Healthy Michigan Plan Evaluation
Domain I – Hospital Uncompensated Care

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University of Michigan Institute for Healthcare Policy & Innovation

Report Authors:
Thomas Buchmueller, Helen Levy, Sayeh Nikpay, Jordan Rhodes

EXECUTIVE SUMMARY

The University of Michigan Institute for Healthcare Policy & Innovation (IHPI) is conducting an 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). This report presents findings for Domain I on Hospital Uncompensated Care. The focus of this domain is to estimate the effect of HMP on the amount of uncompensated care provided by Michigan hospitals. This analysis documents trends in uncompensated care over time and compares changes in Michigan to changes in states that did not expand their Medicaid programs (non-expansion states) and other states that, like Michigan, expanded Medicaid eligibility under the Affordable Care Act (ACA) (expansion states). The main analysis is based on data from Medicare cost reports filed by general acute care hospitals and critical access hospitals located in the 50 states and the District of Columbia. Supplementary analysis is conducted using data from Medicaid cost reports submitted by hospitals to MDHHS and national data submitted by tax-exempt hospitals to the Internal Revenue Service (IRS).

Between 2013, the final year prior to any exposure to the Healthy Michigan Plan, and 2015, the first year in which all Michigan hospital cost reports were exposed to a full year of the program, the average costs of uncompensated care provided by Michigan hospitals declined by $3.4 million, a decline of over 40%. Reductions in uncompensated care were greatest among Michigan hospitals that provided baseline levels of uncompensated care at or above the average for the state; these hospitals exhibit a 57% decline in uncompensated care between 2011-2013 and 2015-2017.

Uncompensated care declined significantly more in Michigan than in states that did not expand their Medicaid programs. The reduction in uncompensated hospital care observed in Michigan was comparable to the reductions observed in other expansion states.

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INTRODUCTION

The University of Michigan Institute for Healthcare Policy & Innovation (IHPI) is conducting an 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). This report presents findings for Domain I on Hospital Uncompensated Care.

As outlined in the Special Terms and Conditions of Michigan's Section 1115 Demonstration Waiver, the focus of Domain I is to examine the impact of reducing the number of uninsured individuals on uncompensated care costs to hospitals in Michigan through the expansion of subsidized insurance. The main hypothesis is that uncompensated care in Michigan decreased significantly following Medicaid expansion through HMP. The analysis considers five sub-hypotheses:

- Hypothesis I.1A: Uncompensated care in Michigan will decrease significantly r*elative to the existing trend in Michigan*.

- Hypothesis I.1B: Uncompensated care will decrease more by percentage *for Michigan hospitals with baseline levels of uncompensated care that are above the average for the state than for hospitals with levels that are below the average for the state.*

- Hypothesis I.1C: Uncompensated care will decrease more by percentage *for Michigan hospitals in areas with above average baseline rates of uninsurance in the state than for hospitals with below state average levels.*

- Hypothesis I.1D: Uncompensated care in Michigan will decrease significantly *relative to states that did not expand their Medicaid programs.*

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

DATA

The primary source of data for this analysis is publicly available hospital cost report data from CMS. All hospitals that receive payments from the Medicare program are required by CMS to submit cost report data annually. The study sample includes cost report data from fiscal years 2010-2016 and consists of general acute care hospitals and critical access hospitals located in the 50 states and the District of Columbia.

Hospitals are required to submit cost report data in the form of standardized worksheets. The data required for this analysis is reported in worksheet S10, which contains information on the costs of uncompensated care provided by each hospital. Uncompensated care is defined as the

sum of charity care and bad debt. The amounts of charity care and bad debt that hospitals report to CMS represent the *charges* corresponding to the care provided. The *cost* of this care can be calculated by applying the hospital's cost-to-charges ratio, which is another measure that hospitals provide on their cost reports.

Although the Medicare cost reports are the best source of data on hospital uncompensated care, they have several limitations for the purpose of our analysis. First, not all hospitals provide complete and accurate submissions. Second, fiscal year reporting periods vary both across hospitals and within hospitals over time. For example, while some hospitals report data for a January through December fiscal year, others report data for an October through September fiscal year. Furthermore, hospitals occasionally submit multiple cost reports within the same fiscal year. For example, a hospital that generally reports for an October through September fiscal year may include two disaggregated submissions, with one submission spanning October through December and the second submission spanning January through September.

We conducted several data cleaning steps to address these issues. We identified and removed infeasible entries associated with key outcome fields. We flagged observations that were six or more standard deviations from the mean of each outcome field. We then checked for consistency within hospital submissions by inspecting all entries that corresponded with flagged hospitals. A hospital that reported multiple high values for the costs of uncompensated care is less of a concern than a hospital that reported only one extremely high value associated with the costs of uncompensated care. We dropped observations that corresponded to these outlier values.

