The University of Iowa
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Outcomes for Iowa Medicaid Health Home Program Enrollees

2011-2013

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Executive Summary

Introduction

The Medicaid Health Home (MHH) program began on July 1, 2012 with 308 members. This program is designed to enhance services to Medicaid members with chronic conditions through provider implementation of Patient-Centered Medical Home best practices. Providers are paid to provide these enhanced services through per member per month payment based on the member's number of chronic conditions. Currently, there are 31 counties with MHH providers.

Methods

The study population is composed of two Medicaid member groups: those participating in the MHH (MHH members) and a randomly selected group of matched non-MHH members. The total number of members in the study was 25,118 with 3,510 MHH members and 21,608 non-MHH members. Non-MHH members were matched to members by decade of birth, gender and type of program for the final 30 months of the study on a month by month basis. MHH members were more likely to be enrolled longer in Medicaid during the study period. Sixty percent were enrolled for all 36 months, while only 47% of non-MHH members were enrolled for the entire study period. MHH members were more likely to be female and more likely to be middle aged. Outcome rates were calculated for both groups and compared over the three year study period.

Ambulatory care

MHH members had an increase in outpatient visits over the 3 year period while those not in the MHH had little change in outpatient visit rates. ED visit rates varied by tier, with those in tier 2 and 3 having a decrease in the ED visit rate, while the rate for those in tier 1 remained constant and the rate for those in tier 4 increased. The rate of ED use increased for non-MHH members. The effect of tier may indicate that there are levels of chronic illness that are impacted more significantly by the MHH.

Nursing facility utilization

Though there were few nursing facility admissions, the general pattern of admissions for the two groups resulted in a decrease in the rate of intermediate facility admissions for the MHH group while this rate increased for the non-MHH group. The admission rate for skilled nursing facilities increased similarly in both groups.

Hospital Readmissions

There were too few readmissions within 30 days to allow for risk adjustment, therefore, we report the numbers of readmissions for the MHH group over the three year period, with regard to diagnosis. Diabetes was the most common primary diagnosis for readmissions in the MHH group ranging from 13 in CY 2011 to 17 in CY 2013. Other diagnoses on readmission included Anemia, asthma, and electrolyte imbalance.

Primary Care

The rates of preventive care use decreased in both groups for those ages 20-64 over the three year period. Rates of primary care use remained high and stable in the MHH group while it decreased in the non-MHH group. Finally, the ambulatory care/office visit rate remained the same for the MHH group while it declined in the non-MHH group.

Conclusion

This report details outcome results over a three year period that

encompasses 18 months before through 18 months after the MHH program began. The results are preliminary as this program is still maturing, adding new members and providers. There are some indicators that point to successes in the program such as the decrease in ED use for some MHH members and the reduction in intermediate care facility admissions, yet others may indicate that the program can be improved such as the low preventive visit rate and the stable number of hospital readmissions.

Introduction

The Iowa Medicaid Health Home (MHH) program incentivizes health care providers in Iowa to offer additional services to Medicaid patients with chronic conditions through a monthly payment tied to the number and severity of the enrollee's chronic conditions (Table 1). The Health Home model was authorized under a state plan amendment approved by the Centers for Medicare and Medicaid Services with enrollment beginning July 1, 2012.

'Health Home' is a specific designation under section 2703 of the Patient Protection and Affordable Care Act indicating a model of care that provides patient-centered, whole person, coordinated care for all stages of life and transitions of care specifically for individuals with chronic illnesses. For Iowa Medicaid, Health Home practices are enrolled Medicaid provider organizations capable of providing enhanced personal, coordinated care for Medicaid members meeting program eligibility criteria. In return for the enhanced care provided, the Iowa Medicaid Enterprise (IME) offers monthly care coordination payments and the potential for annual performance based incentives designed to improve patient health outcomes and lower overall Medicaid program costs.

Additional information about the Iowa MHH Program is located at http://www.ime.state.ia.us/Providers/healthhome.html .

Eligibility for the Medicaid Health Home Program

To be eligible for the MHH Program, Medicaid enrollees must have at least two chronic conditions or one chronic condition and be at risk for developing a second condition from the following list:

- Hypertension
- Overweight (Adults with a Body Mass Index of 25 or greater/Children in the 85th percentile)
- Heart Disease
- Diabetes
- Asthma
- Substance Abuse
- Mental Health Problems

In addition, they may not be in IowaCare, PACE, Iowa Family Planning Network, QMB/SLMB, HMO or be a presumptively eligible child or adult.

