

Supplementary Appendix

Supplement to: Modrek S, Collin DF, Hamad R, White JS. “Medicaid Expansion and Perinatal Health Outcomes: A Quasi-Experimental Study”

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Supplemental Table S1. Number of Respondents by State and Year

	Year														Total
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Expansion States															
Alaska	682	689	654	862	732	667	604	0	432	647	537	614	596	530	8,246
Arkansas	1,407	1,506	1,396	1,349	1,175	842	1,141	995	592	767	0	632	606	0	12,408
Colorado	881	894	877	1,106	1,074	1,082	1,087	1,033	586	778	0	889	688	498	11,473
Delaware	0	0	0	354	691	618	590	577	536	573	522	499	431	421	5,812
Hawaii	963	760	723	937	957	898	923	921	770	816	713	691	172	0	10,244
Illinois	826	713	715	855	778	812	741	716	492	588	658	713	564	490	9,661
Massachusetts	0	0	0	762	748	703	786	777	735	690	764	633	555	683	7,836
Maryland	501	423	479	642	675	629	646	599	400	519	595	543	489	430	7,570
Michigan	568	568	556	876	978	1,072	847	1,011	1,222	1,270	0	897	951	1,032	11,848
New Jersey	938	948	746	705	671	651	642	615	443	391	573	498	550	479	8,850
New York ^a	755	969	953	1,329	0	0	1,244	1,243	0	1,227	994	1,136	1,077	880	11,807
Oregon	1,066	1,034	1,012	1,149	1,061	1,082	1,195	1,162	458	891	0	877	0	0	10,987
Pennsylvania	0	0	0	400	556	538	495	503	327	473	534	494	411	538	5,269
Rhode Island	623	555	541	694	662	648	603	616	557	534	596	0	552	491	7,672
Washington	817	743	775	849	966	1,021	947	736	495	547	595	627	589	563	10,270
West Virginia	565	1,027	1,115	1,258	1,183	1,092	971	1,043	694	862	774	722	459	365	12,130
Non-Expansion States															
Georgia	785	918	966	389	543	543	722	916	424	310	0	0	0	488	7,004
Maine	509	506	525	621	632	603	599	558	361	497	523	407	382	401	7,124
Nebraska	913	976	882	970	963	1,089	1,115	1,057	629	847	834	775	667	0	11,717
Oklahoma	1,070	1,099	1,133	1,379	1,271	1,352	1,208	1,248	1,031	1,052	1,059	1,178	1,236	1,037	16,353
Utah	1,086	1,025	1,062	1,079	1,072	969	949	862	903	737	813	765	665	703	12,690
Wisconsin	0	0	0	625	651	597	0	1,097	1,028	958	975	917	691	808	8,347
Wyoming	0	0	0	571	549	524	608	398	306	325	324	303	321	255	4,484

Note: Data from PRAMS survey waves from 2004-2017. Coverage under the Medicaid expansion became effective January 1, 2014 in all states that have adopted the Medicaid expansion except for the following: Michigan (4/1/2014), Alaska (9/1/2015), and Pennsylvania (1/1/2015).

^a Although administered separately, responses for New York State and New York City were aggregated into one group for the purposes of this study.

Supplemental Table S2. Medicaid and CHIP Income Eligibility Limits for Pregnant People relative to Federal Poverty Line in Study, 2011-2017