In instances where hospitals submitted multiple cost reports that spanned shortened time-periods, we aggregated these partial year reports to construct measures spanning a 12-month period. We identified observations that sum to an annual time-length when combined, (for example, October through December and January through September), and aggregated outcome fields across these observations. We dropped observations that represented a period of less than 335 days or a period of more than 370 days, such that each observation corresponded to a roughly annual time-period. We converted all outcomes into 2015 dollars using the Consumer Price Index.[1]

Table 1 contains information on observation counts across hospital reporting years by state Medicaid expansion status. Note that the observation counts differ across years. While hospital closures occur during this period of analysis, these discrepancies also stem from observations that are dropped after applying the data cleaning procedures.

[1] The Consumer Price Index for All Urban Consumers (CPI-U) is used to convert outcomes. CPI-U figures are obtained from: https://www.minneapolisfed.org/community/financial-and-economic-education/cpi-calculator-information/consumer-price-index-and-inflation-rates-1913

Table 1: Sample Counts of Hospitals by Reporting Period and Expansion State Status

	Michigan		Other Expansion States		Non-Expansion States	
End Year	N	Average Months Exposed to HMP	N	Average Months Exposed to Medicaid Expansion	N	Average Months After Jan 1, 2014
2011	119	0	2,234	0	1,822	0
2012	128	0	2,370	0	1,964	0
2013	130	0	2,345	0	1,956	0
2014	126	5.3	2,359	7.2	1,950	8.6
2015	130	12	2,395	10.6	1,943	12
2016	127	12	2,338	11.5	1,946	12
2017	65	12	1,045	12	778	12

Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.

Table 1 also summarizes the average number of months of actual or potential exposure to Medicaid expansion across reporting periods. This field captures the timing of both expansion and fiscal year reporting periods. For all states, this variable takes a value of zero for the period from 2011 to 2013. In Michigan, exposure to HMP is measured by comparing the timing of the hospital's fiscal year to the HMP start date of April 1, 2014. For all hospitals in the state, the average number of months exposed to HMP in 2014 was 5.3. In fiscal year 2015, all Michigan hospitals were exposed to HMP for a full 12 months. We take a similar approach for other expansion states. For most of these states, the Medicaid expansion went into effect on January 1, 2014, though in some cases the start date was later. For non-expansion states, we measure potential exposure relative to January 1, 2014.

ANALYSIS

Trends over Time in Michigan

<u>Hypothesis I.1A</u>: Uncompensated care in Michigan will decrease significantly *relative to the existing trend.*

To test this hypothesis, we analyzed trends in two measures of uncompensated care provided by Michigan hospitals: (1) the average cost of uncompensated care and (2) uncompensated care costs as a percent of total hospital expenditures. Results for both measures are presented by year in Table 2. Figure 1 presents uncompensated care as a percentage of total expenditures in graphical form.

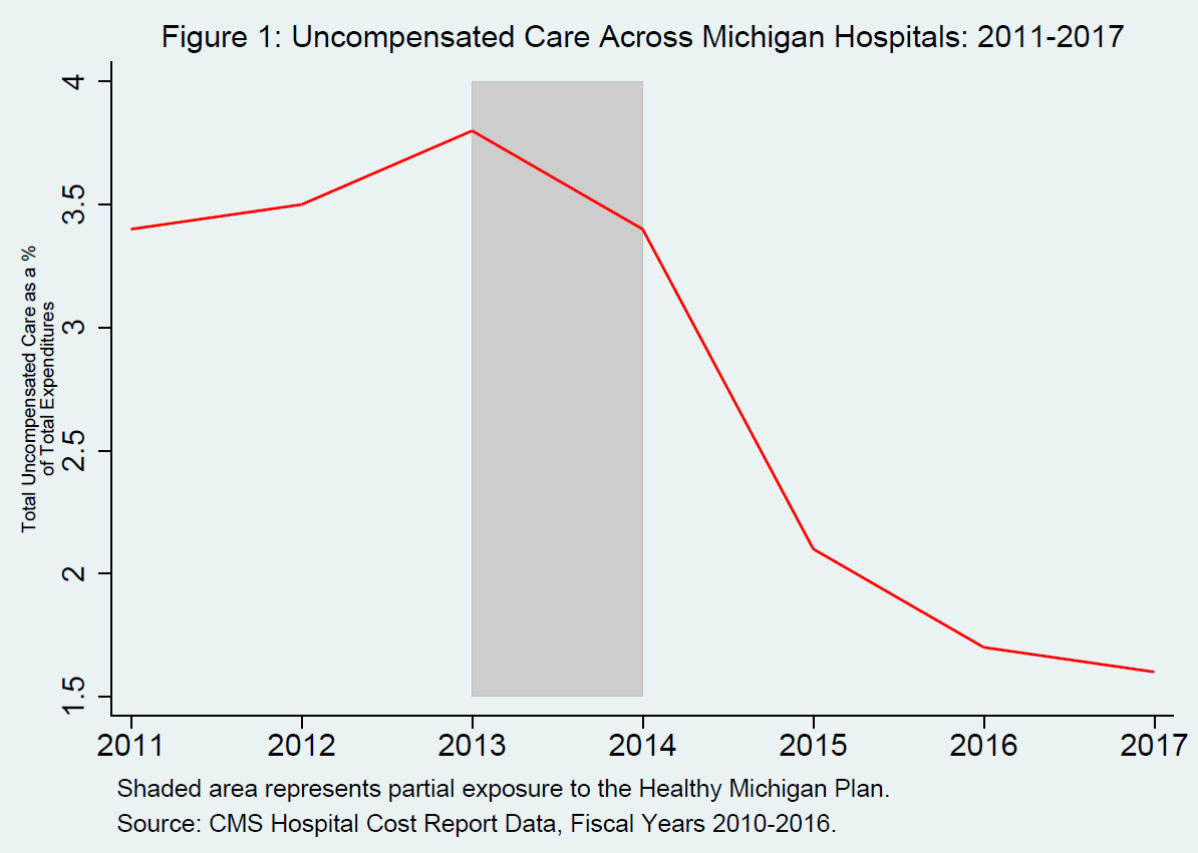
In 2011, the average hospital in Michigan provided roughly $7.4 million of uncompensated care. In 2013, the last full year before HMP went into effect, the mean was $7.8 million. That year, uncompensated care represented 3.8% of total expenditures for Michigan hospitals.

