The Affordable Care Act's Medicaid Expansion and Unemployment

Thomas C. Buchmueller
Ross School of Business
University of Michigan
tbuch@umich.edu

Helen Levy
Institute for Social Research
University of Michigan
hlevy@umich.edu

Robert G. Valletta
Federal Reserve Bank of San Francisco
rob.valletta@sf.frb.org

September 2018

Abstract: We examine how a key provision of the Affordable Care Act—the expansion of Medicaid eligibility—affected health insurance coverage and labor market transitions of unemployed workers. Comparing trends in states that implemented the Medicaid expansion to those that did not, we find that the ACA Medicaid expansion substantially increased insurance coverage among unemployed workers. We then test whether this strengthening of the safety net reduced transitions from unemployment to employment. We find no evidence of such an effect.

Acknowledgements/disclaimer: Prepared for presentation at "Defense against the Dark Arts: A labor economics conference in honor of John E. DiNardo," University of Michigan, September 28-29, 2018. Financial support for this project from the Russell Sage Foundation is gratefully acknowledged. The views expressed in this paper are solely those of the authors and are not attributable to the Federal Reserve Bank of San Francisco or the Federal Reserve System.

Introduction

Job loss can be a catastrophic event for workers and their families. The Unemployment Insurance (UI) program provides partial income replacement for some job losers, but does not fully smooth consumption shocks associated with job loss (Gruber 1997; Browning and Crossley 2009) and leaves households at risk of a range of negative outcomes. In the short run, consequences include reduced income and difficulty finding new work (Farber 2017), loss of health insurance (Schaller and Stevens 2015; Jolly and Phelan 2017), and increased debt (Sullivan 2008); in the longer run, consequences include depleted savings and postponed retirement (Chan and Stevens 1999), increased risk of mortality (Sullivan and von Wachter 2009), and negative outcomes for children (Kalil and Wightman 2011).

The Affordable Care Act may have mitigated one consequence of unemployment by creating new, subsidized health insurance options for individuals without access to employer-sponsored coverage. This development is noteworthy at a time when the prevailing trend is to shift work-related risks from employers and government to workers and their families (Hacker 2006; Morduch and Schneider 2017). Examples of this trend include the rise of contingent work (Katz and Krueger 2016) and the shift from defined benefit to defined contribution retirement plans. The ACA represents a rare movement in the other direction: an expansion of the safety net (Buchmueller and Valletta 2017).

Of course, expanding the safety net and reducing exposure to risk may entail moral hazard. In the context of unemployment, economists have long noted that UI, by softening the downside of unemployment, likely increases the duration of unemployment spells (see, for example, Baily 1978; Krueger and Meyer 2002; Chetty 2008; Rothstein 2011; Farber and Valletta 2015; or Farber, Rothstein, and Valletta 2015). Expanding access to health insurance for the unemployed may have a similar effect; indeed, Gruber and Madrian (1997) found that

continuation-of-coverage mandates—that is, state laws requiring employers to offer what is now commonly known as COBRA coverage—increased the number of months workers spent not employed.

In this paper we explore the implications of the ACA Medicaid expansion for unemployed workers. Our general empirical strategy is a difference-in-differences approach that compares trends for workers in states that implemented the Medicaid expansions and those in states that did not. We begin by testing for an effect of the expansion on the insurance coverage of unemployed workers using data from the American Community Survey (ACS) for the years 2008 to 2016. Prior to 2014, when the main coverage provisions of the ACA went into effect, unemployed workers were roughly three times as likely to be uninsured as employed workers. From 2008 to 2013, the percentage of unemployed and employed workers without insurance as well as the percent with Medicaid or different forms of private insurance, were trending in a similar fashion in states that would and would not choose to expand Medicaid under the ACA. After 2014, insurance coverage increased in both groups of states, though for unemployed workers the change was roughly twice as large in expansion states compared to non-expansion states. In expansion states, the percent of unemployed workers without health insurance was cut by more than one-third.

