



ASPE

ISSUE BRIEF

THE EFFECT OF MEDICAID EXPANSION ON MARKETPLACE PREMIUMS

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Since the enactment of the Affordable Care Act (ACA), health insurance coverage has dramatically increased, primarily through the establishment of Health Insurance Marketplaces (“Marketplaces”) and Medicaid expansion. These two forms of coverage have worked together to improve access to affordable and comprehensive health insurance for all Americans. As of early 2016, an estimated 20 million additional individuals have gained health coverage as a result of provisions of the ACA.¹ Additionally, as this brief estimates, the Medicaid expansion helps lower premiums for Marketplace enrollees; we estimate that Marketplace premiums are about 7 percent lower in states that expanded Medicaid compared to those that have not done so yet.

These findings suggest that implementing the ACA’s two major coverage expansions together as intended can benefit all three affected groups: individuals with incomes below 100% FPL who gain coverage only through expansion, individuals with incomes between 100 and 138% FPL, who gain coverage through Medicaid that is more likely to fit their budget, and individuals with coverage through the Marketplace, who may benefit from the positive impact of Medicaid expansion on premiums.

Coverage through the Marketplaces and Medicaid differ in both design and population covered. The ACA’s Medicaid expansion was designed to cover individuals with incomes up to 138% FPL, who benefit from a robust package of benefits with no or low cost (e.g., limited cost-sharing), while the Marketplaces were expected to serve individuals with income above 138%

¹ Uberoi, N., Finegold, K., and Gee, E. Health insurance Coverage and the Affordable Care Act, 2010-2016. ASPE Issue Brief, March 2016, <https://aspe.hhs.gov/pdf-report/health-insurance-coverage-and-affordable-care-act-2010-2016>.

FPL. While Marketplace and Medicaid coverage differ, they work together in many ways. As a result of the ACA, the two programs' eligibility criteria and processes are closely aligned. Individuals move from one type of coverage to another as their incomes and other circumstances change, insurers participate in one or both markets, and there are interactions between the programs' risk pools.

States that have expanded Medicaid coverage under the ACA effectively have private insurance risk pools comprised largely of individuals with incomes *above* 138% FPL since those with incomes below this level are covered by Medicaid.² In non-expansion states, individuals with incomes below 100% FPL generally have no option for subsidized coverage, but individuals with incomes in the 100%-138% FPL range can access financial assistance through the Marketplace.³ In these states, individuals with incomes between 100 and 138% FPL make up close to 40% of the Marketplace population, on average, *versus* 6% in states that have expanded Medicaid.⁴ Because low-income individuals on average have poorer health status than those with higher incomes (but better health status than those with incomes below poverty), a state's decision to expand Medicaid has the potential to affect the individual market risk pool and ultimately Marketplace premiums.⁵

According to our analysis of states that used HealthCare.gov in 2015, Marketplace premiums in states that have expanded Medicaid are, on average, substantially lower than in states that have not (see Figure 1). While there are many differences between expansion and non-expansion states, this brief examines whether and to what extent the Marketplace premium differences are due to the direct impact of states' decisions to expand Medicaid. We estimate that Marketplace premiums are about 7 percent lower in expansion states, controlling for differences across states in demographic characteristics, pre-ACA uninsured rates, health care costs, and state policy decisions other than Medicaid expansion (e.g., allowing transitional policies, rating area design), and limiting the analysis to neighboring counties, which might be expected to have similar populations. Our findings are consistent with direct evidence on differences in health status

² Note that legal immigrants in this income range may not be covered due to a five-year waiting period between obtaining qualified immigration status and enrolling in Medicaid.

³ Those lawfully present with incomes below 100% FPL and in the five-year waiting period between obtaining qualified immigration status and Medicaid eligibility are eligible for subsidized Marketplace coverage.

⁴ Some individuals in expansion states with incomes between 100 and 138% FPL are nevertheless eligible for subsidized coverage through the Marketplace. This can occur if they are lawfully present but in the five-year waiting period between obtaining qualified immigration status and becoming eligible for Medicaid. In addition, individuals who are eligible for Medicaid are permitted to enroll in unsubsidized Marketplace coverage if they prefer that coverage to Medicaid coverage.