Table 2: Trends in Uncompensated Care in Michigan Hospitals, 2011-2017

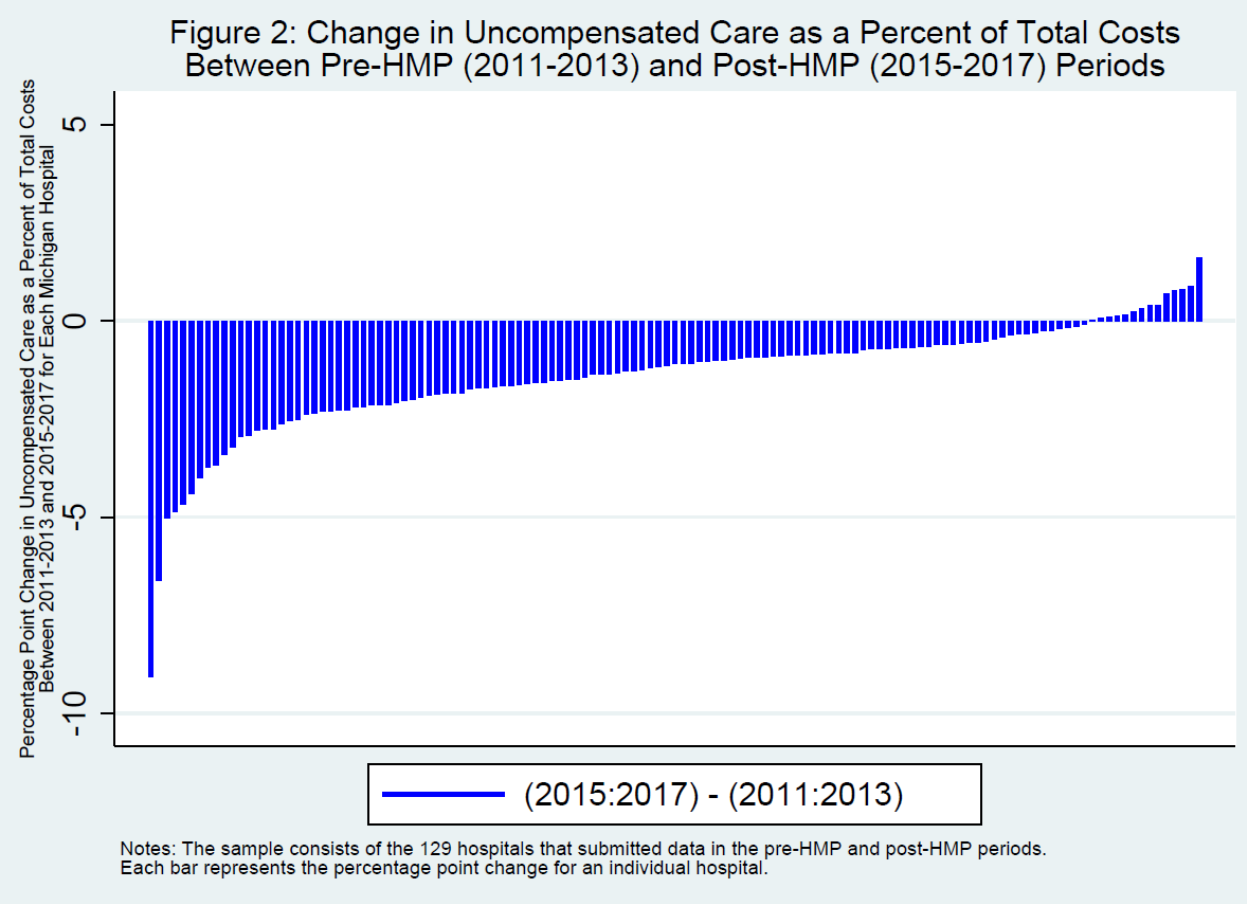
End Year	N	Average Months Exposed to HMP	Mean UC per Hospital ($Millions)	UC as a % of Total Expenditures
2011	119	0	7.4	3.4%
2012	128	0	7.2	3.5%
2013	130	0	7.8	3.8%
2014	126	5.3	7.2	3.4%
2015	130	12	4.4	2.1%
2016	127	12	3.8	1.7%
2017	65	12	4.0	1.6%

Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.

