

SIM Outcomes and Data Acquisition Report CY 2015 - CY 2018

October 2019



Elizabeth T. Momany, PhD
Associate Research Scientist

Peter C. Damiano
Professor and Director

Jason Wachsmuth
Research Associate

The project described was supported by Grant Number 1G1CMS331400-03-00 from the Department of Health and Human Services, Centers for Medicare & Medicaid Services. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the U.S. Department of Health and Human Services or any of its agencies. The research presented here was conducted by the awardee. Findings might or might not be consistent with or confirmed by the findings of the national independent evaluation contractor.



Public Policy Center

Revision Date: December 16, 2019

Final Draft Date:

209 South Quadrangle, Iowa City, IA 52242-1192
O - 319.335.6800 • F - 319.335.6801 • www.ppc.uiowa.edu

Contents

List of Figures	3
List of Tables	3
Introduction	4
Background	5
Measures removed from outcome evaluation	7
Utilization and cost	10
Diabetes	14
Obesity	20
Tobacco use	21

List of Figures

Figure 1. ED visits per 1,000 months eligibility by age, CY 2015 – CY 2018.	10
Figure 2. BRFSS crude diabetes rates by age group and year	14
Table 6. Diabetes monitoring by county type and year, CY 2015 – CY 2018*	16
Figure 3. Rates of Hemoglobin A1c, CY 2015 – CY 2018	16
Figure 4. Rates of eye exams, CY 2015 – CY 2018	17
Figure 5. Rates of medical attention for Nephropathy, CY 2015 – CY 2018	17
Figure 6. Rates of all three diabetes monitoring activities	18
Figure 7. Number of admission for diabetes-related conditions per 100,000 members by year	19
Figure 8. Obesity rates by BMI category and year, CY 2011-CY 2018	20
Figure 9. Tobacco use by age and year, CY 2011-2018	21

List of Tables

Table 1. Hypotheses and measures.	8
Table 2. ED visits per 1,000 months of eligibility, CY 2015 - CY 2018	10
Table 3. Unadjusted Plan All-Cause Readmissions, CY 2015 - 2018	11
Table 4. Risk adjusted per member per month (PMPM) cost of care, CY 2015 – CY 2018	12
Table 5. Risk adjusted per member per month (PMPM) cost of care for C3 counties, comparison counties, and non-C3 counties, CY 2015 – CY 2018	13
Table 7. Number of admissions related to diabetes per 100,000 members, CY 2015 – CY 2018	18

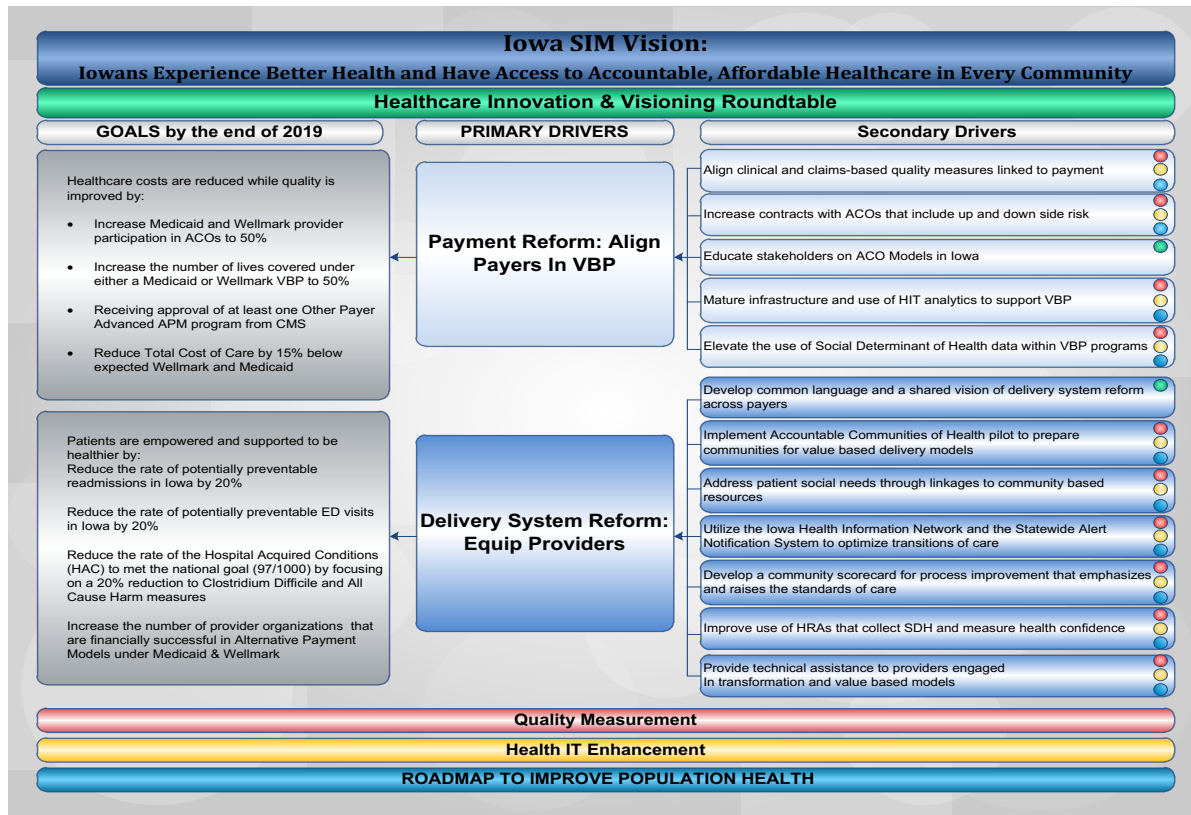
Introduction

The University of Iowa Public Policy Center (UI PPC) is evaluating Iowa's State Innovation Model (SIM) for the Iowa Medicaid Enterprise (IME) using two approaches. First, we utilize an extensive process evaluation describing and assessing the activities and mechanisms for putting SIM activities and changes in place. Second, we calculate state-wide measures of access to care and cost of care related to the SIM Core Goals.