	Year						
	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17
Expansion States							
Alaska	1.75	1.75	1.75	2.05	2.05	2.05	2.05
Arkansas	2	2	2	2.14	2.14	2.14	2.14
Colorado	2.5	2.5	2.5	2.65	2.65	2.65	2.65
Delaware	2	2	2	2.14	2.17	2.17	2.17
Hawaii	1.85	1.85	1.85	1.96	1.96	1.96	1.96
Illinois	2	2	2	2.13	2.13	2.13	2.13
Maryland	2.5	2.5	2.5	2.64	2.64	2.64	2.64
Massachusetts	2	2	2	2.05	2.05	2.05	2.05
Michigan	1.85	1.85	1.85	2	2	2	2
New Jersey	2	2	2	2.05	2.05	2.05	2.05
New York	2	2	2	2.23	2.23	2.23	2.23
Oregon	1.85	1.85	1.85	1.9	1.9	1.9	1.9
Pennsylvania	1.85	1.85	1.85	2.2	2.2	2.2	2.2
Rhode Island	2.5	2.5	2.5	2.58	2.58	2.58	2.58
Washington	1.85	1.85	1.85	1.98	1.98	1.98	1.98
West Virginia	1.5	1.5	1.5	1.63	1.63	1.63	1.63
Non-Expansion States							
Georgia	2	2	2	2.25	2.25	2.25	2.25
Maine	2	2	2	2.14	2.14	2.14	2.14
Nebraska	1.85	1.85	1.85	2.02	2.02	2.02	2.02
Oklahoma	1.85	1.85	1.85	1.9	1.9	1.9	2.1
Utah	1.33	1.33	1.33	1.44	1.44	1.44	1.44
Wisconsin	3	3	3	3.06	3.06	3.06	3.06
Wyoming	1.33	1.33	1.33	1.59	1.59	1.59	1.59
Federal Limits in Dollars							
Federal Poverty Line (Family of 2)	\$14,710	\$15,130	\$15,510	\$15,730	\$15,930	\$16,020	\$16,240
Federal Poverty Line (Family of 4)	\$22,350	\$23,050	\$23,550	\$23,850	\$24,250	\$24,300	\$24,600
Expansion States Mean Eligibility Limit (Fam. of 2)	\$29,420	\$30,260	\$31,020	\$33,751	\$34,210	\$34,403	\$34,875
Non-Expansion States Mean Eligibility Limit (Fam. of 2)	\$28,075	\$28,877	\$29,602	\$32,359	\$32,770	\$32,955	\$33,872
Expansion States Mean Eligibility Limit (Fam. of 4)	\$44,700	\$46,100	\$47,100	\$51,173	\$52,077	\$52,184	\$52,829
Non-Expansion States Mean Eligibility Limit (Fam. of 4)	\$42,657	\$43,993	\$44,947	\$49,063	\$49,886	\$49,989	\$51,309

Source:

<https://www.kff.org/medicaid/state-indicator/medicaid-and-chip-income-eligibility-limits-for-pregnant-women/?currentTimeframe=0&sortModel=%7B%22collid%22:%22Location%22,%22sort%22:%22asc%22%7D>

<https://www.kff.org/medicaid/state-indicator/medicaid-and-chip-income-eligibility-limits-for-pregnant-women/?currentTimeframe=0&sortModel=%7B%22collid%22:%22Location%22,%22sort%22:%22asc%22%7D>

<https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references>

Supplemental Table S3. Estimated Impact of State Medicaid Expansion on Birthing Parent and Infant Outcomes, by Survey Language

	Coefficient (95% Confidence Interval)		
	Full Sample	English Survey	Spanish Survey
Panel A. Birthing Parent outcomes			
<i>Health utilization</i>			
Month of 1st prenatal visit	-0.019 (-0.083 - 0.045)	-0.017 (-0.083 - 0.049)	-0.0093 (-0.14 - 0.12)
Postpartum visit check-up	-0.0077 (-0.020 - 0.0046)	-0.0071 (-0.020 - 0.0058)	0.0042 (-0.023 - 0.032)
<i>Health outcomes</i>			
Gestational diabetes	-0.0020 (-0.018 - 0.014)	0.00082 (-0.014 - 0.016)	-0.018 (-0.049 - 0.013)
Hypertensive disorders of pregnancy	-0.00066 (-0.034 - 0.033)	-0.0016 (-0.037 - 0.034)	0.012 (-0.012 - 0.037)
Smoked last 3 months of pregnancy	-0.0054 (-0.014 - 0.0034)	-0.0081 (-0.019 - 0.0028)	-0.0050 (-0.012 - 0.0017)
Panel B. Infant outcomes			
Ever breastfed	0.011 (-0.013 - 0.034)	0.0087 (-0.016 - 0.033)	0.0014 (-0.024 - 0.027)
Breastfed > 1 month	0.0060 (-0.011 - 0.023)	0.0048 (-0.011 - 0.020)	0.023 (-0.0095 - 0.056)
Preterm birth	0.044 (-0.026 - 0.11)	0.044 (-0.025 - 0.11)	0.024 (-0.065 - 0.11)
Low birthweight	0.050 (-0.048 - 0.15)	0.048 (-0.048 - 0.14)	0.021 (-0.091 - 0.13)
Very low birthweight	0.033 (-0.012 - 0.077)	0.032 (-0.012 - 0.077)	0.024 (-0.022 - 0.069)

Note: Includes PRAMS survey waves from 2004-2017 unless otherwise noted. Sample limited to household with incomes less than \$50,000. Each regression model controls for birthing parent's age, race/ethnicity, education, marital status, income, household size and parity. Regressions also include state-level covariates, and year and state fixed effects.