Because the data for 2014 represents a mix of pre- and post-HMP data, a comparison of 2013 and 2015 is more informative as to the effect of the program. The average amount of uncompensated care provided by Michigan hospitals fell by 44% between these years, from $7.8 million to $4.4 million. The amount in 2015 represents 2.1% of total hospital expenditures. Uncompensated care declined again in 2016, though the change was smaller.



It is possible that these state-level figures mask important differences among hospitals. Therefore, in Figure 2 we present the change in uncompensated care measured as a percentage of total expenditures for all Michigan hospitals. (Using this relative measure rather than dollar amounts effectively adjusts for hospital size.) For this calculation, we define the pre-HMP period as the years 2011-13 and the post-HMP period as 2015-17. We exclude data from fiscal year 2014 because it is a transition year that reflects a mix of pre- and post-HMP experience.



The figure sorts hospitals according to the change in uncompensated care between these two periods. Hospitals with the largest declines are on the far left; the small number of hospitals experiencing an increase in uncompensated care expenditures are on the far right. Two main results emerge. First, for the vast majority of Michigan hospitals—115 out of 129, or 89%—uncompensated care declined after the introduction of HMP. Second, among hospitals that experienced a decrease in uncompensated care, there is substantial heterogeneity in the magnitude of that change. Hypotheses 1B and 1C explore this heterogeneity in more detail.

<u>Hypothesis I.1B</u>: Uncompensated care will decrease more by percentage *for Michigan hospitals with baseline levels of uncompensated care that are above the average for the state than for hospitals with levels that are below the average for the state.*

The expectation is that the increase in insurance coverage will matter most for hospitals that faced the greatest burden of caring for uninsured patients prior to the establishment of HMP. To test this hypothesis, we begin by comparing changes for hospitals above and below the median level of uncompensated care (as a percentage of total expenditures) in the pre-HMP period. The results from this comparison are presented in Table 3.

Table 3: Changes in Uncompensated Care in Michigan Hospitals Between 2011-13 and 2015-17 by Pre-HMP Levels of Uncompensated Care

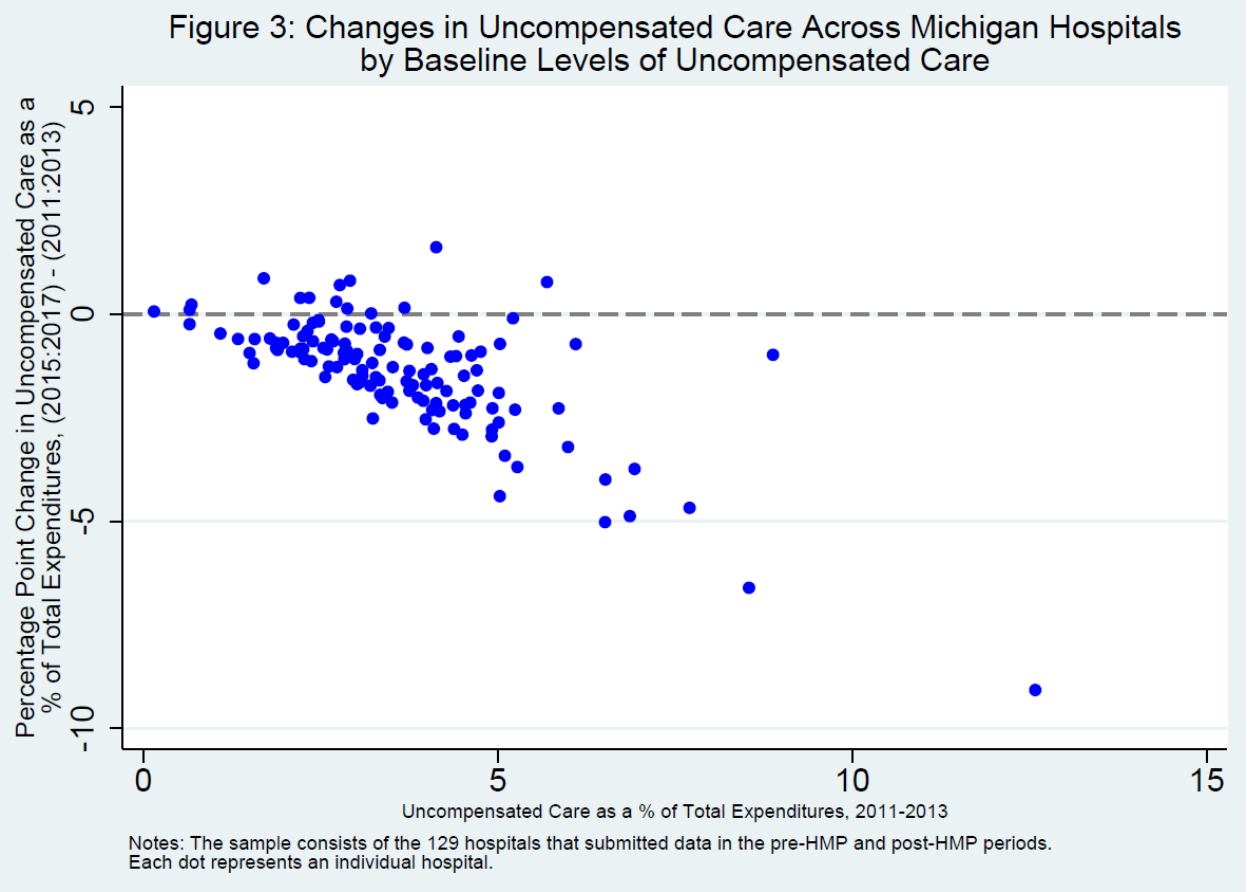
	Pre-HMP (2011-2013)	Post-HMP (2015-2017)	Change
Below-Median Uncompensated Care (67 Hospitals)			
Mean UC per Hospital ($ Millions)	6.2	4.4	-1.9*
	(0.72)	(0.61)	(0.97)
Total UC as a % of Total Expenditures	2.46%	1.77%	-0.69***
	(0.07)	(0.07)	(0.09)
Above-Median Uncompensated Care (67 Hospitals)			
Mean UC per Hospital ($ Millions)	8.6	3.9	-4.7***
	(0.98)	(0.39)	(1.14)
Total UC as a % of Total Expenditures	4.89%	2.83%	-2.06***
	(0.12)	(0.13)	(0.18)

Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.
Notes:
The average level of uncompensated care as a % of total expenditures across Michigan hospitals for the period 2011-2013 is 3.66%.
Standard errors appear in parentheses.
***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level.

Consistent with our hypothesis, uncompensated care fell more for hospitals that were providing more uncompensated care prior to HMP. Among hospitals in the above-median group, uncompensated care fell by $4.7 million or by 2.1% of total expenditures. For hospitals below the median, the corresponding figures were $1.9 million and 0.7%, respectively.

Figure 3 presents a scatterplot providing more detailed information on the relationship between baseline uncompensated care and changes over time. The horizontal axis measures baseline uncompensated care as a percentage of total expenditures. The vertical axis measures the percentage point change between 2011-13 and 2015-17. There is a strong, essentially linear relationship between the two variables. The few hospitals where uncompensated care expenditures increased over time are primarily ones that were providing very little uncompensated care in the pre-HMP period. For these hospitals, the increase in uncompensated care most likely reflects statistical noise in the data rather than a meaningful increase. Not surprisingly, the hospitals that experienced the largest declines were ones that

were providing very large amounts of uncompensated care prior to the implementation of HMP.



<u>Hypothesis I.1C</u>: Uncompensated care will decrease more by percentage *for Michigan hospitals in areas with above average baseline rates of uninsurance in the state than for hospitals with below state average levels.*

The amount of uncompensated care that hospitals provide will be a function of the insurance coverage of their patients: more uninsured patients translates to a greater uncompensated care burden. This relationship leads to hypothesis 1C. We perform a simple test of this hypothesis by stratifying hospitals into two groups based on uninsured rate in their county as of 2013 and comparing changes in uncompensated care between the pre- and post-HMP periods. The results, which are presented in Table 4, are consistent with the hypothesis, though the contrast is less pronounced than when we stratify by baseline uncompensated care. For hospitals located in counties where the uninsured rate was above the median for the state, uncompensated care as a percentage of total hospital expenditures fell by 1.4 percentage points, which represents a 35% decline relative to the baseline value. In counties where the uninsured rate was below the median, uncompensated care as a percentage of total expenditures fell by 1.3 percentage points, a 40% decline relative to the baseline. In dollar

terms, uncompensated care expenditures fell by $3.5 million (a 58% decline) in counties with higher uninsured rates and by $3.2 million (a 37% decline) in below-median counties.

Table 4: Changes in Uncompensated Care in Michigan Hospitals Between 2011-13 and 2015-17 by Pre-HMP County-Level Uninsured Rates

Below-Median County Uninsured Rate (70 Hospitals)	**Pre-HMP (2011-2013)**	**Post-HMP (2015-2017)**	**Change**
Mean UC per Hospital ($ Millions)	8.7	5.6	-3.2***
	(0.76)	(0.62)	(1.004)
Total UC as a % of Total Expenditures	3.37%	2.05%	-1.33***
	(0.104)	(0.095)	(0.14)
Above-Median County Uninsured Rate (64 Hospitals)			
Mean UC per Hospital ($ Millions)	6.0	2.5	-3.5***
	(0.95)	(0.305)	(1.09)
Total UC as a % of Total Expenditures	3.96%	2.56%	-1.39***
	(0.15)	(0.12)	(0.202)

Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016. Census SAHIE, 2013.
Notes:
The average uninsured rate across Michigan counties in 2013 is 14.1%.
Standard errors appear in parentheses.
***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level.

Comparisons with Other States

It is clear that the amount of uncompensated care provided by hospitals fell in Michigan after HMP was established. It is important to compare this change to trends in other states. Comparing Michigan to states that chose not to implement the ACA Medicaid expansion provides an estimate of the effect of HMP that controls for the effect of the other elements of the ACA, most importantly the expansion of subsidized private health insurance through the newly established marketplaces. Comparing Michigan to other states that did implement the ACA Medicaid expansion provides a sense of whether Michigan's experience was consistent with other expansion states.

