Effects of ACA Medicaid Expansions on Health Insurance Coverage and Labor Supply

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Abstract

We examined the effect of the expansion of Medicaid eligibility under the Affordable Care Act on health insurance coverage and labor supply of low-educated and low-income adults. We found that the Medicaid expansions were associated with large increases in Medicaid coverage, for example, 50 percent among childless adults, and corresponding decreases in the proportion uninsured. There was relatively little change in private insurance coverage, although the expansions tended to decrease such coverage slightly. In terms of labor supply, estimates indicated that the Medicaid expansions had little effect on work effort despite the substantial changes in health insurance coverage. Most estimates suggested that the expansions increased work effort, although not significantly.

INTRODUCTION

One of the key features of the Affordable Care Act (ACA) was the expansion of Medicaid to adults with incomes below 138 percent of the Federal Poverty Level (FPL). Low-income adults were largely ineligible for Medicaid prior to the ACA and this group also had a relatively low rate of health insurance coverage. Therefore, expanding Medicaid to this group was viewed as an important way to reduce the number of uninsured persons, which was one of the central goals of the ACA.

While the Medicaid expansions were clearly targeted at expanding health insurance coverage, the income-based eligibility criterion of the expansion may have unintended effects on work effort. There are several reasons why the Medicaid expansions may affect work.[1] First, some people may reduce work effort to lower their income and gain Medicaid eligibility. Second, some people may reduce work effort because Medicaid coverage virtually eliminates out-of-pocket medical expenditures and health insurance premium contributions, and allows a person to work less to generate the same amount of consumption (income effect). Third, some people may increase work effort because they can work and earn more than before the Medicaid expansion and remain eligible for Medicaid due to the higher Medicaid income

[1] A report by the Congressional Budget Office (2014) describes the intuition underlying the causal links between Medicaid and labor supply, and earlier studies by Blank (1989), Matsudaira and Blank (2014), and Yelowitz (1995) present simple models that generate similar hypotheses. Also, see Bitler and Karoly (2015), Moffitt (2015), and, particularly, Mulligan (2013, 2015) for a description of the ACA labor supply incentives and potential behavioral responses.

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eligibility threshold.[2] Finally, the Medicaid expansions may have some, albeit small, positive effect on aggregate economic activity that could increase employment.

The Congressional Budget Office (2014) estimated that the ACA would reduce total hours worked by 1.7 percent, or 2 million fewer full-time equivalent workers. Of this decline in employment, the CBO (2014) estimated that the Medicaid expansions of the ACA would be responsible for a small part of the negative effect on employment.[3] To reach their conclusion about the possible effects of Medicaid, the CBO (2014) relied on a synthesis of the evidence from a few recent case studies of the effect of the Medicaid expansions on labor supply. Perhaps the most important of these studies was Baicker et al. (2013), which examined the effect of expanding Medicaid to childless adults in Oregon in 2008. The findings from this study are particularly compelling because of the high degree of internal validity resulting from the experimental design that was used. Baicker et al. (2013) reported that gaining Medicaid coverage was associated with a small—1.6 percentage points (3 percent)—and statistically insignificant decrease in employment and earnings. Another study reviewed by CBO (2014) was Dague, DeLeire, and Leininger (2014), which examined an expansion of Medicaid to childless adults in Wisconsin in 2009. A quasi-experimental research design (i.e., regression discontinuity) exploited the capping of enrollment that left eligible people unable to enroll in Medicaid after a certain date. Results from the study indicated that Medicaid enrollment was associated with a 2 to 18 percent decrease in employment. A third study included in the CBO (2014) review was by Garthwaite, Gross, and Notowidigdo (2014). This study examined the rollback of Medicaid eligibility in Tennessee in 2005. For this analysis, a difference-in-differences (DiD) research design was used with Tennessee as the treated state and other Southern states the control states. Results of the analysis were mixed. Among low-educated, childless adults, the change in Medicaid policy was associated with a 25 percent increase in employment, but there was no effect for other educational groups.[4]

Besides these notable pre-ACA studies, there are several studies of the effect of the ACA Medicaid expansions on health insurance and labor supply that were produced since the CBO (2014) report.[5] Several studies have examined the effect of Medicaid expansions on health insurance. Courtemanche et al. (2017) used data from the American Community Survey (ACS) through 2014 and quasi-experimental methods (e.g., DiD, synthetic controls, and triple difference approaches) and found that the ACA Medicaid expansions significantly increased Medicaid coverage and reduced the proportion of uninsured. Wherry and Miller (2016) reported similar results using the National Health Interview Survey data through 2014. Interestingly, Wherry

[2] Another possibility is that some people will switch jobs from one that provides employer-provided insurance and a relatively low wage to one that does not provide employer-provided insurance and a relatively higher wage, but that still allows for Medicaid coverage. The higher wage of the new job would have substitution and income effects that could change work effort.

[3] Also, see Harris and Mok (2015).

[4] Estimates in Garthwaite, Gross, and Notowidigdo (2014) are intention-to-treat estimates and are not directly comparable to estimates from the Oregon and Wisconsin studies. Garthwaite, Gross, and Notowidigdo (2014) estimated that between 63 and 90 out of every 100 childless adults that lost public health insurance coverage found employment. This is a very large implied effect of Medicaid that differs dramatically from estimates in the Oregon and Wisconsin studies. Estimates in Garthwaite, Gross, and Notowidigdo (2014) also suggest employment responses to changes in income (the value of Medicaid) that are 20 to 60 times the size of estimates found in most prior studies (see McClelland & Mok (2012)).

[5] There is also a larger literature on the labor effects of the ACA as a whole—not specific to Medicaid expansions. Levy, Buchmueller, and Nikpay (2015) examine the impact of the ACA provisions on part-time work and retirement among 55 to 64 year olds. Moriya, Seldon, and Simon (2016) examine the impact of the ACA employer mandate on part-time work status. See Garrett and Kaestner (2014, 2015) for a review of this literature.

and Miller (2016) rejected the parallel trend assumption of DiD for some outcomes, but not insurance. This suggests that studies relying solely on a DiD approach to address the effects of the ACA Medicaid expansions may be problematic. Note that although both studies used the 138 percent of the FPL threshold to define their low-income samples, these studies reported slightly different estimates—Wherry and Miller (2016) estimated that Medicaid expansions reduced uninsured rates among low-income persons by 7 percentage points while Courtemanche et al. (2017) reported an estimate of 5.5 percentage points. Frean, Gruber, and Sommers (2016) employed a triple-difference approach that exploited geographic variation in exposure to the ACA. The authors used ACS data from 2012 to 2015. The authors estimated that 60 percent of the increase in insurance associated with the ACA resulted from the Medicaid expansions and half of those who gained Medicaid coverage were previously eligible.

Simon, Soni, and Cawley (2017) used data through 2014 from the Behavioral Risk Factors Surveillance System to measure the impact of the 2014 Medicaid expansions on health insurance, the use of preventive care services, and health behaviors. The article reported that the ACA Medicaid expansions were associated with a 5.4 percentage point decline in rate of uninsured among those with incomes under 100 percent of the FPL.[6] Finally, Leung and Mas (2016) used data from the ACS from 2010 to 2014 and a DiD design to estimate the effect of the Medicaid expansions on health insurance coverage. They reported that the Medicaid expansions were associated with approximately a 2 to 3 percentage points decrease in uninsured among childless adults.

We contribute to this literature on the impacts of the Medicaid expansions on health insurance by using data from both the ACS (through 2014) and the March Current Population Surveys (CPSs, through 2015) and by examining several different demographic groups and combinations of states. In addition, we do not select the sample primarily on income, as most studies have done, which among low-income adults is highly volatile, measured with error, and potentially endogenous.

Several recent studies have also examined the impact of the ACA Medicaid expansions on labor supply. Gooptu et al. (2016) used a sample of low-income (less than 138 percent FPL) adults drawn from the monthly CPSs between January 2005 and March 2015 to examine the effect of Medicaid expansions on three outcomes: transitions from employed to unemployed, transitions from full-time to part-time employment, and job switches (employed in one job to employed in different jobs). Notably, they did not study employment or hours of work. A DiD research design was used. The authors reported that the ACA Medicaid expansions had no significant effect on these outcomes.[7] Leung and Mas (2016), which is the study closest to ours, assessed the effect of the ACA Medicaid expansions on employment, hours of work, and wages. As noted, the research design for the analysis in this study was

[6] Notably, Simon, Soni, and Cawley (2017) provided evidence that selecting the sample by using a noisy measure of income is potentially problematic. Estimates of the effect of Medicaid expansions differed when the threshold to select the sample is changed from 100 to 200 percent of the FPL (5.4 vs. 3.8 percentage points, respectively). This is indicative of several potential problems: endogenous income and measurement error are two obvious examples.

[7] Note that Gooptu et al. (2016) do not exhaust the possible employment transitions because they do not examine unemployed to employed or part-time to full-time. In addition, the study selected the sample based on the income in the previous (baseline) year, which may be a noisy measure of potential income in the following year. Finally, a substantial part of the eligible sample (25 percent) could not be matched across CPS surveys.

DiD. Leung and Mas (2016) reported that the ACA Medicaid expansions had no significant effect on employment, hours of work, or wages.[8]

As this brief review of the literature has revealed, previous studies of the effect of Medicaid on labor supply have not produced a consensus conclusion. Some state-specific analyses, such as Dague, DeLeire, and Leininger (2014), found that Medicaid coverage decreased labor supply, but others, for example, Baicker et al. (2013), found no effect. Two recent studies of the effect of the ACA Medicaid expansions reported no adverse effects of the expansions on work effort (Gooptu et al., 2016; Leung & Mas, 2016).[9] Further study of the issue is important because of the relevance of this issue for both economic theory and public policy. Economic theory predicts that social programs with income-based eligibility will bring forth behavioral responses with respect to work effort. Therefore, measuring the existence and magnitude of a behavioral labor supply response to the large and recent expansions of Medicaid will provide empirical evidence to assess a fundamental theoretical tenet. Moreover, two of the recent case studies of the effect of Medicaid on labor supply (OR and WI studies) were conducted using a sample of persons always eligible for Medicaid and, therefore, do not allow for one potentially important labor supply response—"jumping on" Medicaid by lowering income to gain eligibility (Mulligan, 2013). For public policy, knowing whether there are unintended consequences related to work effort associated with Medicaid is an important component of a cost–benefit analysis of the effectiveness of Medicaid. If there are large changes in work effort associated with Medicaid, for example, declines in work along the lines suggested by the Garthwaite, Gross, and Notowidigdo (2014) study, then the net social benefit of the Medicaid expansions would be substantially lower than otherwise believed.

In sum, the absence of a consensus from the prior literature related to whether Medicaid affects labor supply and the importance of the issue for theory and policy warrants additional study. In this paper, we examine the effect of the ACA Medicaid expansions on health insurance coverage and labor supply. We exploit the state variation in expansions to assess the effect of Medicaid on insurance coverage and labor supply. We use two research designs: DiD and synthetic control. Data for the analyses are drawn from the ACS from 2010 to 2014, the March CPS from 2010 to 2015, and monthly CPS data from January 2010 to May 2016.

We study both health insurance coverage and labor supply because insurance coverage is itself an important outcome of interest, and because changes in labor supply will be partly reflected by changes in insurance coverage. For example, if people reduce labor supply to become eligible for Medicaid, then we should observe a decrease in employment, an increase in Medicaid coverage, a reduction in uninsured, and possibly a reduction in private insurance if the person replaced

[8] Our study differs from Leung and Mas (2016) in several ways. Perhaps the most important is that Leung and Mas (2016) selected all childless adults, which resulted in a large fraction of their sample being unaffected by the Medicaid expansions. This explains why their estimates of the effect of Medicaid expansions on uninsured are low—approximately 2 to 3 percentage points, which are noticeably lower than other estimates reported in the literature. It also bears on the issue of internal validity because lower income persons (low-educated) may have different time trends and state effects that are constrained to be the same by Leung and Mas (2016). We use both childless adults and parents, and select the sample based on demographic characteristics linked to income to focus on those likely affected by the Medicaid expansions. Second, we use data that extend to May 2016, which provide nearly a year more of post-ACA information. Finally, while Leung and Mas (2016) conducted an event history assessment of the parallel trend assumption for the main sample, they did not do so for any of the subsamples. This is potentially problematic because, as we report below, for some subsamples, the parallel trends assumption is difficult to maintain.

[9] There is also a literature that examined the effect of Medicaid expansions for pregnant women and children in the late 1980s and 1990s: Yelowitz (1995); Montgomery and Navin (2000); Ham and Shore-Sheppard (2005); Meyer and Rosenbaum (2001); and Dave et al. (2015). These studies also reported mixed results.

their private insurance with Medicaid. Thus, the size of the increase in Medicaid coverage has implications for the magnitude of the potential labor supply response. Similarly, low-income, working persons may gain Medicaid coverage because of the expanded income eligibility. For this group, the extra income associated with Medicaid may cause them to work less. Therefore, changes in insurance coverage, particularly Medicaid, provide some evidence of the extent of treatment and the size of the group that may change labor supply in response to the Medicaid expansion, although the association is not necessarily one-for-one.

Results of our study indicate that among low-educated and low-income adults, the ACA Medicaid expansions significantly increased Medicaid coverage by between 23 and 54 percent for parents, and by between 51 and 70 percent for childless adults. Notably, these increases in Medicaid coverage were associated with significant decreases in the proportion uninsured with relatively little change in private health insurance coverage, although for some groups, such as unmarried parents living in states with prior Medicaid expansions, there was substantial switching from private insurance to Medicaid with less significant decreases in the proportion uninsured. These substantial changes in insurance coverage were associated with few significant changes in labor supply. Estimates of the effect of Medicaid on labor supply were, in general, small and not statistically significant, and most were positive. Overall, there was very little evidence that the Medicaid expansions decreased work effort.

ACA MEDICAID EXPANSIONS

A decision by the Supreme Court (National Federation of Independent Business et al. vs. Sebelius, Secretary of Health and Human Services, 2012) allowed states to opt out of the ACA Medicaid expansions and resulted in approximately half of the states not expanding Medicaid in 2014 (see Table 1). Moreover, among those that did expand, several states had already expanded Medicaid to adults. Therefore, these states may not have experienced any real change in Medicaid eligibility for some groups, such as parents. Finally, several states expanded Medicaid in 2015 or later. In short, classifying states as to whether they did or did not experience an effective change in policy is not as simple as assessing whether they expanded Medicaid in 2014 as part of the ACA.

To classify states into those experiencing a change in Medicaid policy ("treated") and those not experiencing a change in Medicaid policy ("control"), we reviewed several sources of information.[10] Table 1 provides a list of states and how we classified them into treated and control groups as of 2014. For analyses that use data from 2015 and 2016, we made appropriate modifications that we identify below. As of 2014, states included in the control group are:

- States that did not expand Medicaid in 2014 and that had no prior Medicaid expansion between 2010 and 2014: AL, AK, FL, GA, ID, KS, LA, MS, MO, MT, NE, NC, OK, PA, SC, SD, TX, UT, VA, WY (20).
- States that did not expand Medicaid in 2014 and that had prior, but limited, Medicaid expansions between 2010 and 2014: IN, ME, TN, WI (4).
- States that expanded Medicaid in 2014, but that had prior and comprehensive Medicaid expansion similar to ACA for both parents and childless adults between 2010 and 2014: DE, DC, MA, NY, VT (5).

[10] Medicaid eligibility rules were determined using Kaiser Family Foundation's Annual 50 State Survey of Eligibility Rules, Enrollment and Renewal Procedures, and Cost-Sharing Practices in Medicaid and CHIP (2009 through 2015), Medicaid.gov demonstrations and waivers database (http://www.medicaid.gov/medicaid-chip-program-information/by-topics/waivers/waivers_faceted.html), Kaiser Family Foundation's state-specific fact sheets, healthinsurance.org Medicaid state-specific fact sheets, and individual state Medicaid Websites.

Table 1. Classification of states into treatment and control groups.

Control Groups			
		No expansion in 2014	Expansion in 2014
No expansion in 2014 No prior expansion		Prior limited expansions for parents and/or childless adults	Prior full expansions for parents and childless adults
Alabama	Nebraska	Indiana	Delaware
Alaska	North Carolina	Maine	Washington, DC
Florida	Oklahoma	Tennessee	Massachusetts
Georgia	Pennsylvania	Wisconsin	New York
Idaho	South Carolina		Vermont
Kansas	South Dakota		
Louisiana	Texas		
Mississippi	Utah		
Missouri	Virginia		
Montana	Wyoming		

Treatment Groups		
		Expansion 2014
Expansion 2014 No prior expansion		Prior expansions for parents and/or childless adults
Arkansas		Arizona
Kentucky		California
Michigan		Connecticut
Nevada		Colorado
New Hampshire		Hawaii
New Mexico		Illinois
North Dakota		Iowa
Ohio		Maryland
West Virginia		Minnesota
		New Jersey
		Oregon
		Rhode Island
		Washington

The control group consists of 29 states. Note that we include IN, ME, TN, and WI as control states even though they had some prior Medicaid expansions between 2010 and 2014. However, the prior Medicaid expansions in these states were limited (e.g., capped or closed enrollment). We also include states that had expanded Medicaid comprehensively prior to the ACA to both parents and childless adults (DE, DC, MA, NY, VT), which is the equivalent of the ACA expansion. To assess whether including states with prior expansions, either comprehensive as in MA or limited as in IN, made a difference, we re-estimated all models excluding these states from the analysis and we report the results below. We note here that dropping these states had little effect on estimates. As noted, four states expanded Medicaid in 2015 or

2016: PA (1/15), IN (2/15), AK (9/15), and MT (1/16). Analyses that use 2015 and 2016 data drop these states from the analysis.[11]

As of 2014, the treated states are the following:

- States that expanded Medicaid in 2014 and that had no prior Medicaid expansion: AK, KY, MI, NH, NV, NM, ND, OH, WV (9).
- States that expanded Medicaid in 2014 and that had a prior, but limited, Medicaid expansion for parents and/or childless adults: AZ, CA, CO, CT, HI, IA, IL, MD, MN, NJ, OR, RI, WA (13).

We note that Michigan expanded Medicaid in April of 2014 and New Hampshire expanded Medicaid in August of 2014. We include both in the treated group because Michigan expanded for most of the year and New Hampshire is a small state and the partial year expansion is unlikely to make a difference to estimates. Re-estimating models without these two states included in the treatment group had no material effect on estimates. Finally, as already mentioned, states that expanded after 2014 (IN, PA, AK, and MT) are excluded from the analysis when data post-2014 is used.

The fact that some states had prior expansions motivated us to divide the treated states into two groups depending on whether they had a previous expansion as we might expect differential effects between these two groups. The first group of states in the treated category had no prior expansion. The second group of states in the treated category consists of states with a full parental expansion of Medicaid and states with limited expansions for parents and/or childless adults prior to the 2014 ACA Medicaid expansions. On the one hand, it is reasonable to expect that the effect of the 2014 ACA expansions of Medicaid will be smaller in states with previous expansions of Medicaid, although many of these expansions were limited to parents. On the other hand, if take-up of Medicaid among eligible persons was relatively low, the individual mandate that required all people to have health insurance and the public outreach (i.e., marketplaces) that became effective in 2014 may cause those always eligible for Medicaid to obtain it, which would suggest smaller differences between the two groups of states that expanded Medicaid in 2014. Empirically, we test whether the effect of Medicaid differed in the two groups of treated states.[12]

EMPIRICAL APPROACH

Data

The data used in the analysis come from three sources: the ACS from 2010 to 2014, the March CPS from 2010 to 2015, and monthly files of the CPS from January 2010 to May 2016. From each of these datasets, we selected a sample of non-disabled adults between the ages of 22 and 64 who have a high school education or less. We limit the sample to relatively low-educated adults because Medicaid is targeted at low-income persons and education is strongly related to income.

[11] We dropped these states because we wanted to use a common definition of treatment across the two research designs. The synthetic control method requires a common pre- and postperiod, so these late expanders are dropped because we used 2014 as the beginning of the postperiod. To be consistent, we also dropped these states from the difference-in-differences analysis.

[12] We also explored whether to divide the second group of treated states into a finer classification based on the type of previous expansion, but tests indicated that these two categories were the only empirically relevant groupings. Specifically, we divided the second group of treated states into those with and without a full Medicaid expansion to parents. We could not reject the hypothesis that these two groups had similar effects on outcomes.

We conduct analyses using all persons with a high school education or less and analyses stratified by marital status (married, not married), whether there is a child in the family and age.[13] We stratify the sample by marital status because it is associated with income; unmarried persons have lower incomes and may be more likely to be affected by the Medicaid expansions than married persons.[14] We also conducted analyses for samples divided by whether or not there are children under the age of 18 in the household. Most prior Medicaid expansions were targeted toward low-income parents, so this group may be less affected by the ACA Medicaid expansions, and there may be differences in the effect of Medicaid by whether children are present because of differences in household income and preferences. Stratification by age is motivated by the same considerations with respect to income and, also, because age is correlated with health, which is an important determinant of health insurance coverage.

