

Appendix 1. Members of the Centers for Disease Control and Prevention and the Pregnancy Risk Assessment Monitoring System (PRAMS) Working Group

The data for this project were provided by the Centers for Disease Control and Prevention and the Pregnancy Risk Assessment Monitoring System (PRAMS) working group. The PRAMS working group members are listed below:

Alabama—Izza Afgan, MPH
Alaska—Kathy Perham-Hester, MS, MPH
Arkansas—Mary McGehee, PhD
Colorado—Rickey Tolliver, MPH
Connecticut—Jennifer Morin, MPH
Delaware—George Yocher, MS
Florida—Elizabeth C. Stewart, MSPH
Georgia—Florence A. Kanu, MPH
Hawaii—Matt Shim, PhD, MPH
Illinois—Patricia Kloppenburg, MT (ASCP), MPH
Iowa—Jessica Egan
Kentucky—Tracey D. Jewell, MPH
Louisiana—Rosaria Trichilo, MPH
Maine—Tom Patenaude, MPH
Maryland—Laurie Kettinger, MS
Massachusetts—Emily Lu, MPH
Michigan—Peterson Haak
Minnesota—Mira Grice Sheff, PhD, MS
Mississippi—Brenda Hughes, MPPA
Missouri—David McBride, PhD
Montana—Emily Healy, MS
Nebraska—Jessica Seberger
New Hampshire—David J. Laflamme, PhD, MPH
New Jersey—Sharon Smith Cooley, MPH
New Mexico—Oralia Flores
New York State—Anne Radigan
New York City—Pricila Mullachery, MPH
North Carolina—Kathleen Jones-Vessey, MS
North Dakota—Grace Njau, MPH
Ohio—Connie Geidenberger, PhD
Oklahoma—Ayesha Lampkins, MPH, CHES
Oregon—Claudia W. Bingham, MPH
Pennsylvania—Tony Norwood
Rhode Island—Karine Tolentino Monteiro, MPH
South Carolina—Kristin Simpson, MSW, MPA
Texas—Tanya Guthrie, PhD
Tennessee—Ramona Lainhart, PhD
Utah—Nicole Stone
Vermont—Peggy Brozicevic
Virginia—Sara Varner, MPH
Washington—Linda Lohdefinck
West Virginia—Melissa Baker, MA
Wisconsin—Christopher Huard
Wyoming—Lorie Chesnut, PhD
CDC PRAMS Team, Applied Sciences Branch, Division of Reproductive Health

Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018; 132.

The authors provided this information as a supplement to their article.

©2018 American College of Obstetricians and Gynecologists.

Page 1 of 14

Appendix 2. eMethods

1. Sample Inclusion Criteria

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a joint surveillance project between the Centers for Disease Control and Prevention (CDC) and state health departments. States are responsible for data collection and not all states participate (38 states participated in 2009 and 41 states participated in 2015).¹ The CDC sets a minimum overall response rate for the release of PRAMS data from participating states. In 2007, the threshold was 65%, and beginning in 2012, the threshold was changed to 60%. The majority of states who participate meet this threshold.

To be included in the sample, states were required to have data available in the pre-policy (2009-2013) and post-policy (2015) periods. Furthermore, only states who adopted the Medicaid expansion policy on January 1, 2014 were included; states that provided Medicaid coverage similar to the expansion policy (DE, MA, NY, VT) prior to 2014 and those that expanded their Medicaid program after January 1, 2014 (AK, PA) were excluded to isolate the effect of the policy implementation. Seventeen states met the inclusion criteria: eight that expanded their Medicaid program (HI, IL, MD, MI, NJ, OR, WA, WV) and seven that did not (AR, ME, MO, NE, OK, UT, WY). **Appendix 3** provides the sample sizes by expansion status and year of delivery for the states included in the analysis.

2. Study Period

In our main models, the pre-policy period was 2009 to 2013. We separated the post-Medicaid expansion period into two different periods: transition (2014) and post-policy (2015). This decision was motivated by the fact that the index time is childbirth in our study, and due to the duration of pregnancy, it may take several months for Medicaid expansion to have a potential effect on preconception coverage (defined as coverage in the month prior to childbirth). The following table shows, assuming nine-month full term pregnancies, the earliest month of birth for which preconception coverage could have been affected by the January 1, 2014 Medicaid expansion would be October 2014.

