Supplemental Information: The Medicaid Expansion and Public Opinion toward the Affordable Care Act

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Appendix A: Descriptive Statistics

Table 1: This table presents descriptive statistics for key measures in the KFF surveys employed in this analysis. The full data set comprises the 47,918 respondents under age 65 to the KFF's surveys between January 2010 and October 2016. In the far-right column, we provide the share of respondents for whom each measure is missing.

	Mean	SD	Min	Max	Share Missing
Purchase Own Insurance	0.102	0.303	0.000	1.000	0.000
Insured through Employer	0.573	0.495	0.000	1.000	0.000
Receive Medicaid	0.053	0.224	0.000	1.000	0.000
Receive Medicare	0.051	0.221	0.000	1.000	0.000
Insured	0.856	0.351	0.000	1.000	0.000
Favor ACA	2.369	1.175	1.000	4.000	0.000
Age	44.505	13.118	18.000	64.000	0.000
Income	80.736	67.927	10.000	200.000	0.000
Black	0.128	0.334	0.000	1.000	0.000
Hispanic	0.134	0.362	0.000	9.000	0.000
Asian American	0.027	0.162	0.000	1.000	0.000
Other Ethnic/Racial Id.	0.049	0.216	0.000	1.000	0.000
Education	14.472	2.736	6.000	19.000	0.000
Republican	0.252	0.434	0.000	1.000	0.000
Independent	0.405	0.491	0.000	1.000	0.000
Democrat	0.344	0.475	0.000	1.000	0.000

Appendix B: The Medicaid Expansion and Medicaid Receipt

To probe the validity of our "differences-in-differences" estimation strategy, we ask a straightforward question: can we detect an increase in Medicaid receipt in states which participated in the Medicaid expansion? Given that Medicaid is often provided through commercial providers—and that recipients under-report Medicaid enrollment as a consequence (Tallevi, 2016)—it is valuable to examine whether we can detect an increase in Medicaid enrollment.

The Medicaid expansion did have a substantial effect on participation in the program. Prior to the Medicaid expansion in many states in or after January 2014, there were detectable but substantively small differences in Medicaid participation across expansion and non-expansion states.[1] In states that would expand Medicaid, the share of people receiving Medicaid before 2014 was 3.7%, which is not much higher than the 3.4% in states that would not expand Medicaid. In fact, a t-test fails to reject the hypothesis that the two means are the same ($p = 0.21$). But after the expansion, the differences were more pronounced: 4.4% of respondents in non-expansion states reported receiving Medicaid, while 9.4% of respondents in expansion states did.[2]

Several states including California, Connecticut, Minnesota, New Jersey, and Washington—as well as Washington DC—began the expansion of their Medicaid programs prior to January 2014 (Kaiser Family Foundation, 2012). Accordingly, we test the robustness of our core results to the reclassification of states below. However, it is important to note that these early expansions were often pilot programs covering relatively small numbers of people and were partly transitions of existing programs funded by subnational governments (Kaiser Family Foundation, 2012). Moreover, even for these states, the clear discontinuity in Medicaid enrollment is in January 2014, when estimated enrollment increased from 3.7% to 10.0%. For that reason, our primary measures code these states as expanding in January 2014.

Appendix C: Robustness of Core Results

The manuscript's core estimate of the relationship between living in an expansion state post-expansion and ACA favorability proves robust to a variety of alternative specifications. For example, the effect grows slightly, to 0.121 (SE=0.034), when removing the measures of self-reported partisanship, which could potentially be endogenous. The estimate becomes 0.083 (SE=0.028, p=0.003) when including respondents making less than $50,000 as "low-income." When we reclassify early adoption states by the date of their earlier expansion, the core estimate is 0.110 (SE=0.034, p=0.001). Including all respondents, including the wealthy and those over 65, produces a coefficient of 0.068 (SE=0.027).

When we fit a propensity score model predicting residence in an expansion state and then weight control observations by their relative probability of being in an

expansion state, the estimate is 0.108 with a standard error of 0.032 (p=0.0007). This procedure should reduce the threat that the results are driven by demographic differences across states.

