Employment Effects of the ACA Medicaid Expansions*

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Abstract

We examine whether the recent expansions in Medicaid from the Affordable Care Act reduced "employment lock" among childless adults who were previously ineligible for public coverage. We compare employment in states that chose to expand Medicaid versus those that chose not to expand, before and after implementation. We find that although the expansion increased Medicaid coverage by 3.0 percentage points among childless adults, there was no significant impact on employment.

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1 Introduction

In 2010, the United States passed the Patient Protection and Affordable Care Act (ACA), a landmark legislation that overhauled the nation's existing healthcare system. A central debate around the implementation of this act has been its effects on employment. Prior to the ACA, Americans primarily obtained health insurance coverage through their employers, as individually purchased plans were often prohibitively expensive, and public insurance was limited only to certain segments of the population. As a result of this system of employer-sponsored coverage, some have predicted that many individuals sought employment purely to gain coverage. Several provisions of the new law, however, may loosen this "employment lock" by providing alternative affordable coverage options.

One of the ways that the original law made health insurance accessible to low-income populations was through a mandated expansion in the public means-tested Medicaid program to all those with incomes below 138 percent of the federal poverty line, starting in 2014. However, a 2012 Supreme Court ruling made the expansion optional and left the decision up to the individual states. As of this writing, only 32 states have elected to expand Medicaid. Since the program previously covered mostly families with children, the expansions had the greatest impact on non-elderly low-income adults who do not have children under the age of 18 (hereafter, "childless adults"). In states that did not expand Medicaid, most childless adults under the federal poverty line are left without coverage; they are ineligible for Medicaid and are also excluded from receiving the ACA's refundable tax credits toward the purchase of private insurance, which are available to workers above the poverty level.

In this paper, we ask whether the availability of Medicaid reduced "employment lock" among childless adults. Although the long-term impacts of the Medicaid expansion, and health reform more generally, will not be known for a few more years, one effect that should be apparent even at this early stage is whether or not the introduction of public insurance allowed those who were locked into jobs for insurance reasons to exit the labor force.[1] In fact, as detailed below, several studies have demonstrated that the expansions may have potentially large and immediate impacts on the labor market. To study this, we utilize state-level differences in Medicaid availability due to the Supreme Court's ruling. We compare the sources of health insurance coverage and employment rates of states that expanded Medicaid relative to those that did not,

[1] Although we focus on the impacts of Medicaid on the decision of whether or not to work ("employment lock") rather than on "job lock" due to a lack of data on job changes, there is evidence that the health reform may also lead to a reduction in job lock more generally (Heim and Lurie, 2014).

before and after the policy was in place, in a differences-in-differences strategy. In contrast to previous findings and predictions, we do not find any evidence of a reduction in employment lock in response to the expansions of Medicaid.

The best existing evidence on employment lock among the population most affected by the Medicaid expansions – low-income childless adults – come from two quasi-experimental studies and one experimental study of specific state programs that provide Medicaid or similar coverage to childless adults. The first of these is Garthwaite et al. (2014), who examine the employment effects of a large disenrollment in Tennessee's Medicaid program for the "uninsured and uninsurable" in 2005. Using a differences-in-differences strategy, they estimate that Medicaid enrollment was associated with an over 50 percentage point drop in employment. Dague et al. (2014) study a 2009 enrollment freeze in a Wisconsin public insurance program and find smaller, but economically and statistically significant negative employment effects. They use both regression discontinuity design and matched differences-in-differences strategies, and find that the employment drop from Medicaid coverage ranges from two to ten percentage points. Finally, Baicker et al. (2014) find that when Oregon randomly selected childless adults to be eligible for Medicaid coverage, there were no effects on employment. One explanation for the disparate results across states, supplied by both Baicker et al. (2014) and Dague et al. (2014), is that Tennessee's program covered relatively higher income individuals, who are more likely to be able to find jobs with health benefits. Another explanation is that worse labor market conditions may affect the ability of individuals to adjust to health insurance losses or gains through employment. Finally, it is also possible that the groups affected in each of the three states differed in terms of how much they valued health insurance, and therefore how likely they were to be "locked" into employment in the absence of Medicaid. In particular, since Oregon's Medicaid program was only open to those who did not recently have health insurance, those ultimately affected by the lottery would not have been a group that was highly dependent on health insurance. On the other hand, as a result of earlier recertification procedures, the Tennessee disenrollees were likely a population that had greater than average taste for coverage. In contemporaneous studies, Gooptu et al. (2016) and Kaestner et al. (2015) find limited employment effects from the ACA Medicaid expansion.

Our study is also related to the literature on how public insurance expansions crowd out private insurance, since the primary source of private coverage is employer-sponsored coverage. The seminal paper on this topic, Cutler and Gruber (1996), finds that when Medicaid eligibility was expanded for children in the late 1980s to early 1990s, reductions in private coverage offset 49 percent of the increase in Medicaid cover-

age. Furthermore, they find that this private coverage is entirely employer-sponsored coverage, rather than non-group private insurance. Later studies that have reexamined the same Medicaid expansions and subsequent policies for slightly higher income children generally find smaller crowdout effects, though estimates cover a wide range (Shore-Sheppard, 2008, Card and Shore-Sheppard, 2004, LoSasso and Buchmueller, 2004, Gruber and Simon, 2008, Ham and Shore-Sheppard, 2005b). There has been considerably less work examining the crowdout effects of expanding eligibility to adults, since there was very limited coverage for adults prior to the ACA. Hamersma and Kim (2013), Busch and Duchovny (2005), and Aizer and Grogger (2003) find little to no crowdout of private coverage when examining the effects of parental Medicaid expansions.

Finally, we distinguish our study from an earlier literature on the the labor supply effects of Medicaid for single mothers, which mainly focuses on the effects of the decoupling of Medicaid from cash assistance in the 1980s and early 1990s (Yelowitz, 1995, Ham and Shore-Sheppard, 2005a, and Meyer and Rosenbaum, 2001). The key question in these studies is whether raising the income threshold for Medicaid (from a lower cash assistance income threshold) increased labor force participation among potential cash assistance recipients (i.e., single mothers) and abstracts away from the potential effect of Medicaid reducing employment lock.[2] In contrast, we focus on a population that, prior to the expansion, was not eligible for Medicaid or comparable public coverage at any income level. Our estimates therefore should be unaffected by the potentially offsetting impact of relaxing income constraints.

The remainder of this paper is organized as follows. Section 2 gives a brief overview of the major provisions of the ACA and the Medicaid expansions, as well as some background on the insurance landscape prior to the reform. Sections 3 and 4 describe our data, sample, and empirical strategy. We present our results in Section 5. Section 6 concludes.

2 Background on the Affordable Care Act and Medicaid

The Patient Protection and Affordable Care Act (ACA) was passed in 2010 with the goal of providing near universal health insurance coverage in the United States. Prior to the reform, publicly provided health insurance was generally available only to certain segments of the non-elderly population. State Medicaid programs covered low-income families (mostly children), pregnant women, the blind, and the disabled. Pri-

[2] An exception is Hamersma and Kim (2009), who explicitly examine the effects of parental Medicaid expansions on job mobility, finding that Medicaid reduces job lock among unmarried women.

vate insurance was primarily obtained through employment, though not all employees were offered this coverage. Those who did not meet the criteria to qualify for public coverage, and who did not have access to employer-sponsored plans often faced high coverage costs in the private individual market. The health reform sought to bring affordable coverage to these uninsured individuals through a combination of individual and employer mandates, the introduction of premium subsidies and reduced cost plans, the establishment of health insurance exchanges where individuals can shop for coverage, and the expansion of public programs. Many of these provisions went into effect beginning in 2014, including the individual mandate, establishment of the exchanges, and the expansion of Medicaid programs. Indeed, as shown in Figure 1, our data show an increase of about 10 million in the number of people insured from 2013 to 2014.

Originally, the ACA targeted the uninsured at the lower end of the income distribution by requiring states that accept federal funding for Medicaid (currently, all states and the District of Columbia) to expand coverage to all individuals below 138 percent of the federal poverty line. Given that children at that income level were already covered in all states, either by existing Medicaid programs or the Children's Health Insurance Program (CHIP), this expansion mainly affected adults, and in particular, those without dependent children ("childless adults"). Those with incomes above 138 percent of the poverty line (up to 400 percent) would be eligible for premium subsidies in the form of a refundable tax credit when purchasing private insurance. Furthermore, those between 138-250 percent of poverty are eligible for plans with lower deductibles and co-payments.