Data on earnings from the 2013 ACS show that the low-educated sample we selected is quite disadvantaged. For example, unmarried parents in our sample have mean earnings of approximately $17,000 and unmarried, childless adults have mean earnings of approximately $18,000. However, to link our research with some previous research, we also select a sample of persons with incomes less than 300 percent of the FPL, although we recognize that selecting a sample using income is problematic because Medicaid may affect labor supply and income, which introduces possible endogenous selection. We chose the 300 percent threshold because we wanted to limit the selection bias associated with selecting the sample using income while simultaneously selecting a group that was likely affected by the Medicaid expansions.[15] Descriptive information in Table 2 reveals that the low-educated and low-income samples are quite similar with respect to health insurance coverage and labor supply.

The ACS collects information on approximately 3 million people each year representing over 92 percent of the U.S. population. The survey is conducted monthly throughout the year and combined into an annual file. The ACS collects information on health insurance coverage at the time of interview, employment at the time of interview, usual hours of work in last year (one year prior to survey), and demographic characteristics. Because the ACS is conducted monthly, we focus on the health insurance and current employment variables. Information on usual hours of work, which refers to the past year, will span the pre-expansion period in 2014, so we do not use this outcome.

The March CPS collects similar information to the ACS including health insurance. The survey is of the civilian, non-institutional population of the United States. We use the March CPS only for its information on health insurance because it is available for March 2015, whereas the ACS data are through 2014 and, as noted, the ACS is conducted continuously throughout the year. One disadvantage of the March CPS is that there was a change in the health insurance question in 2014 (Pascale, Boudreaux, & King, 2016; Turner & Boudreaux, 2014). The redesigned survey was intended to address the problem related to the recall period (current vs. past year) that affected past CPS surveys.

[13] Further stratification by marital status and education was not empirically meaningful—we could not reject the equality of estimates by education group within marital status category.

[14] Yelowitz (1995) found that the series of Medicaid expansion mandates that separated the Medicaid program from the Aid to Families with Dependent Children program led to a large increase in labor force participation among women who were ever married and no impact on women who were never married. These striking differences along marital status in this seminal study further motivate our choice to stratify by marital status.

[15] We cannot use a sample of low-income persons when we use data from the monthly CPS files because income is not reported accurately.

The monthly CPS files are similar to the March CPS files except they do not collect information on many social and economic indicators. However, the labor supply variables are available and refer to the survey week. Therefore, we can use the hours of work information in the monthly CPS files. In addition, the monthly CPS data are available through May 2016.

To summarize, the dependent variables and data sources for our analyses are the following:

- Health Insurance: Medicaid, private insurance, and uninsured. The information on health insurance is from the ACS and March CPS.[16] The ACS and CPS allow people to report more than one health insurance category and approximately 2 to 3 percent report having Medicaid and another type of insurance.
- Labor Supply: employed at time of interview, usual hours worked per week, and worked 30 or more hours per week (full time). The employed at time of interview information is from the ACS and monthly CPS. The usual hours per week and part-time status are from the monthly CPS.

The key independent variables for the analysis are the treatment group indicators listed in the previous section and Table 1. We estimate regression models using alternate definitions of Medicaid expansion states: one model defines treatment states as all those that expanded in 2014 regardless of whether they had a prior expansion, and the second model separates treatment states into two depending whether they had a prior expansion. For the second model, we test whether the coefficients on the treatment states indicators differ. Other independent variables included in the regression include dummy variables for age; dummy variables for race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic other, and Hispanic); dummy variables for marital status (married, never married, and other); dummy variables for education (high school degree and less than high school degree); dummy variables for number of children (0, 1, 2, and 3 or more); and dummy variables for family size (1, 2, 3, 4, and 5 or more).

Descriptive statistics (unweighted) of the variables used in the analysis are presented in Table 2. These statistics are based on data from 2010, the baseline period. The left panel presents means for the samples selected using education. In general, the low-educated samples drawn from the ACS and CPS are quite similar. Approximately one-third are uninsured; 55 to 60 percent are covered by private insurance; 11 percent are covered by Medicaid; two-thirds are employed at the time of interview; and approximately 60 percent work full-time (more than 30 hours per week). The right panel of Table 2 presents means for the samples selected using income. Here too the ACS and CPS samples are very similar, and notably, not too different from the low-educated samples, which confirms that selecting the sample using education is an effective way to identify a group likely affected by the Medicaid expansions. The low-income samples are slightly more likely to be uninsured (e.g., 36 percent) and slightly less likely to work (full-time) than the low-educated samples. However, the differences are not substantial. The low-educated sample drawn from the March CPS is slightly younger, less likely to be white, and more likely to have a child under age 18 in the household than the ACS sample, although none of the differences are that marked.

[16] We do not divide private health insurance into employer-sponsored and non-group because of well-known problems of data quality that make the distinction between types of private insurance particularly problematic (Call et al., 2012; Claxton et al., 2013; Pascale, 2014). Our focus is also on labor supply and changes in Medicaid and uninsured are the most relevant outcomes related to labor supply. However, estimates for models that divide the privately insured into those with and without employer-sponsored insurance are available from the authors.

Table 2. Descriptive statistics for 2010 from American Community Survey and Current Population Surveys.

	Low-educated sample (HS or less)			Low-income sample (<300% FPL)	
	ACS	Monthly CPS	March CPS	ACS	March CPS
Medicaid	0.11	N/A	0.11	0.14	0.13
Uninsured	0.30	N/A	0.32	0.34	0.36
Private Insured	0.60	N/A	0.56	0.52	0.49
Non-group private insurance	0.08	N/A	0.05	0.10	0.08
Employer-sponsored insurance	0.52	N/A	0.51	0.43	0.42
Employed at time of survey	0.69	0.67	0.69	0.65	0.64
Usual hours worked per week	27.3 (20.5)	26.3 (20.6)	27.3 (20.2)	24.3 (20.3)	24.3 (20.3)
Full-time	0.61	0.60	0.62	0.54	0.55
Age	43.9 (12.0)	43.2 (12.02)	41.8 (11.6)	40.7 (12.2)	39.3 (11.5)
Male	0.52	0.51	0.51	0.46	0.45
Non-Hispanic white	0.62	0.62	0.52	0.59	0.51
Non-Hispanic black	0.11	0.12	0.12	0.13	0.14
Hispanic	0.21	0.21	0.27	0.21	0.26
Other race	0.06	0.06	0.07	0.08	0.08
Married	0.60	0.58	0.60	0.49	0.51
Divorced or separated	0.16	0.15	0.14	0.19	0.17
Never married	0.22	0.24	0.23	0.30	0.30
Widowed	0.02	0.02	0.02	0.02	0.21
Foreign born	0.22	0.20	0.26	0.26	0.26
U.S. citizenship	0.86	0.86	0.82	0.86	0.82
High school educated	0.73	0.76	0.73	0.33	0.36
Has children under age 18	0.35	0.37	0.46	0.43	0.53
Number of children	0.92 (1.22)	0.71 (1.12)	0.90 (1.20)	1.08 (1.33)	1.11 (1.31)
Family size	3.09 (1.80)	3.32 (1.75)	3.14 (1.70)	3.07 (1.92)	3.15 (1.82)
Observations	529,509	321,171	39,386	601,629	42,884

Notes: Data from 2010 American Community Survey, Current Population Survey March Supplement, and Current Population Survey monthly files. Sample in columns 1 through 3 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample in columns 4 and 5 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Standard deviations for continuous variables presented in parentheses.

DiD Research Design

The ACA Medicaid expansions provide plausibly exogenous state by year variation in Medicaid eligibility that can be used to obtain estimates of the effect of Medicaid eligibility on health insurance coverage and labor supply. However, states chose whether to expand or not and, therefore, the exogeneity of the expansions needs to be assessed. Accordingly, we use a DiD research design to obtain estimates of the effect of the expansions on health insurance and labor supply. The DiD design is

a straightforward approach that is intended to mimic the pre- and post-test with comparison group design of a true experiment.

We have already described the classification of states into treatment and control groups. Given this classification, DiD estimates can be obtained using the following regression model:

$$HEALTHINS_{ijt} = \alpha_0 + \beta_j + \delta_t + \lambda(TREAT_j{}^*Y2014_t) + X_{ijt}\Gamma + e_{ijt} \quad (1)$$

Equation (1) indicates that the health insurance coverage, for example, Medicaid, of person "*i*" in state "*j*" and year "*t*" depends on state fixed effects (β_j), year fixed effects (δ_t), an interaction of an indicator of whether the state is in the treated group and an indicator that the year is 2014 ($TREAT_j{}^*Y2014_t$), and demographic characteristics (X_{ijt}) such as age that were previously described. In equation (1), the dependent variable is health insurance, but analogous models will be estimated using labor supply measures. In addition, for data that extend to 2015 or 2016, the interaction between the treated indicator and post-expansion period will include the additional years.

We also estimate a version of equation (1) that allows there to be two treatment groups: states that expanded Medicaid in 2014 and had no prior expansions, and states that expanded Medicaid in 2014 but had some form of prior expansion. The model that allows for effects to differ by treatment group type is:

$$\begin{aligned} HEALTHINS_{ijt} = \alpha_0 + \beta_j + \delta_t + \lambda_1(TREAT\_NOPRIOR_j{}^*Y2014_t) \\ + \lambda_2(TREAT\_PRIOR_j{}^*Y2014_t) + X_{ijt}\Gamma + e_{ijt} \end{aligned} \quad (2)$$

In equation (2), there are two treatment indicators and two coefficients measuring the effect of Medicaid expansions in the different types of treatment states. We test whether $\lambda_1 = \lambda_2$ to assess whether the prior expansion of Medicaid resulted in different effects of the 2014 expansion.

The key assumption underlying the validity of the DiD approach is the parallel trends assumption—that in the absence of the ACA Medicaid expansions changes in health insurance and labor supply would be the same in treated and control states. To assess the likely validity of this assumption, we estimate a model, which we refer to as an event history specification, allowing for a complete set of interactions between the indicator of treatment status and indicators of years:

$$HEALTHINS_{ijt} = \alpha_0 + \beta_j + \delta_t + \sum_{k=2011}^{2014} \lambda_k(TREAT_j{}^*YEAR_t) + X_{ijt}\Gamma + e_{ijt} \quad (3)$$

The only difference between equations (1) and (3) is that the effect of treatment is allowed to differ for every year instead of just 2014 (as well as 2015 and 2016 when relevant). The parallel trends assumption implies that the coefficients on the interaction terms between treatment and year (λ_k) would be zero in years prior to 2014. We test this hypothesis and report results below, but note here that the evidence from this analysis generally supports the validity of the research design.

Synthetic Control

A second approach to obtaining estimates of the effect of the Medicaid expansions on health insurance coverage and labor supply is the synthetic control approach proposed by Abadie, Diamond, and Hainmueller (2010). This approach uses a matching procedure to create a synthetic comparison (control) group that is a

weighted average of states that did not expand Medicaid. While technically not a DiD approach, the Abadie, Diamond, and Hainmueller (2010) approach is similar because the estimate of the effect of Medicaid is obtained by taking the difference in means between treated states and a weighted average of non-treated states. However, only the post-expansion difference is used to calculate the estimate because the approach assumes that pre-expansion differences between treated and non-treated states are zero. Indeed, the central feature of the Abadie, Diamond, and Hainmueller (2010) method is to construct a comparison by selecting weights that minimize—reduce toward zero—the pre-expansion differences in means between treated states and the synthetic comparison group.

The unit of observation in this approach is the state. The argument underlying this approach is that if the pre-treatment means of the treated and control states are equal, then the post-treatment difference is likely to represent a valid estimate of the policy. An advantage of the synthetic control approach is that the closeness of the match between the treated and control states can be assessed graphically, and the weight for each potential comparison state is provided.

There are a variety of ways to select weights that are used to construct the synthetic comparison group, for example, by minimizing the difference between each pre-period value of the dependent variable and covariates of treated and untreated states. Alternatives include using the average of pre-period outcomes to match on instead of each pre-period outcome, or to match on the average and only the last (first) pre-period outcome. We chose to match states using each pre-period value of the dependent variable and a select number of covariates (state means of age, proportion in race/ethnic categories, and proportion with less than high school degree), but we also report estimates from an alternative approach that uses only the average value of pre-2014 dependent variable, the 2013 value, and each pre-2014 value of select covariates.[17] Only states with positive weights are used to construct the synthetic control group. Notably, for our preferred method of matching, almost all (e.g., 25) potential control states had positive weights. For the alternative method, the number of states with positive weights was less, fluctuating between five and 13 depending on the outcome and data set. Despite this difference, estimates from the two approaches were very similar.

Once the weights are selected and the synthetic comparison group constructed, the estimate of the effect of the Medicaid expansion is derived by taking the difference between the mean outcome in the treated states (aggregated as one unit) and the mean outcome in the synthetic comparison group, which is a weighted average of outcomes in the non-expanding states. Inferences for this estimate are derived from permutation tests (randomization inference) that consist of re-doing the analysis 1,000 times, but each time using a randomly selected group of treatment states. After generating these 1,000 "random" estimates, the p-value of the estimate of the effect of Medicaid expansion on labor supply is the fraction of "random" estimates that are larger in absolute value than the actual estimate for the true treated states.

[17] See Kaul et al. (2015) for an analysis of the potential consequences of different approaches. We also used a third approach—matching on pre-2014 averages of dependent variable and select covariates. Estimates from this third approach were in all but a few cases similar to those from the other two approaches.

RESULTS

Estimates of the Effect of ACA Medicaid Expansions on Health Insurance Using the ACS

We begin the discussion of results with the effect of the Medicaid expansions on health insurance coverage, which is classified into three categories: Medicaid, uninsured, and private. Table 3 presents DiD estimates, which are derived from data from the ACS. The table is organized as follows. The top panel presents results for parents (children under 18 in family) and the bottom panel presents results for childless adults (no children under 18 in family). Within each panel, estimates from two samples are shown: the low-educated sample and the low-income (less than 300 percent of FPL) sample. For each of the three health insurance outcomes—Medicaid, uninsured and private—estimates from two model specifications are presented above and below the dashed line. In the model above the dashed line, we combine all states that expanded Medicaid in 2014 into one treatment group. In the model below, we allow the effects of the Medicaid expansions to differ depending on whether the state had a prior expansion of some type. In Table A1, we present these estimates for each outcome and each sample (parents and childless adults) for observations further stratified by marital status.[18]

Estimates in panel A of Table 3 indicate that the ACA Medicaid expansions were associated with an increase in Medicaid coverage, a decrease in the proportion uninsured, and a decrease in private insurance coverage for parents. Estimates related to Medicaid and uninsured are always statistically significant. For the low-educated sample of parents, the 2014 Medicaid expansions increased Medicaid coverage by 4 percentage points, or 24 percent of the 2010 mean of the proportion of uninsured. The expansion of Medicaid was associated with a 2.7 percentage point decline in uninsured and a 1.1 percentage point decline in private insurance. The decline in private insurance suggests some amount of crowd-out of private for public insurance. For the sample of parents as a whole, approximately 25 percent of the increase in Medicaid may have come from private insurance.

Estimates for the low-income sample are very similar to those for the low-educated sample, although slightly larger. The Medicaid expansion of 2014 was associated with a 4.6 percentage point (24 percent) increase in Medicaid, a 2.7 percentage point decrease in uninsured, and a 1.6 percentage point decrease in private insurance. These estimates suggest a slightly higher rate of crowd-out (35 percent) of private for public insurance than in the low-educated sample. Estimates for parents below the dashed line pertaining to the low-income sample also suggest that the effect of the 2014 expansion was larger in states that had no prior expansion, and that crowd-out of private insurance was slightly greater in the prior expansion states.

In panel B of Table 3, estimates of the effect of the 2014 expansions on childless adults are presented. Here, too, estimates indicate that the 2014 expansions were associated with an increase in Medicaid coverage (53 percent) and decrease in uninsured (11 percent), but in this case, there is little change in private insurance. Estimates for the low-income sample are similar, but, again, slightly larger than the corresponding estimates for the low-educated sample. Among low-income, childless

[18] All estimates presented in this study are unweighted. We have also estimated the main difference-in-differences models with survey weights. The inclusion of weights makes no quantitative or qualitative differences in our results. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's Website and use the search engine to locate the article at http://onlinelibrary.wiley.com.

Table 3. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance from American Community Survey.

Panel (A): Parents	Medicaid		Uninsured		Private	
	HS or Less	<300% FPL	HS or Less	<300% FPL	HS or Less	<300% FPL
Expand in 2014	0.040**	0.046**	–0.027**	–0.027**	–0.011	–0.016**
	(0.008)	(0.009)	(0.011)	(0.010)	(0.007)	(0.007)
Expand in 2014, no prior policy	0.045**	0.051**	–0.029**	–0.033**	–0.011	–0.014
	(0.013)	(0.015)	(0.013)	(0.015)	(0.009)	(0.009)
Expand in 2014, any prior policy	0.039**	0.044**	–0.026	–0.024	–0.011	–0.017**
	(0.010)	(0.010)	(0.014)	(0.013)	(0.008)	(0.008)
p-value for test of difference between treatment effects	0.712	<0.001	0.845	0.032	0.972	0.083
Observations	857,486	1,257,844	857,486	1,257,844	857,486	1,257,844
Mean of dep. var. in 2010	0.168	0.190	0.288	0.281	0.560	0.550
Panel (B): Childless adults						
Expand in 2014	0.039**	0.063**	–0.034**	–0.048**	–0.003	–0.013
	(0.007)	(0.008)	(0.009)	(0.008)	(0.006)	(0.007)
Expand in 2014, no prior policy	0.035**	0.057**	–0.028**	–0.044**	–0.006	–0.009
	(0.009)	(0.012)	(0.007)	(0.009)	(0.006)	(0.009)
Expand in 2014, any prior policy	0.040**	0.066**	–0.037**	–0.050**	–0.002	–0.014
	(0.008)	(0.009)	(0.012)	(0.009)	(0.006)	(0.008)
p-value for test of difference between treatment effects	0.637	<0.001	0.484	<0.001	0.536	0.207
Observations	1,718,309	1,766,166	1,718,309	1,766,166	1,718,309	1,766,166
Mean of dep. var. in 2010	0.073	0.095	0.305	0.386	0.614	0.506

Notes: Data from 2010 to 2014 American Community Survey. Estimates above dashed lines report coefficients on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines also report coefficients on these interaction terms but distinguishes between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1, 3, and 5 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 2, 4, and 6 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.
** Significance at the 5 percent level.

adults, the 2014 Medicaid expansions were associated with a 6.3 percentage point (66 percent) increase in Medicaid, a 4.8 percentage point (12 percent) decrease in uninsured, and a 1.3 percentage point decrease in private insurance. As with the low-educated sample, there is little evidence that the effect of the expansion differed by whether a state had a prior expansion.