The insurance coverage results, thus, provide strong evidence that the ACA Medicaid expansion substantially strengthened the safety net for unemployed workers in states that implemented it. We next consider whether this greater access to health insurance affected the duration of ongoing unemployment spells or the rate of transitions out of unemployment. Using basic monthly Current Population Survey (CPS) data for the period 2007 through 2017, we document that there was no difference in the mean duration of ongoing unemployment spells in

expansion states compared to non-expansion states either before or after the Medicaid expansion. Using observations on individuals matched across consecutive CPS survey months, we estimate models similar to those used to study the effect of extended unemployment insurance benefits, distinguishing between unemployment exits to employment and out of the labor force. Our difference-in-difference regression tests show no evidence that the Medicaid expansions altered the relative pattern of unemployment exits between expansion and non-expansion states after 2014. Thus, we conclude that the individual welfare gains for unemployed individuals who obtained insurance coverage as a result of the ACA were not diminished by distortionary effects on their labor supply decisions and corresponding reductions in social welfare.

II. Background and Previous Literature

A. The Safety Net, Job Search, and Employment

Safety net programs are aimed at insuring against economic loss and maintaining living standards at an acceptable level. This entails the potential downside of adverse incentive effects on related economic outcomes. Optimal social insurance therefore balances such "moral hazard" effects against consumption smoothing or other welfare benefits of the policy (Bailey 1978; Chetty 2006).

Past work on optimal social insurance has focused primarily on unemployment insurance (UI), which relates directly to recipients' labor market status and hence has significant and readily observable moral hazard effects. In particular, the increase in reservation wages prompted by UI income may reduce job search intensity and the propensity to accept job offers. Much of the existing research that assesses the impacts of unemployment benefits on search behavior

focuses on benefit generosity (weekly/monthly payment amounts), which follows directly from the role of reservation wages in the underlying theory of optimal UI.

Importantly for our analyses in this paper, UI benefits generally are available for 26 weeks in the United States, but availability typically is extended during periods of economic distress. A longstanding literature focused on estimating the search response to U.S. benefit extensions and found that an increase in the maximum duration of benefits leads to an increase in average UI spell durations (notably Moffitt 1985, Katz and Meyer 1990, Card and Levine 2000, Jurajda and Tannery 2003, and Schwartz 2013).

A new generation of this literature emerged after the Great Recession of 2007-09, when UI benefits were extended to an historically unprecedented maximum of 99 weeks. Despite the large expansion of available benefit durations, papers that examined search responses to the benefit expansions generally found relatively small effects on overall unemployment transitions and durations (e.g., Rothstein 2011; Farber and Valletta 2015; Farber, Rothstein, and Valletta 2015; Valletta 2014). Moreover, most of the impact of the benefit extensions took the form of a reduced tendency to exit the labor force—i.e., prolonged job search—rather than a reduction in the rate of job finding. This finding was enabled by reliance on CPS survey data (matched across adjacent months) that distinguished between different exit routes from unemployment, as we use later in this paper. The results from these papers suggest more limited moral hazard effects of extended UI than did the earlier generation of research.[1]

The relevance of this literature in our setting is heightened by the abrupt withdrawal of extended benefit availability at the end of 2013, due to a congressional decision not to renew the

[1] This finding is consistent with other research suggesting that moral hazard effects of UI on job search are greatly outweighed by the favorable liquidity and social insurance effects (Chetty 2008; Card, Chetty, and Weber 2007). This may reflect reduced effects of UI on job search when labor market conditions are especially weak, although the evidence on this point is mixed (see the discussion in section 2.2 of Valletta 2014).

2008 Emergency Unemployment Compensation (EUC) program at that time. The effects of this abrupt loss of extended UI benefits corresponds exactly to the Medicaid expansions that took effect in January of 2014, which are the focus of our analyses. The ***reduction*** in UI availability could offset and hence bias the estimated impact of the ***expansion*** of Medicaid availability. This emphasizes the importance of incorporating data on UI availability into our analyses. We discuss our approach to this issue further in Section IV.

B. Medicaid and Labor Supply: Pre-ACA Evidence

Other safety net programs are less directly tied to employment and job search status than is UI, but they nonetheless may have substantial moral hazard effects of their own. Most safety net programs are means-tested, requiring that income not exceed a specified threshold, and as such they may reduce work incentives in general. The resulting reduction in labor supply can occur along the intensive (hours) or extensive (participation) margins. The specific effects will depend on the exact structure of any given program, in particular its own and family income thresholds, work and job search requirements, etc. Disability insurance is a program that has been found to have substantial work disincentive effects.[2] These occur primarily along the labor force participation margin, since program eligibility requires strong evidence of inability to work.