Hypothesis I.1D: Uncompensated care in Michigan will decrease significantly *relative to states that did not expand their Medicaid programs.*

Table 5 reports changes for hospitals in Michigan and in 19 states that had not expanded by 2016.[2] As in previous tables, the pre-HMP period is defined as 2011-13 and the post-HMP period is 2015-17. The outcome analyzed is hospital uncompensated care as a percentage of total hospital expenditures.

The data show that at baseline, the average Michigan hospital provided less uncompensated care than the average hospital in non-expansion states, both in dollar terms and as a percentage of total expenditures. As shown in previous tables, uncompensated care fell significantly in Michigan: by an average of $3.3 million, or 1.36% of total expenditures. In contrast, uncompensated care increased between 2011-13 and 2015-2017 in non-expansion states.

To the extent that non-expansion states as a group can be considered as a "control group" for Michigan, the results in Table 5 can be used to construct "difference-in-differences" (DD) estimates of the effect of HMP:

$$DD = D_{Michigan} - D_{Non\text{-}expansion}$$

Where $D_{Michigan}$ and $D_{Nonexpansion}$ represent the change in uncompensated care between 2011-13 and 2015-17 in Michigan and non-expansion states, respectively. Because uncompensated care was trending upward in non-expansion states, the DD estimate of the effect of HMP is even larger than the effect implied by the simple difference using only Michigan data. Specifically, the DD estimates imply that HMP had the effect of reducing uncompensated care provided by the average hospital in Michigan by $5.6 million, or 68% larger than the effect estimated using data from Michigan alone. Using the relative measure of uncompensated care, the DD estimate is that HMP reduced uncompensated as a percentage of total hospital expenditures by 1.9 percentage points.

[2] Non-expansion states in our analysis are Alabama, Florida, Georgia, Idaho, Kansas, Maine, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin, and Wyoming. Five of these states – Maine, Virginia, Utah, Idaho, and Nebraska – have subsequently enacted Medicaid expansions. Information on state expansion timing is available at https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/.

Table 5: Changes in Uncompensated Care in Michigan and Non-expansion States, 2011-2013 & 2015-2017

	Pre-ACA (2011-2013)	Post-ACA (2015-2017)	Change
Mean UC Expenditures per Hospital ($Millions)			
Michigan	7.41	4.11	-3.30***
(136 Hospitals)	(0.61)	(0.36)	(0.74)
Non-Expansion States	8.21	10.49	2.27***
(2,121 Hospitals)	(0.31)	(0.43)	(0.51)
			DD = -5.57* **
			(1.98)
Total UC as a % of Total Expenditures			
Michigan	3.66%	2.29%	-1.36***
(136 Hospitals)	(0.093)	(0.076)	(0.12)
Non-Expansion States	6.37%	6.904%	0.53***
(2,121 Hospitals)	(0.071)	(0.09)	(0.11)
			DD = -1.89* **
			(0.43)

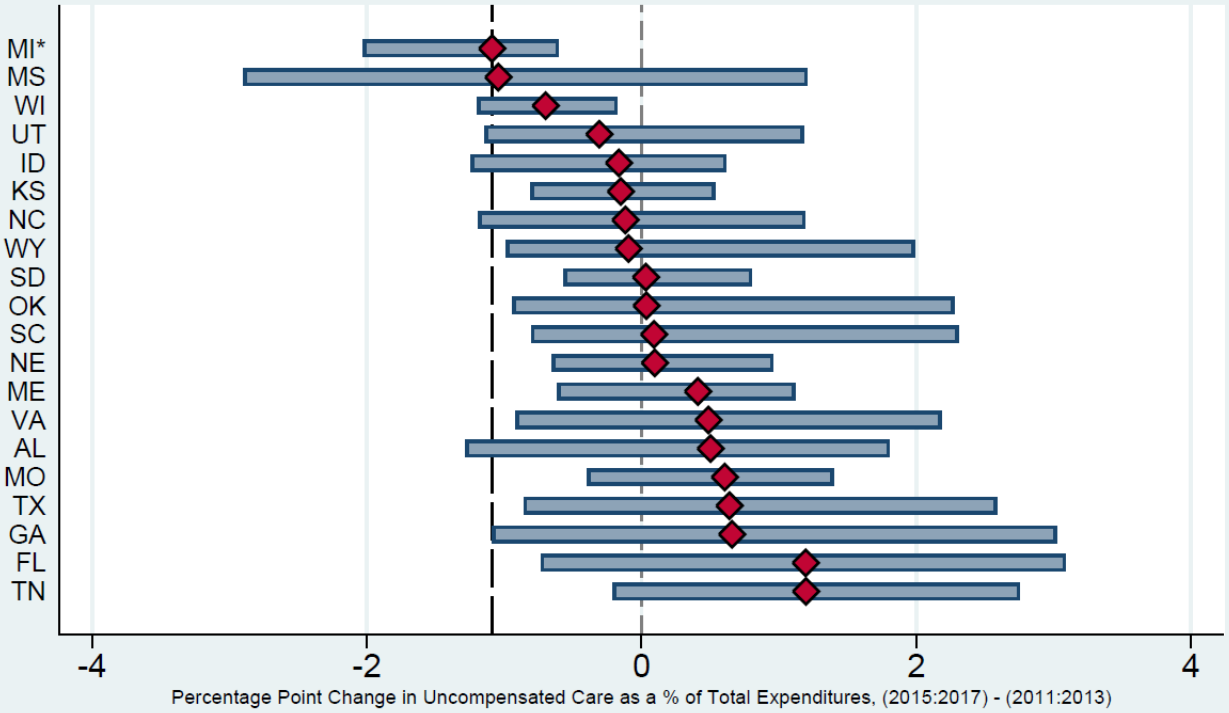
Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.
Notes:
Standard errors appear in parentheses.
***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level.