Preconception Month (one month before conception)	Month of Conception (assuming full-term pregnancy)	Month of Delivery	Preconception Coverage Affected by January 1, 2014 Medicaid Expansion?
Apr-13	May-13	Jan-14	No
May-13	Jun-13	Feb-14	No
Jun-13	Jul-13	Mar-14	No
Jul-13	Aug-13	Apr-14	No
Aug-13	Sep-13	May-14	No
Sep-13	Oct-13	Jun-14	No
Oct-13	Nov-13	Jul-14	No
Nov-13	Dec-13	Aug-14	No
Dec-13	Jan-14	Sep-14	No
Jan-14	Feb-14	Oct-14	Yes
Feb-14	Mar-14	Nov-14	Yes
Mar-14	Apr-14	Dec-14	Yes

Appendix 5 shows the difference-in-differences estimates for the transition period as well as for the transition period and post-policy period combined. Note that Oregon (expansion), Michigan (expansion), and Arkansas (nonexpansion) are excluded from the transition period estimates because of missing data for 2014. As detailed under “Sensitivity Analysis – Transition Period Definition,” we conducted sensitivity analyses around the selection of the transition period, which did not substantively change our results.

3. Outcomes and Subgroups

The primary outcome was preconception insurance coverage, which was defined based on the PRAMS survey question, “During the month before you got pregnant with your new baby, what kind of health insurance did you have?” Responses were classified as “uninsured,” “Medicaid,” or “non-Medicaid” for consistency of responses across the survey period.

Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018;132.

The authors provided this information as a supplement to their article.

©2018 American College of Obstetricians and Gynecologists.

The main analysis group was women with incomes at or less than 138% of the federal poverty level, as women in this group were newly eligible for Medicaid in expansion states. We would expect any association between the outcome and the expansion to be concentrated among women in this income range. The outcome was also tested in two other subgroups of women: 1) all women, regardless of income, and 2) women with prenatal Medicaid coverage. Results for the main analysis and subgroups are presented in the manuscript.

4. Regression Specifications

a) Difference-in-differences analysis (main models)

For each outcome Y , we estimated the following multivariate regression:

$$Y_{ist} = \delta_s + \delta_t + \beta_1 \text{Expansion}_s * \text{Transition}_t + \beta_2 \text{Expansion}_s * \text{PostPolicy}_t + \beta_3 \text{UnemploymentRate}_{ist} + \beta_x X_i + \Omega \text{Month}_i + \epsilon_{ist} \quad (\text{Equation 1})$$

where i indexes woman, s state, and t year. *Expansion* is an indicator for whether a woman resided in a Medicaid expansion state exposure group. *Transition* is an indicator for whether a woman gave birth in 2014, the “wash-out” period for policy implementation. *PostPolicy* is an indicator for whether a woman gave birth in 2015, the year of full policy implementation. X_i was a vector of individual-level control variables (age, race, Hispanic ethnicity, education, marital status). Family income was not included in the main analysis of women with incomes at or below 138% of the federal poverty level, as income was used to determine their poverty status. Family income was included in the subgroup analyses for all women and women who reported prenatal Medicaid coverage. *Unemployment Rate* was the state-specific yearly unemployment rate for reproductive-age women (18-34), from the U.S. Bureau of Labor Statistics. *Month* was the calendar month of birth. β_2 was the parameter of interest, representing the difference-in-differences estimate of the relative change in the outcome from pre- to post-policy among women who gave birth in expansion states relative to nonexpansion states.

All estimates, including the regression models, were weighted using the survey weights provided by the CDC. As recommended for difference-in-differences analysis, standard errors are heteroskedasticity-robust and clustered at the state level to account for serial correlation within states and for the state-level implementation of the policy.² Analyses were conducted using STATA/SE version 14.1 (StataCorp LP).

b) Difference-in-differences validity checks

(i) Test of pre-policy linear trends

The primary assumption of difference-in-differences analysis is that the post-policy trend in the outcome observed among women giving birth in nonexpansion states is a valid counterfactual for what would have occurred in the expansion states if not for the implementation of Medicaid (the “parallel trends” assumption). While this assumption cannot be explicitly tested, lack of evidence that the trend in the outcome was changing differentially in the pre-policy period is supportive of the plausibility of the assumption. Thus, we examined the difference in the yearly linear trends for each outcome between expansion and nonexpansion states using five years of pre-policy data (2009-2013). For each outcome Y , we estimated the following multivariate regression:

$$Y_{ist} = \delta_s + \delta_t + \beta_1 \text{YearNum}_t + \beta_2 \text{Expansion}_s * \text{YearNum}_t + \beta_3 \text{UnemploymentRate}_{ist} + \beta_x X_i + \Omega \text{Month}_i + \epsilon_{ist} \quad (\text{Equation 2})$$

where i indexes woman, s state, and t year. *YearNum* indicates the number of years at year t since the start of the study period and all other variables are defined as in Equation 1. β_2 was the parameter of interest, representing the differential trend in the outcome in the expansion states relative to nonexpansion states in the pre-policy period. **Appendix 6** shows the results from the linear pre-period trend tests.

Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018;132.

The authors provided this information as a supplement to their article.

©2018 American College of Obstetricians and Gynecologists.