Medicaid is another leading example of a program that may affect labor supply and job attachment. Because Medicaid is a means-tested program, it can create a disincentive to work. Research on the relationship between Medicaid and labor supply in the years prior to the ACA has produced mixed results (for a review, see Buchmueller, Ham and Shore-Sheppard 2016).

[2] See Abraham and Kearney (2018) for a broad summary of this literature.

Because very few non-disabled childless adults were eligible for Medicaid prior to the ACA, most of this research focuses on low-income parents. Several studies, however, analyzed the experiences of individual states that either expanded or contracted eligibility for non-disabled, childless adults. The strongest evidence that Medicaid reduces labor supply for this group comes from studies of Tennessee and Wisconsin, while data from Oregon suggest no effect of eligibility on labor supply. Garthwaite, Gross and Notowidigdo (2014) examine the effect of a major contraction of Medicaid eligibility in Tennessee. Applying difference-in-differences methods to repeated cross-sections from the March CPS, their results suggest that the loss of Medicaid coverage led to large increases in employment and private health insurance coverage after a major contraction of Medicaid eligibility in Tennessee. However, these results are not evident in other data sources (DeLeire 2018; Ham and Ueda 2017). Dague, DeLeire, and Leininger (2017) use both difference-in-differences and regression discontinuity methods to analyze the impact of a Medicaid enrollment cap in Wisconsin for non-disabled, childless adults, finding a significant reduction in employment. In contrast, Baicker et al. (2014), using administrative data from the Social Security Administration linked to participants in the Oregon Health Insurance Experiment – and therefore, arguably, the strongest research design – find no significant effect of Medicaid on earnings or employment (Baicker et al. 2014).

C. The ACA and its Effect on Insurance Coverage and Labor Supply

The ACA included provisions to expand both public and private health insurance. As it was originally enacted in 2010, the law would have required all states to expand their Medicaid programs to cover all individuals in families with incomes below 138 percent of the Federal Poverty Level (FPL) beginning January 1, 2014, with the option of expanding sooner. However, a Supreme Court decision in 2012 allowed states to opt out of Medicaid expansion altogether.

Twenty-four states plus the District of Columbia chose to implement the ACA expansion on or before January 1, 2014. Seven states expanded later (2 in 2014, 3 in 2015 and 2 in 2016), and two more – Maine and Virginia – are currently in the process of implementing expansion. As of September 2018, 17 states had not expanded their program. Since our data extend through 2017, our analysis will treat Maine and Virginia as non-expansion states; we will also omit the seven states that expanded after January 2014 but before December 2017.[3] Table 1 summarizes state Medicaid expansion decisions and how we categorize states for our analysis.

The ACA also implemented private insurance market reforms beginning in January 2014, such as prohibiting plans from denying coverage based on an applicant's health status. It established new health insurance marketplaces, sometimes called "exchanges," to facilitate shopping for individual coverage by providing a website where enrollees could easily compare their plan options. Importantly, the law provides premium tax credits for families with income between 100 and 400 percent of poverty to purchase coverage through the marketplaces, provided that they do not already have access to Medicaid or coverage through an employer. Tax credits are calculated on a sliding scale, with the family's share of the premium capped at between 2 and 9.5 percent of family income. Premiums for marketplace plans cannot vary based on health status, and the law limits allowable variation based on age, so that older enrollees cannot be required to pay more than three times what a younger enrollee would be charged for the same plan.

It is estimated that approximately 20 million Americans gained health insurance coverage as a result of the ACA (Obama 2016). Between 2013 and 2016, coverage increased for all age groups (under age 65) and in every U.S. state (Barnett and Berchick 2017). Numerous studies

[3] In future versions of the paper we will investigate the sensitivity of our results to which states are included as expansion states.

have examined the effect of the Medicaid expansion (see Antonisse et al (2018) for a comprehensive review). A general finding is that coverage increased more in states that implemented the Medicaid expansion than in states that did not, especially among low-income adults (Sommers et al 2015; Wherry and Miller 2016; Miller and Wherry 2017) disadvantaged populations, such as racial and ethnic minorities (McMorrow et al 2015; Buchmueller et al 2016) and states or local areas with higher baseline rates of uninsurance (Courtemanche et al 2017; Duggan et al 2017). Changes in Medicaid eligibility as a result of the ACA expansion were most pronounced for childless adults, who in most states were previously not eligible at all. Consistent with this, the effect of the Medicaid expansion on insurance coverage was especially large for childless adults (Kaestner et al 2017).