These mean results obscure heterogeneity among the 19 non-expansion states as well as within each state. Figure 4 provides a sense of this heterogeneity. The horizontal axis denotes the change in uncompensated care between the pre- and post-HMP periods. Results for each state are presented as a horizontal plot, where the red diamond represents the median change for hospitals in the state, and the grey box spans the 25th and 75th percentile of the change variable.

The most important takeaway from the figure is that the median decline in uncompensated care as a percentage of total expenditures in Michigan was larger than the decline in any single non-expansion state. Taken together, the results in Table 5 and Figure 4 provide strong

evidence that after the implementation of HMP, hospital uncompensated care fell significantly in Michigan relative to the trend in states that did not implement the ACA Medicaid expansion.

Figure 4: Changes in Uncompensated Care Across Michigan Hospitals and Hospitals in Non-Expansion States



Sample includes 2076 hospitals that submitted data in the pre-HMP and post-HMP periods.
*Denotes states that expanded their Medicaid programs after January 2014.
The median percentage point change across Michigan hospitals is -1.09 percentage points.
Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.

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

Although the state of Michigan received a Section 1115 waiver which allowed the state to expand Medicaid through HMP with certain features, including greater cost-sharing and financial incentives to promote healthy behaviors, that differed from the way that the ACA Medicaid expansion was implemented in most other states, those features do not have obvious implications for the effect of the program on hospital uncompensated care. Therefore, our hypothesis is that the experience of Michigan hospitals as it relates to uncompensated care was similar to the experience of hospitals in other expansion states.

In making comparisons among expansion states, it is also important to take into account when the Medicaid expansion went into effect. Thirty-two states (including the District of Columbia) expanded their Medicaid programs during the period of our analysis. Twenty-five implemented the expansion immediately in January 2014. Another seven states implemented expansion

either later in 2014 (Michigan and New Hampshire) in 2015 (Alaska, Indiana, and Pennsylvania), or in 2016 (Montana, Louisiana).

Table 6: Changes in Uncompensated Care in Michigan and Other Expansion States, 2011-2013 & 2015-2017

	Pre-ACA (2011-2013)	Post-ACA (2015-2017)	Change
Mean UC Expenditures per Hospital ($Millions)			
Michigan	7.41	4.11	-3.30***
(136 Hospitals)	(0.61)	(0.36)	(0.74)
Other Expansion States			
January 2014 Expansion States	9.46	6.75	-2.71***
(2,024 Hospitals)	(0.39)	(0.24)	(0.48)
Later Expansion States	6.28	6.14	-0.14
(522 Hospitals)	(0.37)	(0.35)	(0.51)
Total UC as a % of Total Expenditures			
Michigan	3.66%	2.29%	-1.36***
(136 Hospitals)	(0.093)	(0.076)	(0.12)
Other Expansion States			
January 2014 Expansion States	4.87%	3.14%	-1.72***
(2,024 Hospitals)	(0.059)	(0.044)	(0.077)
Later Expansion States	5.26%	4.58%	-0.67***
(522 Hospitals)	(0.17)	(0.18)	(0.25)

Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.

Notes:

Standard errors appear in parentheses.

***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level.

In the pre-ACA period, Michigan hospitals provided less uncompensated care than in hospitals in states that expanded in January 2014, as shown in Table 6. Despite this pre-ACA pattern, after the law went into effect the hospital-level mean fell more in Michigan (a decline of $3.3 million) than in these other expansion states (a decline of 2.7 million). However, the difference between these estimates is not statistically significant. The change between 2011-13 and 2015-

17 was substantially smaller in states that were later to expand, which is not surprising. For many hospitals in this group, much of the data from 2015-17 still represent pre-ACA data.