Page 3 of 14

We did not detect statistically significant differential yearly linear trends in the pre-period for the primary analysis. The trend was statistically significant in the Non-Medicaid group in the subgroup analysis of women with prenatal Medicaid coverage. For Non-Medicaid, the differential trend may lead to an overestimation of the difference-in-differences estimate; however, if pre-policy linear trends continued, at the most this would account for 23% of the estimated association (i.e., for Non-Medicaid among all women, the decrease expected from 2013 to 2015 based on the pre-policy trend would be -1.6 p.p., which is 23% of -6.8 p.p., the difference-in-differences estimate).

(ii) *Placebo tests*

We also conducted a more flexible test of differential pre-policy trends which does not assume linearity. In this test, we include a set of interactions between expansion status and each year prior to expansion (excluding the last year prior to expansion as the reference year). Using data limited to the pre-policy period (2009-2013), for each outcome Y , we estimated the following multivariate regression:

$$Y_{ist} = \delta_s + \delta_t + \sum_{j \neq k} \delta_j (Expansion_s \cdot I(t = j)) + \beta_x X_i + \Omega Month_i + \varepsilon_{ist} \quad (\text{Equation 3})$$

where k indicates the last pre-policy year (2013) and all other variables are defined as in Equation 1. The coefficients, δ_j , where $j < k$ are essentially placebo tests for whether expansion status had an effect on the outcome in the two groups in the period prior to the policy (relative to the last pre-policy year). Failure to reject the null hypothesis that these pre-period interaction coefficients are not significantly different than zero is supportive of the parallel trends assumption. We also jointly tested the null hypothesis that all four pre-policy interaction terms (δ_j where $j < k$) are equal to zero using an F-test. **Appendix 7** shows the results from these placebo tests. **Appendix 8** plots the pre-period interaction term coefficients and 95% confidence intervals.

We were unable to reject the null hypothesis that the pre-period interactions were all equal to zero for all outcomes and subgroups except one: Non-Medicaid preconception coverage among all women (F-statistic = 3.5, $p = 0.03$), an outcome for which we did not detect any significant effects in our main analysis. Further, the magnitude of the placebo effect sizes observed are in general much smaller in magnitude than those in our main analysis. For example, the largest placebo effect coefficient for women <138% of federal poverty showed a 3.0 p.p. increase in Medicaid, which is 35% of 8.5 p.p., the difference-in-differences estimate.

5. Sensitivity Analyses

a) *Transition Period Definition*

As outlined under “Study Period Definition,” as preconception coverage for births could not have been affected prior to October 2014, we assumed the full calendar year of 2014 to be a transition year for the implementation of the policy. We also conducted a sensitivity analysis assuming an alternative definition of the transition period (January 1 to September 2014) and the post-policy period (October 2014 to December 2015). As detailed in **Appendix 9**, we conducted a sensitivity analysis using January 2014-September 2014 as an alternate transition period and this did not substantively change our results.

b) *Adjustment for Unemployment Rates*

In the models reported in the main text, we adjusted for state-year unemployment rates for reproductive-age women. This control was included to account for the fact that uninsurance is highly correlated with unemployment rates, which could change differentially in expansion and nonexpansion states over time. However, the inclusion of unemployment rates may be problematic if the Medicaid expansions themselves influenced women’s probability of employment or propensity to seek work. We suspect that this concern is likely minimal since no substantial changes in labor outcomes have been observed related to the Medicaid expansions.^{3,4} However, to address this potential issue, we re-estimated the main model excluding state-year unemployment rates. The results are presented in **Appendix 10**. The exclusion of this control variable did not meaningfully change our results of the primary analysis.

Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018;132.

The authors provided this information as a supplement to their article.

©2018 American College of Obstetricians and Gynecologists.

Page 4 of 14

c) Assumptions about Missing Income

In the study sample, 5.5% of women in nonexpansion states and 9.6% of women in expansion states have missing income information. Women with missing income were excluded from the regression models. If missingness in income is correlated with the outcomes and differentially changing over time between expansion and nonexpansion states, this could bias the results. To assess the bounds of the bias that could result from missing income data on our findings, we conducted a sensitivity analysis assuming all women with missing income data reported both the lowest income (<\$10,000) and highest income (>\$100,000). The assigned incomes were used to classify a patient's income relative to the federal poverty level and in the regression models where income was included as a covariate. The results are presented in **Appendix 11**. The difference-in-difference estimates under the assumptions that all missing women had the lowest or highest incomes did not change the magnitude or the significance of the estimates.

6. References

1. Centers for Disease Control and Prevention (CDC). Pregnancy Risk Assessment Monitoring System. <https://www.cdc.gov/prams>. Published August 30, 2017. Accessed September 27, 2017.
2. Bertrand M, Duflo E, Mullainathan S. How Much Should We Trust Differences-In-Differences Estimates? *Q J Econ*. 2004;119(1):249-275. doi:10.1162/003355304772839588
3. Gooptu A, Moriya AS, Simon KI, Sommers BD. Medicaid Expansion Did Not Result In Significant Employment Changes Or Job Reductions In 2014. *Health Aff Proj Hope*. 2016;35(1):111-118. doi:10.1377/hlthaff.2015.0747
4. Kaestner R, Garrett B, Chen J, Gangopadhyaya A, Fleming C. Effects of ACA Medicaid Expansions on Health Insurance Coverage and Labor Supply. *J Policy Anal Manag J Assoc Public Policy Anal Manag*. 2017;36(3):608-42.