When we use standard errors clustered at the state level, the standard error associated with the key interaction *drops* slightly, to 0.030. This indicates a negative within-cluster correlation conditional on covariates, and makes our preferred specification without clustered standard errors a conservative choice.

In a placebo test, we used the 19 states which did not expand Medicaid to estimate a series of 10,000 placebo tests in which half of the states are randomly designated as "expansion" states. The estimates recovered are lower than our benchmark estimate in 98.7% of simulations, providing added confidence that our result is not the product of chance alone.

Appendix D: Effects by Racial/Ethnic Background and Partisanship

To be sure, Americans' views on the ACA are strongly correlated with partisan and demographic factors (Knowles, Lowery and Schaumberg, 2010; Tesler, 2012; Kriner and Reeves, 2014)—and have proven quite stable in the years since the ACA's passage in 2010. Even prior to the ACA's implementation, Americans on Medicaid were more favorable toward the ACA than others, rating it a 2.66 on a scale from 1 (very unfavorable) to 4 (very favorable) in the period before January 1st, 2014 as compared to the 2.31 rating given in the same period by people not on Medicaid. What's more, citizens are likely to interpret new information and experiences in light of their prior beliefs (Lodge and Taber, 2013), making it important to consider the results separately by factors known to be correlated with their attitudes, such as respondents' racial and ethnic backgrounds and their partisan identification. To do so, we estimate our models separately for respondents who identify with various demographic and political groups, and report the results in Table 2.

Here, we fit similar models of the effect of living in Medicaid expansion states on attitudes toward the ACA for five sub-groups of Americans reporting less than $40,000 in income: non-Hispanic whites, people who identify with other groups (e.g. Blacks, Latinos, Asian Americans, and people who identify as "Other"), Republicans, Independents, and Democrats. Given the sample sizes, we pool non-whites into a single group, while also conditioning on respondents who identify with various sub-groups. For all groups, there are positive coefficients of varying magnitudes, from 0.077 (SE=0.005) for Independents and 0.103 (SE=0.033) for non-whites to 0.119 (SE=0.043) for whites, 0.122 (SE=0.069) for Republicans, and 0.163 (SE=0.05) for Democrats. While research on motivated reasoning suggests that Democrats would respond more positively to the Medicaid expansion (e.g. Lodge and Taber, 2013), a one-sided test cannot exclude the possibility that the effect for Republicans are larger than for Democrats (p=0.32).

Table 2: This table reports the key interaction for five sub-groups, defined in terms of ethnic/racial or partisan self-identification.

	White	Non-White	GOP	Ind.	Dems
Intercept	2.451*	3.133*	2.423*	2.538*	2.081*
	(0.145)	(0.111)	(0.235)	(0.183)	(0.162)
Male	−0.014	−0.001	0.030	−0.056*	0.043
	(0.021)	(0.016)	(0.034)	(0.025)	(0.024)
Republican	−1.289*	−1.119*			
	(0.028)	(0.023)			
Independent	−0.816*	−0.602*			
	(0.025)	(0.018)			
Age (in years)	−0.005*	−0.004*	−0.006*	−0.005*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education (in years)	0.041*	−0.006	−0.037*	−0.007	0.058*
	(0.005)	(0.003)	(0.008)	(0.005)	(0.005)
Income	−0.505*	−0.469*	−0.812*	−0.855*	0.260
	(0.196)	(0.155)	(0.330)	(0.241)	(0.232)
Black		0.341*	0.987*	0.560*	0.173*
		(0.022)	(0.074)	(0.040)	(0.028)
Asian American		0.255*	0.873*	0.477*	−0.100
		(0.057)	(0.153)	(0.082)	(0.089)
Other Ethnic/Racial Id.		0.241*	0.207*	0.066	−0.036
		(0.038)	(0.084)	(0.046)	(0.046)
Hispanic			0.473*	0.484*	0.229*
			(0.051)	(0.034)	(0.031)
Expansion State	0.127	−0.015	0.148	0.171	−0.393*
	(0.115)	(0.101)	(0.194)	(0.168)	(0.154)
Post-Expansion	−0.056	−0.126	0.060	−0.074	−0.311*
	(0.085)	(0.071)	(0.133)	(0.116)	(0.107)
Expansion State x	0.119*	0.103*	0.122	0.077	0.163*
Post-Expansion	(0.043)	(0.033)	(0.069)	(0.051)	(0.050)