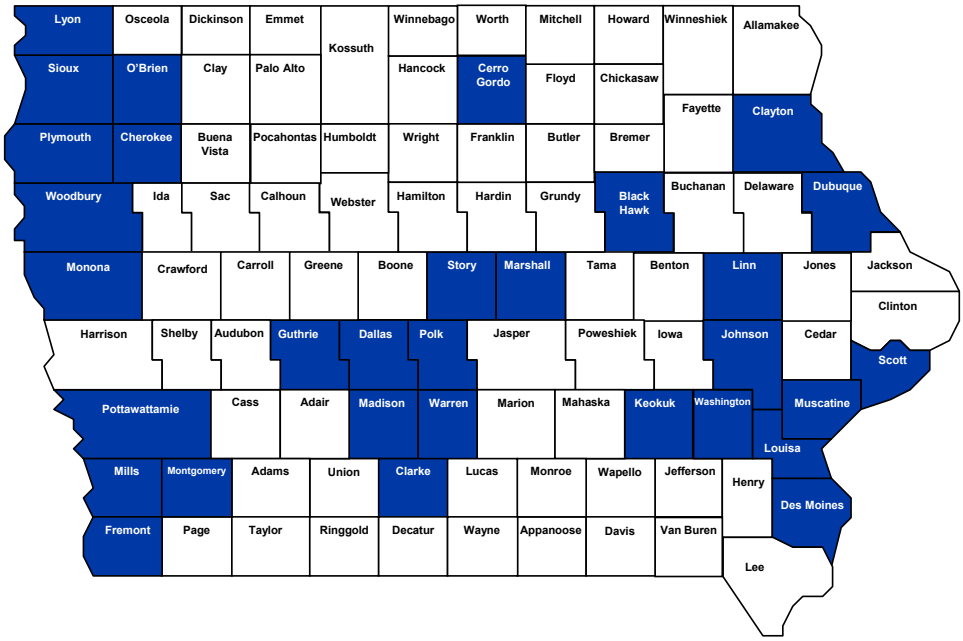
Table 1. Tier definitions

Tier	Sum of chronic conditions	Monthly payment
1	1-3	$12.80
2	4-6	$25.60
3	7-9	$51.21
4	10 or more	$76.81

Provider Network

Providers enrolled in the MHH program include but are not limited to: physician clinics, community mental health centers, Federally Qualified Health Centers (FQHCs), and Rural Health Clinics (RHCs).

Figure 1-1. Map of the counties with MHH providers as of October, 2013.



(Map: Courtesy of the Iowa Department of Human Services)

Methodology

Three outcome measures were used to evaluate the first year of the MHH program, reflecting the outcomes considered most important and most likely to be impacted in the first year.

- Emergency department utilization
- Skilled nursing facility admissions
- Hospital readmissions

Ultimately, a more robust series of outcomes will be used to evaluate the MHH program as enrollment increases and the program matures. The list of potential outcome measures includes:

- Childhood immunization status*
- Flu shots for adults and children over 6 months of age*
- Document BMI and appropriate follow-up

- Comprehensive diabetes care
- Dilated eye exam*
- Micro albumin*
- Proportion with Hemoglobin A1c less than 8
- Proportion with LDL less than 100
- Asthma patients with asthma-related emergency department visit*
- Use of appropriate medications for people with asthma*
- Percent of patients 5-40 with diagnosis of asthma who have had a visit*
- Proportion of patients with BP less than 140 systolic and 90 diastolic
- Systemic antimicrobials*
- 7 day office follow-up to mental health admission*
- Clinical depression screening

Though most of the outcome measures can be calculated through the administrative data, some are only accessible through Continuity of Care Documents (CCDs) or chart review. Measures marked with an asterisk are attainable through administrative data.

Outcome measures include stringent inclusion criteria. Claims and enrollment data from members who meet the following criteria are included in the outcome analyses.

1) Must have no more than a one month gap in enrollment during the measurement period.
2) Must have no more than a one month of enrollment for restricted services programs such as dual eligibility for Medicare or enrollment in Family Planning.
3) Must have been enrolled in the MHH program early enough to allow time for claim adjudication ensuring we have at least 95% of claims related to the enrollee's health care.

Inclusion criteria for outcome analyses

By the end of CY 2013, 5,869 members were enrolled for at least one month since the program began on July 1, 2012 (Figure 2-1). Due to difficulty establishing the costs associated with HMO encounters, members with enrollment in the HMO were removed from the analyses. For the outcomes analyses we also removed members who were eligible for Medicare during any month as we are unable to determine whether and in what quantity health care was consumed during these months.

This resulted in 3,510 members within the outcomes analyses. This number is reduced for outcomes that required at least 11 months of eligibility for inclusion. Many of the outcomes that were originally proposed for this evaluation have been delayed due to the small numbers of members enrolled in the MHH program. Tables 2-1 through 2-3 provide information regarding the demographics of this study population.

Figure 2-1. MHH program enrollment by month and Tier level

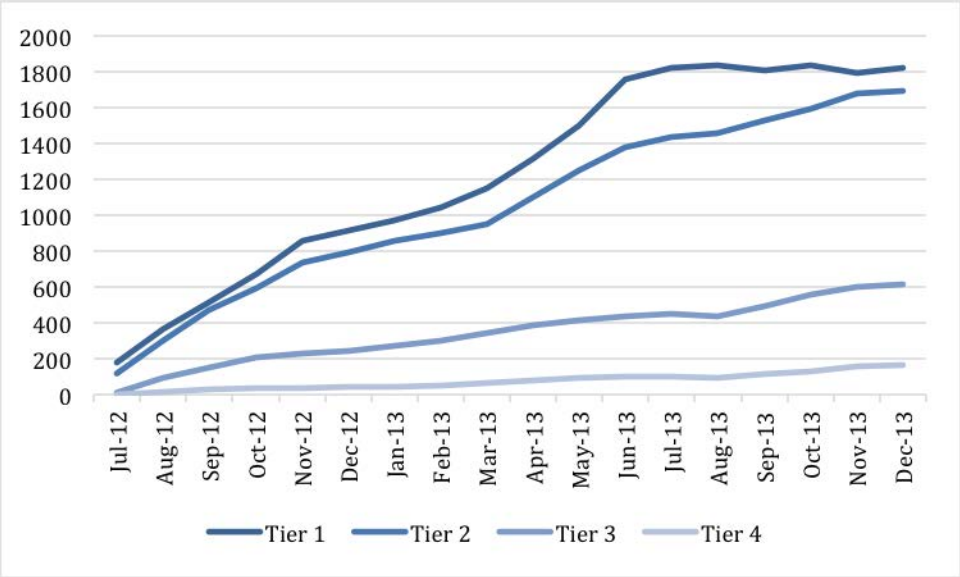


Table 2-1. Number of months enrolled in the MHH program for members in the outcomes analyses