⁵ Center on Budget and Policy Priorities, *Why a State's Health Insurers Should Support Expanding Medicaid*. September, 2012.

across income groups, as well as with statements from insurers, who have noted that states could improve the financial stability of their Marketplaces by expanding Medicaid.⁶

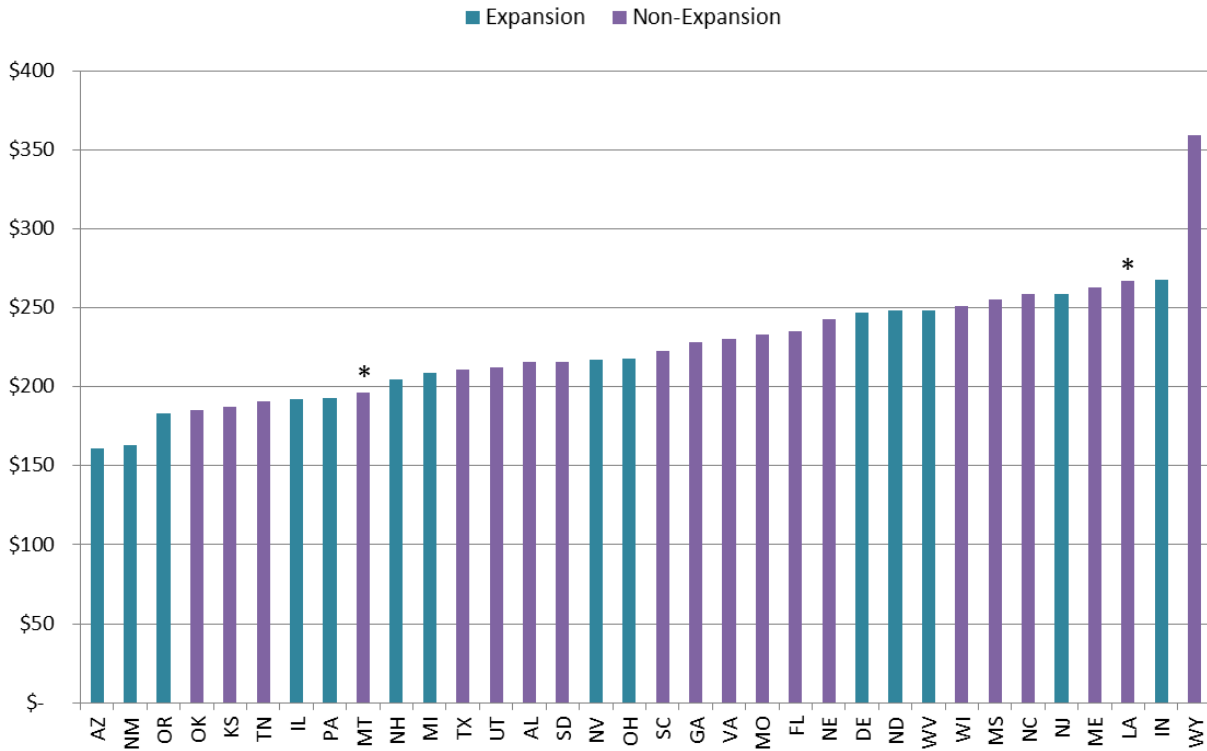
Medicaid Expansion is Associated with Lower Marketplace Premiums

Health insurance premiums of plans offered through the Marketplaces reflect a number of factors, including the health status and expected health care costs of expected enrollees (i.e., the risk pool). Thus, changes in the risk pool may impact Marketplace premiums. As discussed above, whether a state expands Medicaid determines whether individuals with incomes between 100% FPL and 138% FPL will generally be included in the Marketplace risk pool or will instead get coverage through Medicaid. Because low-income individuals report poorer health status than individuals with higher incomes, the presence of these individuals could affect the Marketplace risk pool and, hence, Marketplace premiums.

We use 2015 administrative data on Marketplace plans and enrollment to assess how Medicaid expansion affected premiums due to changes in the underlying risk pool of eligible enrollees. In 2015, Marketplace premiums for the second-lowest cost silver plan were, on average, about 8% lower in expansion states than non-expansion states among states that used HealthCare.gov (excluding Alaska because it expanded Medicaid after Marketplace rates were set) (Figure 1). This raw difference, however, does not control for any other state factors that might vary between expansion and non-expansion states and affect premiums (e.g., population demographics, market characteristics, insurer networks, policy decisions).

⁶ See, for example, Murawski, J. “Blue Cross CEO says insurer may leave ACA market in NC in 2017.” *The News & Observer*, Feb. 10, 2016.