In 2012, the Supreme Court ruled that requiring states to expand Medicaid was unconstitutional in National Federation of Independent Business (NFIB) v. Sebelius. Instead, states may *choose* to expand Medicaid, which was completely funded by the federal government starting in 2014, but will drop gradually to 90 percent funding after 2019. Following the ruling, only about half of the states took up the expansion in January 2014, and a handful more expanded later in 2014 and 2015. In states that did not expand Medicaid, premium subsidies were available for those between 100 to 400 percent of poverty, but many adults below poverty were left without affordable coverage options.

Prior to 2014, state Medicaid programs generally provided no coverage to the non-disabled, non-elderly adult population, with several exceptions. The only group of healthy adults that states were required to cover were very low-income parents of dependent children (typically with incomes well below poverty) and those who were transitioning out of cash welfare programs. If states wanted to expand eligibility outside of mandatory coverage groups, they had to receive approval for a "demonstration" waiver. Some states used

these waivers to offer coverage to childless adults, but since the programs were required to be budget neutral to the federal government, the programs were generally limited in scope.[3] According to surveys of state officials conducted by the Kaiser Family Foundation and the Georgetown University, as of 2013, eight states and the District of Columbia provided childless adults below certain income limits with Medicaid-equivalent coverage (i.e., the same comprehensive benefits at no cost) (Heberlein et al., 2013a). An additional 13 states provided a more limited package of benefits to low-income childless adults, though more than half of these programs were closed to new enrollment.[4]

Therefore, when the ACA Medicaid expansions were implemented in 2014, it simultaneously granted coverage to previously ineligible adults, while relaxing income limits for some who were already enrolled. Since we are interested in isolating the labor supply effects of providing public health insurance ("employment lock" effects) from the potentially confounding effects of raising eligibility limits for existing enrollees, our ideal sample includes only individuals who were not enrolled in Medicaid prior 2014. Since we do not observe prior coverage in our data, our analysis will be limited to childless adults living in states that did not have any Medicaid-equivalent coverage prior to 2014.[5] We keep the states with more limited benefits in our analysis, since it is unclear how accessible these programs were and whether they can be viewed as substitutes for employer-sponsored coverage. However, we probe the robustness of our results to the exclusion of these states below.

To summarize, the upper panel of Table 1 lists the states without any Medicaid-equivalent coverage for childless adults in 2013 that constitutes our main analysis sample, as well as their expansion status and date. We also denote which states in this group had limited benefits to childless adults. The lower panel lists the states that provided some childless adults with Medicaid-equivalent coverage and are therefore excluded from our analysis.

[3]The ACA also allowed states to begin covering childless adults beginning in April 2010, but the federal funding for this new coverage group was limited to the state's "regular" matching rate until 2014.

[4]This number excludes states that provided coverage contingent on employment or other non-income requirement.

[5]Focusing only on those who were previously ineligible for Medicaid also has the advantange of reducing any confounding "woodwork" or "welcome mat" effects, which occurs when previously eligible individuals begin to take up Medicaid ("come out of the woodwork") following the reform due to increased outreach and advertising (Sommers and Epstein, 2011 and Frean et al., 2016). To the extent that expansion states have larger "woodwork" effects, this may confound the interpretation of our employment estimates.

3 Data

Our analysis utilizes data from the annual American Community Survey (ACS) and the monthly Current Population Survey (CPS). Both surveys are nationally representative and contain labor market, health insurance, and demographic information. The ACS surveys a cross-sectional one-percent sample of U.S. households every year. The CPS surveys about 60,000 households per month, interviewing them for four consecutive months, followed by a break of eight months, and finally another four months. The ACS data we use cover 2010-2014, and the CPS data cover 2010 through July 2015.

We draw our health insurance information from the ACS. Although the CPS also contains health insurance information in its annual March supplement, a redesign of the health insurance questions coinciding exactly with the timing of the Medicaid expansions renders it unusable for our purposes (Pascale, 2015). The specific health insurance variables from the ACS that we use are indicators for being covered by the following types of insurance at the time of the survey: private insurance, private insurance through a employer-sponsored group plan, private insurance that is directly purchased, and public insurance (Medicaid or another government program for the low-income or disabled).

For labor market information, we use both ACS and CPS data. The ACS has the advantage of a larger sample size, but the CPS contains more nuanced questions on labor force participation, as well as a slightly longer time horizon post expansion. For both data sets, our main outcome variable is an indicator for being "at work" in the survey reference week. For intensive margin measures of employment, we use the question in the CPS that asks the worker for the number of actual hours worked in the reference week. Usual weekly earnings are reported in the CPS for those who are employed and interviewed in their fourth and eighth month in the survey. We measure wages by dividing weekly earnings by the number of usual hours worked per week.

As mentioned above, prior to the expansion, all states covered low-income parents to some degree, and several states also had programs that provided childless adults with Medicaid-equivalent coverage. To the extent that adults who were enrolled in Medicaid prior to the expansion were limiting their labor supply to stay under income thresholds, any evidence of employment lock would be confounded by workers who increase their labor supply in response to the relaxed income limits in expansion states. We therefore focus only on childless adults and restrict the sample to the 42 states in which there was no Medicaid-equivalent coverage for childless adults in 2013. Later in the analysis, we probe the robustness of our results to includ-

ing only states without *any* public insurance for childless adults. We consider an individual childless if they do not share a household with a child under 18. This definition of childless is likely to identify a subset of the actual population of adults who are excluded from public insurance coverage pre-ACA, as households with children may contain several families where only a subset of the adults qualify as parents or caregivers according to state program rules. To avoid potential interactions with military, aged, and dependent health coverage, we restrict our sample to non-institutionalized, civilian adults, ages 27-64.

Table 2 presents descriptive statistics for childless adults in the expansion states and non-expansion states in our sample. Expansion states have higher rates of coverage, mostly coming from employer-sponsored coverage, though higher rates of Medicaid coverage also contribute to the disparity. In terms of employment rates, however, the two sets of states look fairly similar, with employment in expansion states only slightly higher. In terms of demographic differences, the non-expansion states tend to be on average less educated, more likely to be non-white, and have a higher rate of poverty.

Since individuals with incomes above the federal poverty line (up to 400 percent of the poverty line) would be eligible for premium subsidies beginning in 2014 regardless of whether they live in a state that expanded Medicaid, the expansion will mostly impact those who are below the poverty line. We therefore also focus on a subsample of childless adults who are below the poverty line. Since a poverty measure is not readily available in the basic monthly CPS, we use the categorical variable on the total household income, in conjunction with the number of household members, as a proxy. We define an individual as below poverty if the upper threshold of their household income category is below the official poverty level of the interview year, assuming the number of household members is the family size. As expected, this understates the poverty rate: it is consistently about one percentage point below poverty rates obtained using the ACS. However, the fraction of individuals below poverty using this measure tracks changes in the ACS's poverty rates fairly well over time (not shown).

Finally, for robustness, we estimate the effects of the Medicaid expansion in a few other subsamples that utilize additional information available in the CPS. In one subsample, we take advantage of the short panel structure of the CPS and identify individuals who were employed when surveyed in the previous year. In linking the respondents over time, we follow Madrian and Lefgren (1999) and match by household and person identifiers, and invalidating matches that do not have consistent sex, race, and age information. Using this method, we are able to match about 77 percent of respondents who were in their fifth through eighth month in the survey. In another subsample, we use self-reported health status information, which fall into

five mutually exclusive categories: excellent, very good, good, fair, and poor, from the Annual Social and Economic Supplement of the CPS (the "March CPS").

4 Empirical Strategy

To identify the effects of an expansion in Medicaid coverage, we compare employment in states that did and did not expand Medicaid, before and after adoption of the policy. Specifically, we estimate differences-in differences (DD) specifications of the following form:

$$y_{st} = \beta Exp_{st} + \alpha_s + \gamma_t + \varepsilon_{st} \tag{1}$$

where y_{st} are measures of insurance coverage and employment in state s and time t (where t is a month in CPS samples, and a year in ACS samples), α_s are a set of state fixed effects, and γ_t includes a set of year fixed effects. When we have monthly data (i.e., in the CPS), γ_t also includes a set of calendar month fixed effects to control for seasonal fluctuations in insurance or employment that are common in all states. Exp_{st} is an indicator for whether state s covers childless adults under Medicaid in time t. In the ACS data, which is available yearly through 2014, states will have at most one period in which Exp_{st} is equal to 1.[6] In the monthly CPS analysis, for which we have data through July 2015, Exp_{st} will equal to 1 starting the month the expansion is implemented. The coefficient of interest is β, which captures the effect of expanding Medicaid.