Number of months enrolled	N	Percent
1 month	318	9.1%
2 months	240	6.8%
3 months	216	6.2%
4 months	230	6.6%
5 months	252	7.2%
6 months	228	6.5%
7 months	291	8.3%
8 months	281	8.0%
9 months	298	8.5%
10 months	158	4.5%
11 months	136	3.9%
12 months	113	3.2%
13 months	91	2.6%
14 months	184	5.2%
15 months	128	3.6%
16 months	150	4.3%
17 months	135	3.8%
18 months	61	1.7%

Table 2-2. Age, Gender, and Race/Ethnicity for the MHH study population

Characteristic	Number	Percent
Gender		
Female	2,338	67%
Male	1,172	33%
Race/Ethnicity*		
White	1,839	52%
Black or African American	615	18%
Hispanic/Latino	246	7%
Asian/Pacific Islander	44	1%
American Indian	83	2%
Multiple-other	33	1%
Undeclared	648	19%
Age		
0-17 years old	605	17%
18-64 years old	2,854	81%
65+ years old	51	2%
County of residence		
Woodbury	851	24%
Polk	837	24%
Black Hawk	676	19%
Linn	262	8%
Scott	204	6%
Des Moines	135	4%
All others	735	15%
Tier		
Tier 1	1,727	49%
Tier 2	1,327	38%
Tier 3	374	11%
Tier 4	82	2%

The study population is primarily female, white, adult and living in an urban county. In addition, most of the study population qualified for Tier 1 or Tier 2 indicating they had 6 or fewer chronic problems. For the purposes of the outcomes analyses adults 65 years of age and over are removed from the analyses. The number of members within this category after members with Medicare enrolled months are removed is very small. Table 2-3 provides demographics by age group: child/youth and adult. The distribution of gender by age reveals that though the study population is primarily female, for those under 17 the gender distribution is more even at 45% female. In addition, as age increases members are more likely not to disclose race/ethnicity, while children under 18 and adults over 64 are less likely to be white. The county of residence by age indicates that though all age groups are primarily in urban counties, the counties in which they reside vary by age. This most likely reflects the propensity of MHHs to take people in certain age ranges, particularly pediatric MHHs in certain counties. Finally, as might be expected, as age increases the likelihood that a member will be in a higher tier also increases. In fact, there are no children in tier 4 within the study population.

Table 2-3. Age, Gender, and Race/Ethnicity for the MHH study population by age group

Characteristic	0-17 years Number (%)	18-64 years Number (%)
Gender		
Female	272 (45%)	2,032 (71%)
Male	333 (55%)	822 (29%)
Race/Ethnicity*		
White	253 (42%)	1,584 (56%)
Black or African American	96 (16%)	516 (18%)
Hispanic/Latino	110 (18%)	128 (5%)
Asian/Pacific Islander	5 (1%)	29 (1%)
American Indian	21 (4%)	61 (2%)
Multiple-other	23 (4%)	10 (<1%)
Undeclared	99 (16%)	524 (18%)
County of residence		
Polk	53 (9%)	764 (27%)
Woodbury	174 (29%)	662 (23%)
Black Hawk	152 (25%)	520 (18%)
Scott	15 (3%)	279 (7%)
Linn	86 (14%)	173 (6%)
Des Moines	2 (<1%)	194 (5%)
All others	123 (20%)	262 (9%)
Tier		
Tier 1	431 (71%)	1,263 (44%)
Tier 2	154 (26%)	1,158 (41%)
Tier 3	20 (3%)	351 (12%)
Tier 4	0 (0%)	82 (3%)

Results

Introduction

The National Committee for Quality Assurance (NCQA) provides nationally accepted outcome measurement protocols under the Healthcare Effectiveness Data and Information Set (HEDIS). The outcome measures provided in this report are a selection of these measures deemed most appropriate for evaluating the MHH program, and modified due to the small number of MHH members who met the inclusion criteria. The three primary outcomes, emergency department visits, skilled nursing facility admissions, and hospital readmissions, are normally considered to occur infrequently or rarely. In particular, since those 65 years of age and over and those with dual Medicaid/Medicare eligibility were removed from the outcome study population, there is very little reason to expect skilled nursing facility admissions.

Limitations

Claims data has a set of limitations that must be considered when calculating population rates. In particular, only claims actually submitted by the providers are used for outcome rate calculations, we may be missing claims and therefore, underestimating the rates for specific services.

Outcome Measures

Ambulatory Care

Ambulatory care visits include any visits to a health care provider that do not include an inpatient admission. These visits encompass physician office visits, outpatient clinics, and emergency departments. Outpatient visits were defined through CPT coding and revenue codes. The CPT codes included 99201-99205, 99211-99215, and 99241-99245 to define office visits; 99341-99345, and 99347-99350 to define home visits; 99304-99310, 99315, 99316, and 99318 to define nursing facility care; 99324-99328 and 99334-99337 to define domiciliary or rest home care; 99381-99387, 99391-99397, 99401-99404, 99411, 99412, 99420 and 99429 to define preventive medicine; and 92002, 92004, 92012 and 92014 to define ophthalmology and optometry. The revenue codes included 510-519, 526-529 982, and 983 to define office visits and 524 and 525 to define nursing facility care. Emergency department visits were defined by combinations of codes as follows: 1) revenue code 450-459 or 981, 2) CPT code 10040-69979 and place of service 23, or 3) CPT code 99281-99285. Emergency department visits include care provided in the emergency room and urgently or emergently at a physician's office or satellite location. One modification was made to the HEDIS specifications for this measure: mental health and substance abuse claims that are normally removed were retained.