*$p < 0.05$

Appendix E: Estimation Using Instrumental Variables

We also use our instrumental variables estimation strategy to estimate an upper bound on the effect of actually receiving Medicaid. Specifically, we adopt an instrumental variables approach (Angrist, Imbens and Rubin, 1996). That is, we use the exogenous variation in Medicaid receipt induced by the expansion to estimate the Local Average Treatment Effect of receiving Medicaid on ACA favorability. Critically, these analyses assume that conditional on the covariates, living in an expansion state after the expansion shapes ACA attitudes only through the receipt of Medicaid. Put differently, we assume the absence of indirect effects, such as those acting through medical professionals or recipients' friends and neighbors. We fit a two-stage least squares model in which the excluded, instrumental variable is residence in a Medicaid-expanding state after the expansion took place. This instrument is quite strong, as the F-test corresponding to its inclusion is 67 ($p < 0.00001$). The model includes all of the covariates employed above, and is fit only to respondents making less than $40,000 per year.

This approach relies on the assumption that the only impact of living in an expansion state post-expansion is via receiving Medicaid. As such, it should produce an upper bound on the effect of actually receiving Medicaid. Nonetheless, the results reinforce the conclusions for the sub-groups of interest above. There are relatively few low-income Republicans in our surveys, and for that sub-group, the instrument is not sufficiently strongly related to Medicaid receipt (F-test= 5.8). But for the other sub-groups, we report the first-stage F- tests and second-stage models in Table 3 below. The results confirm the patterns identified above, with sizeable upper-bound effects for non-Hispanic whites (1.139, SE=0.43, p=0.) and Democrats (1.029, SE=0.36) but more uncertain effects for people of color (0.60, SE=0.38) or Independents (0.59,SE=0.46).

Table 3: This table presents the second-stage results from instrumental variables estimators fit via two-stage least squares to relevant subsets of the data.

	All	White	Non-White	Independents	Democrats
Intercept	2.488*	1.977*	3.318*	2.307*	1.825*
	(0.139)	(0.224)	(0.174)	(0.248)	(0.187)
Receive Medicaid	0.841*	1.139*	0.598	0.591	1.029*
	(0.277)	(0.426)	(0.377)	(0.460)	(0.364)
Male	0.041	0.042	0.073*	−0.023	0.103*
	(0.022)	(0.030)	(0.033)	(0.036)	(0.033)
Republican	−1.045*	−1.250*	−0.538*		
	(0.025)	(0.033)	(0.046)		
Independent	−0.556*	−0.794*	−0.250*		
	(0.020)	(0.027)	(0.030)		
Age (in years)	−0.002*	−0.005*	0.003*	−0.004*	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Asian American	0.321*		−0.113	0.474*	−0.100
	(0.058)		(0.060)	(0.082)	(0.095)
Black	0.350*		−0.060	0.526*	0.134*
	(0.026)		(0.040)	(0.049)	(0.033)
Other Ethnic/Racial Id.	0.030		−0.085*	0.054	−0.040
	(0.032)		(0.040)	(0.047)	(0.049)
Hispanic	0.423*			0.521*	0.252*
	(0.024)			(0.045)	(0.034)
Education (in years)	0.017*	0.053*	−0.014*	−0.003	0.063*
	(0.004)	(0.007)	(0.005)	(0.006)	(0.006)
Income	0.485	0.866	0.419	−0.271	1.740*
	(0.354)	(0.550)	(0.459)	(0.511)	(0.579)
R^2	0.186	0.169	0.038	0.108	-0.047
Num. obs.	16934	9598	6838	7131	6762

*$p < 0.05$

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