Appendix 3. Study Sample Sizes by Expansion Status and Year of Delivery

	Study Population	2009	2010	2011	2012	2013	2014	2015	Total
Expansion States	All women	12,760	12,292	12,095	9,529	11,233	7,913	10,765	76,587
	Women at or below 138% federal poverty level	5,230	5,141	4,958	3,844	4,521	2,749	4,052	30,495
	Women who report Medicaid prenatal coverage	5,823	5,585	5,659	4,468	5,412	3,439	5,033	35,419
Non-Expansion States	All women	10,149	10,464	9,407	7,542	8,730	7,424	8,194	61,910
	Women at or below 138% federal poverty level	4,415	4,685	4,257	3,277	3,659	2,846	3,422	26,561
	Women who report Medicaid prenatal coverage	4,859	5,060	4,587	3,577	4,232	3,298	3,665	29,278

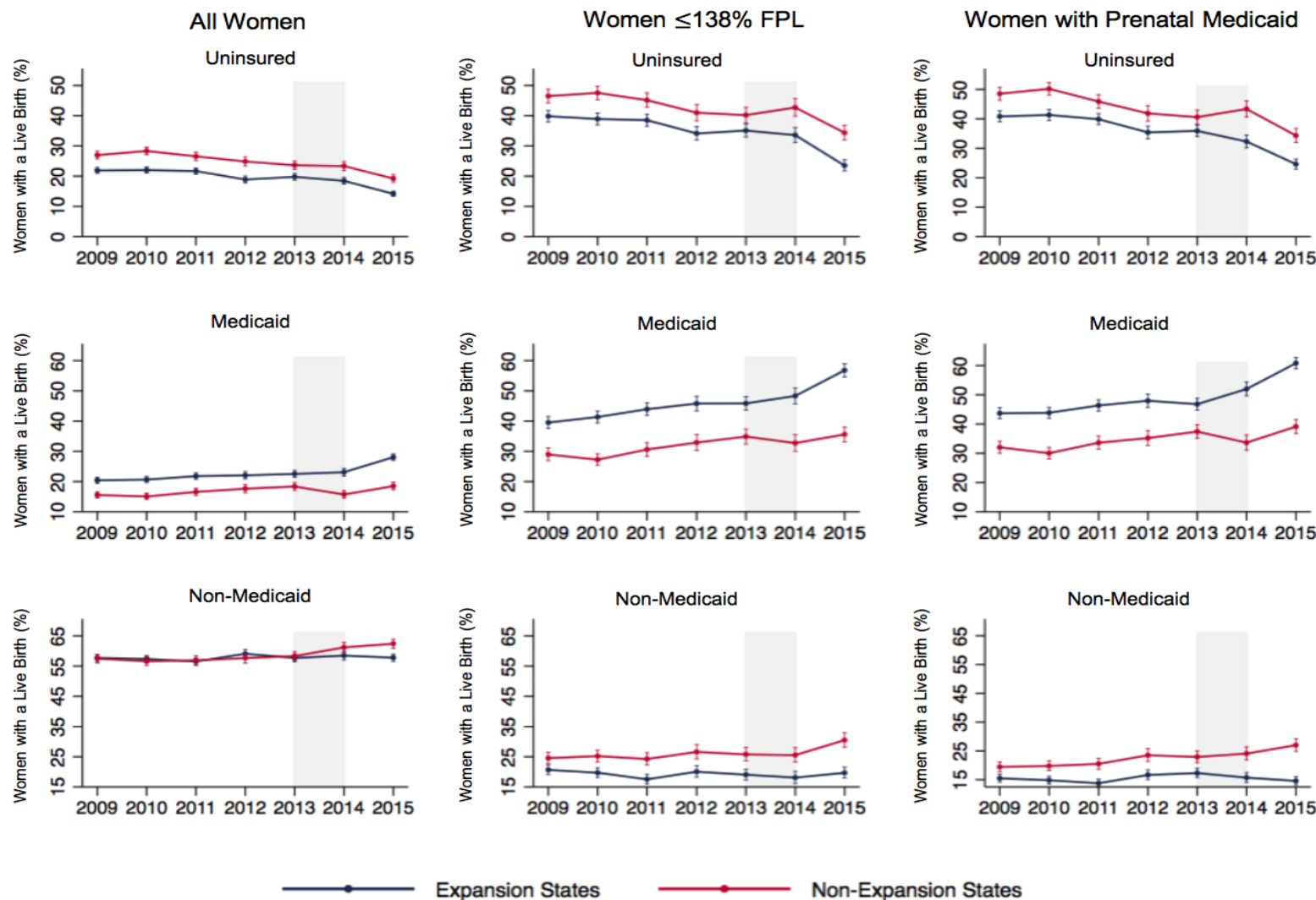
Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018;132.