Tables 3-1 through 3-3 and Figures 3-1 through 3-4 present the rates for ambulatory visits broken into emergency department (ED) and outpatient. The rates reflected in Figure 3-1 illustrate that as the number of chronic conditions increases so does the number of visits per 1,000 eligible months, especially ED visits. Table 3-2 and Figure 3-2 provide the visit rates by age. Not surprisingly, the rates for both ED and outpatient visits are lowest for children, adolescents and young adults. The outpatient visit rate continues to rise with age, while the ED rate rises and then declines for the oldest group. Table 3-3 shows that women are more likely to utilize the emergency department and outpatient care than men across all age groups. The rate of ED visits generally declined for all age and gender groups over the three year study period. A dashboard is provided in Figure 3-4 allowing comparisons by age and study group for the three year period. Invariably the ED rates decreased in the MHH group while they either remained steady or increased in the comparison group. As the ED visit

rate decreased, Figure 3-5 indicates that for at least two of the age groups, the outpatient visit rate increased. For those 20-44 and 45-64 the rate of outpatient visits increased, while for those 0-19 they fluctuated over the 3 year period.

Table 3-1. Emergency department and outpatient visits by MHH tier

	ED visits/1,000 months			Outpatient Visits/1,000 months		
Tier level	**CY 2011**	**CY 2012**	**CY 2013**	**CY 2011**	**CY 2012**	**CY 2013**
Tier 1	150	157	149	497	574	587
Tier 2	193	212	185	653	722	720
Tier 3	255	228	224	831	868	864
Tier 4	231	310	273	1162	1191	1263
Comparison Group	65	63	66	354	343	341

Figure 3-1. Emergency department visits per 1000 eligible months by tier and comparison group, CY 2011-2013

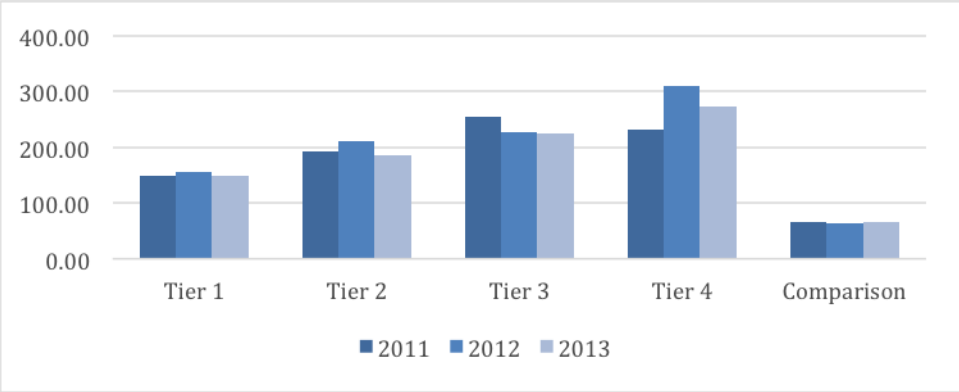


Table 3-2. Emergency department and outpatient visits per 1000 eligible months by age and year for members enrolled in the MHH for at least 1 month

	ED visits/1000 months			Outpatient Visits/1000 months		
Age	**CY 2011**	**CY 2012**	**CY 2013**	**CY 2011**	**CY 2012**	**CY 2013**
0-19 years old	95	97	79	453	465	415
20-44 years old	271	21	245	602	673	666
45-64 years old	145	175	161	721	801	834
Over 64 years old	78	81	64	633	723	650

Figure 3-2. Emergency department visits per 1000 eligible months by age and year for MHH members

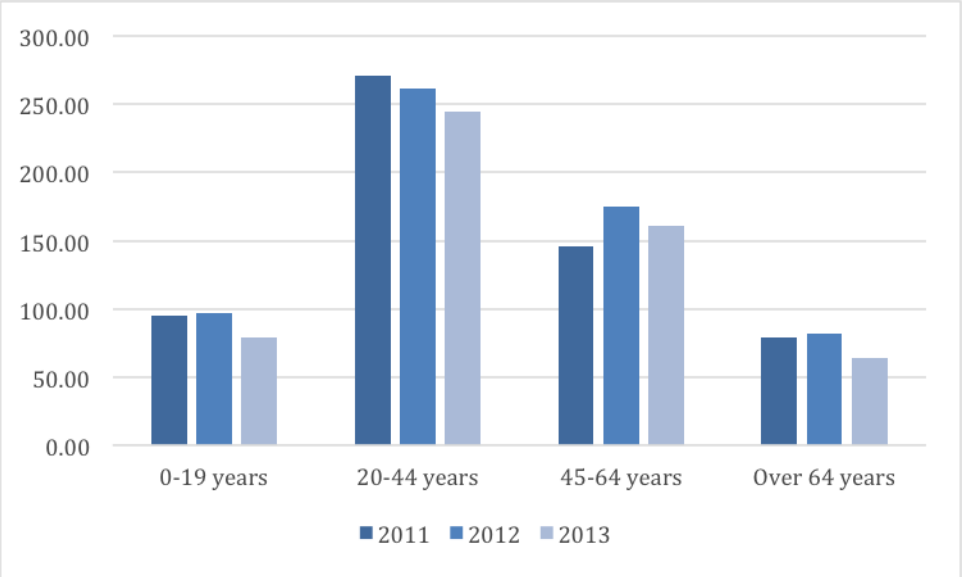


Table 3-3. Emergency department and outpatient visits per 1000 eligible months by age and gender during the study period, calendar year 2011-2013

Age	Females	Males
ER rate		
0-19 years old	101	81
20-44 years old	267	218
45-64 years old	170	148
Over 64 years old	72	117
Outpatient rate		
0-19 years old	55	30
20-44 years old	195	222
45-64 years old	138	117

Figure 3-3. ED visits/1000 eligible months by gender, age and year for MHH members

Figure 3-4. ED visits/1000 eligible months by age and MHH enrollment dashboard.