Figure 1. Average Monthly Premium (for 27-year-old) of Second-Lowest Silver Plan, Medicaid Expansion vs. non-Expansion FFM States (excluding Alaska), 2015



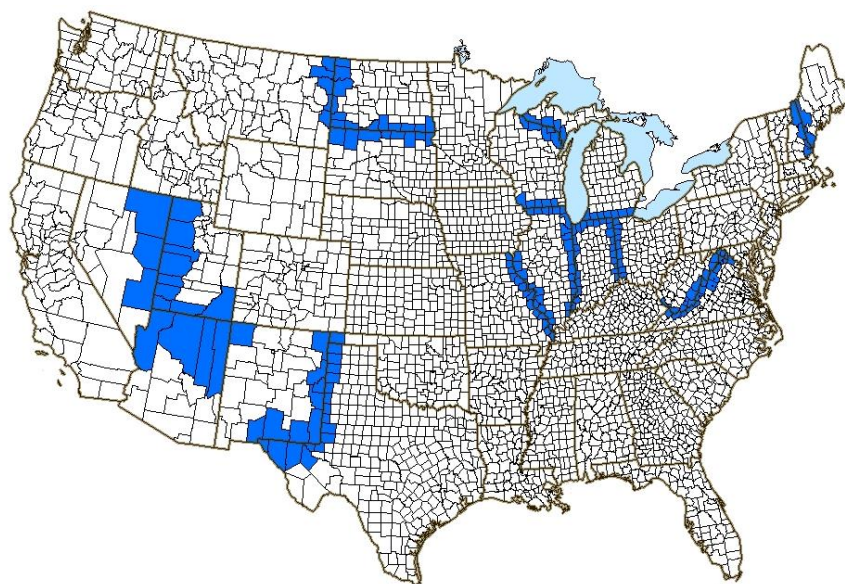
Notes: *LA and MT expanded Medicaid in 2016. AK is excluded because it expanded Medicaid in late 2015 after Marketplace rates were set. Average of second-lowest silver plan premiums across counties within each state, weighted by plan selections, see Avery, K., et al. “Health Plan Choice and Premiums in the 2016 Health Insurance Marketplace,” ASPE Research Brief, October 30, 2015.

To obtain estimates of the relationship between Medicaid expansion and Marketplace premiums that are less subject to these potential confounding factors, we use geographic matching analysis, which is based on comparing premiums across border counties that are within a unified geographic area but located in states that made different Medicaid expansion decisions. While there are likely to be many (unobservable) differences between Medicaid expansion and non-expansion states, our method allows us to compare risk pools and premiums in geographic areas where it is more likely that the population is relatively homogeneous (e.g., in terms of ethnicity, race, economic status) and there are fewer unobservable differences that would affect premiums.

We compare Marketplace premiums within county pairs that span expansion and non-expansion states, using regression analyses to control for population characteristics, state policies that may be related to premiums (e.g., allowing transitional policies, rating area design), market characteristics (e.g., hospital concentration, number of Marketplace issuers), and characteristics of the county-pair through fixed effects. We also weight regressions by Marketplace enrollment.

Due to limitations in data available from State-based Marketplaces, both states in the expansion and non-expansion comparison counties must use the HealthCare.gov platform to be included in the analysis. There are 94 county-pairs across 19 states where one county is located in a Medicaid expansion state and the paired county is in a non-expansion state and both states use the HealthCare.gov platform (Figure 2).⁷ These matched border counties are statistically similar across a range of population characteristics, suggesting that this approach allows us to control for a range of demographic characteristics that might influence premiums (Technical Appendix Table A2, columns 7-8). We have the data to include controls as discussed above for 91 of the 94 county-pairs. Full details on the regression specification and robustness checks are available in the technical appendix.

Figure 2. Counties included in Matched Border Analysis (HealthCare.gov States Only)



Notes: Map shows counties included in matched border analysis. County-pairs must include one county in a Medicaid expansion state and one county in a non-expansion state and both states must use the HealthCare.gov platform.

Results from this analysis suggest that Medicaid expansion was associated with 7% lower Marketplace premiums in this sample of matched border counties. As is shown in Technical Appendix Table A1, the significant reduction in Marketplace premiums associated with Medicaid expansion is consistent across several analytic approaches; while the estimated size of the reduction varies, it is greater than or equal to 7% under all approaches. In other versions of

⁷ We omit Iowa and Arkansas, which have expanded Medicaid under a waiver that allows them to enroll certain Medicaid eligible populations into private insurance with premium assistance. We classify states that expanded after January 1, 2015 (such as Indiana) as non-expansion states because Marketplace premiums are established in the fall of 2014 and would not have accounted for this expansion.

the analysis, we broaden our analysis to include all FFM counties and estimate the effect of expansion (without matching) and use external data to estimate the effect across FFM and SBM states (Appendix Table A1).