The effect of the ACA coverage expansions on labor supply incentives is complex. The increase in the Medicaid income eligibility threshold means that some individuals who were previously covered can work and earn more without losing coverage because they are no longer close to their state's eligibility cutoff. At the same time, workers who would have otherwise earned slightly more than the new eligibility limit of 138 FPL may reduce their hours to qualify for Medicaid. For individuals who gain Medicaid coverage as a result of the ACA, labor supply may also fall as a result of an income effect. Above the poverty level, the phase-out of means-tested subsidies for marketplace coverage increases the effective marginal tax rate on earnings, which has the potential to reduce labor supply. However, in non-expansion states, workers with incomes just below poverty have an incentive to work more (or report higher incomes (Kucko, Rinz and Solow (2018)) in order to qualify for premium tax credits.

In light of these theoretical considerations and a large literature finding significant effects of employer-sponsored health insurance coverage on job mobility, hours and retirement (see

Gruber and Madrian (2002) for a review), the Congressional Budget Office projected that the ACA would reduce labor supply, leading to a decline in hours worked of roughly 2 percent by 2024 (Harris and Mok 2015). The CBO projected that this labor supply response would grow gradually over time as workers adapted to the economic incentives arising from the new coverage options.

Several recent studies test for an immediate effect of the ACA Medicaid expansion on various measures of labor supply (Leung and Mas 2016; Gooptu et al 2016; Kaestner et al 2017; Duggan, Goda and Jackson 2017; Frisvold and Jung 2018; Levy, Buchmueller and Nikpay 2018). All use the same data sources that we use here—the ACS for analyzing health insurance coverage and the CPS for labor market outcomes—though they differ slightly in terms of the time period covered, sample inclusion criteria and the definition of treatment and control groups. Despite these differences, the results of the various studies are quite consistent. They find that outcomes like employment, hours, the probability of working full-time or part-time, retirement and job mobility followed similar trends in expansion and non-expansion states both before and after 2014. Thus, difference-in-differences regressions suggest that the Medicaid expansion had no immediate impact on labor supply in the population as a whole or in subgroups such as older workers or high school dropouts.

III. Analysis, Part 1: Medicaid Expansion and Insurance Coverage of the Unemployed

A. Data and Descriptive Analysis

Our analysis of health insurance coverage uses data from the ACS, which includes annual data on health insurance since 2008. Advantages of the ACS include consistent measurement of health insurance over time and a very large sample: approximately 3 million observations in all,

including between 90,000 and 150,000 individuals who are unemployed at the time of the survey, in each year. The ACS has one question about health insurance: "Is this person CURRENTLY covered by any of the following types of health insurance or health coverage plans?" This question is followed by an 8-item checklist.[4] We examine four insurance-related outcomes of interest: uninsured, which is defined as having none of the sources of coverage listed; Medicaid or other public coverage; employer-sponsored private coverage; and non-group private coverage.

The first provision of the ACA affecting insurance coverage was one that allowed parents with employer-sponsored insurance to cover their adult children as dependents up to age 26. This policy, which went into effect in September 2010, led to a significant increase in insurance coverage among 19 to 25-year-olds (Sommers et al 2013; Akosa Antwi et al 2013, 2014; Barbaresco et al 2014). Studies examining the effect of the policy on labor market outcomes, yield mixed results (Antwi, Moriya and Simon 2013; Heim, Lurie and Simon 2015; Coleman and Dave 2015; Bailey and Chorniy 2016). To isolate the effect of the 2014 Medicaid expansion from this earlier ACA provision, we limit our analysis sample to adults between the ages of 26 and 64.