* p-value < 0.05

Supplemental Table S4. Estimated Impact of State Medicaid Expansion on Birthing Parent and Infant Outcomes, Comparing Full Sample to Nulliparous Birthing Parents

	Coefficient (95% Confidence Interval)	
	Full Sample	Nulliparous
Panel A. Birthing Parent		
<i>Health utilization</i>		
Month of 1st prenatal visit	-0.019 (-0.083 - 0.045)	-0.030 (-0.098 - 0.038)
Postpartum visit check-up	-0.0077 (-0.020 - 0.0046)	-0.0037 (-0.023 - 0.015)
<i>Health outcomes</i>		
Gestational diabetes	-0.0020 (-0.018 - 0.014)	-0.0024 (-0.013 - 0.0087)
Hypertensive disorders of pregnancy	-0.00066 (-0.034 - 0.033)	0.0046 (-0.028 - 0.038)
Smoked last 3 months of pregnancy	-0.0054 (-0.014 - 0.0034)	-0.0028 (-0.022 - 0.016)
Panel B. Infant outcomes		
Ever breastfed	0.011 (-0.013 - 0.034)	0.0098 (-0.017 - 0.036)
Breastfed > 1 month	0.0060 (-0.011 - 0.023)	0.0077 (-0.013 - 0.028)
Preterm birth	0.044 (-0.026 - 0.11)	0.048 (-0.027 - 0.12)
Low birthweight	0.050 (-0.048 - 0.15)	0.051 (-0.053 - 0.15)
Very low birthweight	0.033 (-0.012 - 0.077)	0.043 (-0.0098 - 0.095)

Note: Includes PRAMS survey waves from 2004-2017 unless otherwise noted. Sample limited to household with incomes less than \$50,000. Each regression model controls for birthing parent's age, race/ethnicity, education, marital status, income, household size and parity. Regressions also include state-level covariates, and year and state fixed effects.