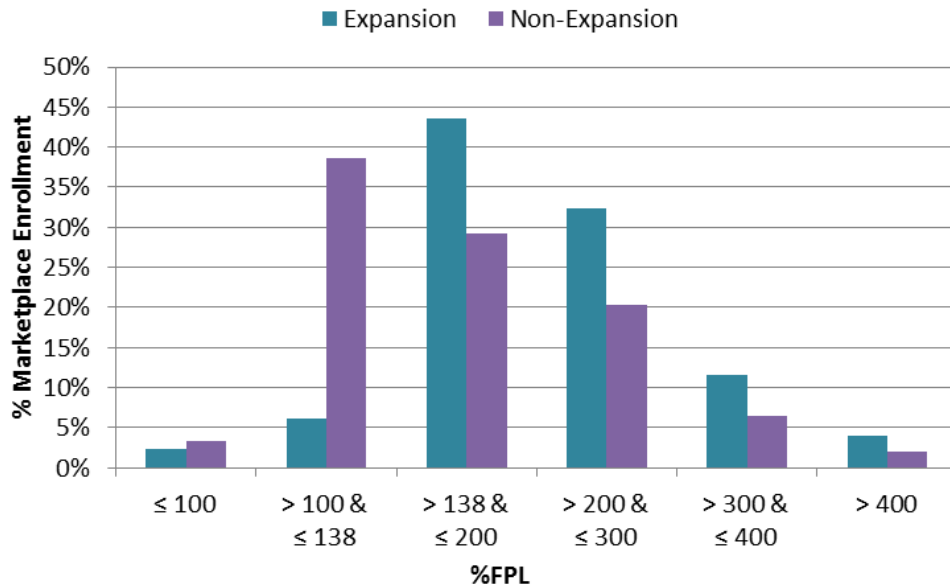
There is the potential for other factors to be driving these differences in premiums between expansion and non-expansion states. Although we cannot control for these differences perfectly, we control for several policy choices as well as for other county and state characteristics that might be expected to have the greatest impact on premiums and also mitigate this issue to a certain degree by restricting our main analysis to FFM states.

Higher Marketplace Premiums in Non-Expansion States Reflect a Different Risk Pool

The 7% premium difference in expansion *versus* non-expansion states is consistent with differences in expected spending of Marketplace enrollees across these types of states due to the variation in enrollment and expected spending by income.

Income and Marketplace Enrollment

In states that have not yet expanded Medicaid, individuals with family incomes between 100 and 138% FPL are eligible for subsidized Marketplace coverage, while in states that have expanded Medicaid, subsidized coverage is generally only available to those with incomes above 138% FPL. As a result, low-income individuals (100-138% FPL) make up a greater share of Marketplace enrollment in Medicaid non-expansion states than in expansion states (Figure 3). Enrollees with incomes between 100 and 138% FPL represent close to 40% of total enrollment in non-expansion states.

Figure 3. Marketplace Enrollment by Income, Expansion vs. non-Expansion States, 2015

Notes: Data from MI, NH, PA, IN, and AK, which expanded Medicaid after January 2014 but before January 1, 2016 are not included in this figure (all states that expanded before 1/1/2015 are included in the main regression analysis). LA and MT, which expanded Medicaid in 2016 are included as non-expansion states.

Income and Health Status

A substantial body of scientific literature confirms a persistent connection between low income and poor health.⁸ Not only are most diseases more common among the poor and near-poor at all ages, but there is evidence that poverty also results in faster progression of diseases, more complications, and poorer survival rates.⁹

Data from the Current Population Survey shows that low-income individuals are more likely to report that they are in fair or poor health than individuals with higher incomes. Close to 20% of individuals with incomes between 100 and 138% FPL report being in fair or poor health compared to approximately 8% of individuals with incomes above 138% FPL. Combining these rates with the enrollment data above suggests that we would expect the share of enrollees in fair or poor health (compared to good, very good, or excellent health) to be 2 percentage points higher in non-expansion states compared to expansion states due to the difference in the percent

⁸ See, for example, Case, A., Lubotsky, D., and Paxson, C. (2002). Economic Status and Health in Childhood: the Origins of the Gradient, *American Economic Review*, 92(5):1308-34. Also see Deaton, A.S. and Paxson, C. (1999). Mortality, Education, Income and Inequality among American Cohorts, NBER Working Paper No. 7140.

⁹ Kaplan, G. A. (2009). The Poor Pay More – Poverty’s High Cost to Health. Federal Reserve Bank of San Francisco. Accessed 7/25/16 at: http://www.frbsf.org/community-development/files/poor_pay_more.pdf.

of low-income enrollees.¹⁰ In turn, data suggest that those in relatively poorer health are likely to have higher health care expenditures than those in better health, which may lead to higher expected spending per enrollee in expansion *versus* non-expansion states, consistent with the increase in premiums we find.¹¹

At the same time, individuals with incomes between 100 and 138% FPL have better health status and lower average costs than individuals with incomes below 100% FPL. Current Population Survey data shows that 22% of individuals with incomes below 100% FPL report being in fair or poor health compared to the approximately 20% of individuals with incomes between 100 and 138% FPL. While there may be pent-up demand as uninsured people gain coverage through the Medicaid expansion, the Congressional Budget Office and the Office of the Actuary estimate that, over time, the cost of newly eligible adults will be less than that of previously eligible adults.