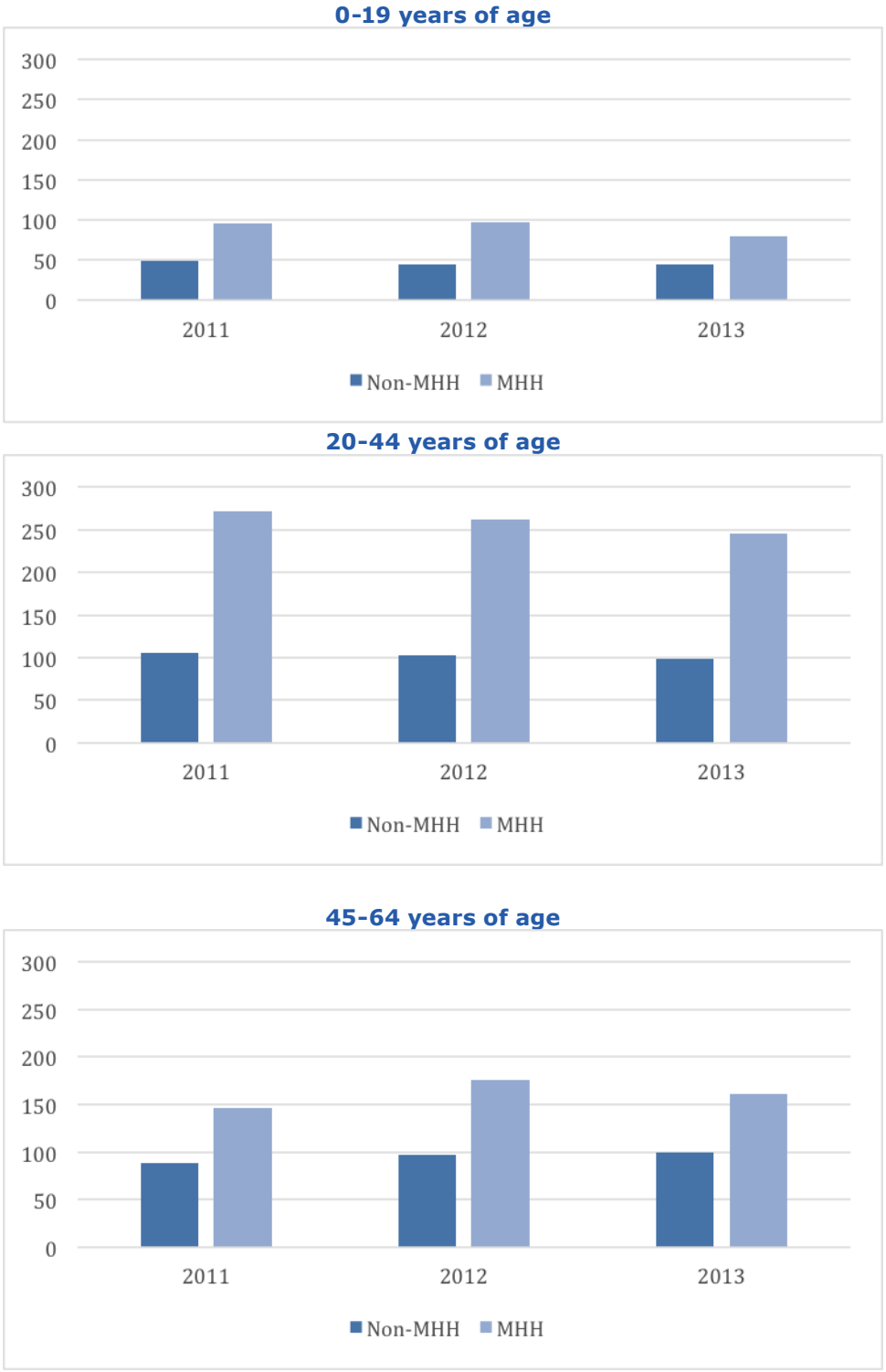
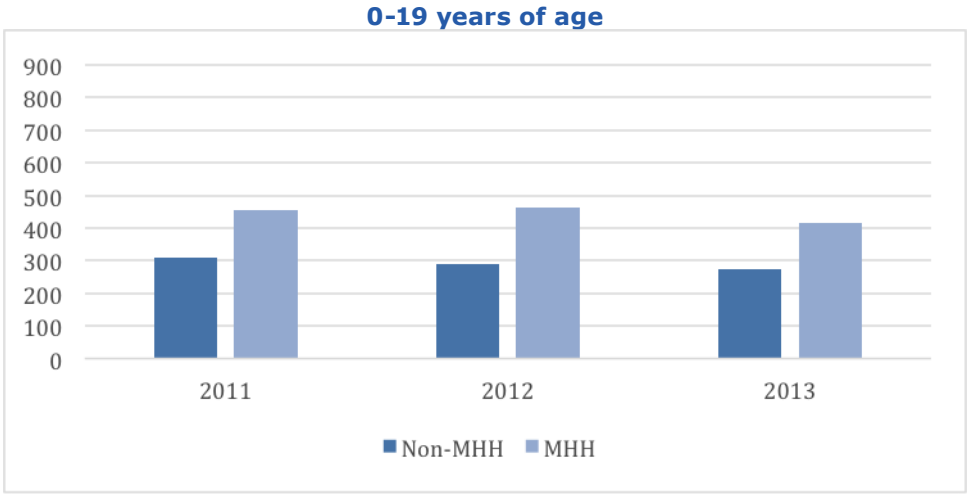
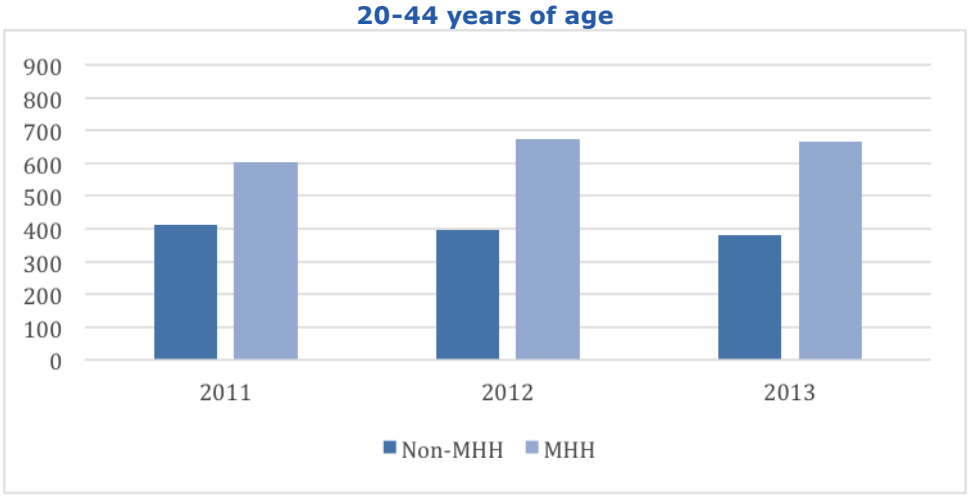
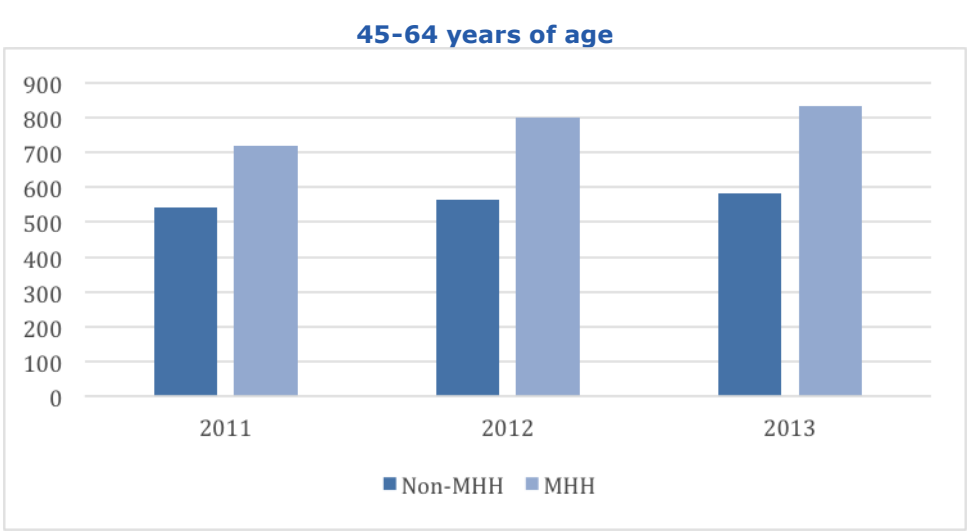