We estimate the model on on data aggregated to state-year (ACS) or state-month (CPS) averages, and weight each aggregate by the number of observations in each state-year or state-month cell. In the absence of individually varying covariates, the weighted aggregate regression is identical to estimating using the individual level data, up to a degrees-of-freedom adjustment.[7] We choose to aggegate the data in this way to highlight the fact that the effective unit of observation in the context of our quasi-experiment is the state-year/month. In other words, if we observe more individuals in the states and years we already have in our existing sample, we are not gaining any more variation in the regressor of interest, and the aggregate analysis reflects this fact. However, more individual observations do reduce the variance of the estimated insurance

[6] States that expanded in the middle of 2014 and in 2015 (MI, NH, PA, IN) are considered not expanded in the ACS analyses.

[7] In our base specification, we do not include any controls other than state and time fixed effects, though our results are robust to controlling for the demographic composition of states (i.e., age, gender, race, education, and marital status), shown in Appendix Tables 3 and 4.

coverage or employment rates for each cell. Thus, the weighting can be viewed as a heteroskedasticity correction: Since state-year/month cells with more individuals have may have smaller error term variances, weighting by the cell sizes may improve precision.[8] All standard errors are clustered at the state level.

The identifying assumption is that the employment in expansion states and non-expansion states would have trended similarly the absence of the Medicaid expansion. One way this would be violated is if only states with strong or weak labor markets, and whose employment was on an upward or downward trajectory prior to 2014, choose to take up the expansion. To gauge whether there were pre-existing trends in the expansion states we replace Exp_{st} in equation (1) with a set of "event time" dummies:

$$y_{st} = \sum_{k=-3}^{1} \delta_k D_{st}^k + \alpha_s + \gamma_t + \varepsilon_{st} \tag{2}$$

where D_{st}^k is equal to 1 if in time t, state s is in its kth year of its Medicaid expansion, and 0 otherwise. If the outcome in the above equation is employment, the coefficients δ_k for $k < 0$ show whether, in the periods leading up to the expansion, the expansion states had significantly different employment rates relative to the control group.

In order to determine whether individuals reduced labor supply in response to the Medicaid availability from equation (1), there must not have been any offsetting differential increases in labor demand in expansion states relative to non-expansion states. One provision of the ACA that is predicted to have impacts on labor demand is the employer penalty, which penalizes large employers for not offering employer-sponsored coverage beginning in 2015. Although all states are subject to this penalty, one way in which the penalty may interact with the Medicaid expansion to impact labor demand is if the penalty is smaller in expansion states. This is possible because the penalty is applied to an employer only if an employee claims a premium tax credit, which may be less likely in states that expand Medicaid. To test this indirectly, we examine the effects of the expansion on wages, which should increase if there were an offsetting increase in demand.

We note that in addition to the Medicaid expansions, the ACA established premium subsidies and health insurance marketplaces in all states, which also had the potential to reduce employment lock. Our identification strategy, which compares states by expansion status, will therefore be unable to estimate the effect of the health reform on employment lock more generally. Rather, we will only detect employment effects

[8] Indeed, a modified Breusch-Pagan test that regresses OLS residuals on the inverse of cell sizes confirms the presence of heteroskedasticity when the outcome is employment in our main ACS and CPS samples (Solon et al., 2015). In addition, we report the estimates without weighting in Appendix Tables 3 and 4.

for a relatively low-income population whose incomes are not high enough to qualify for subsidies to purchase health insurance on the new exchanges. We therefore also estimate our models on low-income and "Medicaid-likely" subsamples described below in Section 5.

Finally, it is also possible that because the premium subsidies are only available to those between 100 to 400 percent of the federal poverty line, workers in non-expansion states may increase their labor supply in order to obtain subsidized private coverage. This effect works in same direction as the the employment lock effects (i.e., non-expansion states would have relatively higher employment), biasing our results upward in absolute value. For this reason, in some specifications, we estimate equation (1) on a sample of workers who were previously employed.

5 Results

We begin by graphically examining insurance and employment trends in our sample of childless adults in expansion states and non-expansion states. In Figures 2 and 3, we only include states that expanded in January 2014 (17 states) and states that have not expanded (21 states), though our estimates will also include the handful of states that expanded later than January 2014. Figure 2a shows that, as expected, Medicaid coverage sharply increased in expansion states after 2014, while the increase was much milder in non-expansion states. In Figure 2b, we plot overall coverage rates. In 2014, when several major provisions of the ACA came into effect, including the individual mandate and the opening of the health insurance exchanges, insurance rates in both expansion and non-expansion states increased, though the increase was larger in expansion states. The magnitude of this difference is smaller than the difference in Medicaid coverage, suggesting that individuals who were ineligible for Medicaid in non-expansion states were differentially more likely to obtain private insurance via employment or through the newly established exchanges. When we plot the annual employment rates in expansion and non-expansion states in Figure 3, however, there is no evidence that employment in expansion states is lower than in non-expansion states.[9] If anything, in states that expanded Medicaid, employment may have increased.

In Table 3, we present our DD estimates of the effect of the Medicaid expansions on health coverage

[9]The differences in employment rates and trends between the ACS and CPS data are likely due to the smaller sample sizes in the CPS. In Appendix Figure 1, we compare the employment-to-population ratio (16+ year-old) estimated from the CPS and ACS in expansion and non-expansion states to those obtained using the Current Employment Statistics (CES). Though we are unable to compare the employment rates in our main sample (childless adults) to the employment rates in the CES, the trends in the CES most closely match the ACS for the overall adult population. Note that the CES does not contain farm employment.

rates. Consistent with Figures 2 and 3, the first two columns of Panel A show that there was a significant difference in the fraction of childless adults insured and insured by Medicaid of 1.6 and 3.0 percentage points, respectively, between expansion states and non-expansion states after the policy was in place. Column 3 confirms that a relative decrease in private insurance contributed to the smaller overall increase in insurance coverage than implied by the increase in Medicaid coverage. In columns 4 and 5 we examine whether this crowdout is coming from employer-sponsored group coverage. The point estimates indicate that the 3.0 percentage point increase in Medicaid coverage in expansion states is crowded out by a 0.9 percentage point reduction in private direct purchase insurance, and 0.3 percentage point reduction in employer-sponsored coverage, though the latter is statistically insignificant.

The total "crowdout" implied by our estimates is 42 percent, with about 11 percent coming from employer-sponsored insurance and 31 percent from direct purchase insurance. These estimates are within the range of estimates of crowdout during the Medicaid and CHIP expansions to low-income children (Cutler and Gruber, 1996, LoSasso and Buchmueller, 2004 and Gruber and Simon, 2008). However, we note that it is somewhat misleading to relate previous measures of crowdout to the current setting, as many changes in health policy and overall insurance coverage coincide with this particular Medicaid expansion. In past work, the interpretation has been that expansions of public insurance led to some dropping of employer-sponsored coverage among already insured individuals or dependents. Due to the individual mandate, as well as other provisions in the ACA, the fraction insured increased sharply in 2014 for both expansion and non-expansion states. The expansion in Medicaid was "crowded out" in the sense that, in the absence of Medicaid coverage, some of the uninsured would have obtained coverage by purchasing insurance directly, perhaps through the newly established state exchanges, where they can select from a menu of affordable coverage options.

Turning to our employment results in the first two columns of Table 4, we find a statistically insignificant difference in employment rates in expansion states following the policy change. The point estimates from the CPS data indicate that there may even have been a positive employment effect in expansion states. In columns 3 and 4, we examine whether there were potential intensive margin responses to Medicaid coverage. If employer-sponsored coverage is only available to full-time employees, we may expect the Medicaid expansion to allow workers who previously worked full-time only to obtain health insurance to switch to a better-matched part-time job. We do not find evidence that individuals are reducing their hours worked following the Medicaid expansion: Part-time employment (those working fewer than 20 hours a week) remained unchanged and full-time employment (those working 30 or more hours a week) may even

have increased. Finally, since the employment lock effect is only relevant for the employed, we estimate employment effects among those who were employed in the prior year, using the CPS's short longitudinal structure. Column 5 shows that the expansion did not affect employment outflows.