Previous reports detailing results of the SIM can be found at <http://ppc.uiowa.edu/health/study/evaluation-state-innovation-model>.

Background

The State Innovation Model has one primary vision: Iowans experience better health and have access to accountable and affordable healthcare in every community. The roadmap to this vision is outlined through the driver diagram below.



There are 2 primary drivers and 12 secondary drivers to make this happen.

- 1) Delivery system reform – Equip providers
 - a) Develop common language and a shared vision of delivery system reform across payers.
 - b) Implement Accountable Communities of Health pilot to prepare communities for value-based delivery models
 - c) Address patient social needs through linkages to community based resources
 - d) Utilize the Iowa Health Information network and the Statewide Alert Notification System to optimize the transitions of care
 - e) Develop a community scorecard for process improvement that emphasizes and raises the standards of care
 - f) Improve use of health risk assessments (HRAs) that collect social determinants of health (SDH) and measure health confidence
 - g) Provide technical assistance to providers engaged in transformation and value based models
- 2) Payment reform – Align payers in Value-based purchasing (VBP)
 - a) Align clinical and claims-based quality measures linked to payment
 - b) Increase contracts with ACOs that include p and down side risk
 - c) Educate stakeholders on ACO Models in Iowa
 - d) Mature infrastructure and use of HIT analytics to support VBP
 - e) Elevate the use of Social Determinants of Health data within VPB programs.

The primary and secondary drivers are designed to meet state-wide goals as shown below.

Delivery System Reform: Equip Providers

- 1) Reduce the rate of potentially preventable readmissions in Iowa by 20%
- 2) Reduce the rate of potentially preventable emergency department (ED) visits in Iowa by 20%
- 3) Reduce the rate of Hospital Acquired Conditions (HAC) to meet the national goal (97/1000) by focusing on a 20% reduction in Clostridium Difficile and All Cause Harm measures
- 4) Increase the number of provider organizations that are financially successful in Alternative Payment Models under Medicaid and Wellmark

Payment Reform: Align Payers in VBP

- 1) Increase Medicaid and Wellmark provider participation in ACOs to 50%
- 2) Increase the number of lives covered under either a Medicaid or Wellmark VBP to 50%
- 3) Receiving approval of at least one Other Payer Advanced APM program from CMS
- 4) Reduce Total Cost of Care by 15% below expected Wellmark and Medicaid

For more information about these aims and their related goals, please go to the SIM home page <http://dhs.iowa.gov/ime/about/initiatives/newSIMhome> .

These goals have changed over the Award Years of the SIM and do not reflect the goals originally stated within the SIM proposal. The evaluation team at the UI PPC, in conjunction with the Iowa Department of Human Services (IDHS), Iowa Department of Public Health (IDPH), and the Centers for Medicare and Medicaid Innovation (CMMI), developed hypotheses and outcome measures to evaluate the effects of Iowa's SIM related to the original goals and expected results. Table 1 lists these hypotheses, measures, data sources and outcome target dates as provided in the evaluation plan.

This report provides data for the measurement years of calendar year 2015 (CY 2015) through calendar year 2018 (CY 2018). Due to the extensive implementation required for the SIM, both CY 2015 and CY 2016 are considered as baseline data, while CY 2017 is considered the first glimpse of possible effects of the SIM with CY 2018 being the most reflective of the ongoing SIM activities. Though CY 2018 data will not be available until August 2019, there are placeholders within the tables to indicate where this data will be added.

Measures removed from outcome evaluation

The SIM is a dynamic process as stakeholders explore mechanisms that will work to drive population health improvement through the enhancement of technology and implementation of quality measures designed to inform health care system change. As the project evolved CMS requested that Iowa focus efforts on a specific group to better measure the effects of SIM-related activities. At that time, the hypotheses listed below were removed from the operational plan necessitating the removal of measures from the evaluation.

- The rate of elective C-sections and early elective deliveries will be reduced.
 - Rates of low birth weight newborns will decrease over the 3 years of the SIM.
 - Providers will integrate the statewide strategies for the care of diabetes.

Hypotheses listed below were not tested within the evaluation because measures related to these hypotheses are no longer considered valid quality indicators or are not accessible with the data provided for evaluation purposes.

- The rate of surgical site infections will be reduced-already measured through IHC
- The rate of Narcane use outside the hospital will be reduced-there are no references for Narcane drug codes.
- There will be an increase in the proportion of people interested in reducing tobacco use-quitline data is not available and claims data are unreliable for this intervention
- Monitoring of anti-coagulation medications will increase-no longer supported quality measure
- The proportion of Medicaid primary care providers in value-based purchasing contracts will increase to 70% by the third year-actively monitored by IDHS

Table 1. Hypotheses and measures

Hypothesis	Measure	Data Source	Outcome Target date
The statewide diabetes rate will be reduced by 0.2% over the three years of the SIM.	Statewide diabetes rate	BRFSS	12/31/2018
The hospitalizations related to the long-term and short-term complications of diabetes will be reduced.	Admissions due to long-term and short term complication from diabetes	Iowa Hospital Association (IHA) inpatient file	12/31/2019
ER visits for diabetes related issues will be reduced.	ED visits due to long-term and short term complication from diabetes	IHA outpatient file	12/31/2019
People with obesity will have decreased BMI over the 3 years of the SIM.	Weight and height measure	BRFSS	12/31/2018
The SIM will reduce the annual rate of preventable readmissions by the third year.	Avoidable readmissions at 7days and 30 days (HEDIS)	IHA inpatient data	12/31/2019
The SIM will reduce the annual rate of preventable emergency department visits by the third year.	Rate of preventable ED visits as defined by NYC Billings algorithm	IHA outpatient file	12/31/2019
The total cost of care per member in Iowa will be reduced below the national average by the third year.	Cost of care per person in Iowa	Medicaid and Wellmark Claims data	12/31/2019
The rate of tobacco use will decrease by 1% over the 3 years of the SIM.	Rate of reported tobacco use	BRFSS	12/31/2018
Glucose monitoring will increase.	Hemoglobin A1c rates	Medicaid and/or Wellmark claims data	6/30/2017 and 6/30/2018
The rate of elective C-sections and early elective deliveries will be reduced.	Rate of C-sections and early elective deliveries	IHA inpatient file	
Rates of low birth weight newborns will decrease over the 3 years of the SIM.	Low birth weight rates	Birth certificate data	
Providers will integrate the statewide strategies for the care of diabetes.	Number of providers who integrate statewide strategies	Provider survey	
The rate of surgical site infections will be reduced.	Rate of surgical site infection	IHA inpatient file perhaps use National Healthcare Safety Network (NHSN)	
The rate of Narcane use outside the hospital will be reduced.	Narcan use rates	Medicaid and/or Wellmark claims data	