Conclusion

As of February 2016, 20 million individuals have gained health insurance thanks to provisions of the ACA, including Medicaid expansion and the establishment of Health Insurance Marketplaces. A comparison of cross-border counties shows that, on average, the benchmark premium in the Marketplace was 7% lower in 2015 in states that expanded Medicaid relative to states that did not, taking into account other state differences such as non-expansion policy choices, population demographics, and health care costs as measured by employer market premiums. It will be important to extend this analysis to future years to see if premium differences continue. These findings suggest that implementing the ACA's two major coverage expansions together as intended can benefit all three affected groups: individuals with incomes below 100% FPL who gain subsidized coverage only through expansion, individuals with incomes between 100 and 138% FPL, who gain coverage through Medicaid that is more likely to fit their budget, and individuals with coverage through the Marketplace, who may benefit from the impact of Medicaid expansion on premiums.

¹⁰ At the same time, the evidence shows that individuals who are newly eligible for Medicaid due to expansion are relatively healthier than Medicaid beneficiaries who were eligible for Medicaid prior to the ACA; see Jacobs, P. D., Duchovny, N., and Lipton, B. J. (2016). Changes in Health Status and Care Use after ACA Expansions Among the Insured and Uninsured. *Health Affairs* 35(7):1184-88.

¹¹ According to the 2013 Medical Expenditure Panel Survey (MEPS)-Household Component, those who are under 65 years old and in good, very good, or excellent health, have median spending of \$945 annually conditional on having a health expense, compared to \$4,115 among those who are <65 but report being in fair or poor health. These spending differences, combined with the difference in the percent of enrollees in fair or poor health, suggest that expected spending per capita would be approximately 6% higher in non-expansion vs. expansion states. This is consistent with the 7% higher premiums estimated in our matched border county analysis. Note that we do not have data to estimate differences in spending by health status by age. Younger individuals who report fair or poor health may have relatively lower spending than older individuals in fair/poor health; in turn, this could have implications for expected spending among enrollees in expansion vs. non-expansion states. In addition, if enrollees pick different types of plans (e.g., different benefit structures) in expansion vs. non-expansion states, this may impact spending in ways we cannot capture.

TECHNICAL APPENDIX

The U.S. Census County Adjacency File was used to identify all counties in states using the HealthCare.gov platform in 2015 that also expanded Medicaid as of January 1, 2015 that were adjacent to one or more counties in a state that also used the HealthCare.gov platform in 2015 but that had not yet expanded Medicaid as of January 1, 2015.

There are 94 counties in expansion states that are adjacent to counties in non-expansion states that we were able to use for the analysis. Each expansion county was grouped with one or more adjacent non-expansion county. We estimated the average difference between the age-adjusted Marketplace premiums of the second-lowest-cost silver plan in each expansion county and its adjacent non-expansion counties. (Results are consistent for premiums of the lowest-cost silver, average silver, lowest bronze, and average bronze plans; results not shown.) We estimated the relationship between expansion and premiums with no controls, controls only for local demographics (variables included as control measures are available for 91 expansion state counties), and a full set of controls including demographic and market characteristics as well as state policies. The full list of controls is listed in Table A1 below.

Because our results may be specific to the states included in the analysis, we broaden our analysis to estimate the effect of expansion on premiums in the following samples. Results are shown in Table A1.

1. All counties in FFM states
 - Counties not matched; this specification includes a dummy indicator of whether or not the county was in a state that had expanded Medicaid.
2. All counties in FFM border states
 - All counties in the 19 FFM border states listed in the notes of Table A1.
 - As above, this specification includes a dummy indicator of whether or not the county was in a state that had expanded Medicaid.
3. Border counties in FFM border states
 - All *border* counties in the 19 FFM border states listed in the notes of Table A1.
 - As above, this specification includes a dummy indicator of whether or not the county was in a state that had expanded Medicaid.
4. Matched border counties in FFM border states [main specification]
 - Expansion counties matched to adjacent non-expansion counties.
 - Fixed effects regression.
5. Matched border counties in FFM and SBM states
 - Expansion counties matched to adjacent non-expansion counties, all states.
 - Rating area-level premiums (rather than county-level as in FFM specifications); no data on control variables for SBMs available; fixed effects regression.