In panels B and C of Tables 3 and 4, we present the analogous results for two subsamples of childless adults who are more likely to be impacted by the Medicaid expansion. As mentioned above, since subsidies for directly purchasing insurance are available for those above poverty in all states, employment lock among higher income groups is expected to be reduced regardless of expansion status and would not be detected by our DD strategy. We therefore examine the effects among those with incomes below the poverty line. Panel B of Table 3 shows that, relative to all childless adults, the Medicaid expansion had a much larger impact on the the overall insured rate among childless adults below poverty, increasing the rate of Medicaid coverage by 11.1 percentage points and overall coverage by 7.9 percentage points. There is evidence of some crowd out of both private employer-sponsored and direct purchase coverage of 1.0 and 2.0 percentage points, respectively. When we examine the effects of the expansion on employment in Table 4, we again find that there are no statistically significant effects on employment rates, nor any adjustment in labor supply along the intensive margin.[10]

We note that restricting the sample to only those below poverty is problematic if the composition of this groups differs in expansion and non-expansion states. In particular, workers may reduce labor supply in order to qualify for Medicaid, resulting in an increased poverty rate in expansion states.[11] In Panel C of Tables 3 and 4 we therefore also show an alternative subsample containing a subset of childless adults who are more likely to be enrolled in Medicaid as predicted by fixed demographic characteristics. To do this, we estimate a linear probability model of Medicaid enrollment, with household size, educational attainment, age categories, sex, marital status, and race as predictors.[12] We use the coefficients from this model to predict the probability of being on Medicaid in both the ACS and CPS childless adult samples. The "Medicaid likely" subsample shown in the bottom panels of Tables 3 and 4 are those who are above the median in terms of their predicted Medicaid probabilities. Columns 1 and 2 of Table 3 show that the first stage estimates of the Medicaid expansion on overall coverage (2.6 percentage points) and Medicaid

[10] Although we are able to estimate and report the results on continued employment and wages in the last two columns, we note that the estimates, especially in the below-poverty sample, suffer from small cell sizes.

[11] We also estimate equation (1) with y_{st} as the fraction of the population below poverty in state s at time t, and present the estimate of β in Appendix Table 1. The statistically insignificant negative coefficient indicates that increased rates of poverty in response to the Medicaid expansion is unlikely confound our findings.

[12] Specifically, we use indicators for each household size (7 dummies), detailed education categories (14 dummies), five-year age groups (8 dummies), sex, marital status (5 dummies), and race (2 dummies).

coverage (4.6 percentage points) are stronger in this subsample relative to all childless adults, as expected. However, the (insignificant) employment effects are of roughly similar magnitudes (Table 4).

Using the estimates from column 2 of Table 3 and column 1 of Table 4, a 95 percent confidence interval indicates that the implied "treatment effect on the treated" (TOT) of Medicaid on employment is no more negative than 15 percentage points (from "Medicaid-likely" subsample). To put these numbers in context, we compare our estimates with three recent studies on the impact of Medicaid on the labor supply of childless adults. As mentioned in the introduction, the most compelling evidence we have so far on the potential for the public insurance expansions in the ACA to reduce employment lock comes from states that have recently stopped or started enrollment in public insurance programs for childless adults. Garthwaite et al. (2014) examine a large disenrollment in Tennessee's childless adult program in 2005 and find that 63 percent of those who lost Medicaid increased their labor supply, though the 95 percent confidence interval ranges from about five percent to well over 100 percent.[13] Dague et al. (2014) find much smaller but still significant and precisely estimated employment effects ranging from 2.4 to 10.6 percentage points after an enrollment freeze in Wisconsin's childless adult program in 2009. Finally, Baicker et al. (2014)'s estimate from the Oregon Health Experiment, where wait-listed childless adults were randomly invited to enroll in the program, is that Medicaid reduced employment by 1.6 percentage points (statistically insignificant). Our point estimates are closest to Baicker et al. (2014)'s small and insignificant point estimates, though our estimates do not rule out the moderately sized effects that were found in Dague et al. (2014).

One possible explanation for the widely disparate findings in the state-specific case studies is that they may be studying very different subpopulations. Employment lock would be most relevant for those who highly value health insurance (i.e., those who are or who have dependents in poor health), and/or who have relatively low labor force attachment. The population studied in Garthwaite et al. (2014) are exactly those with higher than average taste for health insurance (due to earlier recertification reforms), while the population studied in Baicker et al. (2014) are those who have gone without coverage for at least six months, and may have lower than average taste for coverage. To see whether these differences across populations may explain the different results, we estimate our models on subgroups of childless adults who are likely to have larger employment responses to Medicaid coverage. First, we estimate the effects of the expansion on those who tend to have lower labor market attachment: females, those age 50 or older, and high school

[13]These numbers use only the confidence interval on the reduced form effect on employment, and does not account for the estimation of the first stage.

dropouts. Then, as a proxy for health insurance preferences, we also estimate the employment effects among those with a self-reported health of poor, fair, or good (available in the March CPS only). The first two panels of Table 5 show that the Medicaid expansions had similar effects on insurance coverage and employment among females and older individuals as in the overall childless adult population. Among high school dropouts, the expansions had a larger impact on Medicaid coverage, and there is also less evidence of private insurance crowdout. Correspondingly, there is no evidence of employment effects. Finally, in the last panel, we find no statistically significant employment effects among those with self-reported health ranging from poor to good (about 38 percent of respondents).

A potential explanation for the zero to positive employment response is that expansion states experienced a relative increase in labor demand. As mentioned above, since the ACA mandated that employers with over 50 full-time equivalent employees are required to provide group coverage and were penalized for every worker who claims a premium tax credit (excluding the first 30), it is possible that employers in states that expanded Medicaid anticipate lower labor costs because they are less likely to be penalized for lack of coverage.[14] We test for a possible increase in labor demand by examining the wage response in expansion states, which should be positive if there were simultaneous increases in labor demand and decreases in labor supply. In the last column of Table 4, we report the DD coefficient when we estimate equation (1) with the average log wages as outcomes. We find no significant effects of the Medicaid expansion on wages.

As mentioned above, the validity of the differences-in-differences strategy for identifying a causal effect of expanding Medicaid depends crucially on the idea that labor market trends were comparable in states that expanded relative to those that did not. One particular concern is that states that expected upward growth in employment are more likely to take up the Medicaid expansion, masking any employment lock effects. We check to see whether expansion states were on a different employment trajectory prior to the expansion by estimating equation (2) and plotting the estimates of δ_k in Appendix Figure 2. The statistically insignificant estimates of the δ_k coefficients for $k \leq 0$ and lack of visual pre-trends indicate that there were no systematic differences between expansion states and non-expansion states in the periods leading up to the policy change.

In Appendix Table 2, we probe the robustness of our results to the exclusion of certain states. First, as we mention in Section 2, 13 states provided low-income childless adults with limited benefit plans prior to 2014. Of these 13 states, 11 subsequently chose to expand coverage in 2014, as shown in Table 1. To

[14] Note that the employer mandate does not come into effect until the beginning of 2015.

the extent that the enrollees in these limited plans were previously constrained to work fewer hours due to the low income thresholds, it is possible that the Medicaid expansions led to increased labor supply, confounding the effects of employment lock. The upper panel of Appendix Table 2 shows the estimates of our main DD specifications using excluding these 13 states. A second concern is that while most expansion states implemented the policy at the beginning of 2014, a handful of states expanded later in the year and in 2015. In states that expanded later, it is possible that the timing of the policy was determined by factors related to the state's economy and labor market. Therefore, in the lower panel of Appendix Table 2, we include only the states that expanded in January of 2014 and non-expansion states.[15] The results from both of these alternative sample restrictions mirror the results from Table 4.