Hypothesis	Measure	Data Source	Outcome Target date
There will be an increase in the proportion of people interested in reducing tobacco use.	number of people requesting information from the Quitline	Iowa Quitline data and claims data	
Monitoring of anti-coagulation medications will increase.	Prottime rates	Medicaid and/or Wellmark claims data	
The proportion of Medicaid primary care providers in value-based purchasing contracts will increase to 70% by the third year.	Proportion of Medicaid Primary care providers in VBP contracts	Medicaid provider dataset	
People with diabetes will experience improved quality of life (QoL).	Moved to process evaluation		

Note: Hypotheses that have been removed are highlighted in gray

Utilization and cost

We have calculated three outcome measures relating to access and cost for the general population: ED Visits, Plan All-Cause Readmissions, and Total Cost of Care. The measures were calculated using only Medicaid administrative data for this report. All Medicaid members who were not additionally covered by Medicare were included in the measures. The evaluation plan calls for Medicare and Wellmark data to be utilized for the final report in March 2019, however, there have been difficulties performing the TCOC with the heightened security protections on Medicare and Wellmark data. Additionally, we have been unable to obtain the data for CY 2016 and CY 2017 for both populations, making it difficult to understand changes over the SIM implementation. All Medicaid members who were not additionally covered by Medicare were included in the measures. However, we have provided the national benchmarks from the National Committee for Quality Assurance as a comparison for those measures in for which benchmarks are available.

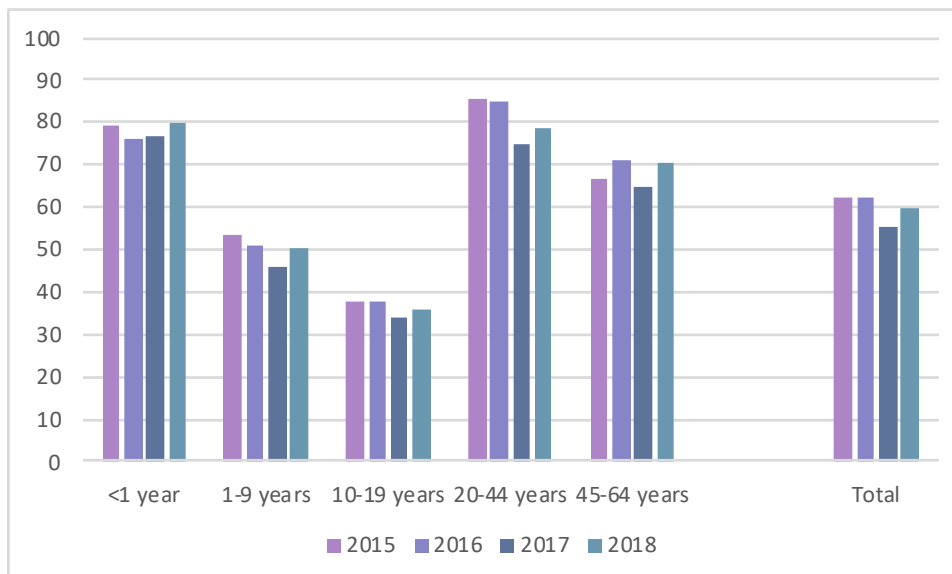
Emergency Department (ED) visits in Medicaid

ED visit rates for the Iowa Medicaid population are calculated according to HEDIS 2018 specifications for Emergency Department. Simple ED visit rates are reported as unadjusted visits per 1,000 months of eligibility (Table 2. ED visits per 1,000 months of eligibility, CY 2015 - CY 2018, Figure 1). These rates include Medicaid members who were eligible for at least 1 month during the measurement year. The ED visit rates include all ED visits that did not result in an inpatient admission and were not related to behavioral health care.

Table 2. ED visits per 1,000 months of eligibility, CY 2015 - CY 2018

Age group	CY 2015	CY 2016	CY 2017	CY2018
<1 year	79.21	76.39	76.73	79.38
1-9 years	53.16	50.76	45.59	50.31
10-19 years	37.76	37.42	33.83	35.92
20-44 years	85.78	84.60	74.55	77.53
45-64 years	66.70	70.96	64.79	69.59
Total	61.96	61.96	55.50	59.24
National Benchmark	62.4	64.6	65.21	62.2

Figure 1. ED visits per 1,000 months eligibility by age, CY 2015 – CY 2018



ED visits rates fell for almost every age group in CY 2017, with the only exception being a slight rise for those under 1 year of age; but rates rose again to pre-2017 levels during CY 2018. Rate changes over time can occur for many reasons that may, or may not, be related to SIM state-wide activities. Over time, Figure 1. ED visits per 1,000 months eligibility by age, CY 2015 – CY 2018 seems to indicate that, though rates may change from year to year, they remain relatively stable over a longer time period.

By calculating ED visits according to HEDIS 2018 specifications for Emergency Department Utilization, the rates do not reflect all ED visits, not only those that are potentially preventable. Determining whether the rates of potentially preventable ED visits has decreased can be particularly difficult for this study period of CY 2015 – CY 201 for two reasons: 1) the Iowa Medicaid program switched all enrollees to one of three Managed Care Organizations (MCOs) during this time period, and 2) diagnosis coding used to determine whether a visit was avoidable had the first major update since the 1960's, going from ICD9 to ICD10 during this time period.