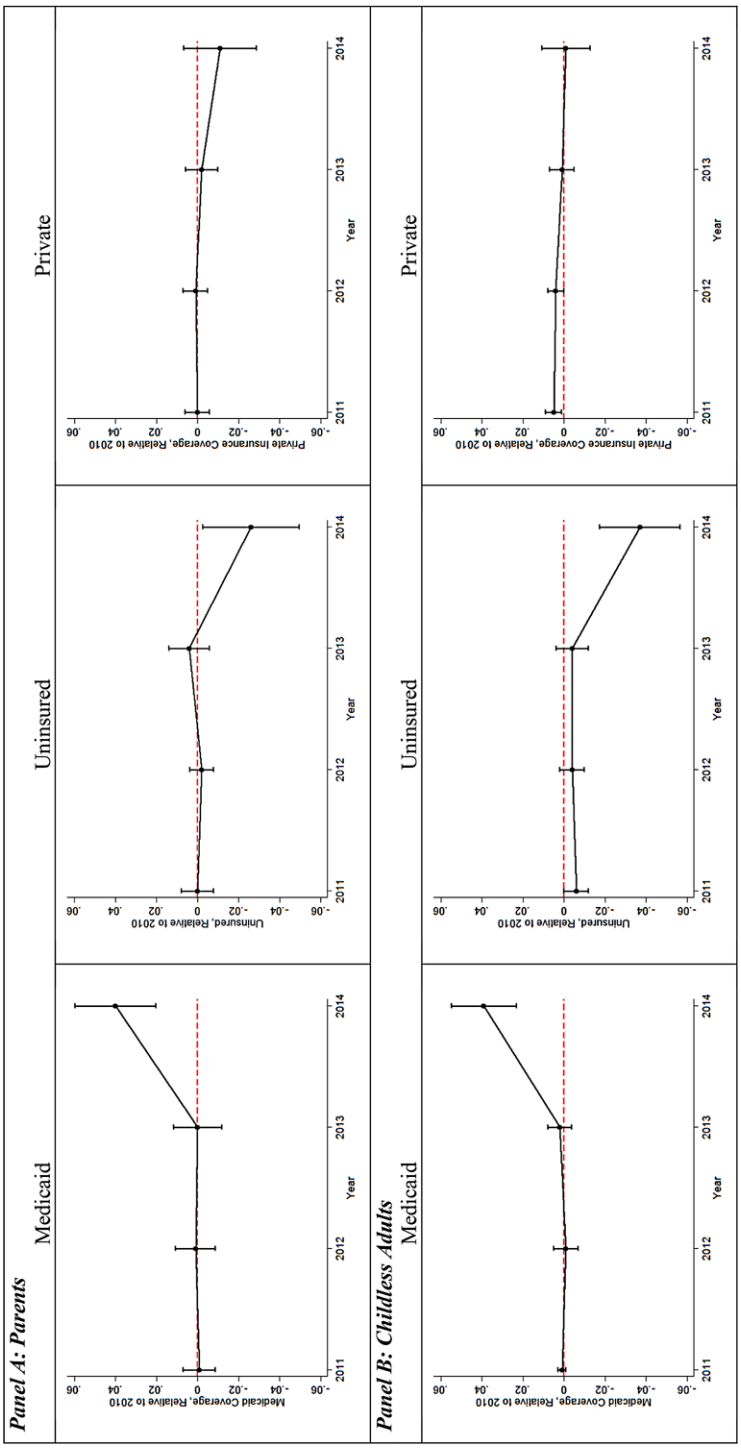
In Table A1, we present results stratified by marital status. There are a few results of note. Estimates in panel A reveal that, among married parents, the effect of the 2014 Medicaid expansions did not differ significantly or meaningfully by whether a state had a prior Medicaid expansion. However, for not married parents, the effect of the 2014 expansion was noticeably, if not statistically, different by whether the state had a prior Medicaid expansion, which was mainly targeted at parents. Among the low-educated and unmarried group, the Medicaid expansion was associated with a larger increase in Medicaid (5.6 percentage points vs. 3.5 percentage points) and larger decrease in uninsured (4.9 percentage points vs. 1.5 percentage points) in states that had no prior expansion than in states with a prior expansion. The substitution of private for public coverage appears to have occurred mostly among the not married, parent sample in states that had previously expanded Medicaid; for this group of parents, the 2014 Medicaid expansion was associated with a 3.5 percentage increase in Medicaid and a 2.4 percentage point decrease in private insurance, suggesting a crowd-out rate of 69 percent.

Panel B of Table A1 shows that, among childless adults, there are substantial differences of effect sizes by marital status within the low-educated sample. Effects are larger in absolute value for the not married group. Among the low-educated, married childless adults, the 2014 Medicaid expansions were associated with a 2.4 percentage point (63 percent) increase in Medicaid coverage and a 2.2 percentage point (11 percent) decrease in uninsured. For the not married group of childless adults, the 2014 expansion is associated with a 5.2 percentage point (48 percent) increase in Medicaid and a 4.4 percentage point (10 percent) decrease in uninsured. As estimates below the dashed line in panel B indicate the effect of the 2014 expansions on health insurance coverage of childless adults did not differ significantly in terms of magnitude (although the small differences are statistically different for the low-income sample as is also true in Table 3) by whether the state had a prior expansion, which is consistent with the fact that most prior expansions were targeted at parents.

As previously noted, the validity of the DiD estimates in Table 3 depends on the parallel trends assumption that in the absence of the Medicaid expansions changes in health insurance coverage would be the same in treated and control states. To assess the likely validity of this assumption, we re-estimated the models that produced the estimates in Tables 3 and A1, but allowed the treatment indicator to differ by every year instead of just pre- and post-2014. We refer to estimates from these analyses as event history estimates. The parallel trends assumption implies that all pre-2014 interactions between the treatment indicator and the year dummy variables are zero.

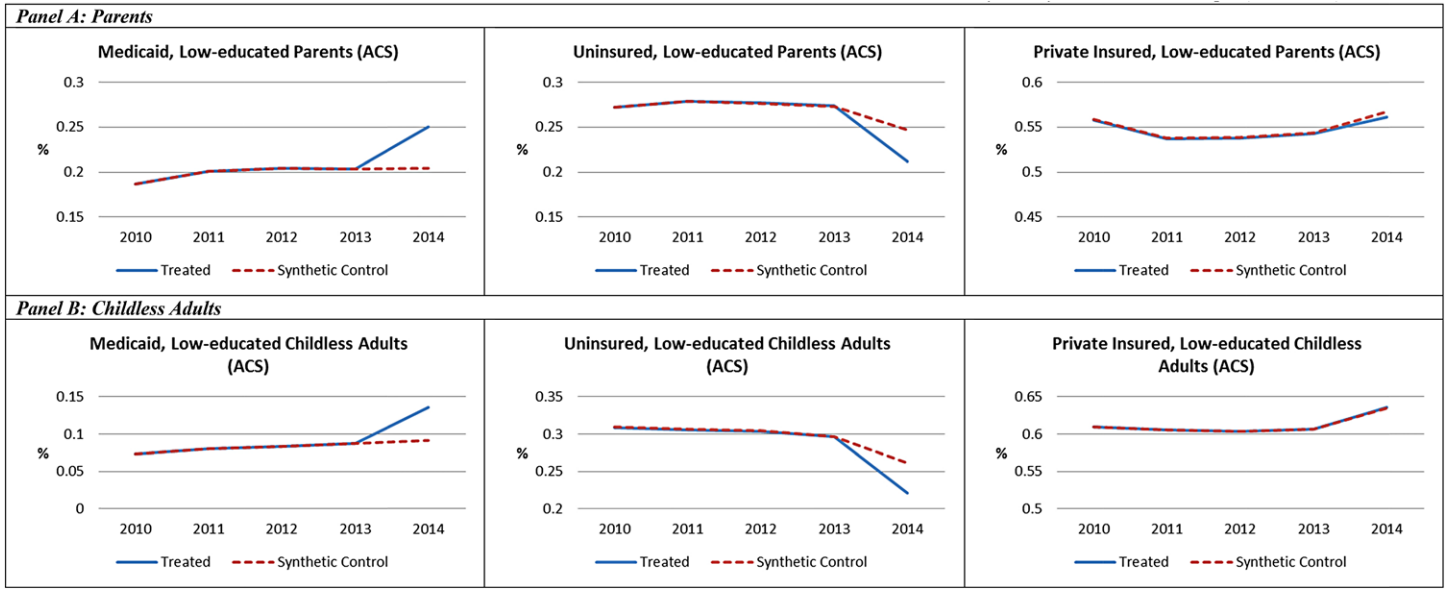
Table A2 presents the event history estimates. While estimates are not all independent, there are 72 different estimates in Table A2 that are relevant—pertaining to coefficients on the interaction between treatment indicator and pre-2014 dummy variables. Only seven of the 72 estimates are statistically different from zero. Even when estimates are different from zero, they are much smaller than the estimates associated with the 2014 interaction. Figure 1 graphs these coefficients for the low-educated sample for parents and childless adults. Overall, the event history estimates support the validity of the DiD approach. Given this finding, it is reasonable to interpret the estimates in Tables 3 and A1 as causal effects of the 2014 Medicaid expansions.

We also obtained estimates of the effect of the Medicaid expansions on health insurance coverage using a synthetic control approach. Figures 2 and 3 provide graphical evidence of the validity of the synthetic control approach. In both figures and across all health insurance outcomes, the pre-2014 trend in each measure of health insurance is very similar—almost identical—between the treated states and synthetic control group of states. In Table 4, we present estimates obtained using



Notes: Data from 2010 to 2014 American Community Survey. Estimates report the coefficients on the interaction terms between an indicator for whether a state expands Medicaid and year indicators. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Vertical bars identify confidence intervals at the 95 percent level.

Figure 1. Event History Estimates of Effect of ACA Medicaid Expansions on Health Insurance, American Community Survey Low-Educated Samples (HS or Less).



Notes: Data from 2010 to 2014 American Community Survey. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure 2. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Health Insurance, American Community Survey Low-Educated Sample (HS or Less).

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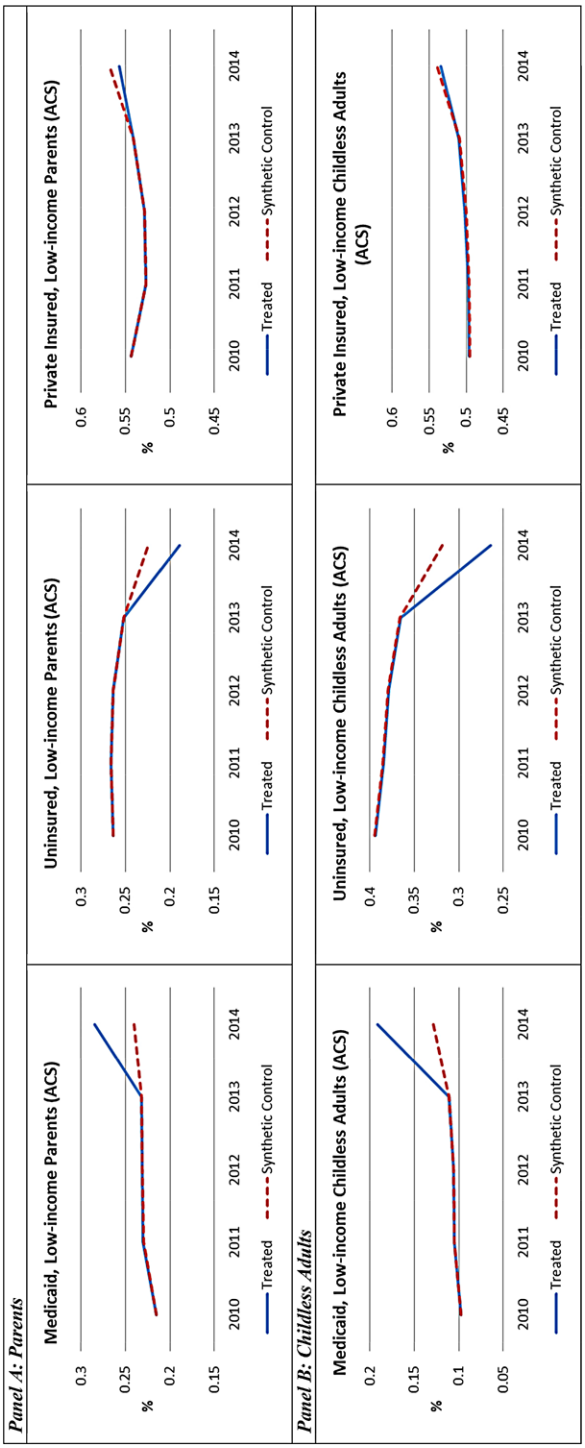

Notes: Data from 2010 to 2014 American Community Survey. Sample limited to non-disabled adults with income below 300 percent of the FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure 3. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Health Insurance, American Community Survey Low-Income Sample (<300% FPL).

Table 4. Synthetic control estimates of effect of ACA Medicaid expansions on health insurance from American Community Survey.

	Medicaid		Uninsured		Private	
Panel (A): Parents	HS or Less	<300% FPL	HS or Less	<300% FPL	HS or Less	<300% FPL
Expand in 2014	0.046**	0.044**	–0.035**	–0.035**	–0.006	–0.011
[*p*-value]	[<0.001]	[0.003]	[0.004]	[0.007]	[0.417]	[0.123]
Difference-in-differences Estimates (From Table 3)	0.040**	0.046**	–0.027**	–0.027**	–0.011	–0.016**
	(0.008)	(0.009)	(0.011)	(0.010)	(0.007)	(0.007)
Observations	857,486	1,257,844	857,486	1,257,844	857,486	1,257,844
Mean of dep. var. in 2010	0.168	0.190	0.288	0.281	0.560	0.550
Panel (B): Childless adults						
Expand in 2014	0.044**	0.062**	–0.040**	–0.054**	0.002	–0.006
[*p*-value]	[0.001]	[<0.001]	[<0.001]	[<0.001]	[0.771]	[0.547]
Difference-in-differences Estimates (From Table 3)	0.039**	0.063**	–0.034**	–0.048**	–0.003	–0.013
	(0.007)	(0.008)	(0.009)	(0.008)	(0.006)	(0.007)
Observations	1,718,309	1,766,166	1,718,309	1,766,166	1,718,309	1,766,166
Mean of dep. var. in 2010	0.073	0.095	0.305	0.386	0.614	0.506

Notes: Data from 2010 to 2014 American Community Survey. Estimates report the difference in dependent variables in 2014 between treatment states and synthetic control group. Sample used in columns 1, 3, and 5 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 2, 4, and 6 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-Values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.

**Significance at the 5 percent level.

the synthetic control approach. For comparison, we also show the analogous DiD estimates from Tables 3 in 4. Note that *p*-values for the synthetic control estimates are provided in square brackets in Table 4 because the randomization inference approach produces only *p*-values. In Table A3, we present these synthetic control estimates for each outcome and each sample (parents and childless adults) for observations further stratified by marital status.

In both Tables 4 and A3, synthetic control estimates are quite similar to DiD estimates. For example, synthetic control estimates indicate that the ACA Medicaid expansions increased Medicaid coverage by 4.6 percentage points among low-educated parents and for 4.4 percentage points among low-educated childless adults. The analogous DiD estimates are 4.0 percentage points and 3.9 percentage points, respectively. Synthetic control estimates also indicate that the Medicaid expansions reduced the rate of uninsured by 3.5 percentage points among low-educated parents and by 4.0 percentage points among low-educated childless adults. The only difference of note between the synthetic control and DiD estimates is that estimates from the synthetic control approach suggest less crowd-out of private insurance. Despite this small difference, the similarity of the synthetic control and DiD estimates bolsters the case for interpreting estimates as causal.

We also conducted analyses for samples stratified by age, which is a determinant of income and health, which would influence health insurance coverage.[19] We report these results in Table A4 using the low-educated sample and a DiD approach.[20] The expansions had a slightly larger effect on Medicaid coverage and the proportion uninsured among younger (ages 22 to 44) than older (ages 45 to 64), low-educated adults. One notable difference by age is that there is more evidence that the Medicaid expansions resulted in a substantial amount of crowding out of private for public insurance among unmarried older parents. For this group, the Medicaid expansions had virtually no effect on the proportion uninsured—the increase in Medicaid coverage was almost fully (84 percent) offset by a decrease in private coverage.

Using the low-educated sample, we re-estimated all models dropping the nine control states that had prior expansions (DE, DC, MA, NY, VT, IN, ME, TN, and WI) and the two treatment states that expanded late (NH and MI). We report both DiD and synthetic control estimates in Table A5, along with corresponding estimates from Tables 3, 4, A1, and A3 for comparison.[21] Estimates in Table A5 are quite similar quantitatively to the corresponding estimates in these tables. For example, difference estimates of the effect of the Medicaid expansions on Medicaid coverage using the smaller group of states are 4.3 percentage points for low-educated parents and 4.6 percentage points for low-educated childless adults. The corresponding estimates in Table 3 are 4.0 percentage points and 3.9 percentage points, respectively. Overall, there are virtually no qualitative differences between estimates in Table A5 and estimates in Tables 3, 4, A1, and A3.

We include two additional sensitivity analyses in the Appendix. First we estimated models that augment our main DiD analysis with state-specific linear trends. These results are presented in Table A6. Although we sacrifice some precision with this specification, the results from the inclusion of state-specific linear trends do not substantially differ from our main findings. In addition, we also estimated synthetic control models using a different approach to select weights for constructing the control group. Specifically, we used the average value of health insurance between 2010 and 2013 and the 2013 value instead of each individual value. Estimates from this alternative (reported in Table A7) are virtually identical to those reported in Table 4. Note, however, that using this alternative approach results in a different comparison group; each model using our main specification assigns non-zero weight to nearly all of the non-expansion states, whereas this alternative specification assigns non-zero weights to six to 13 states.

Estimates of the Effect of ACA Medicaid Expansions on Health Insurance Using March CPS

In addition to using the ACS, we obtained estimates of the effect of the 2014 Medicaid expansions on health insurance coverage using the March CPS from 2010 to 2015. One advantage of the March CPS is that it reports data as of March 2015 whereas the ACS collects information throughout the year and the last year in our

[19] We have also estimated the DiD model dropping adults aged 22 to 25 because of the dependent coverage provision of the ACA. Omitting this group from the analysis has no meaningful effect on our results.

[20] Estimates by age are available upon request for the low-income sample. These are similar to those reported for the low-educated sample, which is unsurprising given the similarity of estimates shown in Tables 3 and 4.

[21] Figure A1 shows that the synthetic control approach of Table A5 is valid as illustrated by the closeness of the pre-2014 trends in outcomes between the treated and synthetic control groups. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's Website and use the search engine to locate the article at http://onlinelibrary.wiley.com.

sample is 2014. Thus, there is a longer post-expansion period in the March CPS than the ACS. The disadvantage of the March CPS is the change in the survey design related to health insurance in 2014. We do not take a position on which is the preferred data source because it is unclear whether one is preferable to the other. To present the evidence in an easily digestible form and one that facilitates comparing estimates from the ACS and March CPS estimates, we calculated the effect of the 2014 Medicaid expansions as the percentage change in health insurance coverage from the 2010 baseline. These results are reported in Table 5.[22] A full set of the underlying estimates obtained using the March CPS and stratified by marital status are reported in Table A9.

Overall, estimates of the effect of Medicaid expansions on health insurance coverage from the March CPS are largely consistent with corresponding estimates obtained using the ACS, as the results in Table 5 illustrate. The main difference is that the estimates from the CPS indicate larger increases in Medicaid and larger decreases in uninsured. For example, among low-educated parents, the 2014 Medicaid expansion was associated with a 6.5 percentage point (43 percent) increase in Medicaid in the CPS. The analogous estimates from the ACS were 4.0 percentage points (24 percent). For uninsured, CPS estimates indicate a 4.0 percentage point (13 percent) decrease where ACS estimates indicated 2.7 percentage point (9 percent) decrease. Estimates from the CPS also show that results are similar whether a low-educated or low-income sample is used.

We also conducted a similar set of analyses using the March CPS as we did for the ACS: event history analysis assessing validity of the DiD research design; an analysis that used the synthetic control approach; and an analysis that stratified by age. With respect to the event history analysis (see Table A10), only five of 96 estimates associated with the interactions between the treatment indicator and pre-2014 dummy variables were significant. This provides considerable evidence that the DiD design is valid and results are plausibly interpreted as causal. Table A11 and Figures A2 and A3 present synthetic control estimates of the effect of Medicaid on health insurance using the March CPS. As was the case for the ACS, there is strong consistency between the DiD and synthetic control estimates further bolstering the case that our estimates be interpreted as causal. Figures A2 and A3 also illustrate the close match between the treated and synthetic control states and the likely validity of the synthetic control approach. Table A12 shows estimates from samples stratified by age. Given the smaller sample sizes of the March CPS than the ACS, these estimates are less precisely estimated. However, as with the ACS, estimates indicate that the expansions had slightly larger effects on Medicaid coverage and the proportion uninsured among younger (ages 22 to 44) than older (ages 45 to 64), low-educated adults.

In addition, we re-estimated all models dropping the nine states with prior expansions and the two late expanding states. Estimates from this analysis are presented in Table A13 and are quite similar to those from analyses that include all states. Finally, we re-estimated our synthetic control models using a different matching specification in which we use the average value of dependent variable in the pre-period and its 2013 value. Estimates from this procedure, reported in Table A14, are virtually identical to our main estimates.

[22] We tested the sensitivity of our low-income threshold in both the ACS and the March CPS in Table A8 by estimating the main results for samples with incomes below 200 percent of FPL. These results are strikingly similar to our sample of adults with incomes below 300 percent of FPL for both the Medicaid and uninsured outcomes. However, estimates using this 200 percent FPL sample reveal modest, statistically significant crowd-out impacts (–6 to –9 percent) on private coverage among parents.

Table 5. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance relative effects (percentage change from 2010) for American Community Survey and March Current Population Survey.