The authors provided this information as a supplement to their article.

©2018 American College of Obstetricians and Gynecologists.

Page 6 of 14

Appendix 4. Subgroup analysis: Unadjusted trends in the primary outcome.



Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates with 95% CIs shown for expansion (*blue*) and nonexpansion (*red*) states for all women, women at or less than 138% federal poverty level (FPL), and women with prenatal Medicaid coverage. The prepolicy period was 2009–2013, and the postpolicy period was 2015. 2014 (*shown in gray*) was considered the transition period.

Clapp MA, James KE, Kaimal AJ, Daw JR. Preconception coverage before and after the Affordable Care Act Medicaid expansions. *Obstet Gynecol* 2018;132. The authors provided this information as a supplement to their article.

Appendix 5. Difference-in-Difference Estimates for the Transition Period (2014) and Transition Period and Post-Policy Period Combined (2014-2015)

Preconception Insurance Status by Study Population	Transition Period (2014)				Transition + Post-policy Period (2014-2015)			
	Unadjusted Analysis		Adjusted Analysis		Unadjusted Analysis		Adjusted Analysis	
	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value
All women								
Uninsured	-1.3 (-4.3 to 1.7)	0.34	-1.3 (-4.4 to 1.8)	0.93	-0.5 (-3.5 to 2.5)	0.73	-0.3 (-3.9 to 3.3)	0.86
Medicaid	2.9 (1.7 to 4.1)	<.001	3.6 (1.4 to 5.9)	0.004	3.9 (1.5 to 6.4)	0.004	4.2 (0.8 to 7.6)	0.02
Non-Medicaid	-1.8 (-4.6 to 1.1)	0.21	-2.6 (-6.8 to 1.6)	0.21	-3.5 (-5.8 to -1.2)	0.005	-4.1 (-8.5 to 0.4)	0.07
Women at or below 138% federal poverty level								
Uninsured	-5.4 (-8.8 to -2.1)	0.004	-5.5 (-8.3 to -2.6)	0.23	-4.6 (-9.3 to 0.2)	0.06	-4.7 (-9.5 to 0.1)	0.06
Medicaid	4.7 (1.3 to 8.1)	0.01	5.2 (2.3 to 8.1)	0.002	6.9 (2.1 to 11.7)	0.008	7.1 (2.3 to 11.8)	0.006
Non-Medicaid	-0.1 (-2.6 to 2.4)	0.96	-0.4 (-2.7 to 1.8)	0.68	-2.8 (-5.3 to -0.2)	0.03	-2.8 (-5.2 to -0.5)	0.02
Women who report Medicaid prenatal coverage								
Uninsured	-6.2 (-9.6 to -2.8)	0.002	-7.4 (-10.1 to -4.8)	0.42	-4.3 (-9.2 to 0.6)	0.08	-5.1 (-10.5 to 0.4)	0.07
Medicaid	6.7 (4.4 to 8.9)	<.001	7.8 (5.2 to 10.4)	<.001	8.2 (3.6 to 12.8)	0.002	8.9 (3.5 to 14.4)	0.003
Non-Medicaid	-1.2 (-4.3 to 1.8)	0.41	-1.1 (-3.6 to 1.5)	0.38	-4.3 (-6.2 to -2.5)	<.001	-4.3 (-6.6 to -1.9)	0.002

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points. Transition period is defined as January to December 2014. Post-policy period is defined as January to December 2015. Difference-in-difference estimates represent the differential change in the outcome from pre-policy to transition (2014) or transition and post-policy combined (2014-15) in expansion states relative to nonexpansion states. Adjusted estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women. CI, confidence interval.

Appendix 6. Preperiod Linear Trend Tests

Study Population	Insurance Type	Interaction	p-value
		(95% Confidence Interval)	
All women	Uninsured	1.1 (-0.2 to 2.5)	0.09
	Medicaid	-0.1 (-1.7 to 1.6)	0.94
	Non-Medicaid	-1.2 (-3.6 to 1.2)	0.29
Women at or below 138% federal poverty level	Uninsured	1.6 (-0.4 to 3.5)	0.10
	Medicaid	-0.7 (-2.5 to 1.0)	0.38
	Non-Medicaid	-1.1 (-2.3 to 0.1)	0.06
Women who report Medicaid prenatal coverage	Uninsured	1.5 (-0.2 to 3.2)	0.09
	Medicaid	-1.0 (-2.4 to 0.4)	0.15
	Non-Medicaid	-0.8 (-1.4 to -0.2)	0.02*

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Interaction terms are expressed in percentage points and represent the differential linear trend for each outcome in expansion states relative to nonexpansion states in the pre-policy period (2009-2013). Estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women.