Plan all-cause readmissions

Plan all-cause readmissions reflect hospital admissions that occur within the first 30 days following an index hospital discharge (NQF measure #1768). Index hospital discharges include discharges that occurred during the measurement year between January 1 and December 2 for Medicaid members eligible for at least 1 month after the index discharge. Readmissions are discharges that occur within 30 days after the index discharge and during the period January 2 to December 31. These discharges do not include pregnancy- or perinatal condition-related discharges or discharges with planned readmissions such as chemotherapy or transfusions.

The HEDIS specifications for plan all-cause readmission rates call for risk adjusting the rates in an effort to make populations more comparable by controlling for existing disease severity-related admission risk. We are unable to risk adjust this measure for the Medicaid population, as HEDIS only provides standardized risk adjustments for Medicare or commercially insured populations. Table 3. Unadjusted Plan All-Cause Readmissions, CY 2015 - 2018 shows the unadjusted plan all-cause readmissions in CY 2015 through CY 2018 for the Iowa Medicaid population. The rate of observed readmissions remained about the same for the 18-44 and 45-54 age groups, while the rate increased for those 55-64 years of age from CY 2015 through CY 2017, however all rates dropped in CY 2018, with the largest drop occurring in the 45-54 year old category.

Table 3. Unadjusted Plan All-Cause Readmissions, CY 2015 - 2018

Age group	Count of index stays (Denominator)				Count of 30-day readmissions (Numerator)				Observed Readmissions			
	CY 2015	CY 2016	CY 2017	CY 2018	CY 2015	CY 2016	CY 2017	CY 2018	CY 2015	CY 2016	CY 2017	CY 2018
18-44 years	7,810	10,288	11,305	11,874	763	858	907	543	9.8%	8.3%	8.0%	7.6%
45-54 years	4,418	3,290	4,088	4,461	545	376	495	343	12.3%	11.4%	12.1%	7.7%
55-64 years	3,575	2,697	3,919	4,674	403	257	473	412	11.3%	9.5%	12.1%	8.8%
Total	15,803	16,275	19,312	21,009	1,711	1,491	1,875	1,298	10.8%	9.2%	9.7%	6.2%

Total cost of care

Total cost of care is calculated using the Health Partners analytic package with the Johns Hopkins ACG system (Adjusted Clinical Groups) to risk adjust cost results for Medicaid members who were eligible for at least 9 months during the measurement year (see <https://www.>

Table 4. Risk adjusted per member per month (PMPM) cost of care, CY 2015 – CY 2018

Year	Months of enrollment	Inpatient PMPM	Outpatient PMPM	Professional PMPM	Medical PMPM	Prescription PMPM	Total PMPM	% change Total PMPM
2018	4,050,149	\$64.01	\$116.97	\$168.31	\$349.30	\$57.67	\$406.96	+10.5%
2017	5,483,132	\$60.66	\$90.46	\$148.87	\$299.99	\$68.17	\$368.16	-10.7%
2016	5,493,831	\$80.04	\$88.97	\$146.16	\$315.16	\$96.93	\$412.09	+13.7%
2015	5,140,441	\$49.18	\$82.86	\$143.01	\$275.05	\$87.41	\$362.46	

The average risk-adjusted per member/per month cost for Medicaid members in CY 2018 was \$406.96, this represents a 10.5% increase in costs over CY 2017 and a shift to nearly 10% higher than the total PMPM in CY 2015. The largest portion of this cost (\$349.30) was attributable to medical care (e.g., outpatient, professional and ancillary services).

As part of the SIM activities, the IDPH awarded funds to counties and county groups to organize area stakeholders and providers to enhance the referral and care coordination systems in an effort to provide not just health care service, but additional service related to social determinants of health such as housing and employment. These counties are referred to as C3 counties. The C3 counties for CY 2015 and CY 2016 include those awarded funds during C3 award year 1: Appanoose, Buena Vista, Calhoun, Dallas, Decatur, Des Moines, Hamilton, Humboldt, Linn, Lucas, Marion, Monroe, Pocahontas, Ringgold, Sac, Sioux, Wayne, Webster, and Wright, while those for CY 2017 and CY 2018 include those operating as C3s during CY 2017: Buena Vista, Calhoun, Cedar, Dallas, Des Moines, Humboldt, Linn, Louisa, Marion, Muscatine, Pocahontas, Sac, Sioux, Webster, and Wright. Though the list of counties is different across time, we opted to compare them with the idea that this shows how successful the C3 program is, not the counties themselves. The addition and deletion of counties in a program such as this is not unusual and our results should show the results embedded with the changes.

C3 counties showed a decrease in costs from \$420.75 to \$360.59 and 14.2% reduction in 2017, however, costs increased 10% in CY 2018 to \$396.80. The Total PMPM cost for C3 counties was lower than the total for all counties in Iowa (Table 4. Risk adjusted per member per month (PMPM) cost of care, CY 2015 – CY 2018) for CY 2017, while non-C3 counties had higher Total PMPM costs than all counties in Iowa in CY 2017. C3 county costs have shifted significantly from CY 2016 to CY 2017 and again to CY 2018. When compared to the change in Medicaid costs nationally, C3 counties have had an 8.4% increase in costs from CY 2015-CY 2018, while nationally the increase has been 9.6%. Applying this percentage difference to CY 2018 costs, approximately \$4.36 per member year in CY 2018, providing an estimated \$264,544 in reduced expenditures in C3 counties as compared to national figures. If this reduction were achieved for all Medicaid members, the reductions could be over \$1.2 million. When compared to the state as a whole, there is a \$15.08 reduction in costs for CY 2018, resulting in estimated total reductions in cost of \$913,879, with the potential to save over 4 million across the state.