Table 2 presents pre-ACA data on the percent uninsured with additional cuts by worker demographic characteristics. These descriptive results indicate dramatic differences in insurance coverage between the employed and the unemployed. In 2008-2010, unemployed workers were roughly three times as likely to be uninsured as those who are employed: 56 vs. 18 percent in

[4] The options are: (a) employer-sponsored insurance; (b) insurance purchased directly from an insurance company; (c) Medicare; (d) Medicaid or other public insurance; (e) TRICARE/military health care; (f) Veteran's Administration; (g) Indian Health Service; and (h) any other type of health plan. Respondents are coded as uninsured if they answer no to all of these options.

non-expansion states and 44 versus 14 percent in expansion states.[5] As would be expected, this gap is driven by large differences in employer-sponsored coverage, which is partly offset by higher rates of Medicaid coverage among the unemployed. Among both employed and unemployed workers, the probability of being uninsured declines with age and education. As a result, the employed/unemployed coverage gap is similar for older and younger workers and those with higher and lower levels of education. The story is different when we cut the data by parental status. Whereas parents and childless adults have similar coverage rates when employed, among the unemployed childless adults are substantially more likely to be uninsured. This reflects the fact that prior to the ACA, some parents were eligible for Medicaid in almost all states, whereas childless adults rarely were.

Figure 1 presents unadjusted trends in four insurance coverage outcomes – Medicaid, private non-group coverage, employer-sponsored coverage, and uninsured - for unemployed and employed adults in expansion and non-expansion states.[6] Prior to 2014, the different types of coverage were trending in a similar fashion in expansion and non-expansion states. For Medicaid, this changed substantially in 2014 when the ACA expansion went into effect. In expansion states, Medicaid coverage increased by 19.1 percentage points among unemployed workers between 2013 and 2016, and nearly five percentage points among employed individuals. In contrast, in non-expansion states there is no apparent break in trend for Medicaid coverage.

Rates of non-group coverage were also quite stable among unemployed workers prior to 2014, as well as being fairly similar in expansion and non-expansion states. Beginning in 2014, non-group coverage increased for unemployed workers in both groups of states, presumably

[5] Note that these unadjusted differences should not be interpreted as a causal effect of unemployment on insurance coverage. Research using longitudinal data suggests that job loss is associated with a decline in insurance coverage of between 13 and 20 percentage points (Gruber and Madrian 1997; Schaller and Stevens 2015).
[6] The underlying data are presented in Table A1.

reflecting the ACA programs implemented in every state, such as health insurance marketplaces and premium tax credits. Employer coverage, in contrast, shows no sharp break in trend in 2014.

The net effect of these trends is that the fraction uninsured dropped sharply for all unemployed workers starting in 2014. The drop was much larger for unemployed workers in expansion states, who experienced a 22-percentage point drop in uninsurance between 2013 and 2016 (from 44.5 percent to 21.3 percent), compared with a drop of only 12 percentage points (from 56.6 percent to 42.3 percent) for unemployed individuals in non-expansion states. For employed workers, the percent uninsured fell by similar, smaller amounts in expansion and non-expansion states (7 percentage points and 6 percentage points, respectively).

B. Regression Analysis

For a closer look at coverage trends prior to 2014 and the changes that coincided with ACA implementation, we estimate event history regressions for each of these four outcomes with controls for both individual (X_{ist}) and state/year (W_{st}) characteristics:

$$(1)\quad Y_{ist} = \alpha_0 + \sum_{2008}^{2016} \alpha_{1t} YEAR_t + \sum_{2008}^{2016} \alpha_{2t} YEAR_t \, x \, EXPANSION_s + \alpha_3 X_{ist} + \alpha_4 W_{st} + e_{ist}$$

The vector of individual-level controls X_{ist} includes age, education, race/ethnicity, gender, marital status; the state/year-level controls W_{st} are cubics in the unemployment rate and employment growth, as well as a single variable reflecting the maximum duration of UI benefits available in December 2013. The model is estimated as a linear probability model weighted by the ACS survey weights. Robust standard errors are clustered by state.

The coefficients on the *YEAR x EXPANSION* interaction terms, which measure the gap in the outcome for expansion versus non-expansion states in each year after controlling for other

factors, are presented graphically in Figure 2. To highlight changes associated with the ACA, the red horizontal line is drawn through the interaction term for 2013. As was evident in Figure 1, rates of Medicaid coverage were always higher in expansion than non-expansion states prior to 2014; however, this gap remained constant at 6 to 9 percentage points from 2008 to 2013. Beginning in 2014, the gap between expansion and non-expansion states in Medicaid coverage for unemployed workers increased significantly to 16 percentage points, then 22 points in 2015 and 23 points in 2016.