6 Conclusion

In this study, we examine whether the recent expansions in Medicaid reduced "employment lock" among childless adults who were previously ineligible for public coverage. To do this, we use a differences-in-differences strategy that compares employment in states that chose to expand Medicaid versus those that chose not to expand, before and after implementation. We find that although the expansion increased Medicaid coverage by 3.0 percentage points among childless adults, there was no significant impact on the employment. Our estimates rule out the large employment lock effects of Garthwaite et al. (2014) and are similar to that of Baicker et al. (2014).

We close with several potential explanations for the different estimates across studies. First, as noted by both Baicker et al. (2014) and Dague et al. (2014), the population studied by Garthwaite et al. (2014) is a higher income population than those most affected by the Medicaid expansions in the ACA. It is possible that the types of jobs that individuals living below poverty are able to obtain are less likely to come with health benefits. Another explanation is that the considerable policy uncertainty surrounding the ACA's Medicaid expansion may have dampened or delayed employment responses: If workers "locked" into employment for insurance reasons perceive the Medicaid expansions to be temporary due to constitutional or implementation challenges, they may be reluctant to leave their jobs and employer-sponsored insurance coverage. As the dust settles, however, it is possible that we will begin to see the predicted impacts on the labor market.

[15] This excludes PA, NH, IN AK, and MI. We also exclude WI because while it did allow childless adults in Medicaid starting in 2014, it is not considered technically expanded because the program is limited to those under 100 percent FPL and will not be accepting the enhanced federal funding for childless adult coverage.

Therefore, while our early estimates suggest that the labor market impacts of the Medicaid expansions are smaller than anticipated, medium- and long- term impacts remain an important avenue for future research.

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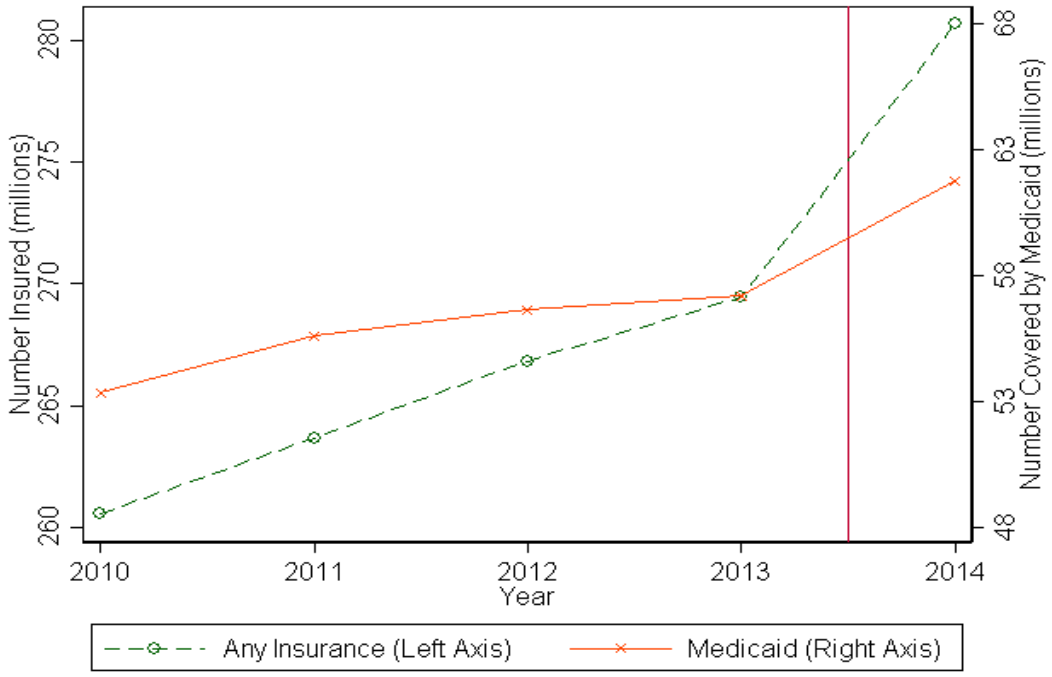
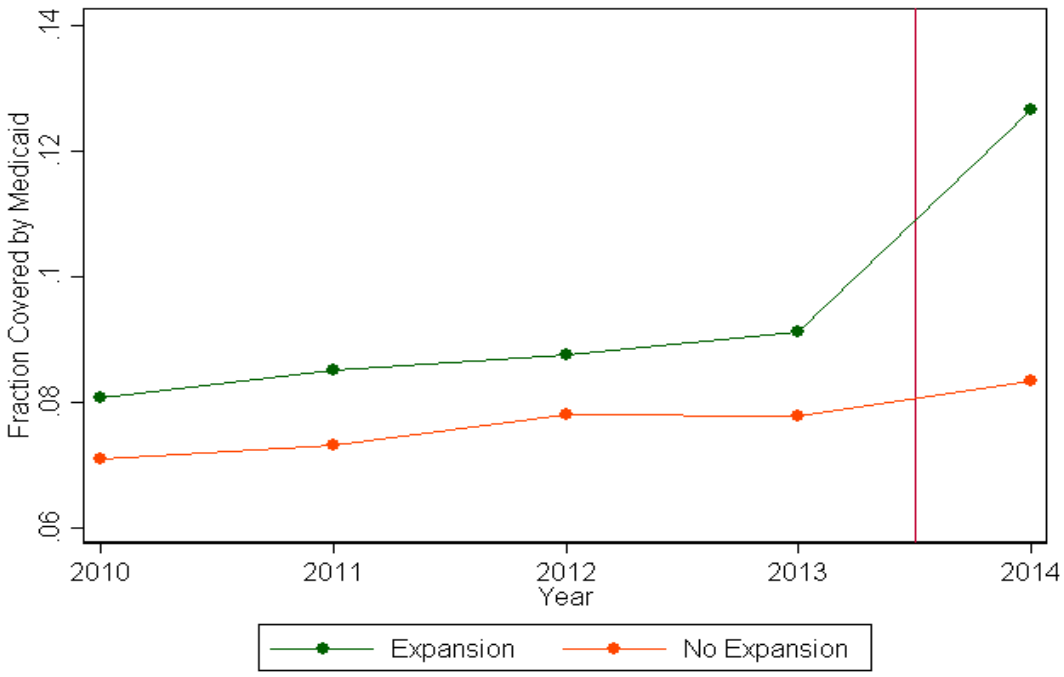
Figure 1: Number of Individuals with Health Insurance and Medicaid, 2010-2014



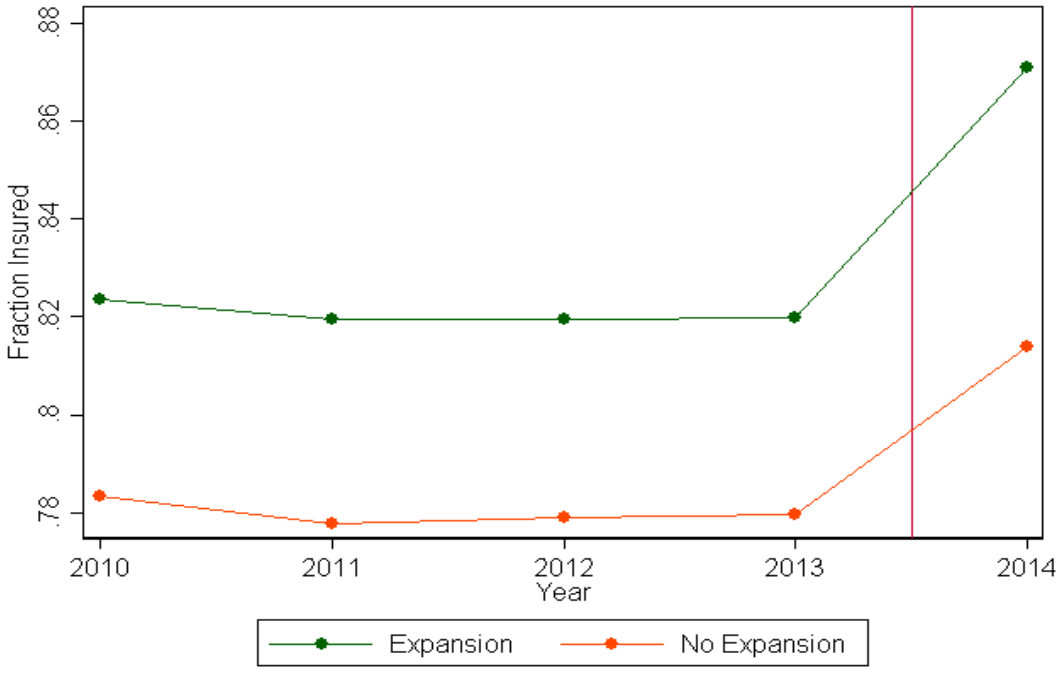
Notes: Author calculations using data from the American Community Survey.