Costs reductions are estimates based on comparisons, it is important to remember that certain assumptions apply in the figures provided above. First, we assume that national trends would be reflected in Iowa Medicaid expenditures. Second, we assume that the members we have included in the cost calculations (eligible for Medicaid for at least 9 months of the year) have similar expenditure patterns as those who are not included (eligible for Medicaid less than 9 months of the year). Third, we assume that non-C3 counties would be as successful at implementing C3 strategies. Finally, we attribute cost reductions to the C3 counties and C3 activities when they may not be the driving force.

Table 5. Risk adjusted per member per month (PMPM) cost of care for C3 counties, comparison counties, and non-C3 counties, CY 2015 – CY 2018

Year	Months of enrollment	Inpatient PMPM	Outpatient PMPM	Professional PMPM	Medical PMPM	Rx PMPM	Total PMPM	% change Total PMPM	% change Medicaid National
C3 Counties									
2018	727,302	\$62.00	\$108.64	\$168.05	\$338.69	\$58.11	\$396.80	+10.0%	+2.2%*
2017	988,568	\$59.38	\$84.75	\$148.66	\$292.80	\$67.80	\$360.59	-14.2%	+2.9%
2016	967,325	\$76.38	\$92.91	\$153.52	\$322.82	\$97.93	\$420.75	+14.9%	+4.2%
2015	906,494	\$50.26	\$84.12	\$145.60	\$279.99	\$86.15	\$366.14		
Non-C3 Counties									
2018	3,322,847	\$64.48	\$118.88	\$168.37	\$351.73	\$57.56	\$409.30	+10.7%	
2017	4,494,564	\$46.95	\$91.77	\$148.92	\$301.64	\$68.26	\$369.90		
Comparison Counties									
2016	972,481	\$81.75	\$88.46	\$136.16	\$306.38	\$96.91	\$403.28	+13.9%	
2015	912,348	\$48.00	\$85.73	\$132.93	\$266.66	\$87.46	\$354.12		

*CMS projections

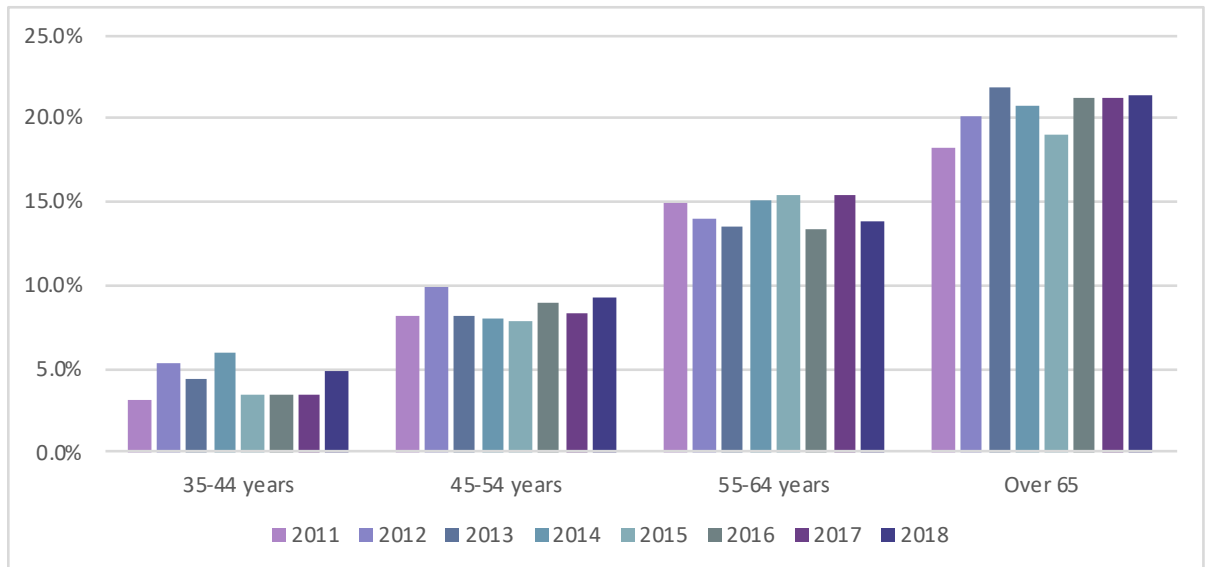
Diabetes

Statewide diabetes rates

The most recent SIM operational plan focuses on improving the quality of care and outcomes for people with diabetes. One of the outcomes related to the goals of the SIM efforts states that “The statewide diabetes rate will be reduced by 0.2% over the three years of the SIM.” Statewide data related to rates of diabetes comes from the Centers for Disease Control (CDC) which administers the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire annually in all 50 states. The crude prevalence diabetes rates are available online through the CDC site and through annual reports compiled by the Iowa Department of Public Health and posted to the IDPH website at <http://idph.iowa.gov/brfss>. Figure 2. BRFSS crude diabetes rates by age group and year provides the crude diabetes prevalence rates by year and age group from CY 2011 through CY 2017 (CY 2018 rates are not currently available). These rates reflect the percent of respondents that indicated their doctor had told them they have diabetes at some time. The rates vary over time somewhat, but hover around 3-5% for those 35-44 years of age, 8-10% for those 45-54 years of age, 13-15% for those 55-64 years of age and 18-21% for those 65 and over. Though most groups have remained relatively stable over time, the 65+ group has continued to experience rising rates of Diabetes due to either increased disease or improved detection. In CY 2017, there was a marked increase in the number of people who reported having been told they had Diabetes in the 55-64 age group over last year. However, when compared to CY 2015, it is nearly the same.

It will be difficult to detect a 0.2% change in the diabetes rates over time as the year to year fluctuations range from reductions of 2.4% to increases of 2.2%. Evidence to date, does not suggest that SIM activities have caused a reduction in the Diabetes rates. Perhaps, it is more prudent to anticipate that rates may increase for a short time as Diabetes-related awareness increases the use of pre-screening and detection tools and the early detection of diabetes. Though this early detection should lead to long term reductions in complications, hospitalizations and ED visits, the time lag for these effects are not well established in the literature.