Figure 3-5. Outpatient visits/1000 eligible months by age and MHH enrollment dashboard.







Emergency department diagnosis

Primary diagnosis codes associated with an ED visit were used to determine the most common reasons for emergency department visits (Table 3-4). As has been seen in previous studies, the primary reasons that enrollees come to the ED are related to pain-abdominal, chest, back, and headache. Respiratory symptoms are listed as the fifth most common as would be expected in a group that has asthma as one of the qualifying diagnoses. ED visits for these reasons are expected to decrease as an outcome of the MHH, however, as more members are enrolled with asthma the numbers are expected to increase despite the decrease in rates.

Table 3-4. Top ten diagnoses for emergency room visits over time

ICD-9	Condition	Number of visits 2013	Number of visits 2012	Number of visits 2011	Rank 2011
786.5	Chest pain	421	376	321	2
789.0	Abdominal pain	388	411	370	1
784.0 & 346.9	Headache/ Migraine	264	360	263	3
724.1-724.9	Back pain	230	224	208	4
491 & 493	Chronic bronchitis/ Asthma	202	170	125	5
599.0	UTI	138	131	109	7
729.5	Pain in limb	93	90	79	8
465.9	Acute URI	83	111	111	6
525.9	Problem with teeth	80			
787.0	Nausea/vomiting	70			
462	Acute pharyngitis		76	78	9
466	Acute bronchitis		81	74	10
Total		1969	1881	1738	

Nursing facility utilization

MHH members are expected to have a decreased rate of skilled nursing facility admissions. For this outcome we utilized data for members who had been eligible for at least 11 months in 2011 or at least 11 months in 2012 or at least 11 months in 2013. Numbers of admissions are very small for children and adolescents, precluding their inclusion in the outcomes analyses. However, for adults we were able to determine the rate of nursing facility admission, both intermediate and skilled. The rates per 1,000 months of eligibility for skilled nursing facility admission and intermediate care facility admission are contained in Figures 3-6 and 3-7. Skilled nursing facility admissions rose slightly in both groups. However, intermediate care facility rates of admission for the MHH members was rising and then fell following the implementation of the MHH program, while for the comparison group the rates of admission were falling and then rose in the post-implementation period. This provides evidence that the MHH may be helping to avoid intermediate nursing facility admissions.

Figure 3-6. Skilled nursing facility admissions per 1,000 months of eligibility for Medicaid MMH members and comparison group members, CY 2011-2013.