	Low-educated sample (HS or less)						Low-income sample (<300% FPL)					
	Medicaid		Uninsured		Private		Medicaid		Uninsured		Private	
Panel (A): Parents	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS
Expand in 2014	24**	43**	–9**	–13**	–2	–2	24**	40**	–10**	–12**	–3**	–4
Mean of dep. var. in 2010	0.17	0.15	0.29	0.31	0.56	0.54	0.19	0.17	0.28	0.31	0.55	0.52
Expand in 2014, no prior policy	28**	54**	–10**	–13**	–2	–6	29**	53**	–12**	–13**	–2	–5**
Mean of dep. var. in 2010	0.16	0.14	0.29	0.30	0.57	0.56	0.17	0.15	0.28	0.31	0.56	0.54
(No prior policy treatment and control states)												
Expand in 2014, any prior policy	23**	39**	–9	–13	–2	0	23**	35**	–8	–11	–3**	–3
Mean of dep. var. in 2010	0.17	0.16	0.30	0.32	0.55	0.53	0.19	0.18	0.29	0.32	0.54	0.52
(Any prior policy treatment and control states)												
Observations	857,486	94,079	857,486	94,079	857,486	94,079	1,257,844	123,788	1,257,844	123,788	1,257,844	123,788
Panel (B): Childless adults												
Expand in 2014	53**	63**	–11**	–12**	–1	1	66**	70**	–13**	–14**	–2	0
Mean of dep. var. in 2010	0.07	0.07	0.31	0.34	0.61	0.58	0.10	0.09	0.39	0.42	0.51	0.46
Expand in 2014, no prior policy	51**	56**	–9**	–11**	–1	1	62**	76**	–12**	–15**	–2	1
Mean of dep. var. in 2010	0.07	0.07	0.30	0.33	0.62	0.58	0.09	0.09	0.38	0.41	0.52	0.47
(No prior policy treatment and control states)												
Expand in 2014, any prior policy	54**	64**	–12**	–13**	0	1	67**	65**	–13**	–14**	–3	0
Mean of dep. var. in 2010	0.07	0.07	0.31	0.34	0.61	0.57	0.10	0.10	0.39	0.42	0.50	0.46
(Any prior policy treatment and control states)												
Observations	1,718,309	114,117	1,718,309	114,117	1,718,309	114,117	1,766,166	114,727	1,766,166	114,727	1,766,166	114727

Notes: Data from 2010 to 2014 American Community Survey and 2010 to 2015 March CPS. Each value is the effect of the 2014 Medicaid expansion on the outcome expressed in percentage terms (estimate divided by 2010 mean). Sample used in columns 1 through 6 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 7 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Estimates for ACS are in Table 3 and estimates for March CPS are in Table A9. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's Website and use the search engine to locate the article at http://onlinelibrary.wiley.com.

** Significance at the 5 percent level.

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Summary of Estimates of the Effect of ACA Medicaid Expansions on Health Insurance

In summary, estimates in Tables 3 through 5 and Tables A1 through A14 indicate that the 2014 Medicaid expansions significantly increased Medicaid coverage and decreased the proportion of uninsured among low-educated/low-income persons.[23] The largest effect sizes were found for childless adults (Table 5). For this group, which was arguably the target group of the Medicaid expansions, the proportion of adults enrolled in Medicaid increased by approximately 51 to 70 percent, depending on the sample and data source. Correspondingly, the proportion of low-educated/low-income childless adults who were uninsured decreased by approximately 9 to 14 percent, depending on the sample and data source. For low-educated/low-income parents, the increase in Medicaid resulting from the ACA expansions was approximately half the size as for childless adults, but the decrease in the proportion uninsured was approximately the same (in relative terms). There was limited and not always consistent evidence of a modest amount of crowding out of private for public insurance coverage. The largest amount of crowd-out was found for unmarried parents in states that had prior Medicaid expansions. Finally, our estimates are consistent with other recent papers that have examined the effect of the Medicaid expansions on health insurance using different data sources, samples, and methods (Courtemanche et al., 2017; Frean, Gruber, & Sommers, 2016; Wherry & Miller, 2016).

Estimates of the Effect of ACA Medicaid Expansions on Labor Supply ACS (2010 to 2014)

As documented above, the ACA Medicaid expansions had a significant impact on health insurance coverage, which raises the possibility that people altered their labor supply to take advantage of the new Medicaid benefit. We assess this hypothesis first using data from the ACS and then using data from monthly CPS surveys.

Table 6 presents estimates of the effect of the 2014 Medicaid expansion on whether a person is employed at the time of the interview using data from the ACS. The table is organized in a similar way as previous tables, although we present both DiD (labeled DD) and synthetic control (labeled SC) estimates in the same table. Panel A of Table 6 shows estimates for parents and panel B shows estimates for childless adults. Within each of these two groups, we show estimates from a sample of low-educated (high school or less) adults and from a sample of low-income (less than 300 percent of FPL) adults. We also present estimates from a sample stratified by marital status for the low-educated group.

Estimates in Table 6 are remarkably consistent. Almost all (28 out of 32) are small, for example, less than 0.5 percentage points (less than 1 percent of baseline mean). All but two estimates are statistically insignificant. Most estimates are positive. Overall, estimates in Table 6 suggest that, on average, the Medicaid expansions had virtually no effect on employment as of 2014. If anything, it appears that the Medicaid expansions are associated with an increase in employment. Further, if we use standard errors derived from the DiD analyses as a reference, for example,

[23] We note that in Table A13 there are some large differences between synthetic control estimates for the uninsured outcome among parents. These differences are due to the poor match of the synthetic control approach when a smaller number of states are used. Therefore, we do not put much weight on the magnitude of these estimates. We also note that DiD estimates of this same sample-outcome are stable and consistent across samples. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's Website and use the search engine to locate the article at http://onlinelibrary.wiley.com.

Table 6. Difference-in-differences and synthetic control estimates of effect of ACA Medicaid expansions on labor supply from American Community Survey.

	Low-educated sample (HS or less)						Low-income sample (<300% FPL)	
	Employed at time of survey						Employed at time of survey	
	All		Married		Unmarried		All	All
Panel (A): Parents	DD	SC	DD	SC	DD	SC	DD	SC
Expand in 2014	0.005	–0.003	0.003	0.013**	0.011	–0.005	0.004	–0.007
	(0.004)	[0.679]	(0.003)	[0.015]	(0.007)	[0.713]	(0.003)	[0.066]
Expand in 2014, no prior policy	0.002		0.001		0.003		0.002	
	(0.005)		(0.005)		(0.009)		(0.005)	
Expand in 2014, any prior policy	0.006		0.003		0.014		0.005**	
	(0.004)		(0.004)		(0.007)		(0.002)	
p-value for test of difference between treatment effects	0.507		0.731		0.288		0.128	
Observations	857,486	857,486	655,254	655,254	202,232	202,232	1,257,844	1,257,844
Mean of dep. var. in 2010	0.715	0.715	0.726	0.726	0.676	0.676	0.693	0.693
Panel (B): Childless adults								
Expand in 2014	0.003	–0.002	0.003	–0.008	0.002	0.003	0.003	–0.0004
	(0.003)	[0.580]	(0.003)	[0.067]	(0.004)	[0.605]	(0.003)	[0.915]
Expand in 2014, no prior policy	0.002		0.0005		0.004		0.004	
	(0.006)		(0.006)		(0.006)		(0.004)	
Expand in 2014, any prior policy	0.003		0.004		0.002		0.003	
	(0.003)		(0.003)		(0.004)		(0.003)	
p-value for test of difference between treatment effects	0.910		0.525		0.685		0.462	
Observations	1,718,309	1,718,309	855,016	855,016	863,293	863,293	1,766,166	1,766,166
Mean of dep. var. in 2010	0.677	0.677	0.688	0.688	0.667	0.667	0.610	0.610

Notes: Data from 2010 to 2014 American Community Survey. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1 through 6 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 7 and 8 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of estimates (parentheses) are clustered on state.
** Significance at the 5 percent level.

a value of 0.003, in most cases, we can reject effect sizes less than approximately –0.005. Thus, estimates rule out decreases in employment of 1 percent or more.

Estimates in Table 6 are somewhat larger in relative terms based on the proportion of the sample that experienced a change in Medicaid coverage or uninsured status. Against this benchmark, which is at best suggestive of the size of the potentially treated group and does not include those affected who did not have to switch coverage to benefit,[24] estimates in Table 6 can rule out decreases in employment for those who changed coverage of approximately 10 to 15 percent (e.g., –0.005/0.05) or greater. We reiterate, however, that most estimates are positive, suggesting an increase in employment.

We also assess the validity of the DiD estimates in Table 6 using the event history approach described earlier. Estimates from this analysis are in Table A15 and provide substantial support for the validity of the DiD analysis—only three of the 24 interactions between treatment and pre-2014 year indicators are statistically significant. Similarly, Figure A4 shows that there is a close match between the pre-2014 trends in employment between the treated and synthetic control groups of states, which provides support for the validity of this approach.[25] Moreover, there is substantial agreement between estimates obtained from the two approaches.

In Table A16, we report DiD and synthetic control estimates of the effect of Medicaid expansions on labor supply omitting the nine states with prior expansions and the two states with late expansions. Results from these analyses are very similar to those reported in Table 6. Finally, we test the sensitivity of our estimates to the definition of low-income by limiting our sample to adults with income less than 200 percent of the FPL. These estimates, reported in the right panel of Table A17, are very similar to our main estimates for the low-income sample using the less than 300 percent of the FPL criteria.

Estimates of the Effect of ACA Medicaid Expansions on Labor Supply Monthly CPS

The final set of results pertains to the effect of Medicaid on labor supply using monthly CPS files. These data extend through May 2016, which is nearly 2.5 years after the initial implementation, and allow for the analysis of more measures of labor supply, specifically, usual hours worked per week and whether a person worked full-time, defined here using a threshold indicating greater than 30 hours per week. For these data, we do not use a sample of low-income persons because income is not well measured in these data. We also omit all states that expanded in 2015/2016 (i.e., AK, MT, IN, and PA).

Table 7 presents DiD estimates of the effect of Medicaid on labor supply using the monthly CPS. The table is divided into two panels, depending on whether we are analyzing parents (panel A) or childless adults (panel B). Within each panel, we show estimates for three outcomes (employment, usual hours of work, and more than 30 hours of work per work) for the full sample, and for samples stratified by marital status.

Estimates in panel A of Table 7, which pertain to parents, are not statistically significant. Estimates related to married parents are small, negative, and not statistically significant. Among unmarried parents, estimates are positive, relatively small

[24] This includes those on Medicaid prior to expansion who were potentially able to increase labor supply and still remain eligible for Medicaid.

[25] Synthetic control estimates that use the alternative approach to constructing weights that uses the 2010 to 2013 average value of the dependent variable and the 2013 value are very similar to those reported in Table 6.

Table 7. Difference-in-differences estimates of effect of ACA Medicaid expansions on labor supply from Monthly Current Population Survey.

	Low-educated sample (HS or less)								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Expand in 2014	0.001	–0.004	0.015	–0.039	–0.202	0.388	0.001	–0.003	0.012
	(0.005)	(0.005)	(0.008)	(0.222)	(0.234)	(0.356)	(0.005)	(0.006)	(0.009)
Expand in 2014,	0.002	–0.004	0.016	–0.029	–0.227	0.388	–0.002	–0.007	0.008
no prior policy	(0.009)	(0.010)	(0.011)	(0.431)	(0.502)	(0.514)	(0.010)	(0.011)	(0.014)
Expand in 2014,	0.0002	–0.004	0.014	–0.043	–0.190	0.388	0.003	–0.001	0.013
any prior policy	(0.004)	(0.005)	(0.008)	(0.200)	(0.208)	(0.370)	(0.005)	(0.006)	(0.009)
p-value for test of difference between treatment effects	0.817	0.980	0.873	0.974	0.941	>0.999	0.648	0.600	0.697
Observations	640,572	459,425	181,147	640,572	459,425	181,147	640,572	459,425	181,147
Mean of dep. var. in 2010	0.685	0.706	0.627	27.1	28.3	23.9	0.615	0.639	0.548
Panel (B): Childless adults									
Expand in 2014	0.012**	0.014**	0.012	0.426	0.446	0.459	0.010	0.012**	0.009
	(0.005)	(0.006)	(0.007)	(0.239)	(0.267)	(0.302)	(0.005)	(0.006)	(0.007)
Expand in 2014,	0.012	0.017	0.007	0.378	0.585	0.215	0.007	0.012	0.003
no prior policy	(0.009)	(0.008)	(0.011)	(0.377)	(0.352)	(0.478)	(0.008)	(0.007)	(0.011)
Expand in 2014,	0.013**	0.012	0.014	0.455	0.358	0.596	0.012**	0.012	0.013
any prior policy	(0.006)	(0.007)	(0.007)	(0.237)	(0.292)	(0.318)	(0.006)	(0.006)	(0.008)
p-value for test of difference between treatment effects	0.901	0.557	0.560	0.835	0.514	0.453	0.576	0.955	0.439
Observations	1,141,994	549,419	592,575	1,141,994	549,419	592,575	1,141,994	549,419	592,575
Mean of dep. var. in 2010	0.652	0.669	0.636	25.8	26.7	24.9	0.587	0.605	0.569

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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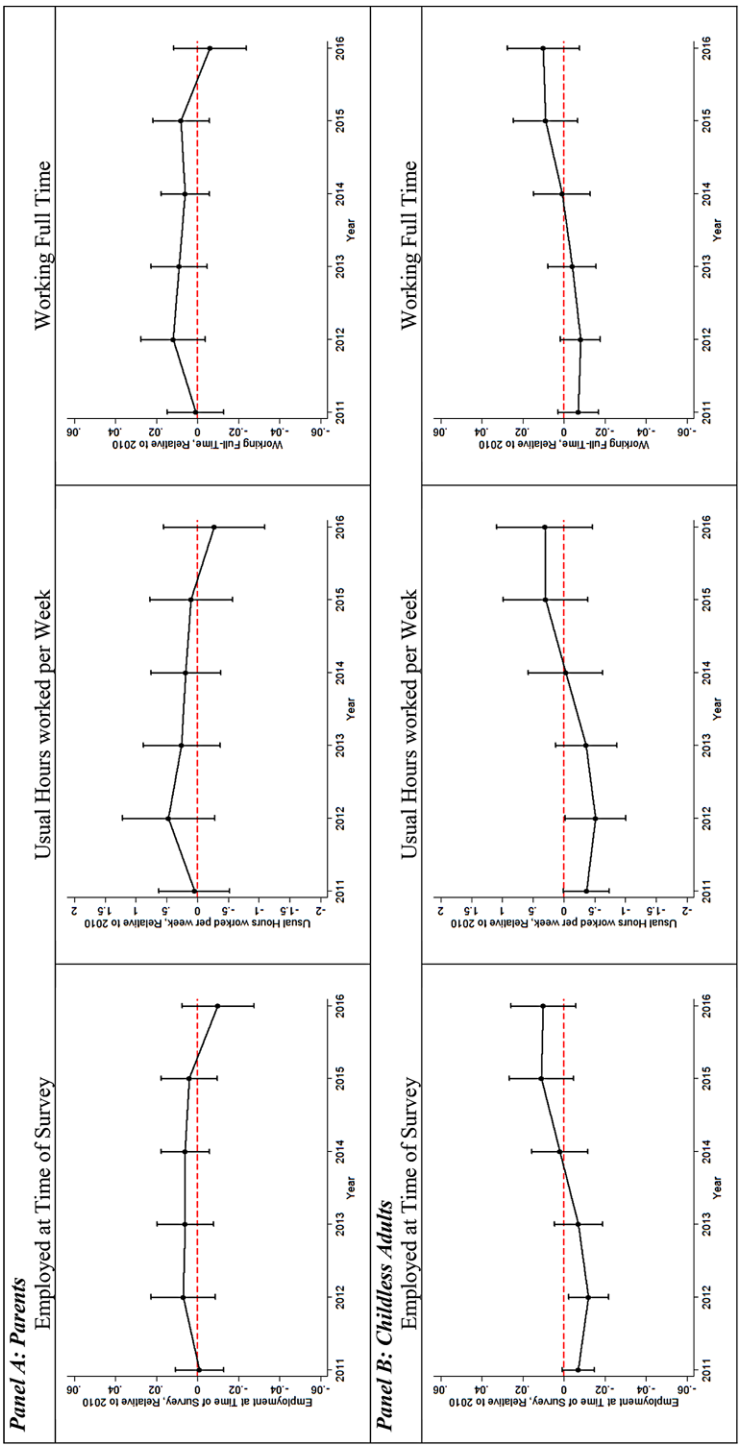
(e.g., 2 percent of mean), and not statistically significant. In addition, there is no evidence that the effect of Medicaid expansions on labor supply of low-educated parents differed by whether a state had a prior expansion.

For the childless adult sample (panel B of Table 7), estimates indicate that the Medicaid expansions were associated with an increase in employment and the probability of working more than 30 hours per week. While estimates are only statistically significant for the sample of married, childless adults, the magnitudes of the estimates are very similar for the unmarried sample. Similarly, estimates are very similar for states with and without a prior expansion. In terms of magnitudes, estimates indicate that the Medicaid expansions were associated with a 1.2 percentage point (1.8 percent) increase in the probability of employment and a 1.0 percentage point (1.7 percent) increase in probability of being employed full-time among childless adults.

Evidence in Table A18, however, raises a note of caution. In this table, we report estimates from the event history specification assessing the validity of the DiD approach underlying the estimates in Table 7. We graph the coefficients on the treatment group and year interactions for low-educated parents and childless adults in Figure 4. In this case, and particularly for the sample of unmarried parents and childless adults, we observe that two or three of the coefficients on the interactions between the treatment indicator and the pre-2014 year dummy variables are statistically significant. The significant estimates in Table A18 are of similar magnitude to the significant estimates in Table 7. Given this evidence, we conclude that the small, significant estimates in Table 7 pertaining to the childless adult sample may not be reliable.

Synthetic control estimates, which are presented in Table 8, reinforce the last conclusion. For the childless adult sample, synthetic control estimates of the effect of Medicaid expansions on labor supply are in almost all cases quite small and not statistically significant. In addition, as Figure 5 suggests, there is a close match (identical) between the treated and synthetic comparison group in the pre-ACA period, which bolsters the credibility of the synthetic control estimates. Therefore, we believe it is reasonable to give greater weight to the synthetic control estimates than the DiD estimates, and this leads us to conclude that the Medicaid expansions had virtually no effect on labor supply of childless adults. Synthetic control estimates in Table 8 for the parent sample (panel A) are small and consistent with the DiD estimates of Table 7, suggesting that for this sample the Medicaid expansions had no significant effect on labor supply.

We report a series of sensitivity tests for these CPS results in the Appendix. Table A19 presents results from an analysis dropping nine states that had prior full or limited expansion control states as well as two late expansion treatment states. These estimates are largely qualitatively similar compared to the main results. Synthetic control estimates for usual hours worked per week are different depending on the inclusion of these states (estimates from the removal of these states indicate a significant reduction of between a half hour to an hour of work for married parents and childless adults); however, we believe these estimates are likely driven by a poorer pre-2014 match in outcomes with the removal of these states. Table A20 augments our main DiD model by including state-specific linear trends. This model assesses whether states that expanded Medicaid had differentially trending labor supply measures prior to 2014. Estimates in Table A20 are very similar to the main DiD estimates reported in Table 7. As a final sensitivity analysis, we re-estimated our synthetic control models using a matching approach that matches on the average of the pre-2014 period dependent variable and the 2013 value of the dependent variable. Results from this alternative synthetic control approach, which is reported in Table A21, are quantitatively and qualitatively similar to our main results in Table 8.



Notes: Data from 2010 to 2016 (May) Monthly Current Population Survey. Estimates report the coefficients on interaction terms between an indicator for whether a state expands Medicaid and year indicators. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Vertical bars identify confidence intervals at the 95 percent level.

Figure 4. Event History Estimates of Effect of ACA Medicaid Expansions on Labor Supply, Monthly Current Population Survey Low-Educated Samples (HS or Less).

Table 8. Synthetic control estimates of effect of ACA Medicaid expansions on labor supply from Monthly Current Population Survey.

	Low-educated sample (HS or less)								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Expand in 2014	–0.009	–0.011	0.002	–0.121	–0.359	–0.301	–0.002	–0.004	–0.011
[*p*-value]	[0.285]	[0.206]	[0.885]	[0.728]	[0.335]	[0.621]	[0.853]	[0.618]	[0.489]
Difference-in-differences	0.001	–0.004	0.015	–0.039	–0.202	0.388	0.001	–0.003	0.012
Estimates (from Table 7)	(0.005)	(0.005)	(0.008)	(0.222)	(0.234)	(0.356)	(0.005)	(0.006)	(0.009)
Observations	640,572	459,425	181,147	640,572	459,425	181,147	640,572	459,425	181,147
Mean of dep. var. in 2010	0.686	0.713	0.650	27.1	28.3	23.9	0.616	0.640	0.549
Panel (B): Childless adults									
Expand in 2014	0.0005	0.001	–0.007	0.282	–0.412	0.081	0.002	–0.002	0.001
[*p*-value]	[0.963]	[0.924]	[0.562]	[0.547]	[0.404]	[0.886]	[0.859]	[0.856]	[0.940]
Difference-in-differences	0.012**	0.014**	0.012	0.426	0.446	0.459	0.010	0.012**	0.009
Estimates (from Table 7)	(0.005)	(0.006)	(0.007)	(0.239)	(0.267)	(0.302)	(0.005)	(0.006)	(0.007)
Observations	1,141,994	549,419	592,575	1,141,994	549,419	592,575	1,141,994	549,419	592,575
Mean of dep. var. in 2010	0.652	0.675	0.648	25.8	26.7	24.9	0.587	0.605	0.569

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
** Significance at the 5 percent level.