Figure 2: Health Insurance Trends Among Childless Adults, Expansion vs. Non-expansion States

A. Medicaid Coverage



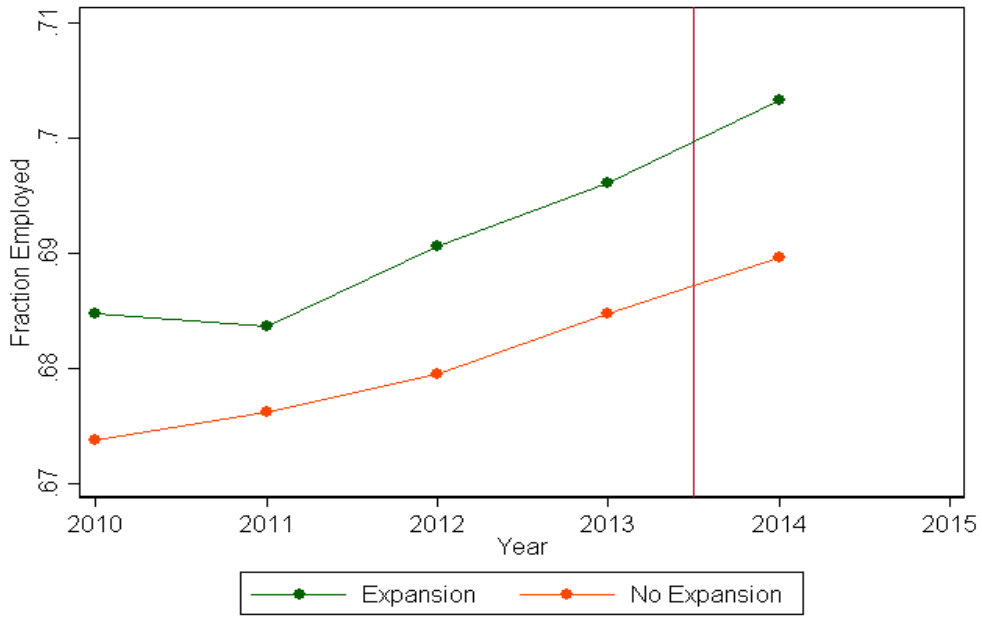
B. Overall Health Insurance Coverage



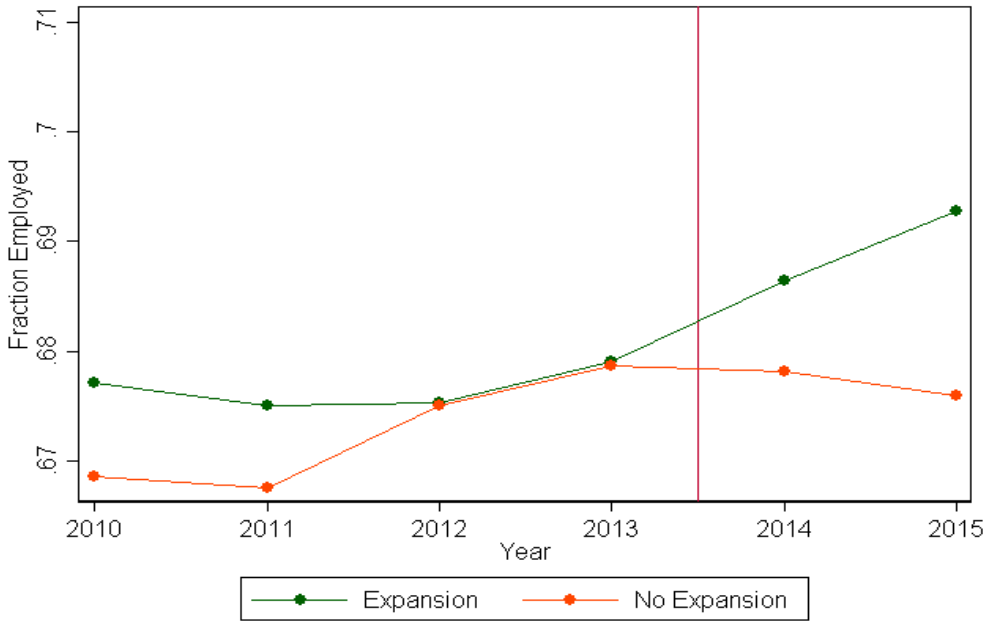
Notes: Sample includes childless adults in states with no prior Medicaid-equivalent coverage for childless adults, and that either expanded in January 2014 (17 states) or did not expand (21 states). Data is from the American Community Survey.

Figure 3: Employment Trends Among Childless Adults, Expansion vs. Non-expnsion States

A. American Community Survey



B. Current Population Survey



Notes: Sample includes childless adults in states with no prior Medicaid-equivalent coverage for childless adults, and that either expanded in January 2014 (17 states) or did not expand (21 states). Data is from the American Community Survey (panel A) or the Current Population Survey (panel B).

Table 1: State Expansion Status

A. Childless Adults Ineligible in 2013

Expansion States	Date Expanded	Non-Expansion States
AR	1/1/2014	AK**
CA†	1/1/2014	AL
IL	1/1/2014	FL
IA†	1/1/2014	GA
KY	1/1/2014	ID
MD†	1/1/2014	KS
MA†	1/1/2014	LA**
NV	1/1/2014	ME†
NJ†	1/1/2014	MO
NM†	1/1/2014	MS
ND	1/1/2014	MT**
OH	1/1/2014	NE
OR†	1/1/2014	NC
RI	1/1/2014	OK
WA†	1/1/2014	SC
WI*†	1/1/2014	SD
WV	1/1/2014	TN
MI†^	4/1/2014	TX
NH^	8/1/2014	UT†
PA^	1/1/2015	VA
IN†^	2/1/2015	WY

B. Childless Adults Eligible in 2013

AZ
CO
CT
DE
DC
HI
MN
NY
VT

Source: The Henry J. Kaiser Family Foundation

Notes: *WI did not take up federal funding for the newly covered group, but created a program that covers childless adults up to 100% FPL
**AK expanded Medicaid 9/2015, MT 1/2016, LA 7/2016
† Limited benefits to childless adult group in 2013
^ Considered not expanded in the ACS sample

Table 2: Descriptive Statistics

	Expansion States	No Expansion States
ACS 2010-2014		
Insured	83.6%	78.7%
Insured Through Employer	63.5%	58.4%
Insured, Own Purchase	10.9%	11.2%
Medicaid	9.5%	7.7%
CPS 2010-2015		
Employed	67.6%	67.4%
Employed, >=30 Hrs	58.7%	59.6%
Below Poverty	8.6%	10.4%
Female	49.1%	49.1%
HS Grad	91.6%	89.7%
Non-white	18.1%	22.1%
Average Age	48.7	48.7
Number of States	21	21

Notes: Sample for both ACS and CPS data are non-institutionalized civilians, ages 27-64, and childless (see text for details). Each number is calculated using CPS or ACS person-level weights.