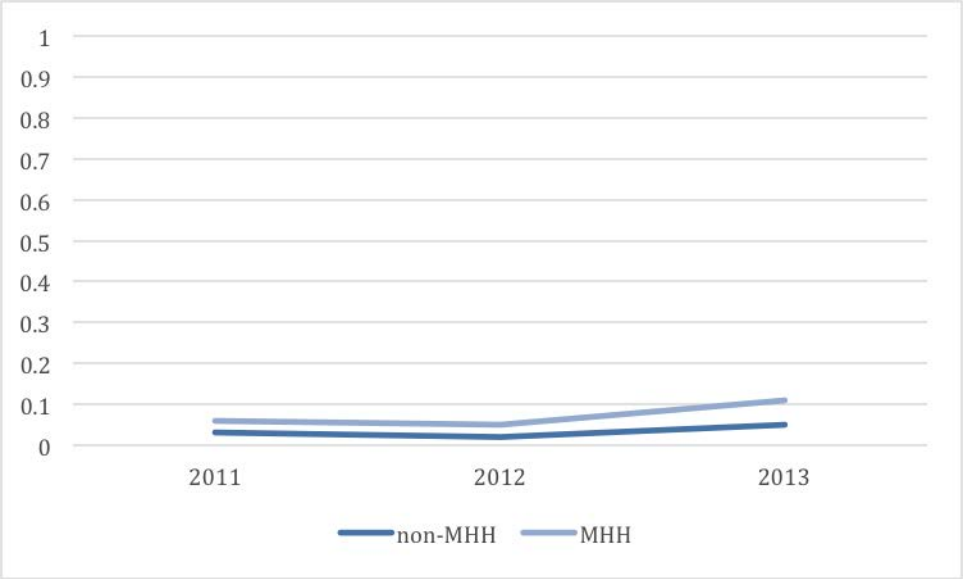
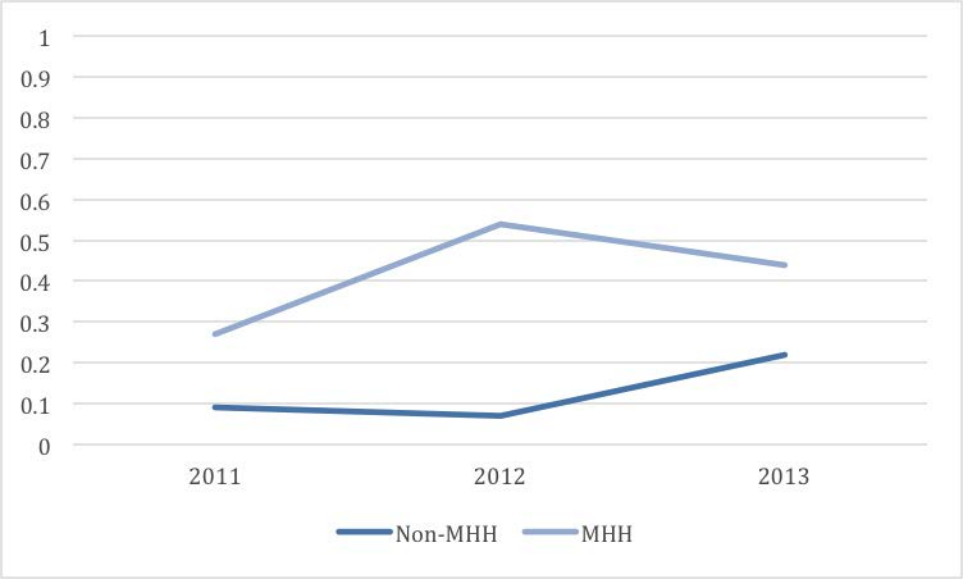


Figure 3-7. Skilled nursing facility admissions per 1,000 months of eligibility for Medicaid MMH members and comparison group members, CY 2011-2013.

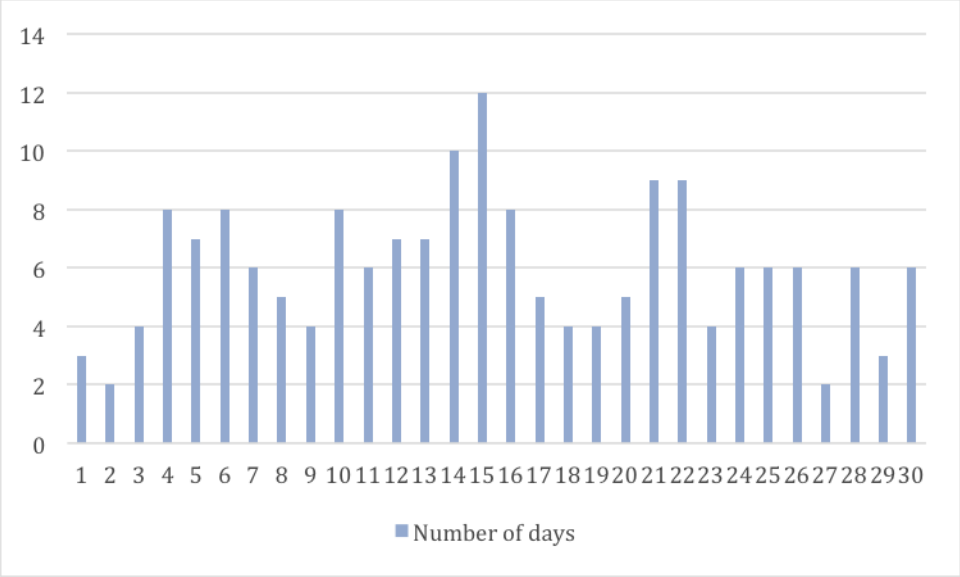


Hospital Readmission

The outcome measure for hospital readmission is derived from the HEDIS All Cause Plan Readmission rate measure. The number of enrollees was too small to adequately risk adjust the data, however, some information regarding readmissions serves to inform the evaluation. Stays for pregnancy related diagnoses are removed from the analyses. The first admission is considered the Index Hospital Stay (IHS). There were 434 enrollees in both groups with 824 hospital stays with a readmission within 30 days during the three year study period. Of these, 282 had one hospital stay with a readmission, 77 had two stays with a readmission, and eight had 3-5 stays with a readmission. For this latter group, the readmission to one stay may actually form the IHS for the next stay, resulting in serial readmissions under 30 days.