For non-group insurance, the expansion/non-expansion gap remained constant (and small – about one percentage point) between 2008 and 2013. Starting in 2014, as already noted, non-group coverage increased in both groups of states, but the gains are about two percentage points larger in non-expansion states. This pattern reflects the differential treatment of individuals with incomes between 100 and 138 percent of FPL in expansion and non-expansion states. In non-expansion states, they are eligible for premium tax credits to purchase private non-group coverage (as long as they do not have access to affordable employer coverage), whereas in expansion states they would be eligible for Medicaid. Employer coverage also declines by a few percentage points in expansion states compared with non-expansion states.

The net effect of these changes is a significant decline in uninsurance among unemployed workers in expansion states relative to non-expansion states. In 2013, unemployed workers in expansion states were 11 percentage points less likely to be uninsured than observationally similar workers in non-expansion states. By 2016, the gap increased to 19 percentage points. The difference between these two figures implies a difference-in-differences estimate of 8 percentage points.

For employed workers (Figure 3) the general patterns are similar, though the magnitudes are much less pronounced. Comparing the interaction terms for 2013 and 2016, we see that Medicaid coverage increased by almost 4 percentage points in expansion states relative to non-expansion states (0.062 – 0.025 = 0.037). However, this was partially offset by a 1.4 percentage point relative decline in non-group coverage and a 1.9 point relative decline in employer-sponsored insurance. As a result, for employed workers the expansion/non-expansion gap in uninsurance remained essentially unchanged between 2013 and 2016.

To summarize the effect of the ACA Medicaid expansion on the insurance coverage of unemployed and employed adults and to show how the effect of the policy varied across different demographic groups, we estimate a set of difference-in-differences regressions with the dependent variable equal to one if the individual is uninsured:

$$(2)\ UNINSURED_{ist} = \beta_0 + \beta_1 EXPANSION_s + \beta_2 POST_t + \beta_3 EXPANSION_s \times POST_t + \beta_4 X_{ist} + \beta_5 W_{st} + u_{ist}$$

In these regressions, *POST* is a dummy equal to one for years greater than or equal to 2014. *EXPANSION* and the vectors of controls variables X_{ist} and W_{st} are the same as in equation (1). Note that because coverage increased in 2014 and again in 2015, the coefficients on *POST* and *EXPANSION x POST*, which represent average effects over the years 2014 through 2016, understate the full impact of the ACA and its Medicaid expansion. Nonetheless, this specification provides a usefully concise summary of the policy effects.

Coefficient estimates from these regressions are reported in Table 3. The coefficients on the variable *EXPANSION* represent pre-ACA differences between workers in expansion and non-expansion states, adjusting for covariates. The estimates are nearly identical to the

unadjusted differences reported in Table 2. The fact that the baseline difference is much larger among unemployed workers (12.9 percentage points) than employed workers (4.3 points) can be explained by greater Medicaid eligibility in expansion states even before the ACA.

The coefficient on *POST* represents the change in insurance coverage in non-expansion states after the ACA was in place. The estimates indicate large increases in coverage, especially for unemployed workers. In the full sample, the estimated effect of -0.068 represents a 12 percent effect relative to the pre-ACA mean of about 56 percent uninsured for unemployed workers in non-expansion states. The change for employed workers in non-expansion states was smaller in percentage point terms (3.6 points) but larger as a percent of the baseline uninsured rate of 18.2 percent.

The most important parameters for our analysis are the coefficients on the interaction term, *EXPANSION x POST*, which represent the difference-in-differences estimate of the effect of the Medicaid expansion. In the full sample of unemployed workers, the Medicaid expansion led to an additional decline in insurance of 7.4 percentage points. Because of the way it averages the data during the post-period, this estimate is slightly smaller than the effect implied by using the event history results to calculate the change from 2013 to 2016. Medicaid expansion had particularly large effects on some subsamples of unemployed workers: those with a high school degree or less (-0.110), childless adults (-0.101) and men (-0.097).[7]

Summing the coefficients on *POST* and *EXPANSION x POST* gives the total change in coverage in expansion states—i.e., the combined effect of the Medicaid expansion and the

[7] Additional stratified regressions indicate smaller differences in the effect of the Medicaid expansion related to race/ethnicity and age. The estimated effect was -0.09 for non-Hispanic Whites and Hispanics and was -0.08 for non-Hispanic Blacks. Cutting the data by age, the estimated effect was -0.9 for 26 to 39-year-olds and -0.08 for older unemployed workers. For all subgroups defined by race/ethnicity and age, we find no significant effect of the Medicaid expansion among employed workers.