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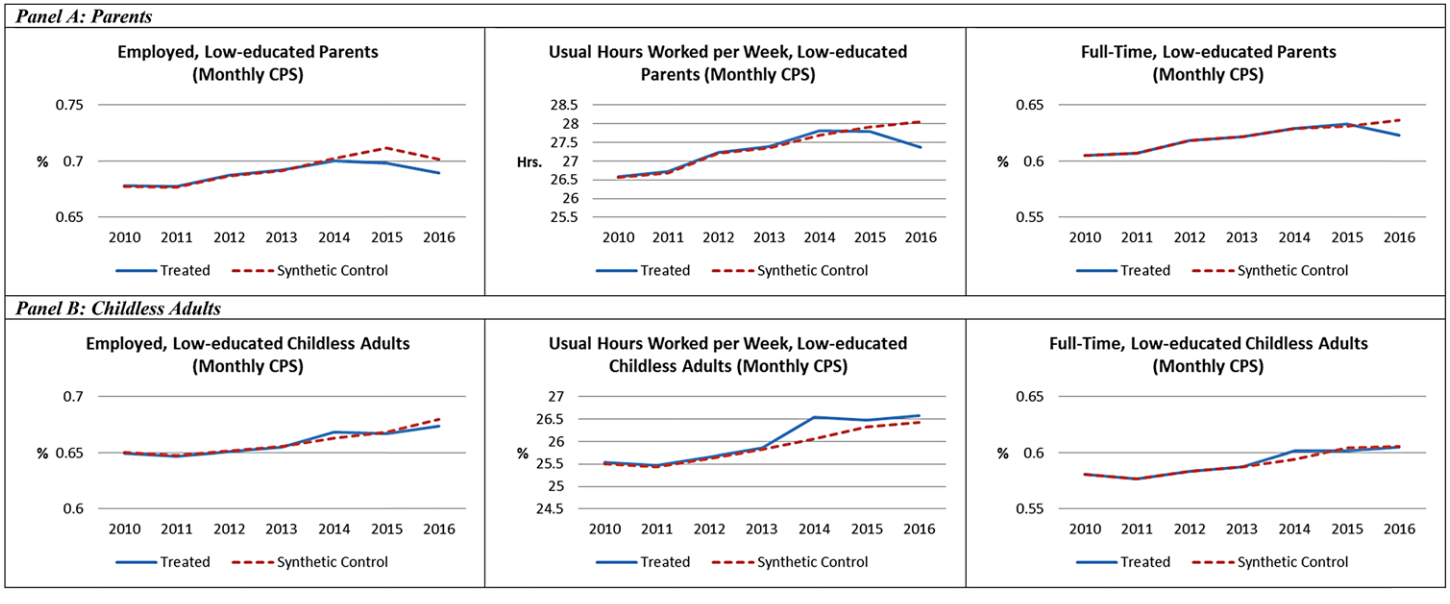

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure 5. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Labor Supply, Monthly Current Population Survey Low-Educated Sample (HS or Less).

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Summary of Estimates of the Effect of ACA Medicaid Expansions on Labor Supply

The large majority of estimates of the effect of Medicaid expansions on labor supply shown in Tables 6 through 8 were small (e.g., 1 percent in relative terms) and statistically insignificant. Most estimates were positive. Moreover, in the few cases when estimates were statistically significant, estimates remained small and corresponding estimates obtained using different methods and samples were at odds with these significant estimates. Given this evidence, it appears that the Medicaid expansions did not have a significant effect on labor supply in the two years subsequent to its implementation.

The small and relatively precise estimates rule out all but the smallest negative effects of the Medicaid expansions on labor supply. Consider DiD estimates in Table 6 of the effect of the ACA Medicaid expansions on employment in 2014. All estimates are positive and most are in the 0.004 range (less than one-half of a percentage point). Standard errors of DiD estimates indicate a 95 percent confidence interval for the typical estimate of approximately –0.004 to 0.012. The mean employment rate for the different samples in Table 6 is generally between 0.6 and 0.7. Thus, a –0.004 estimate represents less than 1 percent of mean. Alternatively, we can compare the –0.004 figure to an estimate of the proportion of sample that was likely affected by the expansion. Such a comparison may be thought of as an estimate of treatment-on-the-treated, although it would be quite crude. However, we do not observe the fraction affected, but here we use the change in Medicaid coverage (e.g., 5 percentage points) as one possible benchmark. In this case, the –0.004 figure would represent approximately 8 percent for the affected group. This admittedly crude, back-of-the-envelope estimate is consistent with the magnitudes of estimates reported and found in the Oregon Medicaid Experiment (Baicker et al., 2013) and in Dague, DeLeire, and Leininger (2014). Notably, these estimates suggest much smaller income elasticities of labor supply than those found, for example, with respect to the EITC (Eissa & Hoynes, 2006).

CONCLUSION

The ACA became law in 2010 when the unemployment rate in the United States was just under 10 percent and at a 30-year high, and the economy was just coming out of the Great Recession. With this backdrop, it is understandable that the potential work disincentives of the ACA garnered considerable public attention. Specifically, the expansion of Medicaid income eligibility thresholds and the formation of the health insurance marketplaces that provided income-based subsidies created incentives for people to alter their labor supply. Moreover, most of the incentives generated by the ACA were likely to reduce work effort.

In this paper, we examined whether the expansions in Medicaid affected labor supply of low-educated (a high school education or less) and low-income persons, which are groups likely to be affected by the expansions. We first measured the effect of the Medicaid expansions on health insurance coverage to assess the extent of the "treatment" engendered by the expansions. Estimates indicate that the Medicaid expansions increased the proportion of the sample covered by Medicaid and decreased the proportion uninsured by a similar, but slightly lower amount because of some switching between private insurance and Medicaid. There was some variation in effects by demographic groups with larger changes in Medicaid coverage and the proportion uninsured observed for unmarried, childless adults.

Specifically, for parents, estimates indicated that the Medicaid expansions:

- increased Medicaid coverage by between 23 and 54 percent (4 to 7 percentage points) depending on the data source, time period examined, and whether the state had a prior Medicaid expansion;
- decreased the proportion uninsured by between 8 and 13 percent (3 to 5 percentage points) depending on the data source, time period examined, and whether the state had a prior Medicaid expansion; and
- decreased private health insurance coverage by between 0 and 5 percent (0 to 4 percentage points).

For childless adults, estimates indicated that the Medicaid expansions:

- increased Medicaid coverage by between 54 and 70 percent (4 to 6 percentage points) depending on the data source, time period examined, and whether the state had a prior Medicaid expansion;
- decreased the proportion uninsured by between 9 and 15 percent (4 to 5 percentage points) depending on the data source, time period examined, and whether the state had a prior Medicaid expansion; and
- decreased private health insurance coverage by between 1 and 5 percent (1 percentage point).

Estimates of the effect of Medicaid on labor supply were, in general, small and not statistically significant. In fact, most estimates of the effect of the Medicaid expansions on labor supply were positive. Overall, there was very little evidence that the Medicaid expansions decreased work effort. Moreover, confidence intervals associated with estimates rule out modest to large decreases in employment and hours of work in response to the Medicaid expansions.

The absence of much of a labor supply response to the expansion of Medicaid is consistent with the broader literature on the income effect of labor supply, which found small elasticities of labor supply with respect to income (McClelland & Mok, 2012). Overall, the Medicaid expansions have significantly expanded health insurance coverage and reduced the proportion of people uninsured without significant unintended consequences related to work effort.

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APPENDIX

Table A1. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance from American Community Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand in 2014	0.040**	0.039**	0.041**	–0.027**	–0.027**	–0.024**	–0.011	–0.009	–0.019**	0.046**	–0.027**	–0.016**
	(0.008)	(0.009)	(0.009)	(0.011)	(0.012)	(0.011)	(0.007)	(0.008)	(0.006)	(0.009)	(0.010)	(0.007)
Expand in 2014,	0.045**	0.040**	0.056**	–0.029**	–0.023	–0.049**	–0.011	–0.012	–0.008	0.051**	–0.033**	–0.014
no prior policy	(0.013)	(0.013)	(0.018)	(0.013)	(0.012)	(0.019)	(0.009)	(0.009)	(0.011)	(0.015)	(0.015)	(0.009)
Expand in 2014,	0.039**	0.039**	0.035**	–0.026	–0.029	–0.015	–0.011	–0.007	–0.024**	0.044**	–0.024	–0.017**
any prior policy	(0.010)	(0.011)	(0.010)	(0.014)	(0.015)	(0.012)	(0.008)	(0.009)	(0.006)	(0.010)	(0.013)	(0.008)
p-value for test of difference between treatment effects	0.712	0.953	0.283	0.845	0.733	0.103	0.972	0.549	0.153	<0.001	0.032	0.083
Observations	857,486	655,254	202,232	857,486	655,254	202,232	857,486	655,254	202,232	1,257,844	1,257,844	1,257,844
Mean of dep. var. in 2010	0.168	0.129	0.303	0.288	0.269	0.355	0.560	0.620	0.355	0.190	0.281	0.550
Panel (B): Childless adults												
Expand in 2014	0.039**	0.024**	0.052**	–0.034**	–0.022	–0.044**	–0.003	–0.001	–0.007	0.063**	–0.048**	–0.013
	(0.007)	(0.007)	(0.007)	(0.009)	(0.011)	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.008)	(0.007)
Expand in 2014,	0.035**	0.019**	0.052**	–0.028**	–0.012	–0.046**	–0.006	–0.006	–0.005	0.057**	–0.044**	–0.009
no prior policy	(0.009)	(0.008)	(0.010)	(0.007)	(0.007)	(0.008)	(0.006)	(0.005)	(0.008)	(0.012)	(0.009)	(0.009)
Expand in 2014,	0.040**	0.026**	0.052**	–0.037**	–0.026	–0.043**	–0.002	0.001	–0.007	0.066**	–0.050**	–0.014
any prior policy	(0.008)	(0.008)	(0.009)	(0.012)	(0.014)	(0.009)	(0.006)	(0.008)	(0.006)	(0.009)	(0.009)	(0.008)
p-value for test of difference between treatment effects	0.637	0.488	0.992	0.484	0.328	0.853	0.536	0.334	0.683	<0.001	<0.001	0.207
Observations	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,766,166	1,766,166	1,766,166
Mean of dep. var. in 2010	0.073	0.038	0.108	0.305	0.191	0.421	0.614	0.763	0.462	0.095	0.386	0.506

Notes: Data from 2010 to 2014 American Community Survey. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A2. Event history estimates of effect of ACA Medicaid expansions on health insurance from American Community Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand × year 2014	0.040**	0.041**	0.035**	–0.026**	–0.030**	–0.013	–0.011	–0.007	–0.024**	0.048**	–0.027**	–0.017
	(0.010)	(0.011)	(0.010)	(0.012)	(0.014)	(0.012)	(0.009)	(0.009)	(0.008)	(0.010)	(0.012)	(0.009)
Expand × year 2013	–0.0001	0.003	–0.013	0.004	–0.0002	0.020**	–0.002	–0.001	–0.005	0.004	0.001	–0.003
	(0.006)	(0.006)	(0.007)	(0.005)	(0.005)	(0.009)	(0.004)	(0.004)	(0.007)	(0.006)	(0.005)	(0.004)
Expand × year 2012	0.001	0.002	–0.002	–0.002	–0.005	0.010	0.001	0.005	–0.010	0.001	–0.001	0.001
	(0.005)	(0.005)	(0.009)	(0.004)	(0.005)	(0.008)	(0.003)	(0.003)	(0.006)	(0.005)	(0.004)	(0.003)
Expand × year 2011	–0.001	0.002	–0.012	–0.0001	–0.004	0.014	0.0001	0.002	–0.005	0.001	–0.001	–0.001
	(0.004)	(0.004)	(0.007)	(0.004)	(0.005)	(0.008)	(0.003)	(0.004)	(0.005)	(0.004)	(0.003)	(0.003)
p-value test of joint significance of pre-trend	0.870	0.948	0.037	0.374	0.391	0.136	0.765	0.275	0.493	0.779	0.868	0.634
Observations	857,486	655,254	202,232	857,486	655,254	202,232	857,486	655,254	202,232	1,257,844	1,257,844	1,257,844
Mean of dep. var. in 2010	0.168	0.129	0.303	0.288	0.269	0.355	0.560	0.620	0.355	0.190	0.281	0.550
Panel (B): Childless adults												
Expand × year 2014	0.039**	0.024**	0.052**	–0.037**	–0.022	–0.050**	–0.001	–0.001	–0.001	0.064**	–0.054**	–0.008
	(0.008)	(0.007)	(0.009)	(0.010)	(0.012)	(0.008)	(0.006)	(0.008)	(0.006)	(0.009)	(0.009)	(0.008)
Expand × year 2013	0.002	0.001	0.001	–0.004	0.002	–0.008	0.001	–0.004	0.006	0.004	–0.006	0.002
	(0.003)	(0.002)	(0.005)	(0.004)	(0.004)	(0.006)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.003)
Expand × year 2012	–0.001	–0.001	–0.002	–0.004	–0.002	–0.004	0.004	0.002	0.006	–0.001	–0.006	0.008**
	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)	(0.005)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Expand × year 2011	0.001	0.0005	0.001	–0.006**	–0.0001	–0.011**	0.005**	–0.0001	0.011**	0.002	–0.009**	0.008**
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
p-value test of joint significance of pre-trend	0.303	0.420	0.566	0.156	0.505	0.035	0.060	0.212	0.010	0.092	0.007	0.001
Observations	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,766,166	1,766,166	1,766,166
Mean of dep. var. in 2010	0.073	0.038	0.108	0.305	0.191	0.421	0.614	0.763	0.462	0.095	0.386	0.506

Notes: Data from 2010 to 2014 American Community Survey. Estimates report coefficients on interaction terms between an indicator for whether a state expands Medicaid and year indicators. A *p*-value reports results from *F*-tests of joint significance from pre-2014 Medicaid expansion interaction terms. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A3. Synthetic control estimates of effect of ACA Medicaid expansions on health insurance from American Community Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand in 2014	0.046**	0.034**	0.067**	–0.035**	–0.032**	–0.038**	–0.006	–0.007	–0.013	0.044**	–0.035**	–0.011
[*p*-value]	[<0.001]	[0.003]	[0.004]	[0.004]	[0.003]	[0.021]	[0.417]	[0.367]	[0.235]	[0.003]	[0.007]	[0.123]
Difference-in-differences	0.040**	0.039**	0.041**	–0.027**	–0.027**	–0.024**	–0.011	–0.009	–0.019**	0.046**	–0.027**	–0.016**
Estimates (from Table A1)	(0.008)	(0.009)	(0.009)	(0.011)	(0.012)	(0.011)	(0.007)	(0.008)	(0.006)	(0.009)	(0.010)	(0.007)
Observations	857,486	655,254	202,232	857,486	655,254	202,232	857,486	655,254	202,232	1,257,844	1,257,844	1,257,844
Mean of dep. var. in 2010	0.168	0.129	0.303	0.288	0.269	0.355	0.560	0.620	0.355	0.190	0.281	0.550
Panel (B): Childless adults												
Expand in 2014	0.044**	0.021**	0.062**	–0.040**	–0.028**	–0.057**	0.002	0.003	–0.002	0.062**	–0.054**	–0.006
[*p*-value]	[0.001]	[0.006]	[<0.001]	[<0.001]	[0.034]	[<0.001]	[0.771]	[0.681]	[0.750]	[<0.001]	[<0.001]	[0.547]
Difference-in-differences	0.039**	0.024**	0.052**	–0.034**	–0.022	–0.044**	–0.003	–0.001	–0.007	0.063**	–0.048**	–0.013
Estimates (from Table A1)	(0.007)	(0.007)	(0.007)	(0.009)	(0.011)	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.008)	(0.007)
Observations	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,718,309	855,016	863,293	1,766,166	1,766,166	1,766,166
Mean of dep. var. in 2010	0.073	0.038	0.108	0.305	0.191	0.421	0.614	0.763	0.462	0.095	0.386	0.506

Notes: Data from 2010 to 2014 American Community Survey. Estimates report the difference in dependent variables in 2014 between treatment states and synthetic control group. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
**Significance at the 5 percent level.

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Table A4. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance by age from American Community Survey.

	Low-educated sample (HS or less)								
	Medicaid			Uninsured			Private		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Age 22 to 44									
Expand in 2014	0.044**	0.044**	0.041**	–0.030**	–0.031**	–0.028**	–0.011	–0.009	–0.016**
	(0.008)	(0.008)	(0.010)	(0.010)	(0.012)	(0.011)	(0.007)	(0.009)	(0.006)
Observations	625,684	461,899	163,785	625,684	461,899	163,785	625,684	461,899	163,785
Mean of dep. var. in 2010	0.186	0.141	0.324	0.315	0.297	0.367	0.518	0.582	0.325
Age 45 to 64									
Expand in 2014	0.030**	0.029**	0.037**	–0.018	–0.020	–0.008	–0.012	–0.008	–0.031**
	(0.010)	(0.011)	(0.010)	(0.014)	(0.015)	(0.013)	(0.008)	(0.009)	(0.012)
Observations	231,802	193,355	38,447	231,802	193,355	38,447	231,802	193,355	38,447
Mean of dep. var. in 2010	0.118	0.099	0.215	0.214	0.197	0.306	0.680	0.717	0.487
Panel (B): Childless adults									
Age 22 to 44									
Expand in 2014	0.047**	0.036**	0.050**	–0.042**	–0.026**	–0.045**	–0.004	–0.009	–0.004
	(0.007)	(0.006)	(0.007)	(0.007)	(0.010)	(0.007)	(0.005)	(0.007)	(0.006)
Observations	594,085	133,989	460,096	594,085	133,989	460,096	594,085	133,989	460,096
Mean of dep. var. in 2010	0.092	0.052	0.104	0.472	0.346	0.511	0.438	0.603	0.386
Age 45 to 64									
Expand in 2014	0.034**	0.022**	0.054**	–0.028**	–0.021	–0.041**	–0.004	0.001	–0.012
	(0.007)	(0.007)	(0.008)	(0.010)	(0.011)	(0.008)	(0.006)	(0.007)	(0.006)
Observations	1,124,224	721,027	403,197	1,124,224	721,027	403,197	1,124,224	721,027	403,197
Mean of dep. var. in 2010	0.062	0.035	0.113	0.214	0.159	0.315	0.710	0.795	0.552

Notes: Data from 2010 to 2014 American Community Survey. Sample is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.
** Significance at the 5 percent level.

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Table A5. Comparison of health insurance estimates with and without 11 states (nine prior full expansion or limited expansion control states: DE, DC, MA, NY, VT, IN, ME, TN, and WI, and two late expansion treatment states: MI and NH) from American Community Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Difference-in-differences	0.043**	0.043**	0.039**	–0.020	–0.020	–0.019	–0.021**	–0.019**	–0.025**	0.049**	–0.020	–0.026**
Estimates	(0.008)	(0.008)	(0.009)	(0.011)	(0.013)	(0.011)	(0.006)	(0.007)	(0.006)	(0.009)	(0.011)	(0.006)
Difference-in-differences	0.040**	0.039**	0.041**	–0.027**	–0.027**	–0.024**	–0.011	–0.009	–0.019**	0.046**	–0.027**	–0.016**
Estimates (from Table A1)	(0.008)	(0.009)	(0.009)	(0.011)	(0.012)	(0.011)	(0.007)	(0.008)	(0.006)	(0.009)	(0.010)	(0.007)
Synthetic control	0.029	0.025	0.044	–0.040**	–0.031**	–0.020	–0.014	–0.007	–0.021	0.027	–0.062**	–0.021**
[*p*-value]	[0.073]	[0.085]	[0.079]	[0.002]	[0.023]	[0.247]	[0.068]	[0.407]	[0.085]	[0.097]	[<0.001]	[0.009]
Synthetic control [*p*-value] (from Table A3)	0.046** [<0.001]	0.034** [0.003]	0.067** [0.004]	–0.035** [0.004]	–0.032** [0.003]	–0.038** [0.021]	–0.006 [0.417]	–0.007 [0.367]	–0.013 [0.235]	0.044** [0.003]	–0.035** [0.007]	–0.011 [0.123]
Observations	703,283	537,870	165,413	703,283	537,870	165,413	703,283	537,870	165,413	1,035,622	1,035,622	1,035,622
Mean of dep. var. in 2010	0.153	0.116	0.279	0.312	0.292	0.380	0.550	0.608	0.352	0.172	0.302	0.545
Panel (B): Childless adults												
Difference-in-differences	0.046**	0.030**	0.060**	–0.034**	–0.019	–0.045**	–0.011**	–0.009	–0.014**	0.075**	–0.049**	–0.023**
Estimates	(0.006)	(0.006)	(0.006)	(0.010)	(0.012)	(0.008)	(0.005)	(0.007)	(0.004)	(0.006)	(0.008)	(0.006)
Difference-in-differences	0.039**	0.024**	0.052**	–0.034**	–0.022	–0.044**	–0.003	–0.001	–0.007	0.063**	–0.048**	–0.013

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Table A5. Continued.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Estimates (from Table A1)	(0.007)	(0.007)	(0.007)	(0.009)	(0.011)	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.008)	(0.007)
Synthetic control	0.042**	0.034**	0.065**	–0.041**	–0.028**	–0.060**	–0.006	–0.0002	–0.007	0.076**	–0.055**	–0.013
[*p*-value]	[0.002]	[0.003]	[0.001]	[<0.001]	[0.057]	[<0.001]	[0.325]	[0.966]	[0.316]	[<0.001]	[<0.001]	[0.127]
Synthetic control	0.044**	0.021**	0.062**	–0.040**	–0.028**	–0.057**	0.002	0.003	–0.002	0.062**	–0.054**	–0.006
[*p*-value] (from Table A3)	[0.001]	[0.006]	[<0.001]	[<0.001]	[0.034]	[<0.001]	[0.771]	[0.681]	[0.750]	[<0.001]	[<0.001]	[0.547]
Observations	1,375,638	679,664	695,974	1,375,638	679,664	695,974	1,375,638	679,664	695,974	1,435,514	1,435,514	1,435,514
Mean of dep. var. in 2010	0.064	0.033	0.096	0.323	0.205	0.441	0.603	0.752	0.453	0.082	0.403	0.500

Notes: Data from 2010 to 2014 American Community Survey. Estimates report difference in dependent variables in 2014 between treatment states and synthetic control group. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-Values of synthetic control estimates obtained through randomization inference in square brackets.