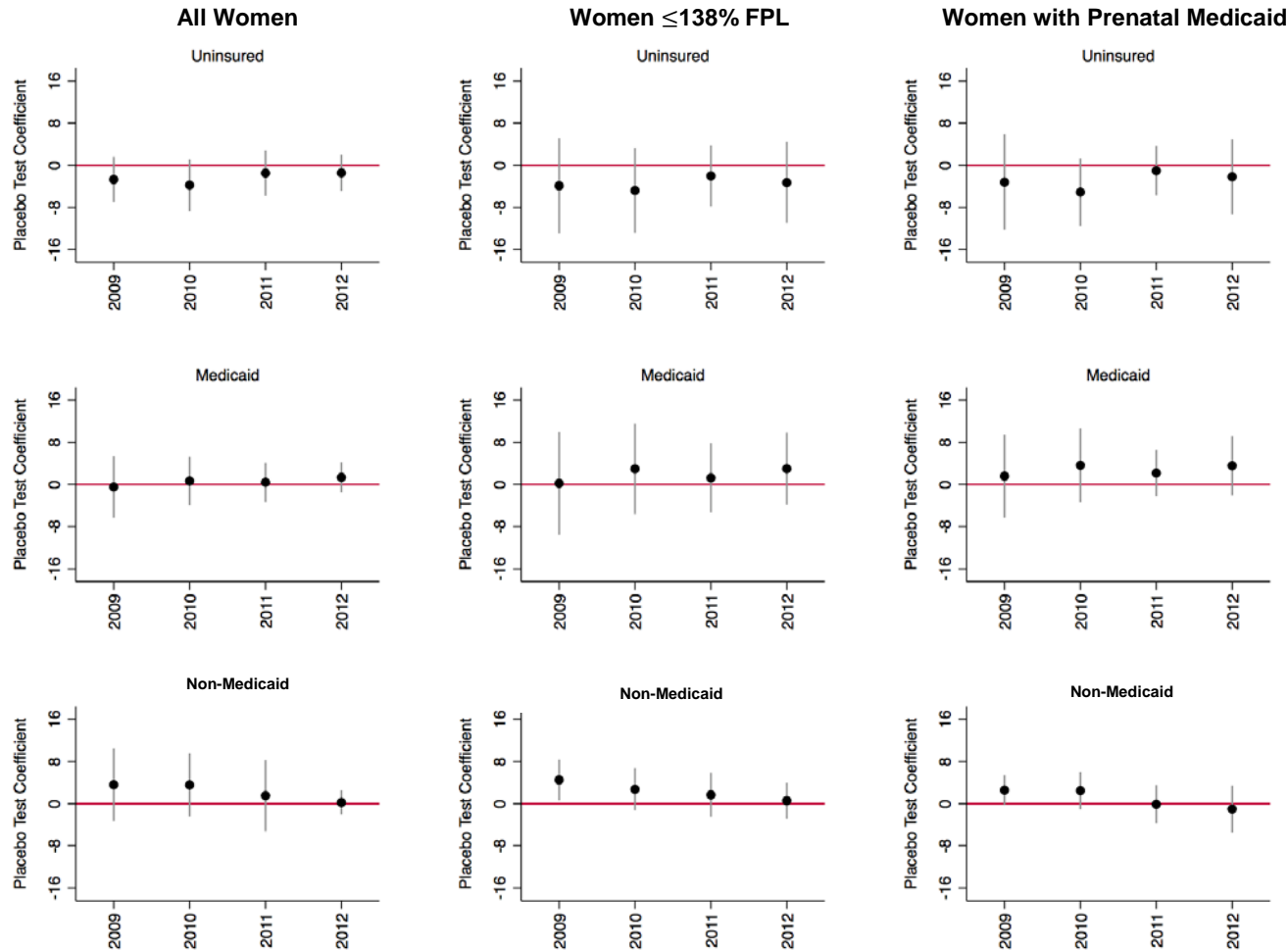
*p<0.05.