Table A1. Analysis of 2015 Premium Differences in Medicaid Expansion vs. Non-Expansion States

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	All FFM Counties			All Counties in FFM Border States			Border Counties in FFM Border States			Matched Border Counties in FFM Border States			Matched Border Counties (SBM + FFM)
Difference between Counties in Expansion States and Counties in Non-Expansion States	-\$23.89	-\$41.75	-\$32.13	-\$22.19	-\$35.37	-\$28.20	-\$31.30	-\$24.89	-\$31.71	-\$30.52	-\$24.94	-\$15.44	-\$32.00
	(5.38)	(4.78)	(4.57)	(6.61)	(3.85)	(4.20)	(9.56)	(3.60)	(4.75)	(8.06)	(3.25)	(5.60)	(5.16)
	{10.34}	{8.76}	{10.19}	{11.05}	{7.44}	{12.65}	{11.43}	{6.08}	{7.05}				
Mean SLS Premium in Non-Expansion Counties		\$219.40			\$210.92			\$217.00			\$223.94		\$232.22
Percent Effect	-10.89%	-19.03%	-14.64%	-10.52%	-16.77%	-13.37%	-15.11%	-13.21%	-14.61%	-13.63%	-11.14%	-6.89%	-13.78%
Exogenous controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Market/policy controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No
Method	Weighed OLS			Weighed OLS			Weighed OLS			Fixed Effects			Fixed Effects
Number of counties	2,544	2,152	2,152	1,349	1,055	1,055	249	211	211	249 (94 groups)	211 (91 groups)	211 (91 groups)	570 (186 groups)

Notes:

Border states include: AZ, IL, MI, ND, NH, NM, NV, OH, WV (Expansion) and IN, ME, MO, MT, OK, SD, TX, UT, VA, WI.

Exogenous controls include: population density, per-capita income, percent uninsured, percent in poverty, ESI spending, CMS wage index, adult smoking rate, adult obesity rate, and NCHS rural county indicators.

Market/policy controls include number of issuers, hospital market concentration, indicator for transitional policies, indicator for county-based rating areas, pcps per capita, doctors per capita, and hospital beds per capita.

Robust standard errors in parentheses; State-level clustered standard errors in brackets.

Second-lowest silver premium is for age 21 and is calculated at the county level, except for column (13) in which SLS is for age 27 and is calculated by rating area.

Expansion states include those that expanded as of 1/1/2015.

Premium information for column (13) comes from RWJF HIX Compare, accessed at: <http://www.rwjf.org/en/library/research/2015/12/hix-compare-2015-2016-datasets.html>

Lower premiums in Medicaid expansion states are observed in all samples, though effect sizes vary. Moving from columns (1) – (3) to (10) – (12) improves the comparability of expansion vs. non-expansion counties on a range of demographic factors that are likely to influence premiums (Table A2). The lack of statistical differences in matched border counties is the main factor making this our preferred specification.

Table A2. Difference between expansion and non-expansion counties (to test for balance) for FFM specifications

County Characteristic	(1) All FFM Counties		(3) All Counties in FFM Border States		(5) Border Counties in FFM Border States		(7) Matched Border Counties in FFM Border States	
	Difference between expansion and non-expansion counties	t-stat (bold indicates statistical significance)	Difference between expansion and non-expansion counties	t-stat (bold indicates statistical significance)	Difference between expansion and non-expansion counties	t-stat (bold indicates statistical significance)	Difference between expansion and non-expansion counties	t-stat (bold indicates statistical significance)
Population Density	668	1.64	270	0.49	1447	1.16	161	0.2
Per-capita Income	1,710	1.38	-1,679	-0.91	4,075	1.47	21	0.01
Median Income	2,916	1.81	-2,760	-1.23	3,171	1.09	532	0.3
% <65 without Health Insurance 2012	-5.82%	-5.67	-4.39%	-3.63	-0.39%	-0.21	-1.11%	-1.1
Unemployment Rate 2014	0.55%	3.16	1.48%	6.2	0.74%	2.41	0.43%	2.22
Employer-Sponsored Insurance Personal Healthcare Expenditures Per Enrollee	204	1.87	572	4.23	463	2.46	88	0.39
Hospital Wage Index from CMS	6.56%	4.84	4.01%	2.46	6.83%	2.4	0.50%	0.34
Number of Issuers	1.18	2.39	2.88	4.3	1.51	2.69	0.56	1.17
Percent of Adults that Smoke	1.06%	1.71	1.22%	1.88	0.16%	0.2	-0.26%	-0.23
Percent of Adults that are Obese	-0.31%	-0.44	-0.48%	-0.56	-1.80%	-1.55	-1.03%	-0.84
Percent in Poverty	-1.33%	-1.94	0.48%	0.55	0.32%	0.21	0.11%	0.12
Percent with College Education	1.58%	1.4	-0.37%	-0.22	2.55%	0.94	0.28%	0.12
Primary Care Docs per-1000 pop	0.1027	3.29	0.1215	2.47	0.0943	1.01	0.0198	0.27
MDs per 1000 pop	0.4223	2.08	0.4143	1.42	0.2079	0.31	-0.42	-0.65
Percent in Poor or Fair Health 2014	-0.57%	-1.38	-0.54%	-0.91	0.42%	0.33	0.74%	1.18
Percent in Poor or Fair Health 2015	-0.57%	-1.38	-0.54%	-0.91	0.42%	0.33	0.74%	1.18
Percent Rural 2014	1.00%	0.35	-2.33%	-0.56	-2.23%	-0.3	0.32%	0.08
Percent Rural 2015	1.00%	0.35	-2.33%	-0.56	-2.23%	-0.3	0.32%	0.08