The average length of stay for IHS was 4 days with 1 day being the shortest stay and 13 days being the longest stay. The gap between hospital stays averaged 16 days with the shortest gap between stays being two days. Figure 10 displays these results.

Figure 3-8. Length of gap between IHS and readmission hospital stay for MHH members, CY 2013



The most common primary diagnoses on IHS are listed by condition with number of stays in parentheses: diabetes (44), asthma (21), heart failure (17) and anemia, including sickle cell disease (12). Clearly, readmissions due to diabetes, asthma or heart failure should be reduced when enrollees are provided the full complement of services under the health home model.

In an effort to determine the effects of the MHH on readmissions, the number of readmissions within 30 days for the same diagnosis was computed. The diagnoses for readmission and the number of readmissions by year are shown in Table 3-5. Diabetes and Asthma are among the top readmitted diagnoses.

Table 3-5. Frequency of readmissions for the same diagnosis within 30 days for MHH members by year

Diagnosis code	Description	2011	2012	2013
250	Diabetes	13	14	17
282	Anemia, include sickle-cell	7	3	2
493	Asthma	4	7	10
276	Electrolyte imbalance	2	1	0
730	Bone infections	2	0	0
998	Procedure complication	2	1	0
428	Heart failure	0	12	5
427	Cardiac dysrhythmias	0	3	3
577	Disease of the pancreas	0	3	3
403	Hypertensive kidney disease	0	2	0
491	Chronic bronchitis	0	2	3
518	Other lung disease	0	0	2
786	Chest symptoms	0	0	2
824	Ankle Fracture	0	0	2

Primary Care

One explanation for the decreases in ED utilization may be the increased reliance on primary care. Three measures are used to assess primary care utilization: had an ambulatory care visit, had a preventive care visit and had a primary care visit. An ambulatory care visit indicates any outpatient or clinic visit with a procedure code including: 99385-99387, 99395-99397, 99401-99404, 99411, 99412, 99420, 99429, 99201-99205, 99211-99215, 99241-99245, 99341-99350, 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337, 92002, 92004, 92012, 92014, G0402, G0438, G0439, S0620, S0621 or a diagnosis code including: V70.0, V70.3, V70.5, V70.6, V70.8 or V70.9. If the visit occurred at a hospital the claim must indicate that the visit was at an outpatient clinic providing general ambulatory care include family medicine or general internal medicine. A primary care visit indicates an ambulatory visit that occurred with a primary care provider including: physicians or ARNPs with a specialty of family medicine, pediatrics, OB/Gyn, or internal medicine or a rural health clinic, federally qualified health center, maternal health center, or certified nurse midwife. A preventive care visit is any ambulatory care visit with a preventive care code including: 99385-99387, 99395-99397, 99401-99402, 99411-99412, 99420, 99429, G0402, G0438 or G0439.

These rates are presented for adults, as they are normally reported for the HEDIS Adults' Access to Ambulatory/Preventive care measure. In addition, children and adolescents are normally broken into groups with different specification to determine a preventive or ambulatory care visit. Future reports will focus on these specifications and reporting child and adolescent preventive and ambulatory rates.

MHH members had higher rates of all three visits prior to the start of the program, which is to be expected as they have at least one chronic illness. Preventive visit rates were very low for all age groups across both study groups (Table 3-6). Both groups showed a decline in preventive visits over time for those 22-44 years of age while the rates for those 45-64 years of age remained relatively stable. Primary care and ambulatory care visit rates were relatively high in the MHH group throughout the study period (94-98%), remaining stable (Table 3-7 and 3-8). In the comparison group the ambulatory visit rates were lower but also remained relatively stable with the exception of a drop in those 20-44 years of age in CY 2013 (Table 3-8). We do not report rates for those over 64 years of age as the numbers in the groups were low, ranging from 17-30.

Table 3-6. Preventive visit rates by age and year

	MHH members			Non-MHH members		
Age	**CY 2011**	**CY 2012**	**CY 2013**	**CY 2011**	**CY 2012**	**CY 2013**
20-44 years old	22%	25%	19%	20%	17%	14%
45-64 years old	11%	11%	11%	8%	11%	9%

Table 3-7. Primary care visit rates by age and year

	MHH members			Non-MHH members		
Age	**CY 2011**	**CY 2012**	**CY 2013**	**CY 2011**	**CY 2012**	**CY 2013**
20-44 years old	94%	96%	94%	84%	82%	68%
45-64 years old	96%	97%	96%	84%	84%	80%

Table 3-8. Ambulatory care visit rates by age and year

	MHH members			Non-MHH members		
Age	**CY 2011**	**CY 2012**	**CY 2013**	**CY 2011**	**CY 2012**	**CY 2013**
20-44 years old	95%	97%	95%	87%	85%	72%
45-64 years old	97%	98%	97%	86%	87%	83%

Conclusion

Low enrollment continues to present challenges for the outcomes analyses. Though we are able to establish that ED rates are decreasing for MHH members while they are stable or increasing for non-MHH members, we are unable to engage complex modelling methods to estimate the true effects. In addition, the rates for outpatient care have risen possibly signaling an increase in well-person or preventive care. Both skilled nursing facility admissions and hospital readmissions are very difficult to analyze with small numbers. From the limited information provided from the current study, we can perhaps assert that these rates are not increasing. However, this assertion is tenuous at best.