Appendix 7. Prepolicy Placebo Tests

Study Population	Insurance Type	2009	2010	2011	2012	F-Statistic	p-value
All women	Uninsured	-2.7 (-7.0 to 1.6)	-3.8 (-8.6 to 1.1)	-1.5 (-5.8 to 2.9)	-1.4 (-4.9 to 2.0)	1.3	0.34
	Medicaid	-0.5 (-6.3 to 5.4)	0.7 (-4.0 to 5.3)	0.7 (-4.0 to 5.3)	-0.5 (-6.3 to 5.4)	1.1	0.39
	Non-Medicaid	3.6 (-3.3 to 10.4)	3.5 (-2.5 to 9.6)	1.5 (-5.3 to 8.3)	0.2 (-2.0 to 2.5)	3.5	0.03*
Women at or below 138% federal poverty level	Uninsured	-3.9 (-12.9 to 5.1)	-4.8 (-12.8 to 3.2)	-2.0 (-7.8 to 3.8)	-3.3 (-11.0 to 4.4)	0.5	0.71
	Medicaid	0.2 (-9.5 to 9.9)	3.0 (-5.6 to 11.5)	1.2 (-5.3 to 7.8)	3.0 (-3.8 to 9.8)	2.8	0.07
	Non-Medicaid	4.5 (0.6 to 8.4)	2.7 (-1.3 to 6.7)	1.7 (-2.6 to 5.9)	0.6 (-2.8 to 3.9)	2.1	0.13
Women with Medicaid Prenatal Insurance	Uninsured	-3.2 (-12.3 to 5.9)	-5.1 (-11.5 to 1.3)	-1.0 (-5.7 to 3.7)	-2.2 (-9.3 to 5.0)	1.7	0.20
	Medicaid	1.6 (-6.3 to 9.5)	3.6 (-3.3 to 10.6)	2.2 (-2.2 to 6.5)	3.6 (-2.0 to 9.2)	1.0	0.45
	Non-Medicaid	2.6 (-0.3 to 5.4)	2.5 (-1.1 to 6.0)	-0.1 (-3.8 to 3.5)	-1.0 (-5.5 to 3.4)	2.0	0.15

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points. Placebo test coefficients represent the difference in the outcome in expansion states relative to nonexpansion states in each year compared to the last year of the pre-policy period (2013). Estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women. The null hypothesis of the joint F-test is that all coefficients (2009-2012) are equal to zero. *p<0.05.

Appendix 8. Plots of prepolicy placebo test coefficients. Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points. *Error bars* represent 95% CIs. Placebo test coefficients represent the difference in the outcome in expansion states relative to nonexpansion states in each year compared to the last year of the prepolicy period (2013). Estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women. FPL, federal poverty level.



Appendix 9. Sensitivity Analysis: Alternate Transition Period

Preconception Insurance Status by Study Population	Main Analysis				Sensitivity Analysis	
	Unadjusted Analysis		Adjusted Analysis		Adjusted Analysis	
	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value
All women						
Uninsured	0.2 (-3.6 to 3.9)	0.93	0.5 (-4.1 to 5.2)	0.80	2.5 (-1.0 to 5.9)	0.14
Medicaid	4.8 (1.0 to 8.5)	0.02	4.7 (0.0004 to 9.4)	0.05	-1.7 (-5.7 to 2.2)	0.36
Non-Medicaid	-5.0 (-7.2 to -2.7)	<.001	-5.4 (-10.1 to -0.6)	0.03	-1.0 (-5.0 to 3.0)	0.59
Women at or below 138% federal poverty level						
Uninsured	-3.9 (-10.6 to 2.8)	0.23	-4.1 (-11.1 to 2.9)	0.23	4.8 (-2.6 to 12.3)	0.18
Medicaid	8.5 (1.2 to 15.9)	0.03	8.6 (1.1 to 16.0)	0.03	-4.0 (-12.1 to 4.2)	0.31
Non-Medicaid	-4.8 (-8.5 to -1.2)	0.01	-4.7 (-8.3 to -1.1)	0.01	-1.5 (-4.9 to 1.9)	0.36
Women who report Medicaid prenatal coverage						
Uninsured	-2.8 (-9.9 to 4.4)	0.42	-3.2 (-11.4 to 5.1)	0.43	4.6 (-1.9 to 11)	0.16
Medicaid	9.4 (2.1 to 16.7)	0.02	9.8 (1.1 to 18.6)	0.03	-5.4 (-11.8 to 0.9)	0.09
Non-Medicaid	-6.8 (-8.3 to -5.2)	<.001	-6.8 (-9.8 to -3.8)	<.001	0.1 (-2.6 to 2.8)	0.92

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points. In the main analysis, the transition period is defined as January to December 2014 and the post-policy period is defined as January to December 2015. In the sensitivity analysis, the transition period is defined as January to September 2014 and the post-policy period is defined as October 2014 to December 2015. Difference-in-difference estimates represent the differential change in the outcome from pre-policy to post-policy periods in expansion states relative to nonexpansion states. Adjusted estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women CI, confidence interval.