** Significance at the 5 percent level.

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Table A6. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance with state-specific linear trends from American Community Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand in 2014	0.042**	0.049**	0.029	–0.028	–0.027	–0.031	–0.004	–0.011	0.008	0.041**	–0.022	–0.019
	(0.013)	(0.013)	(0.024)	(0.017)	(0.015)	(0.031)	(0.015)	(0.016)	(0.021)	(0.013)	(0.016)	(0.015)
Expand in 2014,	0.061**	0.068**	0.046	–0.056**	–0.051**	–0.060	–0.014	–0.031	0.022	0.067**	–0.042**	–0.024
no prior policy	(0.020)	(0.021)	(0.037)	(0.018)	(0.016)	(0.051)	(0.018)	(0.022)	(0.028)	(0.019)	(0.021)	(0.019)
Expand in 2014,	0.034**	0.041**	0.022	–0.017	–0.017	–0.018	–0.000	–0.003	0.002	0.030**	–0.013	–0.016
any prior policy	(0.015)	(0.014)	(0.025)	(0.019)	(0.017)	(0.032)	(0.017)	(0.017)	(0.025)	(0.014)	(0.018)	(0.018)
p-value for test of difference between treatment effects	0.184	0.243	0.505	0.033	0.022	0.407	0.492	0.204	0.523	0.068	0.186	0.741
Observations	94,079	68,065	26,014	94,079	68,065	26,014	94,079	68,065	26,014	123,788	123,788	123,788
Mean of dep. var. in 2010	0.150	0.118	0.239	0.310	0.272	0.416	0.545	0.617	0.343	0.170	0.311	0.524
Panel (B): Childless adults												
Expand in 2014	0.042**	0.042**	0.042**	–0.046**	–0.043	–0.046**	0.010	0.016	0.003	0.063**	–0.057**	–0.001
	(0.008)	(0.014)	(0.011)	(0.018)	(0.023)	(0.020)	(0.016)	(0.020)	(0.018)	(0.010)	(0.015)	(0.012)
Expand in 2014,	0.049**	0.037**	0.059**	–0.052**	–0.029	–0.069**	0.011	0.015	0.000	0.079**	–0.067**	–0.002
no prior policy	(0.012)	(0.014)	(0.017)	(0.018)	(0.023)	(0.025)	(0.013)	(0.022)	(0.017)	(0.012)	(0.021)	(0.014)
Expand in 2014,	0.039**	0.045	0.034**	–0.043	–0.050	–0.036	0.010	0.016	0.004	0.055**	–0.053**	–0.000
any prior policy	(0.010)	(0.018)	(0.011)	(0.024)	(0.028)	(0.026)	(0.022)	(0.024)	(0.024)	(0.013)	(0.019)	(0.013)
p-value for test of difference between treatment effects	0.533	0.687	0.167	0.749	0.499	0.306	0.977	0.981	0.892	0.138	0.570	0.910

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Table A6. Continued.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Observations	114,117	55,253	58,864	114,117	55,253	58,864	114,117	55,253	58,864	114,727	114,727	114,727
Mean of dep. var. in 2010	0.071	0.058	0.084	0.337	0.217	0.451	0.575	0.712	0.445	0.094	0.422	0.460

Notes: Data from 2010 to 2014 American Community Survey. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A p-value reports results from F-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

Table A7. Comparisons of synthetic control estimates of effect of ACA Medicaid expansions on health insurance and labor supply from American Community Survey.

	Medicaid		Uninsured		Private		Employed at time of survey	
Panel (A): Parents	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)								
Expand in 2014 (from Tables A3 and A6)	0.046**	0.044**	–0.035**	–0.035**	–0.006	–0.011	–0.003	–0.007
[*p*-value]	[<0.001]	[0.003]	[0.004]	[0.007]	[0.417]	[0.123]	[0.679]	[0.066]
(RMSE)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Number of states with weight > 0	29	29	29	29	29	29	29	29
Specification 2 (each pre-2014 value of age, race, education, and the 2013 value and the average value of pre-2014 dependent variable)								
Expand in 2014	0.036**	0.040**	–0.032**	–0.034**	0.003	0.003	0.004	–0.0002
[*p*-value]	[0.010]	[0.032]	[0.019]	[0.025]	[0.658]	[0.779]	[0.488]	[0.974]
(RMSE)	(0.004)	(0.003)	(0.004)	(0.001)	(0.006)	(0.003)	(0.009)	(0.006)
Number of states with weight > 0	7	8	6	7	6	8	7	6
Observations	857,486	1,257,844	857,486	1,257,844	857,486	1,257,844	857,486	1,257,844
Mean of dep. var. in 2010	0.168	0.190	0.288	0.281	0.560	0.550	0.715	0.693
Panel (B): Childless adults								
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)								
Expand in 2014 (from Tables A3 and A6)	0.044**	0.062**	–0.040**	–0.054**	0.002	–0.006	–0.002	–0.0004
[*p*-value]	[0.001]	[<0.001]	[<0.001]	[<0.001]	[0.771]	[0.547]	[0.580]	[0.915]

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Table A7. Continued.

	Medicaid		Uninsured		Private		Employed at time of survey	
Panel (A): Parents	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL
(RMSE)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Number of states with weight > 0	29	29	29	29	29	29	29	28
Specification 2 (each Pre-2014 value of age, race, education, and the 2013 value and the average value of Pre-2014 dependent variable)								
Expand in 2014	0.040**	0.059**	–0.036**	–0.053**	0.009	–0.006	–0.001	–0.010
[*p*-value]	[0.001]	[<0.001]	[0.001]	[0.002]	[0.151]	[0.593]	[0.711]	[0.056]
(RMSE)	(0.001)	(0.001)	(0.002)	(0.008)	(0.005)	(0.004)	(0.006)	(0.013)
Number of states with weight > 0	13	7	10	7	9	10	6	6
Observations	1,718,309	1,766,166	1,718,309	1,766,166	1,718,309	1,766,166	1,718,309	1,766,166
Mean of dep. var. in 2010	0.073	0.095	0.305	0.386	0.614	0.506	0.677	0.610

Notes: Data from 2010 to 2014 American Community Survey. Estimates report the difference in dependent variables in 2014 between treatment states and synthetic control group. Sample used in columns 1, 3, and 5 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 2, 4, and 6 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. *p*-Values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A8. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance, Relative effects (percentage change from 2010) for American Community Survey and March Current Population Survey.

	Low-educated sample (HS or less)						Low-income sample I (<300% FPL)						Low-income sample II (<200% FPL)					
	Medicaid		Uninsured		Private		Medicaid		Uninsured		Private		Medicaid		Uninsured		Private	
Panel (A): Parents	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS
Expand in 2014	24**	43**	–9**	–13**	–2	–2	24**	40**	–10**	–12**	–3**	–4	23**	32**	–10**	–10**	–6**	–9**
Mean of dep. var. in 2010	0.17	0.15	0.29	0.31	0.56	0.54	0.19	0.17	0.28	0.31	0.55	0.52	0.26	0.24	0.36	0.40	0.40	0.37
Expand in 2014, no prior policy	28**	54**	–10**	–13**	–2	–6	29**	53**	–12**	–13**	–2	–5**	30**	47**	–14**	–15**	–4	–10**
Mean of dep. var. in 2010	0.16	0.14	0.29	0.30	0.57	0.56	0.17	0.15	0.28	0.31	0.56	0.54	0.25	0.22	0.36	0.40	0.41	0.39
Expand in 2014, any prior policy	23**	39**	-9	-13	-2	0	23**	35**	-8	-11	-3**	-3	21**	26**	-8	-7	-6**	-8
Mean of dep. var. in 2010	0.17	0.16	0.30	0.32	0.55	0.53	0.19	0.18	0.29	0.32	0.54	0.52	0.26	0.24	0.36	0.40	0.40	0.37
Observations	857,486	94,079	857,486	94,079	857,486	94,079	1,257,844	123,788	1,257,844	123,788	1,257,844	123,788	796,356	78,210	796,356	78,210	796,356	78,210
Panel (B): Childless adults																		
Expand in 2014	53**	63**	–11**	–12**	–1	1	66**	70**	–13**	–14**	–2	0	65**	64**	–13**	–14**	–5**	–1
Mean of dep. var. in 2010	0.07	0.07	0.31	0.34	0.61	0.58	0.10	0.09	0.39	0.42	0.51	0.46	0.13	0.12	0.46	0.51	0.39	0.34
Expand in 2014, no prior policy	51**	56**	–9**	–11**	–1	1	62**	76**	–12**	–15**	–2	1	66**	68**	–14**	–16**	–3	3
Mean of dep. var. in 2010	0.07	0.07	0.30	0.33	0.62	0.58	0.09	0.09	0.38	0.41	0.52	0.47	0.13	0.12	0.46	0.50	0.40	0.34
Expand in 2014, any prior policy	54**	64**	–12**	–13**	0	1	67**	65**	–13**	–14**	–3	0	65**	61**	–13**	–13**	–6**	–3
Mean of dep. var. in 2010	0.07	0.07	0.31	0.34	0.61	0.57	0.10	0.10	0.39	0.42	0.50	0.46	0.13	0.13	0.46	0.51	0.39	0.34

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Table A8. Continued.

	Low-educated sample (HS or less)						Low-income sample I (<300% FPL)						Low-income sample II (<200% FPL)					
	Medicaid		Uninsured		Private		Medicaid		Uninsured		Private		Medicaid		Uninsured		Private	
Panel (A): Parents	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS
Observations	1,718,309	114,117	1,718,309	114,117	1,718,309	114,117	1,766,166	114,727	1,766,166	114,727	1,766,166	114,727	1,064,590	68,707	1,064,590	68,707	1,064,590	68,707

Notes: Data from 2010 to 2014 American Community Survey and 2010 to 2015 March CPS. Each value is the effect of the 2014 Medicaid expansion on the outcome expressed in percentage terms (estimate divided by 2010 mean). Sample used in columns 1 through 6 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 7 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Sample used in columns 13 through 18 is limited to non-disabled adults between ages 22 and 64 with family income below 200 percent of FPL. Estimates for ACS are in Table 3 and estimates for March CPS are in Table A4.
** Significance at the 5 percent level.

Table A9. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance from March Current Population Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand in 2014	0.065**	0.075**	0.043**	–0.040**	–0.038**	–0.050**	–0.011	–0.021	0.013	0.068**	–0.037**	–0.019
	(0.015)	(0.017)	(0.020)	(0.017)	(0.018)	(0.024)	(0.013)	(0.015)	(0.019)	(0.014)	(0.017)	(0.012)
Expand in 2014, no prior policy	0.074**	0.074**	0.074	–0.039**	–0.034**	–0.053	–0.031	–0.040**	–0.011	0.82**	–0.040**	–0.028**
	(0.021)	(0.021)	(0.037)	(0.017)	(0.014)	(0.044)	(0.017)	(0.018)	(0.029)	(0.020)	(0.017)	(0.010)
Expand in 2014, any prior policy	0.061**	0.075**	0.028	–0.041	–0.039	–0.049**	–0.002	–0.013	0.025	0.62**	–0.036**	–0.015
	(0.018)	(0.021)	(0.019)	(0.022)	(0.023)	(0.023)	(0.014)	(0.016)	(0.018)	(0.018)	(0.021)	(0.014)
p-value for test of difference between treatment effects	0.603	0.962	0.219	0.945	0.794	0.913	0.148	0.178	0.250	0.385	0.866	0.389
Observations	94,079	68,065	26,014	94,079	68,065	26,014	94,079	68,065	26,014	123,788	123,788	123,788
Mean of dep. var. in 2010	0.150	0.118	0.239	0.310	0.272	0.416	0.545	0.617	0.343	0.170	0.311	0.524
Panel (B): Childless adults												
Expand in 2014	0.045**	0.040**	0.049**	–0.041**	–0.033	–0.048**	0.006	0.007	0.004	0.065**	–0.060**	0.002
	(0.008)	(0.013)	(0.009)	(0.015)	(0.021)	(0.014)	(0.012)	(0.017)	(0.012)	(0.009)	(0.015)	(0.011)
Expand in 2014, no prior policy	0.039**	0.026	0.051**	–0.035**	–0.019	–0.053**	0.005	0.007	0.004	0.069**	–0.061**	0.004
	(0.011)	(0.013)	(0.015)	(0.015)	(0.019)	(0.018)	(0.018)	(0.023)	(0.011)	(0.013)	(0.019)	(0.011)
Expand in 2014, any prior policy	0.048**	0.046**	0.048**	–0.044**	–0.041	–0.045**	0.006	0.007	0.004	0.063**	–0.059**	0.001
	(0.009)	(0.014)	(0.009)	(0.020)	(0.026)	(0.018)	(0.016)	(0.020)	(0.015)	(0.012)	(0.020)	(0.014)
p-value for test of difference between treatment effects	0.516	0.163	0.851	0.713	0.459	0.738	0.957	0.990	0.972	0.716	0.965	0.824

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Table A9. Continued.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Observations	114,117	55,253	58,864	114,117	55,253	58,864	114,117	55,253	58,864	114,727	114,727	114,727
Mean of dep. var. in 2010	0.071	0.058	0.084	0.337	0.217	0.451	0.575	0.712	0.445	0.094	0.422	0.460

Notes: Data from 2010 to 2015 March Current Population Survey. Estimates above dashed lines report coefficients on interaction terms between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines also report coefficients on these interaction terms but distinguishes between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A10. Event history estimates of effect of ACA Medicaid expansions on health insurance from March Current Population Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand × survey year 2015	0.073**	0.088**	0.038	–0.043**	–0.037	–0.066**	–0.015	–0.030	0.029	0.078**	–0.044**	–0.018
	(0.018)	(0.019)	(0.023)	(0.021)	(0.023)	(0.025)	(0.016)	(0.019)	(0.022)	(0.018)	(0.019)	(0.014)
Expand × survey year 2014	0.030**	0.029	0.026	–0.007	–0.003	–0.020	–0.013	–0.014	0.001	0.038**	–0.015	–0.003
	(0.014)	(0.017)	(0.017)	(0.018)	(0.023)	(0.022)	(0.013)	(0.016)	(0.024)	(0.014)	(0.015)	(0.013)
Expand × survey year 2013	0.010	0.020	–0.016	–0.019	–0.014	–0.037	0.007	–0.003	0.040**	0.010	–0.018	0.009
	(0.011)	(0.011)	(0.021)	(0.015)	(0.014)	(0.025)	(0.011)	(0.013)	(0.019)	(0.012)	(0.011)	(0.011)
Expand × survey year 2012	0.012	0.020	–0.011	0.007	0.009	0.0004	–0.018	–0.022	0.0002	0.011	–0.003	–0.007
	(0.009)	(0.010)	(0.019)	(0.010)	(0.011)	(0.019)	(0.010)	(0.012)	(0.020)	(0.010)	(0.008)	(0.010)
Expand × survey year 2011	–0.0003	0.004	–0.016	0.002	0.011	–0.025	0.002	–0.008	0.035	0.003	–0.003	0.003
	(0.008)	(0.009)	(0.015)	(0.009)	(0.012)	(0.017)	(0.010)	(0.013)	(0.021)	(0.009)	(0.010)	(0.011)
p-value test of joint significance of pre-2014 interactions	0.284	0.267	0.086	0.266	0.068	0.339	0.132	0.394	0.115	0.059	0.519	0.539
Observations	94,079	68,065	26,014	94,079	68,065	26,014	94,079	68,065	26,014	123,788	123,788	123,788
Mean of dep. var. in 2010	0.150	0.118	0.239	0.310	0.272	0.416	0.545	0.617	0.343	0.170	0.311	0.524
Panel (B): Childless adults												
Expand × survey year 2015	0.045**	0.035**	0.054**	–0.043**	–0.025	–0.060**	0.007	0.002	0.012	0.067**	–0.070**	0.008
	(0.011)	(0.014)	(0.012)	(0.015)	(0.021)	(0.014)	(0.013)	(0.019)	(0.013)	(0.011)	(0.018)	(0.014)
Expand × survey year 2014	0.004	–0.003	0.011	–0.009	0.003	–0.023	0.006	–0.007	0.022	0.007	–0.019	0.012
	(0.011)	(0.011)	(0.014)	(0.010)	(0.015)	(0.013)	(0.011)	(0.017)	(0.016)	(0.010)	(0.015)	(0.014)

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Table A10. Continued.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand × survey year 2013	0.002	–0.007	0.009	0.008	0.015	0.00003	–0.005	–0.005	–0.004	0.001	–0.001	0.001
	(0.008)	(0.009)	(0.011)	(0.011)	(0.014)	(0.014)	(0.010)	(0.013)	(0.014)	(0.008)	(0.014)	(0.012)
Expand × survey year 2012	–0.006	–0.010	–0.004	0.009	0.025	–0.007	–0.012	–0.023	–0.0002	–0.002	–0.008	0.002
	(0.006)	(0.009)	(0.008)	(0.012)	(0.013)	(0.016)	(0.011)	(0.012)	(0.016)	(0.007)	(0.013)	(0.001)
Expand × survey year 2011	0.004	–0.001	0.008	–0.019	–0.004	–0.034**	0.018	0.009	0.029	0.005	–0.024**	0.017
	(0.005)	(0.007)	(0.008)	(0.010)	(0.010)	(0.014)	(0.010)	(0.014)	(0.015)	(0.006)	(0.011)	(0.011)
p-value test of joint significance of pre-2014 interactions	0.190	0.838	0.111	0.098	0.298	0.026	0.050	0.139	0.038	0.754	0.082	0.335
Observations	114,117	55,253	58,864	114,117	55,253	58,864	114,117	55,253	58,864	114,727	114,727	114,727
Mean of dep. var. in 2010	0.071	0.058	0.084	0.337	0.217	0.451	0.575	0.712	0.445	0.094	0.422	0.460

Notes: Data from 2010 to 2015 March Current Population Survey. A *p*-value reports results from *F*-tests of joint significance from pre-2014 Medicaid expansion interaction terms. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A11. Synthetic control estimates of effect of ACA Medicaid expansions on health insurance from March Current Population Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Expand in 2014	0.061**	0.068**	0.049	–0.052**	–0.049	–0.045	0.003	–0.017	0.030	0.043	–0.041**	–0.011
[*p*-value]	[0.010]	[0.009]	[0.082]	[0.031]	[0.072]	[0.145]	[0.891]	[0.442]	[0.209]	[0.065]	[0.032]	[0.525]
Difference-in-differences	0.065**	0.075**	0.043**	–0.040**	–0.038**	–0.050**	–0.011	–0.021	0.013	0.068**	–0.037**	–0.019
Estimates (from Table A9)	(0.015)	(0.017)	(0.020)	(0.017)	(0.018)	(0.024)	(0.013)	(0.015)	(0.019)	(0.014)	(0.017)	(0.012)
Observations	94,079	68,065	26,014	94,079	68,065	26,014	94,079	68,065	26,014	123,788	123,788	123,788
Mean of dep. var. in 2010	0.150	0.118	0.239	0.310	0.272	0.416	0.545	0.617	0.343	0.170	0.311	0.524
Panel (B): Childless adults												
Expand in 2014	0.043**	0.046**	0.042**	–0.032**	–0.031	–0.051**	0.020	0.002	0.016	0.067**	–0.047**	0.008
[*p*-value]	[0.003]	[0.035]	[0.010]	[0.043]	[0.074]	[0.007]	[0.202]	[0.915]	[0.290]	[<0.001]	[0.012]	[0.595]
Difference-in-differences	0.045**	0.040**	0.049**	–0.041**	–0.033	–0.048**	0.006	0.007	0.004	0.065**	–0.060**	0.002
Estimates (from Table A9)	(0.008)	(0.013)	(0.009)	(0.015)	(0.021)	(0.014)	(0.012)	(0.017)	(0.012)	(0.009)	(0.015)	(0.011)
Observations	114,117	55,253	58,864	114,117	55,253	58,864	114,117	55,253	58,864	114,727	114,727	114,727
Mean of dep. var. in 2010	0.071	0.058	0.084	0.337	0.217	0.451	0.575	0.712	0.445	0.094	0.422	0.460

Notes: Data from 2010 to 2015 March Current Population Survey. Estimates report the difference in dependent variables in survey year 2015 between treatment states and synthetic control group. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
** Significance at the 5 percent level.