Figure 2. BRFSS crude diabetes rates by age group and year



Diabetes monitoring

Effectiveness of diabetes care is monitored through the measure ‘Comprehensive Diabetes Monitoring consisting of 1) Hemoglobin A1c (HbA1c) testing, 2) HbA1c poor control, 3) HbA1c control under 8%, 4) HbA1c control under 7% (special populations), 5) eye exam performed, 6) Medical attention for nephropathy, and 7) blood pressure under control. Claims data can be used to calculate three of these diabetes monitoring outcomes to determine the effectiveness of Diabetes management: 1) receiving a Hemoglobin A1c, 2) receiving an eye exam, and 3) receiving medical attention for nephropathy. These outcomes utilize claims for Medicaid members from 19 through 64 years of age with diabetes. The Medicaid statewide results are shown in Table 6. Diabetes monitoring by county type and year, CY 2015 – CY 2018* and Figure 3. Rates for Diabetes monitoring have remained similar

in all monitoring categories. However, this could change as additional data is added for the final report. Within CY 2018, C3 counties do have significantly higher rates of eye exam and completion of all three types of monitoring than non-C3 counties.

Over time, rates for all three monitoring activities have fallen from CY 2015-CY 2017; however, in CY 2018 rates begin to move upward again. When looking at the average over time it appears that for the diabetes monitoring activities, rates have not improved at the state level, while nationally they have improved slightly or remained stable.

Table 6. Diabetes monitoring by county type and year, CY 2015 – CY 2018*

Year	2015			2016			2017			2018		
	C3	Non-C3	Nat. BM	C3	Non-C3	Nat. BM	C3	Non-C3	Nat. BM	C3	Non-C3	Nat. BM
Hemoglobin A1c	2,775	13,489		3,072	14,468		2,722	13,066		3,050	14,301	
	90.3%	89.7%	86.3%	89.5%	88.8%	86.0%	78.7%	79.7%	86.7%	80.8%	81.7%	87.6%
Eye exam	1,890	8,811		2,151	9,183		2,009	8,674		2,153	9,311	
	61.5%	58.6%	54.4%	62.7%	56.5%	52.7%	58.1%	52.9%	54.9%	57.0%	53.2%	57.2%
Medical attention for Nephropathy	2,845	13,878		3,175	15,056		2,813	13,304		2,966	13,713	
	92.6%	92.3%	81.0%	92.5%	92.5%	90.0%	81.3%	81.1%	89.9%	78.5%	78.3%	90.1%
Had all three types of monitoring	1,690	7,765		1,896	8,054		1,478	6,396		1,604	6,952	
	55.0%	51.7%		55.2%	49.5%		42.7%	39.0%		42.5%	39.7%	

*Rates for Eye exam and having all three types of monitoring are significantly higher for C3 counties than non-C3 counties.