For our main analysis, we did not include Arkansas or Iowa. These states expanded Medicaid under a premium assistance model through a Section 1115 waiver under which they use Medicaid funds to purchase private coverage for Medicaid beneficiaries through the Marketplaces. Medicaid enrollees in these states may be considered to be part of the Marketplace risk pool and therefore these states may not be comparable to other Medicaid expansion states.

Table A3. Full Regression Results for the Analysis Summarized in Table A1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
	All FFM Counties			All Counties in FFM Border States			Border Counties in FFM Border States			Matched Border Counties in FFM Border States			Matched Border Counties (SBM + FFM)	Variable Notes [Source]
Expansion State	-23.89*** (5.380)	-41.75*** (4.782)	-32.13*** (4.571)	-22.19*** (6.609)	-35.37*** (3.846)	-28.20*** (4.200)	-31.30*** (9.564)	-24.89*** (3.602)	-31.71*** (4.749)	-30.52*** (8.062)	-24.94*** (3.251)	-15.44*** (5.598)	-32.00 (5.16)	Expansion states include those that expanded as of 1/1/2015.
Population Density in County, 2010		-0.000129 (0.00169)	-0.000585 (0.00141)		0.000961 (0.00232)	-0.000358 (0.00235)		-0.00573*** (0.00163)	-0.00753*** (0.00184)		-0.00812* (0.00485)	-0.0100*** (0.00375)		[Area Resources File]
Per-capita Income, 2013		0.000424 (0.000262)	0.000589*** (0.000198)		0.000621** (0.000287)	0.000361 (0.000256)		0.00106*** (0.000253)	0.000738** (0.000298)		0.00112** (0.000504)	0.00113** (0.000556)		[Area Resources File]
Percent of Adults < Age 65 without Health Insurance, 2013		-58.42 (47.94)	35.58 (40.45)		-180.4*** (48.47)	-198.3*** (55.48)		-147.6** (61.35)	-180.3*** (77.53)		186.5* (99.75)	334.8*** (105.0)		[Area Resources File]
ESI Personal Healthcare Expenditures Per Enrollee, 2013		0.00807*** (0.00117)	0.00624*** (0.00106)		0.00628*** (0.00204)	0.00642*** (0.00174)		0.00152 (0.00209)	-0.000131 (0.00248)		0.00257 (0.00341)	0.00471 (0.00328)		Employer-Sponsored Insurance Personal Healthcare Expenditures Per Enrollee [MarketScan]
Hospital Wage Index from CMS		140.6*** (24.69)	140.7*** (21.91)		47.92 (29.83)	53.29* (28.27)		26.27 (38.66)	-6.068 (39.44)		47.91 (52.31)	18.01 (65.00)		[CMS FY 2015 Wage Index Home Page]
Percentage of Adults Who Are Current Smokers, 2015		116.6*** (33.95)	79.14** (32.89)		79.89** (39.08)	61.34 (39.76)		228.1*** (48.37)	224.5*** (54.17)		158.7** (62.15)	129.7* (71.63)		[Robert Wood Johnson Foundation County Health Rankings, 2015]
Percentage of Adults Who Report a BMI of 30 or Higher, 2015		42.56 (59.86)	111.9*** (40.77)		217.4*** (50.10)	206.8*** (53.76)		112.6 (74.88)	133.5 (88.54)		85.68 (81.56)	-25.45 (105.9)		[Robert Wood Johnson Foundation County Health Rankings, 2015]
Central County of MSA > 1 million pop (omitted)														
Fringe County of MSA > 1 million pop		2.662 (7.258)	-3.152 (6.149)		5.478 (6.537)	-1.980 (6.406)		1.898 (6.595)	-11.74 (8.750)		7.683 (21.01)	4.465 (16.92)		
County within MSA of 250,000-999,999 pop		12.10* (7.072)	4.475 (6.918)		6.724 (7.473)	3.415 (7.674)		9.233 (9.226)	34.01*** (11.46)		12.59 (21.89)	2.621 (18.34)		[National Center for Health Statistics Urban-Rural Classification Scheme for Counties, 2013]
County within MSA of 50,000 to 249,999 pop		19.10*** (7.212)	9.291 (7.706)		22.03*** (7.799)	18.01** (9.119)		16.96* (10.03)	38.21** (16.08)		12.63 (23.29)	-9.119 (20.94)		
County within Metropolitan Statistical Area		33.21*** (7.207)	17.84** (8.350)		24.61*** (7.698)	19.43** (9.792)		12.75 (9.081)	36.00** (16.70)		21.30 (25.85)	-0.747 (22.05)		
Noncore County not within Metropolitan Statistical Area		32.80*** (6.844)	16.10* (8.493)		28.18*** (7.966)	23.08** (10.52)		26.16*** (9.664)	50.33*** (18.84)		18.62 (25.71)	-2.000 (22.56)		
Percent of Persons in Poverty, 2013		0.543 (0.345)	0.456 (0.377)		0.651 (0.555)	0.870* (0.525)		1.494*** (0.491)	2.044*** (0.686)		1.142* (0.619)	1.287 (0.850)		[Area Resources File]