Figure 5 provides state-by-state estimates of the change in uncompensated care, in a format that is similar to Figure 4. Because there are more expansion states, the data are presented in two panels, with the results for Michigan presented at the top of each. The other states are sorted by the median change in uncompensated care between the pre- and post-HMP periods. Late expanders are denoted with an asterisk. Here, there are two main takeaways. First, the median amount of uncompensated care (as a percentage of total expenditures) fell in nearly every state that implemented the Medicaid expansion. The two states with the smallest changes, Connecticut and the District of Columbia, are ones that took advantage of a provision of the ACA that allowed states to begin the expansion process before 2014. In earlier research, we found that Connecticut's early expansion led to a reduction in uncompensated care prior to 2014 (Nikpay et al 2015). The second is that Michigan falls roughly in the middle of expansion states in terms of the change in hospital uncompensated care as a percentage of total hospital expenditures: the median decline was larger in 17 states and smaller in 14 states.

Figure 5: Changes in Uncompensated Care Across Michigan Hospitals and Hospitals in Other Expansion States

Sample includes 2484 hospitals that submitted data in the pre-HMP and post-HMP periods.
*Denotes states that expanded their Medicaid programs after January 2014.
The median percentage point change across Michigan hospitals is -1.09 percentage points.
Source: CMS Hospital Cost Report Data, Fiscal Years 2010-2016.

Evidence from Other Data Sources

Although the Medicare cost reports are the best data for assessing the change in uncompensated care in Michigan and other states, we also conducted parallel analyses with two other data sources. The first alternative data source is Medicaid cost reports that Michigan hospitals file with the state. Although these reports are similar to the Medicare reports, they are not identical. In any year, the number of hospitals filing reports does not match exactly. Nonetheless, the two sets of cost reports tell a similar story. Table 7 reports hospital-level means for the years 2013 and 2016.[3] The data show that the mean level of uncompensated care fell by 53% (from $8.1 million to $3.8 million), which is similar to the 51% change between those two years seen in the Medicare data (see Table 2). The Medicaid data indicate that for the average Michigan hospital uncompensated care as a percentage of total expenditures fell by 2.8 percentage points, or a 58% decline relative to 2013. In the Medicare data we see a decline of 2.1 percentage points, which translates to a 55% effect.

Table 7: Changes in Uncompensated Care in Michigan Hospitals, 2013 to 2016

	2013	2016	Change
Number of Hospitals	141	138	
Uncompensated Care Costs			
Mean ($ millions)	8.1	3.8	-4.3
As a % of Total Costs	4.8%	2.0%	-2.8%

Source: Medicaid Cost Reports provided by the Michigan Department of Health and Human Services.

The second alternative source of data comes from filings that non-profit hospitals are required to make with the IRS. On Form 990, Schedule H, hospitals are required to report the amount of charity care and bad debt they provide. As in the cost report data, uncompensated care represents the sum of these two measures. However, there are important differences between the Form 990 data and the cost report data presented above. The most obvious is that only tax-exempt hospitals are required to file Form 990. Second, whereas the cost report data is collected at the facility level, the Form 990 data is collected at the level of the system. For the sake of comparability, for our analysis of the Form 990 data we limit the sample to independent hospitals that were not part of a system. A third difference with the cost reports is that uncompensated care costs reported in the Form 990 include amounts accrued at off-campus facilities that are not part of the main hospital campus. Therefore, uncompensated care amounts estimated using the Form 990 are higher than the amounts estimated using the Medicare or Medicaid cost reports. Additionally, because the Form 990 does not include measures of total operating expenses, to calculate uncompensated care costs as a share of total expenditures, we must use data from the cost reports in the denominator. Because this

[3] For more information on these data and additional results, see Buchmueller et al (2018).

expense measure applies only to the hospital facility, the percentage of uncompensated care as a share of total costs will also be over-estimated relative to the cost reports.

Table 8 reports statistics on uncompensated care as a share of total hospital expenditures from the Form 990 data. Despite the differences in measurement (which lead to higher mean values in these data) the general pattern is consistent with the results from the Medicare cost reports. Uncompensated care declined in Michigan between 2013 and 2015. In non-expansion states, there was essentially no change.

Table 8: Changes in Uncompensated Care Provided by Independent, Tax-Exempt Hospitals in Michigan and Non-expansion States, 2013 & 2015

	2013	2015	Change
Total UC as a % of Total Expenditures			
Michigan	9.7%	6.8%	-2.9%
(44 Hospitals)	(0.011)	(0.008)	(0.013)
Non-Expansion States	14.3%	13.8%	-0.5%
(396 Hospitals)	(0.004)	(0.005)	(0.063)
			DD = -2.4%
			(0.020)

Source: IRS form 990, Schedule H.
Notes: Uncompensated care is defined as the tax unit-level. Therefore, the sample is limited to hospitals that are not members of a multi-hospital system. Standard errors are reported in parentheses.

SUMMARY AND CONCLUSIONS

This report examines five hypotheses related to the effect of the Healthy Michigan Plan on hospital uncompensated care. The results indicate that after the program went into effect:

- Uncompensated care fell in Michigan relative to the pre-existing trend;
- The change was larger for hospitals that had provided a greater amount of uncompensated care at baseline;
- The change was larger for hospitals located in areas where a higher percentage of the population was uninsured at baseline;
- Uncompensated care fell in Michigan relative to the trend in states that did not expand Medicaid through the Affordable Care Act;
- The trend in uncompensated care provided by Michigan hospitals was comparable to the trend for hospitals in other states that expanded their Medicaid programs.

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