ACA's private market reforms. For unemployed workers, the uninsured rate fell by 15 percentage points, or by more than one-third of the baseline rate reported in Table 1 ((0.077 + .074)/0.443 = 0.340). Consistent with the event history results, the results presented in Panel B indicate that there was no significant difference in the coverage gains experienced by employed workers in expansion versus non-expansion states.

IV. Analysis, Part 2: Medicaid Expansion and Transitions out of Unemployment

A. Labor Market Conditions in Expansion/Non-expansion States

We now turn to an examination of the labor market effects of the Medicaid expansions. Proper design and interpretation of this analysis requires incorporation of state labor market conditions and relevant elements of the state policy environment (other than Medicaid expansion status) that may differ between expansion and non-expansion states.

Figure 4 displays some key differences between expansion and non-expansion states, using monthly data that extends from the beginning of 2007, just before the start of the Great Recession, into early 2018.[8] Panel A shows that expansion states generally had higher unemployment rates, reflecting weaker labor market conditions, throughout the sample frame. Changes in the unemployment rate generally track each other across the two groups of states. The exception is during the period just before and just after January 2014, exactly when the Medicaid expansions came into effect. The unemployment rate gap grew during the few years leading up to January 2014 and then shrank noticeably after January 2014.

[8] The aggregate statistics for the separate groups of expansion and non-expansion states are weighted, as described in the figure note. As noted earlier, we limit the set of Medicaid expansion states to those that expanded in January 2014, with later expanders excluded from the analyses. We plan to incorporate the late expanders in subsequent versions of this manuscript.

Panel B of Figure 4 illustrates one potential reason why the unemployment rate gap between expansion and non-expansion states shrank after January 2014. This panel plots the average number of total UI weeks available in the two groups of states. Changes over time in UI availability reflect the legislative rollout, expansion, and eventual withdrawal of the extended benefits during the Great Recession and recovery (see Valletta 2014 and Rothstein and Valletta 2017 for details). The expansion states had higher maximum UI weeks available during most of the sample frame, reflecting their weaker labor market conditions. As the figure shows, this also means that the expansion states experienced a larger withdrawal of available UI benefits when the EUC program was terminated at the end of 2013. In addition, various non-expansion states reduced their normal UI benefits below 26 weeks during 2011-forward, causing available UI weeks in non-expansion states to remain below that of expansion states from 2014 forward.

With these differences in mind, we begin by comparing the reported duration of ongoing unemployment spells in the basic monthly CPS for 2007 through 2017. Figure 5 shows the mean duration in weeks for the unemployed in expansion versus non-expansion states, which trend very similarly over time. Although the average duration is very slightly higher in non-expansion states, this difference is never statistically significant, either before or after 2014. Figure 6 confirms this by plotting event history dummies from a regression similar to equation (1) above but with reported unemployment duration as the dependent variable. As with the insurance coverage results in Figures 2 and 3, the red line is drawn through the coefficient representing the difference between expansion and non-expansion states in 2013, the last year before the ACA coverage provisions went into effect. In both the unadjusted and regression-adjusted results, the difference between expansion and non-expansion states is consistently small and statistically insignificant.

Note that the CPS duration variable is top-coded at 119 weeks; in order to address the possibility that this top-coding obscures changes over time or across the groups of states, Figure 7 plots the 25th, 50th, 75th, and 90th percentiles of the distribution of unemployment duration in expansion and non-expansion states, with very little indication of any difference between the two groups.

Accurate assessment of potential moral hazard effects of the Medicaid expansions requires drilling down beneath broad labor market indicators such as the unemployment rate and unemployment duration. In particular, recent research on the impact of the UI extensions that occurred during the Great Recession distinguished between their impact on job-finding rates and labor force attachment or withdrawal (Rothstein 2011; Valletta 2014; Farber, Rothstein, and Valletta 2015; Farber and Valletta 2015). These papers generally find a limited impact of UI availability on job finding rates during this timeframe—i.e., little or no moral hazard effect. Instead, extended UI tends to increase the duration of job search and hence unemployment durations via reduced labor force exit rates. This suggests limited adverse labor supply impacts. However, by not distinguishing between these two sources of changes in unemployment outcomes, an examination of unemployment rates or durations alone would suggest adverse effects of UI on search behavior and labor supply.