Appendix 10. Sensitivity Analysis: Unemployment Rates Adjustment

Preconception Insurance Status by Study Population	Main Analysis				Sensitivity Analysis	
	Unadjusted Analysis		Adjusted Analysis		Adjusted Analysis	
	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value
All women						
Uninsured	0.2 (-3.6 to 3.9)	0.93	0.5 (-4.1 to 5.2)	0.80	0.6 (-3.6 to 4.7)	0.77
Medicaid	4.8 (1.0 to 8.5)	0.02	4.7 (0.0004 to 9.4)	0.05	4.4 (-0.1 to 8.9)	0.05
Non-Medicaid	-5.0 (-7.2 to -2.7)	<.001	-5.4 (-10.1 to -0.6)	0.03	-5.1 (-9.6 to -0.6)	0.03
Women at or below 138% federal poverty level						
Uninsured	-3.9 (-10.6 to 2.8)	0.23	-4.1 (-11.1 to 2.9)	0.28	-4 (-10.5 to 2.5)	0.21
Medicaid	8.5 (1.2 to 15.9)	0.03	8.6 (1.1 to 16.0)	0.03	8.5 (1.4 to 15.5)	0.02
Non-Medicaid	-4.8 (-8.5 to -1.2)	0.01	-4.7 (-8.3 to -1.1)	0.01	-4.7 (-8.1 to -1.3)	0.01
Women who report Medicaid prenatal coverage						
Uninsured	-2.8 (-9.9 to 4.4)	0.42	-3.2 (-11.4 to 5.1)	0.43	-2.8 (-10.5 to 5.0)	0.46
Medicaid	9.4 (2.1 to 16.7)	0.02	9.8 (1.1 to 18.6)	0.03	9.7 (1.3 to 18.1)	0.03
Non-Medicaid	-6.8 (-8.3 to -5.2)	<.001	-6.8 (-9.8 to -3.8)	<.001	-7.1 (-9.7 to -4.5)	<.001

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points. Difference-in-difference estimates represent the differential change in the outcome from pre-policy (2009-2013) to post-policy (2015) in expansion states relative to nonexpansion states. All adjusted estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income. In the main analysis, estimates were adjusted for state-year specific unemployment rates for reproductive-age women. In the sensitivity analysis, estimates were not adjusted for unemployment rates. CI, confidence interval.

Appendix 11. Sensitivity Analysis: Missing Income

Preconception Insurance Status by Study Population	Main Analysis				Sensitivity Analyses			
	Unadjusted Analysis		Adjusted Analysis		Adjusted Analysis (All missing income=min)		Adjusted Analysis (All missing income=max)	
	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value	Difference-in-difference estimate (95% CI)	p-value
All women								
Uninsured	0.2 (-3.6 to 3.9)	0.93	0.5 (-4.1 to 5.2)	0.80	0.2 (-4.4 to 4.8)	0.92	0.5 (-3.7 to 4.7)	0.81
Medicaid	4.8 (1.0 to 8.5)	0.02	4.7 (0.0004 to 9.4)	0.05	4.7 (0.4 to 8.9)	0.03	5.0 (0.5 to 9.4)	0.03
Non-Medicaid	-5.0 (-7.2 to -2.7)	<.001	-5.4 (-10.1 to -0.6)	0.03	-5 (-8.9 to -1.0)	0.02	-5.5 (-9.0 to -2.1)	0.004
Women at or below 138% federal poverty level								
Uninsured	-3.9 (-10.6 to 2.8)	0.23	-4.1 (-11.1 to 2.9)	0.23	-2.9 (-9.7 to 3.9)	0.38	-4.1 (-11.1 to 2.9)	0.23
Medicaid	8.5 (1.2 to 15.9)	0.03	8.6 (1.1 to 16.0)	0.03	7.2 (0.4 to 14)	0.04	8.6 (1.1 to 16.0)	0.03
Non-Medicaid	-4.8 (-8.5 to -1.2)	0.01	-4.7 (-8.3 to -1.1)	0.01	-4.6 (-7.4 to -1.7)	0.004	-4.7 (-8.3 to -1.1)	0.01
Women who report Medicaid prenatal coverage								
Uninsured	-2.8 (-9.9 to 4.4)	0.42	-3.2 (-11.4 to 5.1)	0.43	-3.2 (-11.4 to 5.1)	0.43	-3.2 (-11.4 to 5.1)	0.43
Medicaid	9.4 (2.1 to 16.7)	0.02	9.8 (1.1 to 18.6)	0.03	9.8 (1.1 to 18.6)	0.03	9.8 (1.1 to 18.6)	0.03
Non-Medicaid	-6.8 (-8.3 to -5.2)	<.001	-6.8 (-9.8 to -3.8)	<.001	-6.8 (-9.8 to -3.8)	<.001	-6.8 (-9.8 to -3.8)	<.001

Notes: Authors' analysis of the Pregnancy Risk Assessment Monitoring System. Estimates expressed as percentage points Difference-in-difference estimates represent the differential change in the outcome from pre-policy (2009-2013) to post-policy (2015) in expansion states relative to nonexpansion states. All adjusted estimates were adjusted for state, year, age, race, Hispanic ethnicity, education, marital status, family income, and state-year specific unemployment rates for reproductive-age women. In the sensitivity analyses, all missing incomes were first assumed to be the lowest reported incomes (\$0-8,000), which qualified all women as being at or below 138% federal poverty level. Then, all missing incomes were assumed to be the highest reported income (>\$100,000). The results for the main analysis are shown in comparison with the minimum and maximum missing income assumptions. CI, confidence interval