* p-value < 0.05

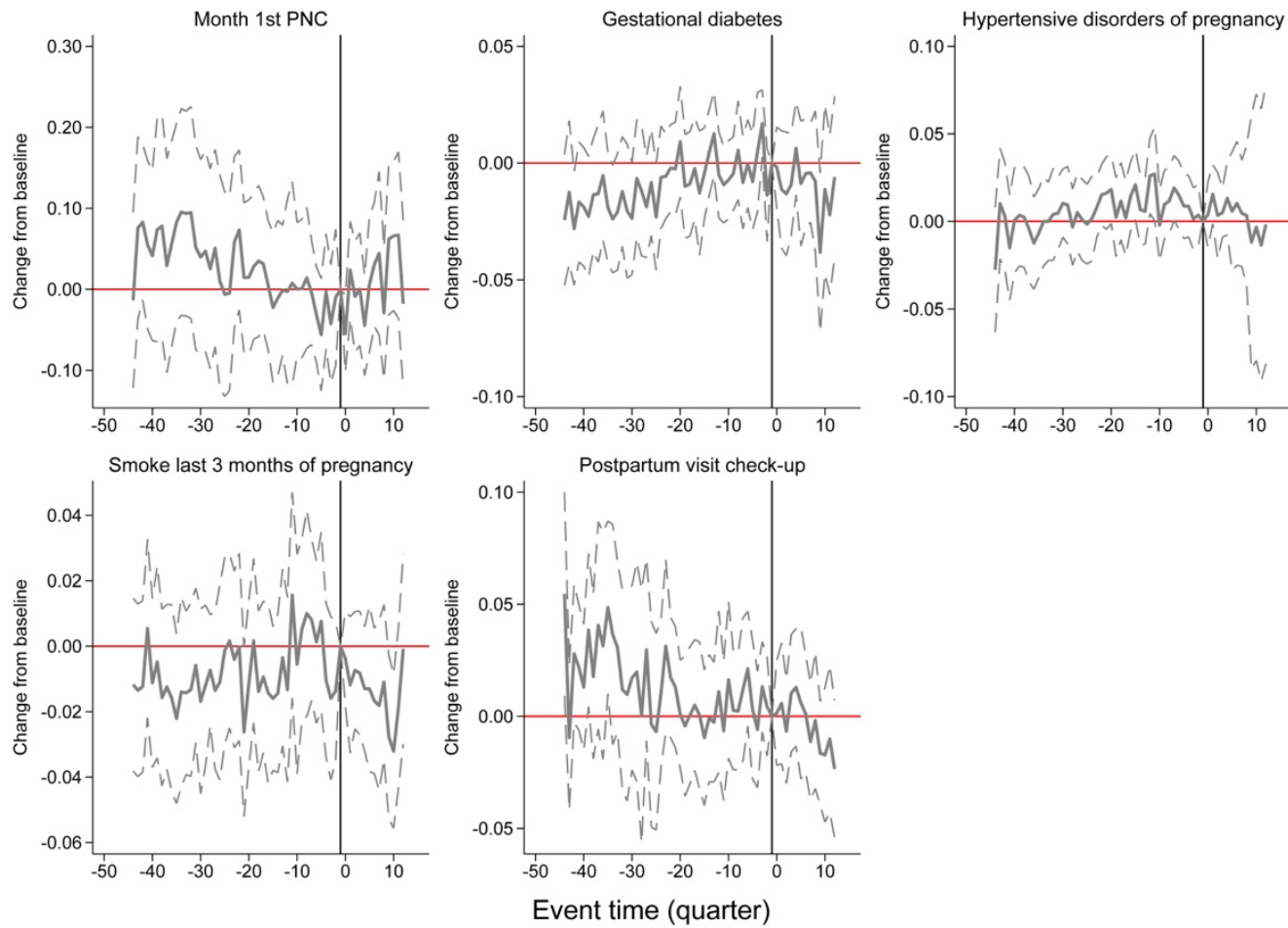
Supplemental Table S5. Estimated Impact of State Medicaid Expansion on Having Any Insurance at First Prenatal Visit

Variable	Prenatal Care Paid for by Any Insurance	
	Coef.	95% CI
Post-Medicaid Expansion	0.025	(-0.047 - 0.096)
Age (Ref. <25)		
25-34	0.081**	(0.052 - 0.11)
35+	0.13**	(0.097 - 0.17)
Race (Ref. White)		
Black	0.012	(-0.046 - 0.070)
Hispanic/Latina	0.22*	(0.053 - 0.38)
Other	0.074**	(0.020 - 0.13)
Education (Ref. Less than HS)		
HS	-0.084**	(-0.13 - -0.033)
Some college	-0.074*	(-0.13 - -0.015)
College +	0.031	(-0.036 - 0.098)
Married	0.14**	(0.12 - 0.17)
Income (Ref. \$10,000)		
\$10,000-\$19,999	0.066**	(0.047 - 0.084)
\$20,000-\$29,999	0.16**	(0.12 - 0.19)
\$30,000-\$39,999	0.30**	(0.27 - 0.34)
\$40,000-\$49,999	0.44**	(0.41 - 0.48)
Family size	-0.0097*	(-0.018 - -0.0012)
Parity (Ref. Nulliparous)		
Primiparous	-0.093**	(-0.11 - -0.076)
Multiparous	-0.16**	(-0.18 - -0.13)
Constant	2.33	(-1.66 - 6.33)
Observations		202,533
R-squared		0.137

Note: Model includes state-level time-varying covariates, and year and state fixed effects. Standard errors were clustered by state. Robust confidence intervals in parentheses.