Table 3: Effects of Medicaid Expansion on Health Insurance

	Insured	Medicaid / Other Govt	Privately Insured	Private, Thr. Employer	Private, Own Purchase
	(1)	(2)	(3)	(4)	(5)
A. Childless Adults					
Expansion x Post	0.016	0.030	-0.014	-0.003	-0.009
	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)
	[2.96]	[8.07]	[-3.32]	[-1.25]	[-2.85]
Mean of Dep Var	0.842	0.086	0.738	0.628	0.124
B. Childless Adults Under the Poverty Line					
Expansion x Post	0.079	0.111	-0.030	-0.010	-0.020
	(0.011)	(0.012)	(0.005)	(0.004)	(0.004)
	[7.02]	[9.29]	[-5.63]	[-2.45]	[-5.36]
Mean of Dep Var	0.619	0.354	0.230	0.125	0.105
C. Medicaid-Likely Childless Adults					
Expansion x Post	0.026	0.046	-0.019	-0.008	-0.011
	(0.006)	(0.005)	(0.005)	(0.004)	(0.003)
	[4.25]	[9.48]	[-3.73]	[-2.05]	[-3.32]
Mean of Dep Var	0.764	0.149	0.591	0.490	0.113

Notes: Data is from ACS 2010-2014. Sample includes states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages (N=210). Regressions include year and state fixed effects and are weighted by cell sizes. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

Table 4: Effects of Medicaid Expansion on Labor Market Outcomes

	Employed - ACS (1)	Employed - CPS (2)	Employed, <20 Hrs (3)	Employed, >=30 Hrs (4)	Still Employed (5)	Log Wage (6)
A. Childless Adults						
Expansion x Post	0.000	0.005	-0.001	0.006	-0.001	-0.006
	(0.002)	(0.003)	(0.001)	(0.003)	(0.003)	(0.007)
	[0.25]	[1.48]	[-0.98]	[1.99]	[-0.25]	[-0.88]
Mean of Dep Var	0.682	0.678	0.038	0.590	0.900	2.914
B. Childless Adults Under the Poverty Line						
Expansion x Post	0.002	0.009	-0.003	0.005	0.006	0.038
	(0.004)	(0.011)	(0.005)	(0.008)	(0.020)	(0.035)
	[0.48]	[0.77]	[-0.58]	[0.60]	[0.31]	[1.09]
Mean of Dep Var	0.246	0.318	0.056	0.208	0.731	2.420
C. Medicaid-Likely Childless Adults						
Expansion x Post	-0.002	0.007	-0.001	0.007	-0.003	-0.009
	(0.002)	(0.004)	(0.001)	(0.004)	(0.005)	(0.010)
	[-0.96]	[1.81]	[-0.61]	[1.91]	[-0.54]	[-0.91]
Mean of Dep Var	0.609	0.617	0.037	0.530	0.889	2.770

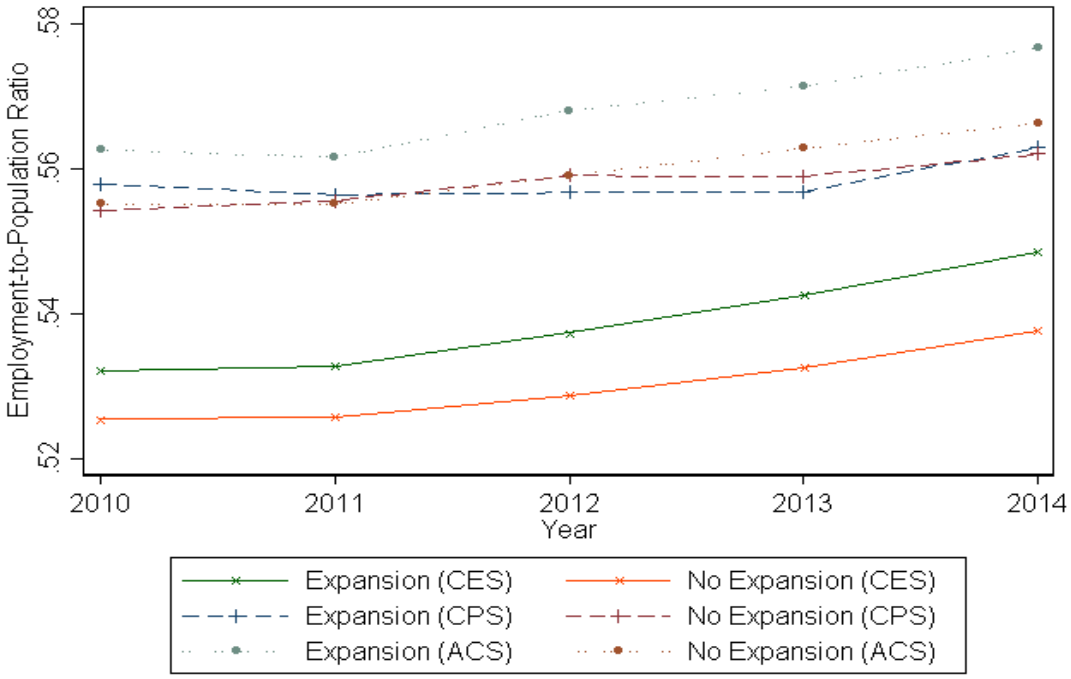
Notes: Data is from ACS 2010-2014, CPS 2010-July 2015. Sample includes all states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages for ACS (N=210) and state-month averages for CPS (N=2814). Regressions include year and state fixed effects, month-in-year effect (CPS only) and are weighted by cell sizes. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

Table 5: Effects of Medicaid Expansions in Subgroups of Childless Adults

	Insured (1)	Medicaid (2)	Employed (CPS) (3)
A. Females			
Expansion x Post	0.016	0.032	0.003
	(0.005)	(0.004)	0.005
	[3.17]	[7.78]	[0.71]
Mean of Dep Var	0.860	0.089	0.644
B. Age 50 or Older			
Expansion x Post	0.013	0.027	0.004
	(0.005)	(0.004)	(0.005)
	[2.41]	[6.60]	[0.94]
Mean of Dep Var	0.880	0.085	0.627
C. High School Dropouts			
Expansion x Post	0.049	0.055	0.017
	(0.009)	(0.008)	(0.008)
	[5.45]	[7.23]	[2.13]
Mean of Dep Var	0.692	0.262	0.462
D. In Poor Health (Health Rated Poor - Good)			
Expansion x Post	-	-	-0.008
			(0.008)
			[-0.93]
Mean of Dep Var			0.540

Notes: Health insurance data is from ACS 2010-2014. Labor market data are from basic CPS 2010-July 2015 (Panels A-C) and March CPS 2010-2015 (Panel D). Sample includes all states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages for ACS (N=210), and state-month averages for CPS (N=2814 - basic, N=252 - March). Regressions include year and state fixed effects, month-in-year effect (basic CPS only) and are weighted by cell sizes. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

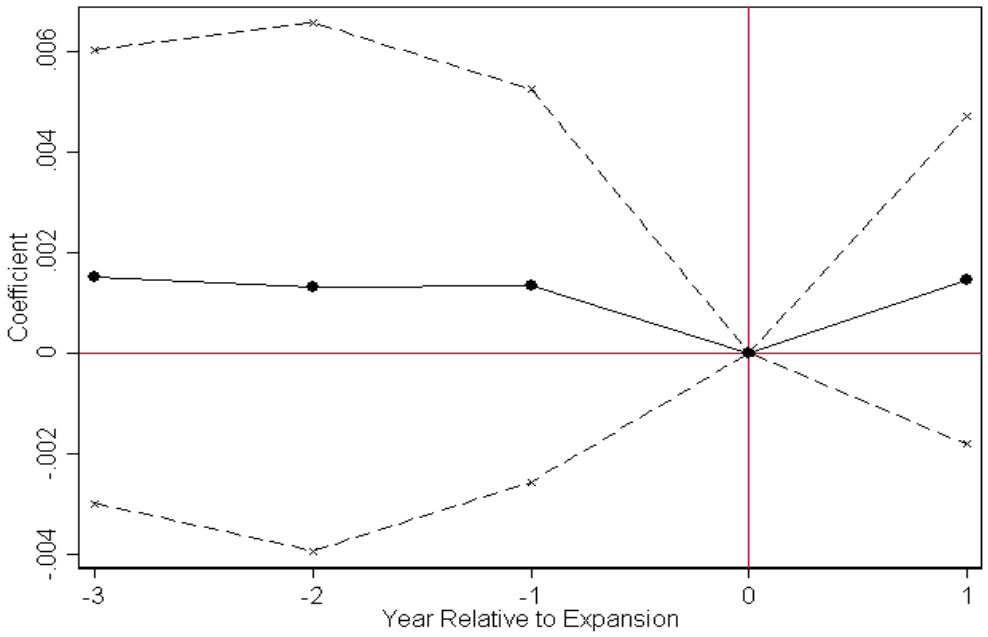
Appendix Figure 1: Comparison of Employment-to-Population Ratio Estimates Across Datasets