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Table A12. Difference-in-differences estimates of effect of ACA Medicaid expansions on health insurance by age from March Current Population Survey.

	Low-educated sample (HS or less)								
	Medicaid			Uninsured			Private		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Age 22 to 44									
Expand in 2014	0.069**	0.081**	0.046**	–0.045**	–0.041**	–0.057**	–0.011	–0.024	0.018
	(0.016)	(0.017)	(0.021)	(0.017)	(0.017)	(0.025)	(0.013)	(0.014)	(0.018)
Observations	70,818	49,563	21,255	70,818	49,563	21,255	70,818	49,563	21,255
Mean of dep. var. in 2010	0.166	0.130	0.258	0.334	0.260	0.429	0.506	0.582	0.316
Age 45 to 64									
Expand in 2014	0.056**	0.060**	0.036	–0.030	–0.032	–0.023	–0.011	–0.012	–0.007
	(0.016)	(0.019)	(0.032)	(0.023)	(0.026)	(0.031)	(0.025)	(0.025)	(0.043)
Observations	23,261	18,502	4,759	23,261	18,502	4,759	23,261	18,502	4,759
Mean of dep. var. in 2010	0.101	0.087	0.156	0.236	0.206	0.357	0.664	0.716	0.461
Panel (B): Childless adults									
Age 22 to 44									
Expand in 2014	0.048**	0.054**	0.045**	–0.046**	–0.040	–0.046**	–0.002	–0.015	–0.0004
	(0.011)	(0.017)	(0.012)	(0.015)	(0.024)	(0.017)	(0.013)	(0.022)	(0.015)
Observations	45,489	11,214	34,275	45,489	11,214	34,275	45,489	11,214	34,275
Mean of dep. var. in 2010	0.080	0.072	0.082	0.480	0.349	0.525	0.431	0.577	0.380
Age 45 to 64									
Expand in 2014	0.042**	0.035**	0.055**	–0.036**	–0.030	–0.049**	0.011	0.012	0.008
	(0.011)	(0.014)	(0.012)	(0.018)	(0.023)	(0.017)	(0.017)	(0.019)	(0.020)
Observations	68,628	44,039	24,589	68,628	44,039	24,589	68,628	44,039	24,589
Mean of dep. var. in 2010	0.065	0.054	0.086	0.239	0.181	0.345	0.675	0.749	0.539

Notes: Data from 2010 to 2015 March Current Population Survey. Sample is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.
** Significance at the 5 percent level.

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Table A13. Comparison of health insurance estimates with and without 11 states (nine prior full expansion or limited expansion control states: DE, DC, MA, NY, VT, IN, ME, TN, and WI, and two late expansion treatment States: MI and NH) from March Current Population Survey.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Difference-in-differences	0.054**	0.067**	0.027	–0.032	–0.027	–0.048	–0.010	–0.027	0.027	0.064**	–0.027	–0.024
Estimates	(0.016)	(0.018)	(0.023)	(0.020)	(0.020)	(0.029)	(0.015)	(0.016)	(0.020)	(0.015)	(0.018)	(0.013)
Difference-in-differences	0.065**	0.075**	0.043**	–0.040**	–0.038**	–0.050**	–0.011	–0.021	0.013	0.068**	–0.037**	–0.019
Estimates (from Table A9)	(0.015)	(0.017)	(0.020)	(0.017)	(0.018)	(0.024)	(0.013)	(0.015)	(0.019)	(0.014)	(0.017)	(0.012)
Synthetic control	0.083**	0.117**	0.057	–0.040	–0.073**	–0.149**	–0.016	–0.003	0.062	0.104**	–0.028	–0.042
[*p*-value]	[0.005]	[0.001]	[0.099]	[0.247]	[0.039]	[<0.001]	[0.539]	[0.899]	[0.073]	[<0.001]	[0.238]	[0.069]
Synthetic control	0.061**	0.068**	0.049	–0.052**	–0.049	–0.045	0.003	–0.017	0.030	0.043	–0.041**	–0.011
[*p*-value] (from Table A11)	[0.010]	[0.009]	[0.082]	[0.031]	[0.072]	[0.145]	[0.891]	[0.442]	[0.209]	[0.065]	[0.032]	[0.525]
Observations	73,739	53,599	20,140	73,739	53,599	20,140	73,739	53,599	20,140	97,741	97,741	97,741
Mean of dep. var. In 2010	0.130	0.103	0.206	0.340	0.300	0.453	0.532	0.601	0.338	0.145	0.338	0.520
Panel (B): Childless adults												
Difference-in-differences	0.052**	0.049**	0.054**	–0.037**	–0.030	–0.042**	–0.001	–0.001	–0.002	0.069**	–0.059**	0.001
Estimates	(0.007)	(0.012)	(0.008)	(0.017)	(0.024)	(0.015)	(0.014)	(0.019)	(0.014)	(0.009)	(0.016)	(0.012)
Difference-in-differences	0.045**	0.040**	0.049**	–0.041**	–0.033	–0.048**	0.006	0.007	0.004	0.065**	–0.060**	0.002
Estimates (from Table A9)	(0.008)	(0.013)	(0.009)	(0.015)	(0.021)	(0.014)	(0.012)	(0.017)	(0.012)	(0.009)	(0.015)	(0.011)
Synthetic control	0.061**	0.075**	0.072**	–0.056**	–0.057**	–0.053**	–0.006	0.002	0.005	0.078**	–0.051	–0.004
[*p*-value]	[<0.001]	[0.005]	[<0.001]	[0.002]	[0.008]	[0.045]	[0.701]	[0.898]	[0.808]	[0.001]	[0.059]	[0.805]

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Table A13. Continued.

	Low-educated sample (HS or less)									Low-income sample (<300% FPL)		
	Medicaid			Uninsured			Private			Medicaid	Uninsured	Private
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	All	All
Synthetic control	0.043**	0.046**	0.042**	–0.032**	–0.031	–0.051**	0.020	0.002	0.016	0.067**	–0.047**	0.008
[*p*-value] (from Table A11)	[0.003]	[0.035]	[0.010]	[0.043]	[0.074]	[0.007]	[0.202]	[0.915]	[0.290]	[<0.001]	[0.012]	[0.595]
Observations	86,576	42,179	44,397	86,576	42,179	44,397	86,576	42,179	44,397	88,459	88,459	88,459
Mean of dep. var. In 2010	0.062	0.054	0.068	0.359	0.234	0.479	0.562	0.698	0.431	0.079	0.443	0.453

Notes: Data from 2010 to 2015 March Current Population Survey. Estimates report difference in dependent variables in survey year 2015 between treatment states and synthetic control group. Sample used in columns 1 through 9 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 10 through 12 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets.

** Significance at the 5 percent level.

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Table A14. Comparisons of synthetic control estimates of effect of ACA Medicaid expansions on health insurance from March Current Population Survey.

	Medicaid		Uninsured		Private	
Panel (A): Parents	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)						
Expand in 2014 (from Table A11)	0.061**	0.043	–0.052**	–0.041**	0.003	–0.011
[*p*-value]	[0.010]	[0.065]	[0.031]	[0.032]	[0.891]	[0.525]
(RMSE)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Number of states with weight > 0	29	29	29	29	28	29
Specification 2 (each pre-2014 value of age, race, education, and the 2013 value and the average value of pre-2014 dependent variable)						
Expand in 2014	0.062**	0.048	–0.065**	–0.054**	0.015	0.006
[*p*-value]	[0.025]	[0.099]	[0.009]	[0.006]	[0.541]	[0.811]
(RMSE)	(0.011)	(0.014)	(0.006)	(0.004)	(0.012)	(0.009)
Number of states with weight > 0	8	7	8	7	10	8
Observations	94,079	123,788	94,079	123,788	94,079	123,788
Mean of dep. var. in 2010	0.150	0.170	0.310	0.311	0.545	0.524
Panel (B): Childless adults						
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)						
Expand in 2014 (from Table A11)	0.043**	0.067**	–0.032**	–0.047**	0.020	0.008
[*p*-value]	[0.003]	[<0.001]	[0.043]	[0.012]	[0.202]	[0.595]
(RMSE)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Number of states with weight > 0	29	29	28	29	29	29
Specification 2 (each pre-2014 value of age, race, education, and the 2013 value and the average value of pre-2014 dependent variable)						
Expand in 2014	0.038**	0.056	–0.042**	–0.053	0.012	0.012
[*p*-value]	[0.007]	[0.005]	[0.005]	[0.015]	[0.444]	[0.489]
(RMSE)	(0.003)	(0.005)	(0.010)	(0.013)	(0.017)	(0.015)

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Table A14. Continued.

	Medicaid		Uninsured		Private	
Panel (A): Parents	HS or less	<300% FPL	HS or less	<300% FPL	HS or less	<300% FPL
Number of states with weight > 0	12	12	11	9	11	10
Observations	114,117	114,727	114,117	114,727	114117	114,727
Mean of dep. var. in 2010	0.071	0.094	0.337	0.422	0.575	0.460

Notes: Data from 2010 to 2015 March Current Population Survey. Estimates report the difference in dependent variables in survey year 2015 between treatment states and synthetic control group. Sample used in columns 1, 3, and 5 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 2, 4, and 6 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
[**] Significance at the 5 percent level.

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Table A15. Event history estimates of effect of ACA Medicaid expansions on labor supply from American Community Survey.

	Low-educated sample (HS or less)			Low-income sample (<300% FPL)
	Employed at time of survey			Employed at time of survey
Panel (A): Parents	All	Married	Unmarried	All
Expand × year 2014	0.007	0.005	0.016	0.007
	(0.005)	(0.004)	(0.010)	(0.004)
Expand × year 2013	0.006	0.006	0.008	0.006
	(0.003)	(0.003)	(0.008)	(0.003)
Expand × year 2012	0.004	0.004	0.009	0.005
	(0.003)	(0.003)	(0.007)	(0.003)
Expand × year 2011	–0.001	–0.002	0.005	0.001
	(0.003)	(0.003)	(0.007)	(0.003)
p-value test of joint significance of pretrend	0.157	0.153	0.664	0.086
Observations	857,486	655,254	202,232	1,257,844
Mean of dep. var. in 2010	0.715	0.726	0.676	0.693
Panel (B): Childless adults				
Expand × year 2014	0.006	0.007	0.005	0.007
	(0.004)	(0.004)	(0.006)	(0.004)
Expand × year 2013	0.007**	0.008**	0.007	0.006
	(0.004)	(0.004)	(0.005)	(0.003)
Expand × year 2012	0.004	0.008**	0.001	0.005
	(0.003)	(0.003)	(0.005)	(0.003)
Expand × year 2011	0.002	0.001	0.004	0.002
	(0.002)	(0.003)	(0.003)	(0.002)
p-value test of joint significance of pretrend	0.214	0.002	0.245	0.251

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Table A15. Continued.

	Low-educated sample (HS or less)			Low-income sample (<300% FPL)
	Employed at time of survey			Employed at time of survey
Panel (A): Parents	All	Married	Unmarried	All
Observations	1,718,309	855,016	863,293	1,766,166
Mean of dep. var. in 2010	0.677	0.688	0.667	0.610

Notes: Data from 2010 to 2014 American Community Survey. Estimates report coefficient on interaction term between an indicator for whether state expands Medicaid and year indicators. A *p*-value reports results from *F*-tests of joint significance from pre-2014 Medicaid expansion interaction terms. Sample used in columns 1 through 3 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in column 4 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.

** Significance at the 5 percent level.

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Table A16. Comparison of labor supply estimates with and without 11 states (nine prior full expansion or limited expansion control states: DE, DC, MA, NY, VT, IN, ME, TN, and WI, and two late expansion treatment states: MI and NH) from American Community Survey.

	Low-educated sample (HS or less)			Low-income sample (<300% FPL)
	Employed at time of survey			Employed at time of survey
Panel (A): Parents	All	Married	Unmarried	All
Difference-in-differences	0.005	0.002	0.014	0.005
Estimates	(0.004)	(0.004)	(0.008)	(0.003)
Difference-in-differences	0.005	0.003	0.011	0.004
Estimates (from Table 6)	(0.004)	(0.003)	(0.007)	(0.003)
Synthetic control	0.003	–0.001	0.001	0.008**
[*p*-value]	[0.532]	[0.786]	[0.957]	[0.049]
Synthetic control	–0.003	0.013**	–0.005	–0.007
[*p*-value] (from Table 6)	[0.679]	[0.015]	[0.713]	[0.066]
Observations	703,283	537,870	165,413	1,035,622
Mean of dep. var. in 2010	0.713	0.723	0.677	0.692
	Panel (B): Childless adults			
Difference-in-differences	0.001	0.002	–0.001	0.002
Estimates	(0.003)	(0.003)	(0.004)	(0.003)
Difference-in-differences	0.003	0.003	0.002	0.003
Estimates (from Table 6)	(0.003)	(0.003)	(0.004)	(0.003)
Synthetic control	–0.003	–0.007	–0.004	–0.008
[*p*-value]	[0.470]	[0.165]	[0.384]	[0.082]
Synthetic control	–0.002	–0.008	0.003	–0.0004
[*p*-value] (From Table 6)	[0.580]	[0.067]	[0.605]	[0.915]
Observations	1,375,638	679,664	695,974	1,435,514
Mean of dep. var. in 2010	0.676	0.686	0.667	0.612

Notes: Data from 2010 to 2014 American Community Survey. Estimates report the difference in dependent variables in 2014 between treatment states and synthetic control group. Sample used in columns 1 through 3 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in column 4 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
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Table A17. Difference-in-differences and synthetic control estimates of effect of ACA Medicaid expansions on labor supply from American Community Survey.

	Low-educated sample (HS or less)						Low-income sample I (<300% FPL)		Low-income sample II (<200% FPL)	
	Employed at time of survey						Employed at time of survey		Employed at time of survey	
	All		Married		Unmarried		All	All	All	All
Panel (A): Parents	DD	SC	DD	SC	DD	SC	DD	SC	DD	SC
Expand in 2014	0.005	–0.003	0.003	0.013**	0.011	–0.005	0.004	–0.007	0.004	0.001
	(0.004)	[0.679]	(0.003)	[0.015]	(0.007)	[0.713]	(0.003)	[0.066]	(0.003)	[0.817]
Expand in 2014, no prior policy	0.002		0.001		0.003		0.002		–0.001	
	(0.005)		(0.005)		(0.009)		(0.005)		(0.005)	
Expand in 2014, any prior policy	0.006		0.003		0.014		0.005**		0.006	
	(0.004)		(0.004)		(0.007)		(0.002)		(0.003)	
p-value for test of difference between treatment effects	0.507		0.731		0.288		0.128		0.204	
Observations	857,486	857,486	655,254	655,254	202,232	202,232	1,257,844	1,257,844	796,356	796,356
Mean of dep. var. in 2010	0.715	0.715	0.726	0.726	0.676	0.676	0.693	0.693	0.628	0.628
Panel (B): Childless adults										
Expand in 2014	0.003	–0.002	0.003	–0.008	0.002	0.003	0.003	–0.0004	0.003	–0.003
	(0.003)	[0.580]	(0.003)	[0.067]	(0.004)	[0.605]	(0.003)	[0.915]	(0.003)	[0.641]
Expand in 2014, no prior policy	0.002		0.0005		0.004		0.004		0.005	
	(0.006)		(0.006)		(0.006)		(0.004)		(0.004)	
Expand in 2014, any prior policy	0.003		0.004		0.002		0.003		0.002	
	(0.003)		(0.003)		(0.004)		(0.003)		(0.003)	
p-value for test of difference between treatment effects	0.910		0.525		0.685		0.462		0.379	

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Table A17. Continued.

	Low-educated sample (HS or less)						Low-income sample I (<300% FPL)		Low-income sample II (<200% FPL)	
	Employed at time of survey						Employed at time of survey		Employed at time of survey	
	All		Married		Unmarried		All	All	All	All
Panel (A): Parents	DD	SC	DD	SC	DD	SC	DD	SC	DD	SC
Observations	1,718,309	1,718,309	855,016	855,016	863,293	863,293	1,766,166	1,766,166	1,064,590	1,064,590
Mean of dep. var. in 2010	0.677	0.677	0.688	0.688	0.667	0.667	0.610	0.610	0.526	0.526

Notes: Data from 2010 to 2014 American Community Survey. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. Sample used in columns 1 through 6 is limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Sample used in columns 7 and 8 is limited to non-disabled adults between ages 22 and 64 with family income below 300 percent of FPL. Sample used in columns 9 and 10 is limited to non-disabled adults between ages 22 and 64 with family income below 200 percent of FPL. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
** Significance at the 5 percent level.

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Table A18. Event history estimates of effect of ACA Medicaid expansions on labor supply from Monthly Current Population Survey.

	Low-educated sample (HS or less)								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Expand × year 2016	–0.010	–0.013	–0.002	–0.270	–0.446	0.174	–0.006	–0.012	0.008
	(0.009)	(0.009)	(0.016)	(0.418)	(0.441)	(0.656)	(0.009)	(0.009)	(0.017)
Expand × year 2015	0.004	–0.005	0.029**	0.103	–0.338	1.267**	0.008	–0.002	0.034**
	(0.007)	(0.008)	(0.013)	(0.342)	(0.368)	(0.580)	(0.007)	(0.008)	(0.014)
Expand × year 2014	0.006	–0.006	0.042**	0.189	–0.260	1.414**	0.006	–0.007	0.042**
	(0.006)	(0.008)	(0.012)	(0.288)	(0.322)	(0.489)	(0.006)	(0.007)	(0.011)
Expand × year 2013	0.006	0.001	0.021	0.256	–0.013	1.013	0.009	0.002	0.028**
	(0.007)	(0.009)	(0.011)	(0.320)	(0.371)	(0.510)	(0.007)	(0.008)	(0.013)
Expand × year 2012	0.007	0.001	0.023	0.469	0.101	1.389**	0.012	0.001	0.040**
	(0.008)	(0.009)	(0.013)	(0.381)	(0.412)	(0.566)	(0.008)	(0.009)	(0.014)
Expand × year 2011	–0.001	–0.008	0.018	0.051	–0.325	0.982**	0.001	–0.010	0.027**
	(0.006)	(0.007)	(0.011)	(0.292)	(0.317)	(0.431)	(0.007)	(0.007)	(0.011)
p-value test of joint significance of pre-2014 interactions	0.425	0.300	0.247	0.239	0.232	0.091	0.130	0.144	0.052
Observations	640,572	459,425	181,147	640,572	459,425	181,147	640,572	459,425	181,147
Mean of dep. var. in 2010	0.685	0.706	0.627	27.1	28.3	23.9	0.615	0.639	0.548
Panel (B): Childless adults									
Expand × year 2016	0.010	0.006	0.016	0.311	0.169	0.529	0.010	0.006	0.015
	(0.008)	(0.010)	(0.011)	(0.396)	(0.484)	(0.503)	(0.009)	(0.010)	(0.012)
Expand × year 2015	0.011	0.012	0.014	0.295	0.239	0.504	0.009	0.008	0.014
	(0.008)	(0.008)	(0.011)	(0.350)	(0.381)	(0.454)	(0.008)	(0.008)	(0.011)
Expand × year 2014	0.002	–0.010	0.016	–0.025	–0.401	0.469	0.001	–0.007	0.012
	(0.007)	(0.008)	(0.010)	(0.309)	(0.358)	(0.427)	(0.007)	(0.008)	(0.010)
Expand × year 2013	–0.007	–0.017**	0.007	–0.360	–0.707**	0.134	–0.004	–0.014	0.008
	(0.006)	(0.008)	(0.009)	(0.254)	(0.337)	(0.370)	(0.006)	(0.007)	(0.009)

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Table A18. Continued.

	Low-educated sample (HS or less)								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Expand × year 2012	–0.012**	–0.024**	0.002	–0.509**	–0.892**	–0.042	–0.008	–0.019**	0.005
	(0.005)	(0.006)	(0.008)	(0.252)	(0.323)	(0.364)	(0.005)	(0.007)	(0.009)
Expand × year 2011	–0.007	–0.018**	0.005	–0.363	–0.734**	0.033	–0.007	–0.017**	0.004
	(0.004)	(0.005)	(0.007)	(0.191)	(0.254)	(0.301)	(0.005)	(0.006)	(0.007)
p-value test of joint significance of pre-2014 interactions	0.182	0.001	0.766	0.204	0.028	0.939	0.422	0.017	0.828
Observations	1,141,994	549,419	592,575	1,141,994	549,419	592,575	1,141,994	549,419	592,575
Mean of dep. var. in 2010	0.652	0.669	0.636	25.8	26.7	24.9	0.587	0.605	0.569

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. A *p*-value reports results from *F*-tests of joint significance from pre-2014 Medicaid expansion interaction terms. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. All standard errors (parentheses) are clustered on state.
** Significance at the 5 percent level.