(continued on the next page)

Table A3 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Number of Issuers in the County			-3.923*** (0.935)			-1.845*** (0.708)			-1.318 (1.288)			-5.473** (2.342)	[Marketplace Plan Landscape File]
State did not allow Transitional Policies			-1.780 (2.883)			8.367* (4.359)			-8.517*** (3.705)			14.56** (5.879)	[CCIIO]
State used MSA+1 definition for rating areas			-18.79*** (3.800)			6.077 (5.876)			-5.070 (7.681)			34.88*** (12.95)	[CCIIO: https://www.cms.gov/ccio/programs-and-initiatives/health-insurance-market-
Hospital Beds Per Capita, 2012			-919.7 (750.2)			-1,385** (588.8)			-3,921*** (1,008)			-977.8 (1,141)	[Area Resources File]
Primary Care Physicians Per Capita, 2013			23,658*** (8,278)			11,051 (8,082)			27,724** (10,773)			-4,001 (9,900)	[Area Resources File]
Physicians Per Capita, 2013			-3,429** (1,418)			-458.4 (1,854)			-1,629 (1,853)			860.7 (2,611)	[Area Resources File]
Hospital HHI<2500			-1.203 (6.832)			9.096 (7.058)			48.76*** (12.29)			-3.254 (17.82)	
Hospital HHI>2500 and < 5000			-3.939 (4.798)			-0.730 (5.563)			1.055 (9.978)			-0.693 (10.11)	
Hospital HHI>5000 and <10000			-4.253 (3.973)			-0.356 (4.547)			14.61* (7.890)			8.342 (6.854)	[American Hospital Association Annual Survey, 2013]
Hospital HHI missing (omitted)													
Constant	219.4*** (2.007)	-3.279 (40.33)	-6.399 (33.21)	210.7*** (2.823)	50.38 (44.66)	62.86 (44.62)	217.0*** (4.368)	66.55 (52.68)	86.88 (56.97)	223.9*** (2.368)	14.47 (81.55)	71.44 (90.94)	232.2*** (1.43)
Observations	2,544	2,152	2,152	1,349	1,055	1,055	249	211	211	249 (94 groups)	211 (91 groups)	211 (91 groups)	570 (186 groups)
R-squared	0.093	0.321	0.407	0.107	0.500	0.535	0.251	0.728	0.772	0.443	0.734	0.768	0.386

Notes:
 Border states include: AZ, IL, MI, ND, NH, NM, NV, OH, WV (Expansion) and IN, ME, MO, MT, OK, SD, TX, UT, VA, WI.
 Robust standard errors in parentheses.
 Second-lowest silver premium is for age 21 and is calculated at the county level, except for column (13) in which SLS is for age 27 and is calculated by rating area.
 Premium information for column (13) comes from RWJF HIX Compare, accessed at: <http://www.rwjf.org/en/library/research/2015/12/hix-compare-2015-2016-datasets.html>
 *** p<0.01, ** p<0.05, * p<0.1