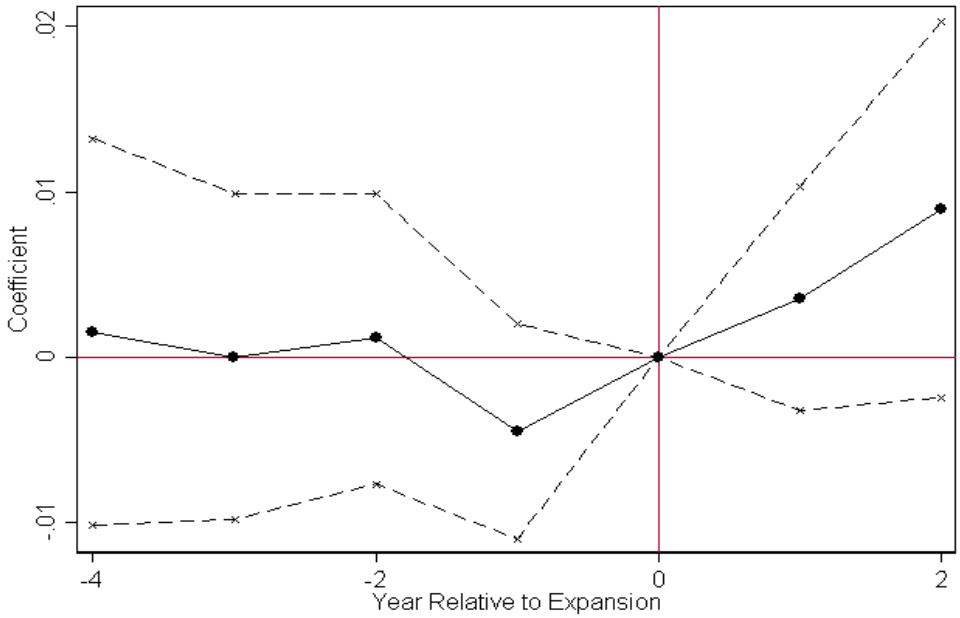
Notes: This plot shows the employment-to-population ratio in expansion and non-expansion states using CES, CPS, and ACS. The denominator for each series in the 16 and over population. Expansion status is defined as in Figure 1.

Appendix Figure 2: Event Study Estimates on Employment

A. American Community Survey



B. Current Population Survey



Notes: These figures plot the estimates of δ in equation (2) for k=-3 to k=1, where the the dependent variable is employment rate in the ACS (upper figure) or CPS (lower figure). Sample is as in Table 4.

Appendix Table 1: Effect of Medicaid Expansion on Fraction Below Poverty

	Fraction Below Poverty - ACS	Fraction Below Poverty - CPS
Childless Adults		
Expansion x Post	0.001	-0.004
	(0.001)	(0.003)
	[0.58]	[-1.12]
Mean of Dep Var	0.109	0.094

Notes: Data is from ACS 2010-2014, CPS 2010-July 2015. Sample includes all states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages for ACS (N=210) and state-month averages for CPS (N=2814). Regressions include year and state fixed effects, month-in-year effect (CPS only) and are weighted by cell sizes. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

Appendix Table 2: Robustness to Inclusion of Different States

	Insured	Medicaid / Other Govt	Employed (CPS)
A. Excluding Limited Plan States			
Expansion x Post	0.021	0.035	0.003
	(0.004)	(0.005)	(0.004)
	[4.88]	[7.05]	[0.78]
Mean of Dep Var	0.833	0.081	0.674
B. Including Only 2014 Expansion States			
Expansion x Post	0.016	0.033	0.005
	(0.005)	(0.003)	(0.004)
	[2.99]	[10.09]	[1.41]
Mean of Dep Var	0.841	0.841	0.677

Notes: Data is from ACS 2010-2014, CPS 2010-July 2015. Panel A includes all states in which childless adults were not eligible for any coverage (Medicaid-equivalent or limited) in 2013 (29 States). Panel B includes all states in which childless adults were not eligible for Medicaid in 2013, excluding MI, NH, PA, IN (36 States). Observations are state-year averages for ACS and state-month averages for CPS. Regressions include year and state fixed effects, month-in-year effect (CPS only) and are weighted by cell sizes. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

Appendix Table 3: Effects of Medicaid Expansion on Health Insurance

	Insured			Medicaid / Other Govt			Private, Thr. Employer			Private, Own Purchase		
A. Childless Adults												
Expansion x Post	0.018	0.019	0.017	0.031	0.031	0.030	-0.003	-0.002	-0.003	-0.009	-0.009	-0.008
	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
	[3.94]	[4.57]	[3.60]	[7.44]	[7.29]	[7.48]	[-1.22]	[-0.81]	[-1.08]	[-3.23]	[-3.13]	[-2.93]
Mean of Dep Var	0.842	0.842	0.842	0.086	0.086	0.086	0.628	0.628	0.628	0.124	0.124	0.124
B. Childless Adults Under the Poverty Line												
Expansion x Post	0.085	0.091	0.083	0.108	0.107	0.112	-0.010	-0.007	-0.009	-0.013	-0.009	-0.017
	(0.015)	(0.014)	(0.010)	(0.014)	(0.014)	(0.010)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)	(0.003)
	[5.75]	[6.66]	[8.64]	[7.55]	[7.88]	[10.86]	[-2.33]	[-1.67]	[-2.64]	[-2.76]	[-1.88]	[-5.93]
Mean of Dep Var	0.619	0.619	0.619	0.354	0.354	0.354	0.125	0.125	0.125	0.105	0.105	0.105
C. Medicaid Likely Childless Adults												
Expansion x Post	0.029	0.032	0.029	0.048	0.048	0.047	-0.008	-0.007	-0.006	-0.009	-0.009	-0.010
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
	[4.58]	[5.61]	[5.06]	[7.80]	[7.88]	[9.65]	[-1.71]	[-2.10]	[-1.86]	[-3.01]	[-2.95]	[-3.53]
Mean of Dep Var	0.764	0.764	0.764	0.149	0.149	0.149	0.490	0.490	0.490	0.113	0.113	0.113
Weighting	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Notes: Data is from ACS 2010-2014. Sample includes states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages (N=210). Regressions include year and state fixed effects. Controls include: Percent of childless adults that are female, married, married and female, in 5-year age categories (8 groups), nonwhite, have less than a high school diploma, and have a bachelor's degree. Standard errors are clustered by state and in parentheses. t-stats are in brackets.

Appendix Table 4: Effects of Medicaid Expansion on Employment

	Employed - ACS			Employed - CPS			Employed, >=30 Hrs Worked		
A. Childless Adults									
Expansion x Post	-0.001	-0.004	-0.001	0.003	0.003	0.005	0.004	0.004	0.007
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)
	[-0.41]	[-1.23]	[-0.51]	[0.82]	[0.91]	[1.48]	[0.99]	[1.26]	[2.26]
Mean of Dep Var	0.682	0.682	0.682	0.678	0.678	0.678	0.590	0.590	0.590
B. Childless Adults Under the Poverty Line									
Expansion x Post	0.001	-0.001	0.000	0.010	0.002	0.001	0.003	-0.004	-0.001
	(0.007)	(0.007)	(0.003)	(0.013)	(0.012)	(0.010)	(0.009)	(0.008)	(0.007)
	[0.14]	[-0.20]	[0.05]	[0.81]	[0.18]	[0.10]	[0.33]	[-0.53]	[-0.19]
Mean of Dep Var	0.246	0.246	0.246	0.318	0.318	0.318	0.208	0.208	0.208
C. Medicaid Likely Childless Adults									
Expansion x Post	-0.006	-0.005	-0.001	0.006	0.006	0.007	0.005	0.005	0.007
	(0.004)	(0.004)	(0.002)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.003)
	[-1.32]	[-1.37]	[-0.55]	[1.31]	[1.31]	[1.93]	[1.13]	[1.12]	[2.06]
Mean of Dep Var	0.609	0.609	0.609	0.617	0.617	0.617	0.530	0.530	0.530
Weighting	No	No	Yes	No	No	Yes	No	No	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Notes: Data is from ACS 2010-2014, CPS 2010-July 2015. Sample includes all states in which childless adults were not eligible for Medicaid in 2013 (42 States). Observations are state-year averages for ACS (N=210) and state-month averages for CPS (N=2814). Regressions include year and state fixed effects, month-in-year effect (CPS only). Controls include: Percent of childless adults that are female, married, married and female, in 5-year age categories (8 groups), nonwhite, have less than a high school diploma, and have a bachelor's degree. Standard errors are clustered by state and in parentheses. t-stats are in brackets.