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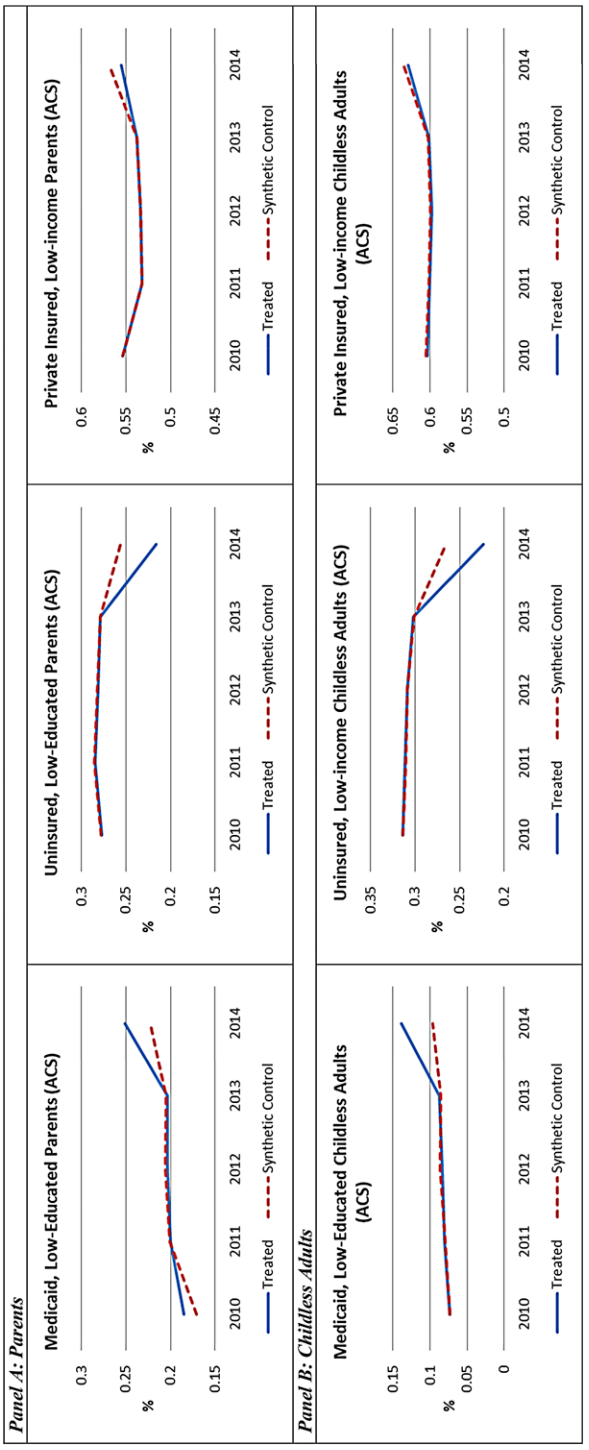
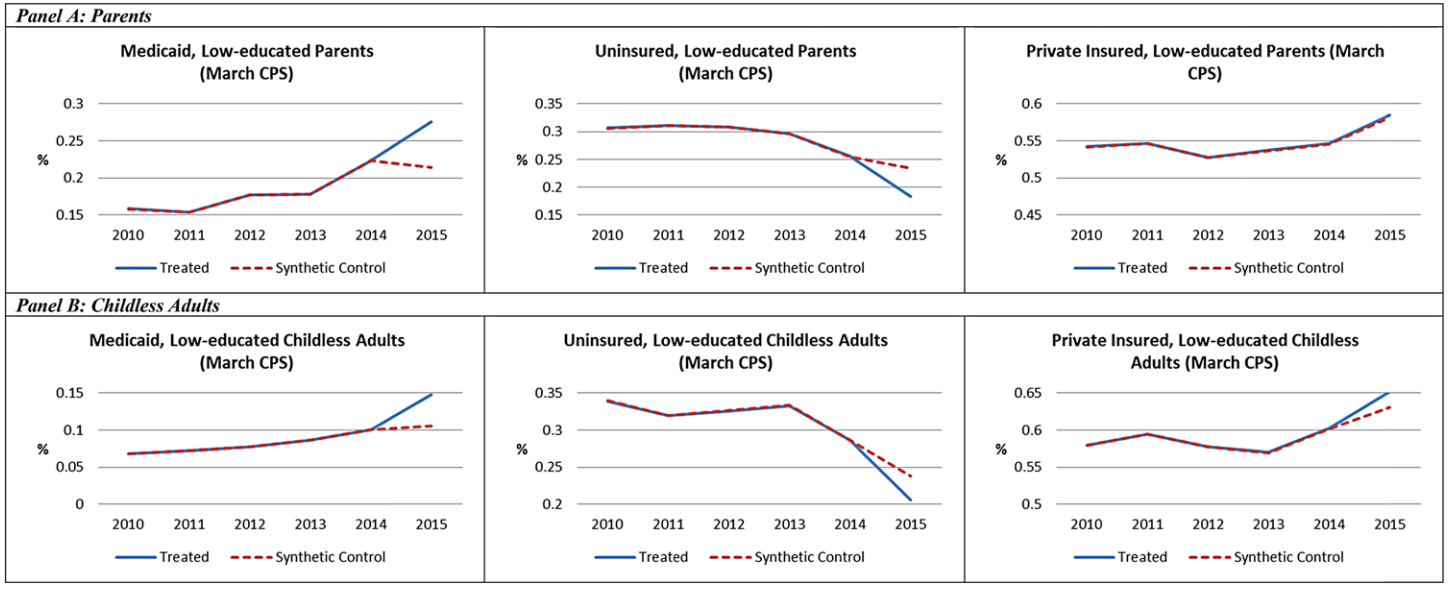


Notes: Data from 2010 to 2014 American Community Survey. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure A1. Synthetic Control Estimates of Effect of ACA Medicaid Expansions on Health Insurance, American Community Survey without 11 States (Nine Prior Full Expansion or Limited Expansion Control States: DE, DC, MA, NY, VT, IN, ME, TN and WI, and Two Late Expansion Treatment States: MI and NH) from American Community Survey.



Notes: Data from 2010 to 2015 March Current Population Survey. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure A2. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Health Insurance, March Current Population Survey Low-Educated Sample (HS or Less).

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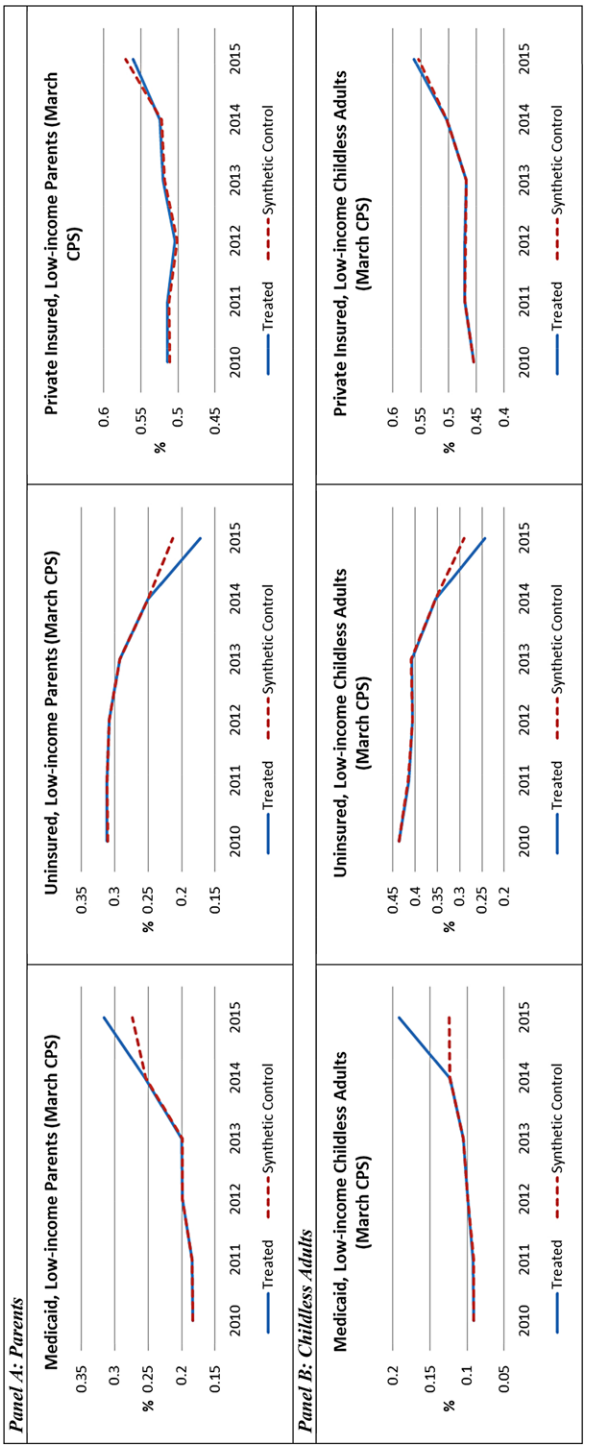
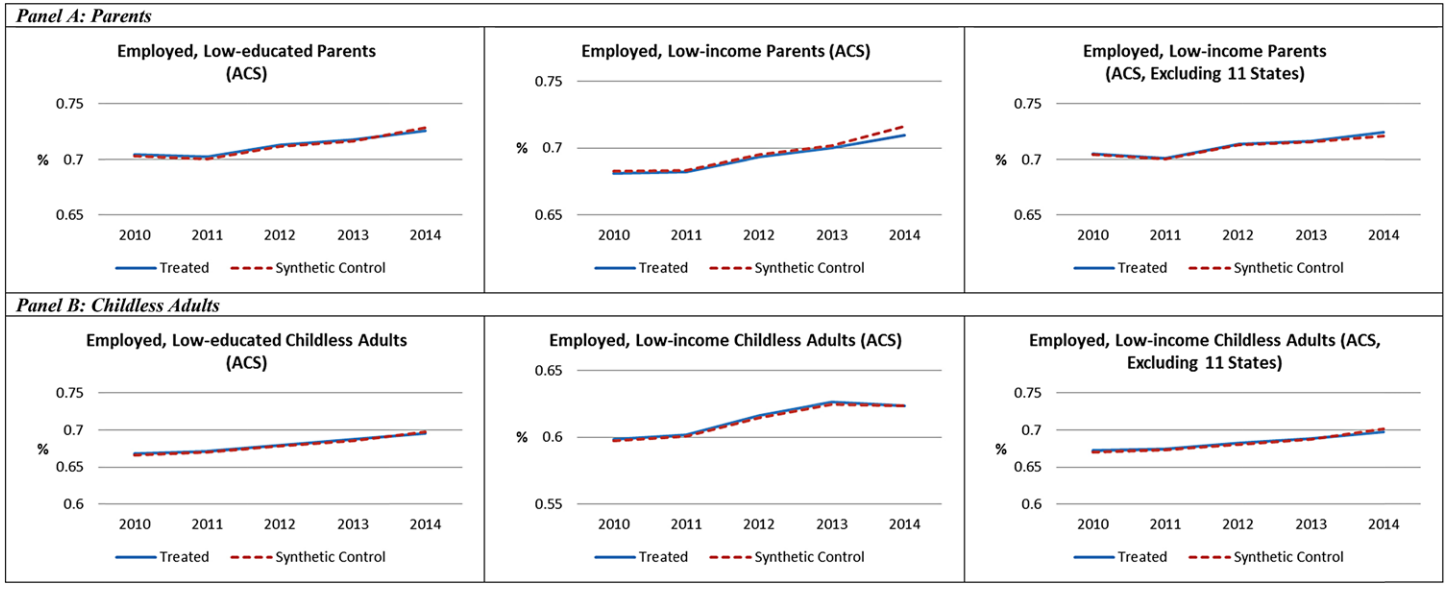


Notes: Data from 2010 to 2015 March Current Population Survey. Sample limited to non-disabled adults between ages 22 to 64 with income below 300 percent of the FPL. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure A3. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Health Insurance, March Current Population Survey Low-Income Sample (<300% FPL).



Notes: Data from 2010 to 2014 American Community Survey. Sample limited to non-disabled adults between ages 22 and 64. In samples excluding 11 states, observations are removed from nine states with prior full expansions (DE, DC, MA, NY, VT, IN, ME, TN, and WI) and two late expansion treatment states (MI and NH). Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable.

Figure A4. Synthetic Control Estimates of the Effect of ACA Medicaid Expansions on Employment, American Community Survey, Various Samples.

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Table A19. Comparison of health insurance estimates with and without 11 states (nine prior full expansion or limited expansion control states: DE, DC, MA, NY, VT, IN, ME, TN, and WI, and two late expansion treatment states: MI and NH) from Monthly Current Population Survey.

	Low-educated sample (HS or less)								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Difference-in-differences	0.001	–0.005	0.020**	–0.018	–0.227	0.562	0.002	–0.002	0.014
Estimates	(0.004)	(0.005)	(0.008)	(0.213)	(0.225)	(0.359)	(0.005)	(0.006)	(0.009)
Difference-in-differences	0.001	–0.004	0.015	–0.039	–0.202	0.388	0.001	–0.003	0.012
Estimates (from Table 7)	(0.005)	(0.005)	(0.008)	(0.222)	(0.234)	(0.356)	(0.005)	(0.006)	(0.009)
Synthetic control	–0.0003	–0.013	0.011	0.245	–0.626**	–0.238	–0.004	–0.009	–0.014
[*p*-value]	[0.958]	[0.078]	[0.505]	[0.459]	[0.048]	[0.763]	[0.694]	[0.299]	[0.436]
Synthetic control	–0.009	–0.011	0.002	–0.121	–0.359	–0.301	–0.002	–0.004	–0.011
[*p*-value] (from Table 8)	[0.285]	[0.206]	[0.885]	[0.728]	[0.335]	[0.621]	[0.853]	[0.618]	[0.489]
Observations	527,338	381,446	145,892	527,338	381,446	145,892	527,338	381,446	145,892
Mean of dep. var. In 2010	0.693	0.709	0.653	27.7	28.8	25.0	0.628	0.649	0.573
Panel (B): Childless adults									
Difference-in-differences	0.013**	0.012	0.014	0.413	0.379	0.486	0.011	0.012	0.011
Estimates	(0.006)	(0.007)	(0.007)	(0.259)	(0.279)	(0.330)	(0.006)	(0.006)	(0.008)
Difference-in-differences	0.012**	0.014**	0.012	0.426	0.446	0.459	0.010	0.012**	0.009
Estimates (from Table 7)	(0.005)	(0.006)	(0.007)	(0.239)	(0.267)	(0.302)	(0.005)	(0.006)	(0.007)
Synthetic control	0.002	–0.001	–0.013	0.072	-1.01**	0.023	0.001	0.010	–0.002
[*p*-value]	[0.861]	[0.942]	[0.280]	[0.882]	[0.030]	[0.957]	[0.932]	[0.298]	[0.814]
Synthetic control	0.0005	0.001	–0.007	0.282	–0.412	0.081	0.002	–0.002	0.001
[*p*-value] (from Table 8)	[0.963]	[0.924]	[0.562]	[0.547]	[0.404]	[0.886]	[0.859]	[0.856]	[0.940]
Observations	901,679	435,294	466,385	901,679	435,294	466,385	901,679	435,294	466,385
Mean of dep. var. In 2010	0.661	0.673	0.650	26.3	27.2	25.6	0.597	0.613	0.583

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Synthetic control approach matches each pre-2014 value of age, race, education, and dependent variable. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.
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Table A20. Difference-in-differences estimates of effect of ACA Medicaid expansions on labor supply from Monthly Current Population Survey with state-linear trends.

	High School or less								
	Employed at time of survey			Usual hours worked per week			Full-time		
Panel (A): Parents	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
Expand in 2014	0.003	–0.001	0.013	–0.007	–0.037	0.091	–0.0001	–0.002	0.003
	(0.007)	(0.009)	(0.012)	(0.351)	(0.381)	(0.590)	(0.009)	(0.009)	(0.016)
Expand in 2014,	0.013	0.012	0.014	0.381	0.456	0.227	0.007	0.009	0.002
no prior policy	(0.012)	(0.014)	(0.016)	(0.508)	(0.491)	(0.886)	(0.013)	(0.013)	(0.024)
Expand in 2014,	–0.002	–0.007	0.013	–0.204	–0.277	0.014	–0.004	–0.006	0.004
any prior policy	(0.007)	(0.010)	(0.013)	(0.377)	(0.430)	(0.585)	(0.009)	(0.010)	(0.016)
p-value for test of difference between treatment effects	0.254	0.209	0.941	0.273	0.184	0.797	0.418	0.253	0.929
Observations	640,572	459,425	181,147	640,572	459,425	181,147	640,572	459,425	181,147
Mean of dep. var. in 2010	0.685	0.706	0.627	27.1	28.3	23.9	0.615	0.639	0.548
Panel (B): Childless adults									
Expand in 2014	0.014**	0.019**	0.007	0.561**	0.713**	0.356	0.010	0.016	0.002
	(0.006)	(0.00823)	(0.008)	(0.23874)	(0.351)	(0.319)	(0.005)	(0.008)	(0.007)
Expand in 2014,	0.009	0.020**	–0.0010	0.355	0.767	–0.035	0.004	0.019	–0.009
no prior policy	(0.006)	(0.009)	(0.008)	(0.274)	(0.415)	(0.306)	(0.006)	(0.009)	(0.007)
Expand in 2014,	0.017**	0.018	0.013	0.696**	0.675	0.599	0.013**	0.014	0.009
any prior policy	(0.006)	(0.010)	(0.009)	(0.256)	(0.429)	(0.392)	(0.006)	(0.010)	(0.009)
p-value for test of difference between treatment effects	0.250	0.880	0.122	0.206	0.845	0.090	0.110	0.667	0.023
Observations	1,141,994	549,419	592,575	1,141,994	549,419	592,575	1,141,994	549,419	592,575
Mean of dep. var. in 2010	0.652	0.669	0.636	25.8	26.7	24.9	0.587	0.605	0.569

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions include state-specific linear trends and are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. Estimates above dashed lines report coefficient on interaction term between an indicator for whether a state expands Medicaid and an indicator for whether the year is 2014. Estimates below dashed lines distinguish between states that had no prior Medicaid policy and those that had any prior policy (except for those that had ACA-level Medicaid expansions prior to 2014). A *p*-value reports results from *F*-tests measuring whether Medicaid expansion effects are statistically different between states that had prior policies and those that did not. All standard errors (parentheses) are clustered on state.
** Significance at the 5 percent level.

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Table A21. Comparison of synthetic control estimates of effect of ACA Medicaid expansions on labor supply from Monthly Current Population Survey.

Panel (A): Parents	Employed at the time of survey	Usual hours worked per week	Full-time
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)			
Expand in 2014 (from Table 8)	–0.009	–0.121	–0.002
[*p*-value]	[0.285]	[0.728]	[0.853]
(RMSE)	(<0.001)	(<0.001)	(<0.001)
Number of control states with weight > 0	25	25	25
Specification 2 (each pre-2014 value of age, race, education, and the 2013 value and the average value of Pre-2014 dependent variable)			
Expand in 2014	–0.005	–0.256	–0.003
[*p*-value]	[0.485]	[0.377]	[0.759]
(RMSE)	(0.008)	(0.261)	(0.007)
Number of control states with weight > 0	6	6	7
Observations	640,572	640,572	640,572
Mean of dep. var. in 2010	0.686	27.1	0.616
Panel (B): Childless adults			
Specification 1 (each pre-2014 value of age, race, education, and dependent variable)			
Expand in 2014 (from Table 8)	0.0005	0.282	0.002
[*p*-value]	[0.963]	[0.547]	[0.859]
(RMSE)	(<0.001)	(<0.001)	(<0.001)
Number of control states with weight > 0	25	25	25
Specification 2 (each pre-2014 value of age, race, education, and the 2013 value and the average value of pre-2014 dependent variable)			
Expand in 2014	–0.001	0.012	0.001
[*p*-value]	[0.918]	[0.978]	[0.949]
(RMSE)	(0.007)	(0.386)	(0.008)
Number of control states with weight > 0	5	6	5
Observations	1,141,994	1,141,994	1,141,994
Mean of dep. var. in 2010	0.652	25.8	0.587

Notes: Data from 2010 to 2016 (May) Current Population Survey monthly files. Analysis excludes Alaska, Indiana, Montana, and Pennsylvania due to expansions after 2014. Sample limited to non-disabled adults between ages 22 and 64 with a high school degree or less. Regressions are adjusted using indicators for state, year, age, sex, race, education levels, marital status, foreign-born status, citizenship status, number of children, and family size. *p*-values of synthetic control estimates obtained through randomization inference in square brackets. All standard errors of difference-in-differences estimates (parentheses) are clustered on state.

** Significance at the 5 percent level.

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