Figure 3. Rates of Hemoglobin A1c, CY 2015 – CY 2018

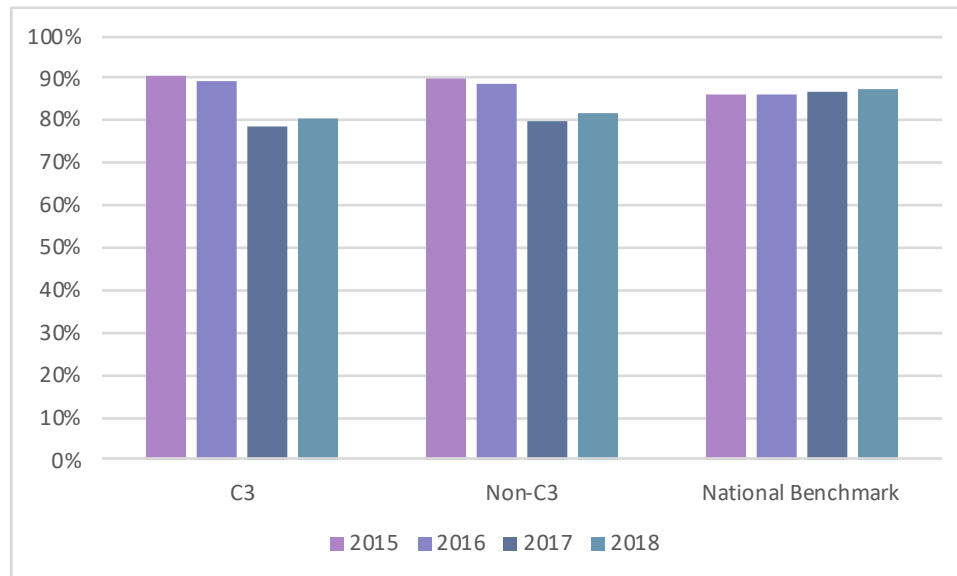


Figure 4. Rates of eye exams, CY 2015 – CY 2018

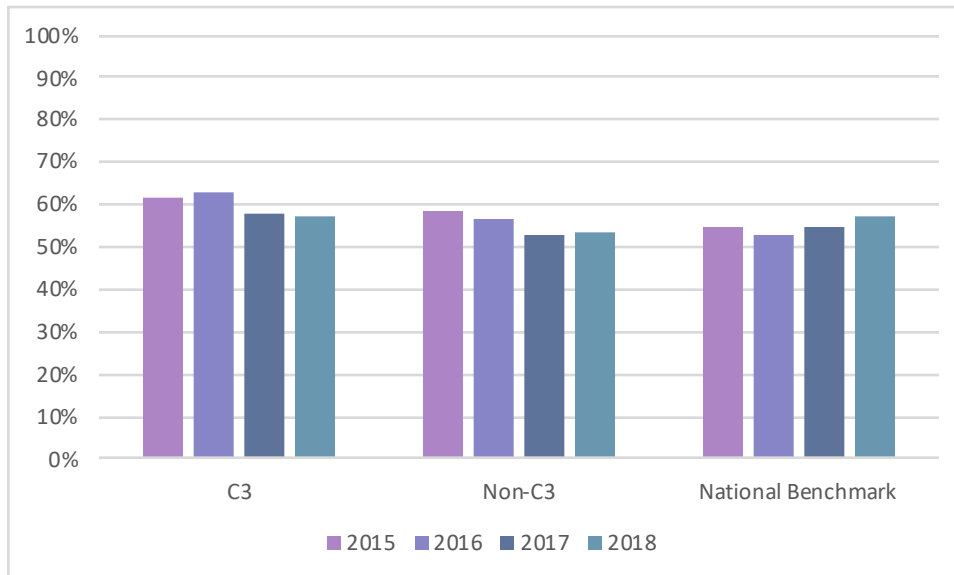


Figure 5. Rates of medical attention for Nephropathy, CY 2015 – CY 2018

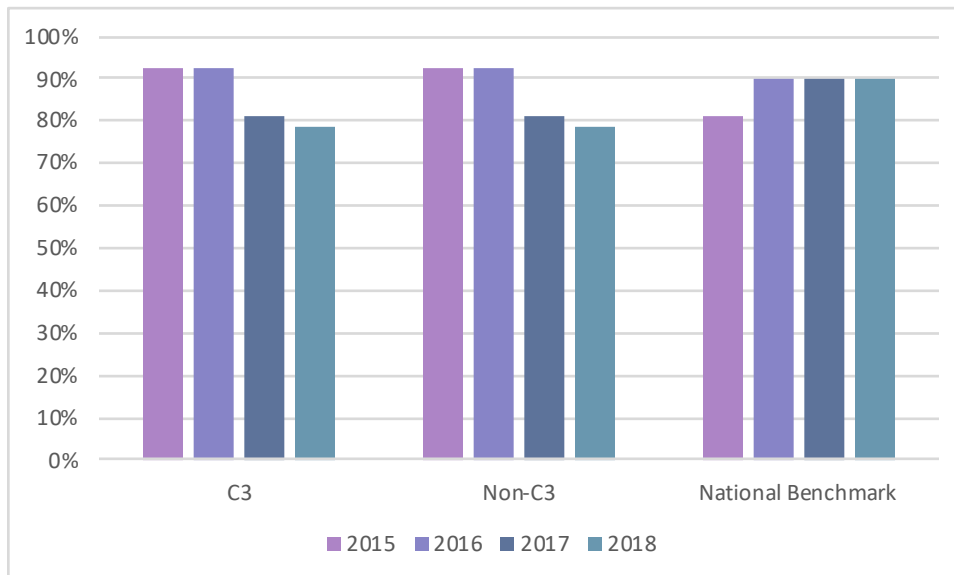
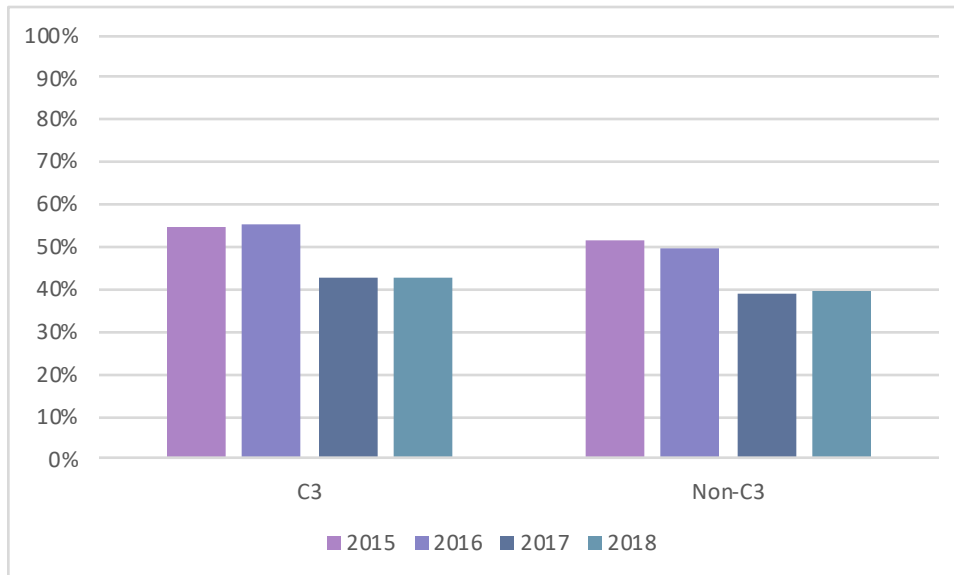