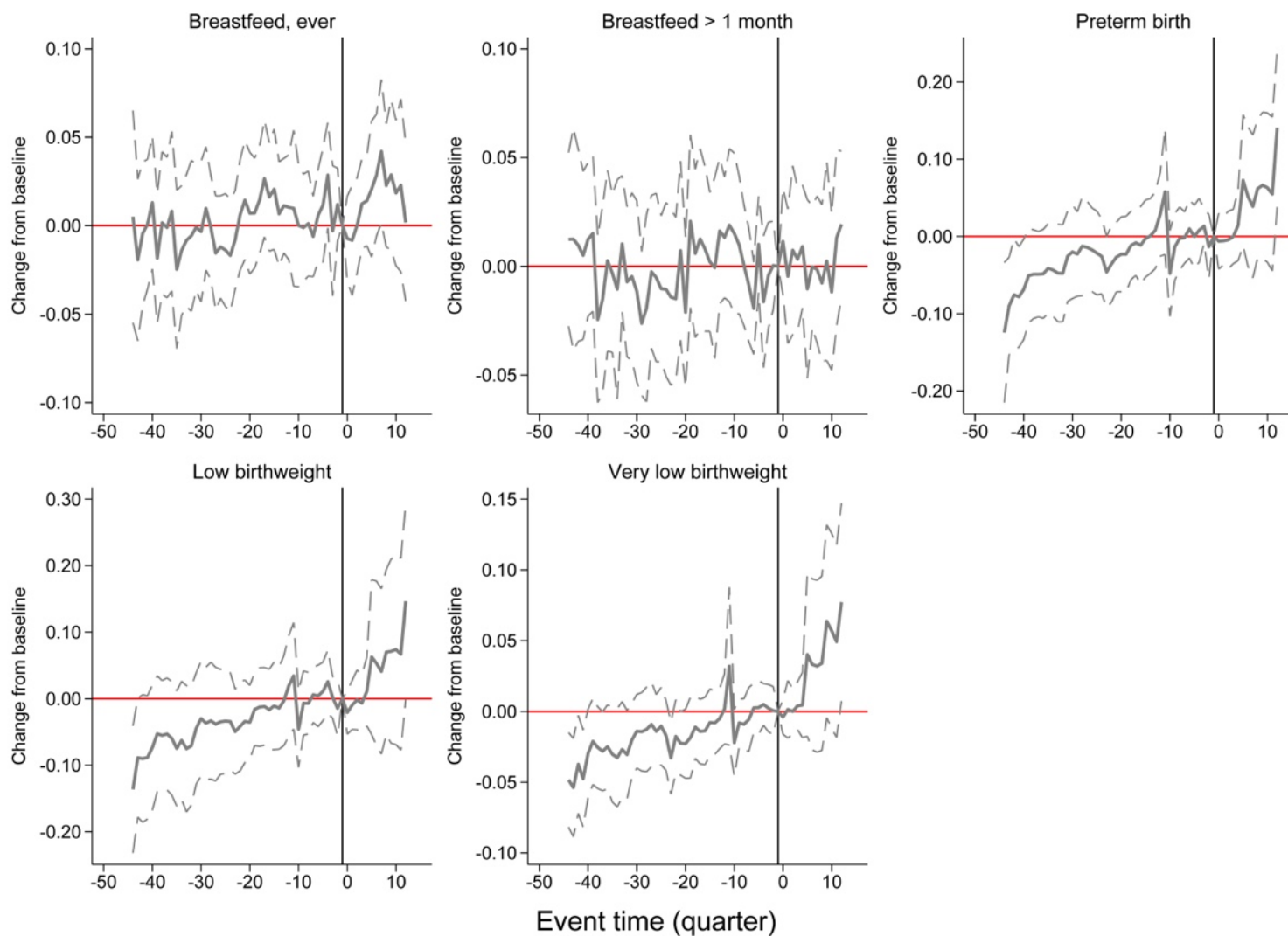
* p-value < 0.05 ** p-value <0.01

Supplemental Figure S1. Event-Study Estimates of Difference by Treatment Group and Parallel Pre-ACA Trends for Birthing Parent Outcomes



Note: Means and 95% confidence intervals of difference between treatment and control groups compared to differences between treatment and control groups in the first quarter of 2014 (the omitted category that is set to 0).

Supplemental Figure S2: Event-Study Estimates of Difference by Treatment Group and Parallel Pre-ACA Trends for Infant Outcomes



Note: Means and 95% confidence intervals of difference between treatment and control groups compared to differences between treatment and control groups in the first quarter of 2014 (the omitted category that is set to 0).