3A**- SMOKING DETERRENT AGENTS (GANGLIONIC STIM, OTHERS), and **J3C**-SMOKING DETERRENT-NICOTINIC RECEPT.PARTIAL AGONIST.

### **Vaccines**

#### **Influenza vaccine**

Identification of flu vaccine receipt was based on flu vaccine administration dates in the Michigan Care Improvement Registry (MCIR), flu vaccine CPT codes in Medicaid claims

data, and flu vaccine NDC codes in the Medicaid pharmacy data; receipt of any flu vaccine during 2015 or 2016 calendar years is included in this analysis.

### **Pneumonia vaccine**

Identification of pneumonia vaccine receipt was based on having at least one CPT code in Medicaid claims data, NDC code in the Medicaid pharmacy data, or MCIR record for a PCV13 or PPSV23 vaccine during CY2015 or 2016.

### **Other vaccines**

Identification of any other vaccine receipt was based on having at least one CPT code in Medicaid claims data, NDC code in the Medicaid pharmacy data, or MCIR record for any listed vaccine during CY2015 or 2016. This includes Td/Tdap, Zoster, Hepatitis A and B, HIB, HPV, Meningitis or Meningitis B, Varicella, and MMR.

### **Any preventive service**

Any of the above services with the exception of primary care visits are included in this definition.

## **Health Risk Assessment (HRA) Completion**

Data were extracted from the Health Risk Assessment (HRA) table in the data warehouse for the first 24 months from initial enrollment (i.e., the combined Year 1 and Year 2 period), along with any information obtained during the pre-HMP enrollment period of February-March 2014. This information was used to categorize each enrollee's HRA status:

- HRA attestation – record includes physician attestation date, signaling completion of the HRA process
- HRA questions only – record includes enrollee responses to some/all questions on the patient portion of the HRA, but no physician attestation date
- No HRA record – lack of data for any HRA-related activity

For enrollees with a physician attestation date, the record identified a healthy behavior status:

- Selected a healthy behavior
- No healthy behaviors to address
- Not ready for change
- Serious condition / healthy behavior not required

## **Emergency Department Utilization Claims**

Identification of ED visits was based on specifications in the HEDIS Emergency Department Utilization (EDU) measure. Consistent with HEDIS, ED visits that resulted in an inpatient admission were not counted, and non-institutional/non-surgical ED visits that occurred a day prior to or after an institutional ED/Observation/Inpatient visit were removed. Two modifications of the HEDIS criteria were made, to allow results to represent the full range of ED utilization for the HMP population: (1) mental health/substance abuse ED visits were included, where HEDIS excludes them; and (2) three observation visit codes (G0378, G0379, revenue code 0762) were added to the HEDIS observation value set, along with codes G0380-G0384 for Hospital Type B emergency visits.

## Chronic Conditions

**HEDIS definition:** Identification of chronic disease (asthma, cardiovascular disease, COPD, and diabetes) was based on identification criteria outlined in the HEDIS 2016 Relative Resource Use (RRU) specifications, applied to each beneficiary's first 24 months of HMP enrollment.

### Chronic Disease defined by claims-based diagnostic codes

A second method of identifying chronic disease uses diagnosis codes including Alzheimer's disease and related dementia, anemia, asthma, atrial fibrillation, cancer, chronic kidney disease, COPD, cystic fibrosis, deep venous thrombosis, diabetes mellitus, glaucoma, heart failure, hemophilia, HIV, hyperlipidemia, hypertension, ischemic heart disease, liver disease and other liver disorders, osteoporosis, arthritis, and stroke/transient ischemic attack.

**Mental and behavioral health conditions or substance use disorders:** Defined by Mental and Behavioral Disorders value set from HEDIS 2016. Tobacco use disorder was excluded from the list of mental and behavioral health conditions for this analysis.

## Individual and Community Factors Analysis

**Census/American Community Survey (ACS):** American FactFinder, United States Census Bureau <https://factfinder.census.gov> All data is downloadable at the ZIP code level. Data is from the 2011-2015 ACS 5-year estimates unless otherwise noted. The following fields were included in the individual and community factor analysis.

### Educational attainment

- College Grads (% of population ages 25 and over)

### Insurance coverage (2009-2013 ACS data as pre-HMP comparator)

- Percent uninsured of the civilian non-institutionalized population
- Percent uninsured ages 18-64

**County Health Rankings & Roadmaps:** Robert Wood Johnson Foundation, <http://www.countyhealthrankings.org/> Data is available on the county level, both as rankings within the state and some summary measures used to calculate those rankings. The following variables are used in the analysis.

### Ratio of PCPs to population

Source: Area Health Resource File/National Provider Identification File 2014

Definition: Ratio of population to primary care providers