Figure 6. Rates of all three diabetes monitoring activities



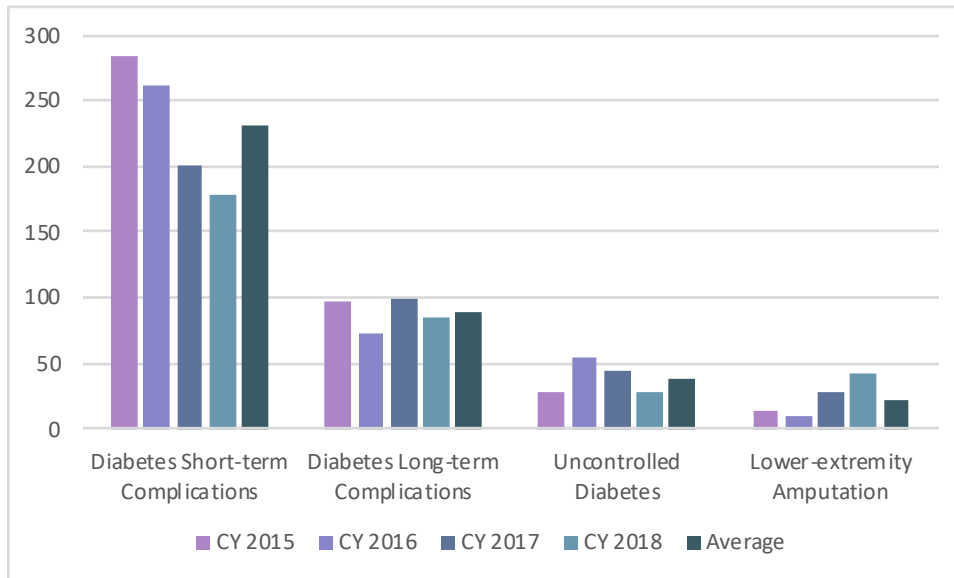
Admissions related to Diabetes

The rate of hospital admissions for diabetes-related problems is expected to decrease over the SIM as monitoring for early detection of problems would lead to fewer admissible events. We used the rates of admission for short-term and long-term complications of diabetes, uncontrolled diabetes and lower-extremity amputation among patients with diabetes to evaluate this hypothesis. These rates were calculated using the Agency for Health Research and Quality (AHRQ) outcome calculator utilizing the Prevention Quality Indicators (PQI) related to diabetes for Medicaid members eligible for at least 9 months in the calendar year. Table 7. Number of admissions related to diabetes per 100,000 members, CY 2015 – CY 2018 and Figure 7, show that the rates for two of the four admission types (short-term complications and uncontrolled diabetes) fell from CY 2016 to CY 2018, while rates for uncontrolled diabetes remained stable, and the rate of lower extremity (LE) amputations increased. There were 62 admissions for LE amputations in CY 2017 and 106 in CY 2018. This change in number resulted in a large increase in the rate. It is unclear why the number of LE amputations related to diabetes increased so dramatically in CY 2018, nearly doubling. Yet, the numbers are still small and may explain the large changes in rates over time. Thus, while the admission rate for short-term complications of diabetes have fallen over time, indicating that there may be improved monitoring of diabetes, the rate of lower extremity amputations has increased and the rates of admission for long-term complications and uncontrolled diabetes have varied.

Table 7. Number of admissions related to diabetes per 100,000 members, CY 2015 – CY 2018

Type of admission	CY 2015	CY 2016	CY 2017	2018
Diabetes Short-term Complications	282.83	262.02	200.02	178.88
Diabetes Long-term Complications	97.53	72.76	98.44	85.66
Uncontrolled Diabetes	28.28	54.01	45.19	29.08
Lower-extremity Amputation	13.17	9.37	27.7	42.23

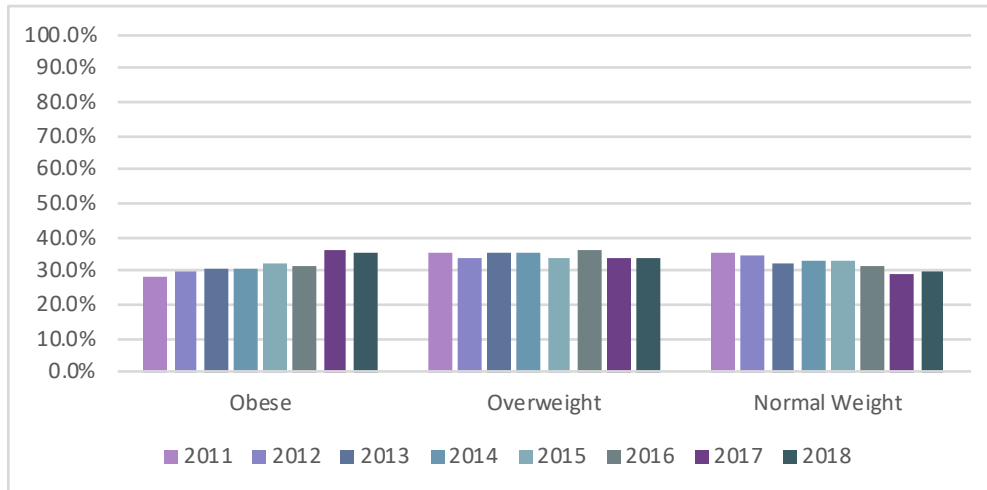
Figure 7. Number of admission for diabetes-related conditions per 100,000 members by year



Obesity

SIM activities are designed to support providers and patients as they lower individual BMI. These efforts are expected to have the following result: People with obesity will have decreased BMI over the 3 years of the SIM. Though we need to have the state-specific BRFSS data to report this measure, the statewide obesity rates are available through the CDC and IDPH annual reports (Figure 8. Obesity rates by BMI category and year, CY 2011-CY 2018). Between CY 2011 and CY 2018, the rate of obesity has risen from 29% to 35%, a 21% increase. Unlike the crude prevalence rates for diabetes, this rate does not vary from year to year – increasing one year and then decreasing the next. This rate rises steadily over time to over 36% in CY 2017 with a mirrored decrease in the rate of people with normal weight, and nearly stable rates of people who are overweight. These rates seem to stabilize in CY 2018.

Figure 8. Obesity rates by BMI category and year, CY 2011-CY 2018



Tobacco use

Reducing tobacco use is an expected outcome for the SIM activities. Figure 9. Tobacco use by age and year, CY 2011-2018 provides the tobacco use rate by age group and year as provided by the BRFSS. Tobacco use has consistently been decreasing for all age groups except those 55-64 years of age and those 65 years of age and over. The SIM goal is to reduce tobacco use by 1% over the 3 years of the SIM; this may be difficult to measure since the rates were already going down an average of 1% per year from CY 2011 to CY 2016 for the four lower age groups. In comparing the pre-SIM (2011-2014) tobacco use rates to the post-SIM (2015-2018) tobacco use rates there are extremely mixed results. For those ages 18-24 there was a 34% reduction in those using tobacco in the pre-SIM period, while there was a 22.6% reduction in those using tobacco in the post-SIM period. Contrast these results to those for people ages 25-34 years. For this group, there was a pre-SIM reduction in tobacco use of 8% and a post-SIM increase in tobacco use of 8%. Tobacco use rates do not show any definite effects from the SIM activities.

Figure 9. Tobacco use by age and year, CY 2011-2018