The Medicaid expansions may have similar impacts on the underlying unemployment transitions. Individuals who become eligible to receive Medicaid via the expansions may find that their health insurance enables them to engage in lengthier job search, rather than dropping out of the labor force to engage in home production activities, for example. Such behavior will tend to increase measured unemployment rates and durations for reasons other than moral hazard (reduced job finding).

We therefore focus our analyses on transitions out of unemployment, distinguishing between exits via job finding and labor force withdrawal. The regression framework and results are described in the next two sub-sections.

B. Data and Empirical Strategy

Given the close relationship between Medicaid expansions, available UI benefits, and labor market outcomes, detailed microdata are required to assess the independent effects of Medicaid expansions. Such data allow us to isolate the effects of the Medicaid expansions and obtain estimated impacts that are uncontaminated by the other changes in state labor markets and their policy environments.

We use matched monthly data on individual labor force participants from the CPS. As with our analysis of insurance coverage, we restrict the sample to individuals age 26-64, to minimize the influence of the ACA dependent coverage provision. The sample period is January 2007 through December 2017, which enables reliance on a pre-recession year (2007) as a reference point. Among the unemployed, we exclude individuals who are new entrants to the labor force.

Due to the rotating sampling scheme used for the CPS, surveyed households and individuals are in the sample for two separate periods of 4 consecutive months (with an intervening 8-month period spent out of the sample). This enables month-to-month matching for about three-fourths of the sample (all but the "outgoing rotation groups" that are exiting the sample for eight months or permanently). The monthly match is based on household identifiers and validated by ensuring that the reported data on age, education, race, and gender do not conflict across matched observations. We identify labor market transitions by comparing an

individual's labor force status in month *t* to that in month *t+1*. Individual characteristics are measured at the time of the base transition month (month *t*).

A well-known concern regarding matched CPS data is the likelihood of spurious transitions in labor force status arising from inconsistent or error-ridden survey responses rather than meaningful changes (Abowd and Zellner 1985; Poterba and Summers 1986, 1995). Such spurious transitions could impart a downward bias to the estimated effect of Medicaid on unemployment exits and might also reduce the precision of the estimates. We therefore follow past research by adjusting the data to minimize the incidence of spurious transitions (Rothstein 2011, Farber and Valletta 2015). In particular, for individuals identified as leaving unemployment one month, either through job finding or labor force exit, and then returning to unemployment the next month, their records are recoded to show no transition (and the newly created observations are retained). This correction requires restriction of the final analysis sample to individuals who are observed to be in their first or second month of a consecutive four-month span in the sample. We refer to these as "two-month forward matches." All results reported below are based on these restricted matches and corresponding measured transitions. The results are similar but less precisely estimated when this restriction is not imposed (i.e., when the wider set of single-month matches and transitions are used).

We estimate regressions of the following form (with restrictions described below):

$$(3)\ E_{ist} = \gamma_0 + \sum_{2007}^{2017} \gamma_{1t} YEAR_t + \sum_{2007}^{2017} \gamma_{2t} YEAR_t \times EXPANSION_s + \gamma_3 X_{ist} + \gamma_4 D_{it} + \gamma_4 W_{st} + \varepsilon_{ist}$$

The dependent variable *E* ("exit") is an indicator for whether an individual *i* living in state *s* who is unemployed in the survey reference week in month *t* exits unemployment by month *t+1* (i.e.,

reports no longer being unemployed in the reference week in the subsequent survey month). Exits from unemployment can occur either through job finding or labor force withdrawal (referred to as UE and UN transitions below). Estimation is based on the monthly panel of individuals formed by the CPS match. Estimation is via a logit model. This is a standard "grouped duration data" approach that enables straightforward incorporation of key time-varying covariates plus a flexible baseline hazard (see e.g. Wooldridge 2002, section 20.4). All estimates are weighted by the CPS survey weights, and robust standard errors are provided (clustered by state, hence the disturbance term ε in equation 3 has underlying components).[9]

YEAR and *EXPANSION* are defined as in equation (1). Focusing on the pattern in the interaction coefficients over time, we interpret any changes after 2014 in relative transition rates between expansion and non-expansion states as representing direct effects of the Medicaid expansions. To bolster this interpretation, Equation (3) specifies a set of other controls. In addition to the individual demographic variables we include in our insurance coverage regressions (*X*), we flexibly control for individual unemployment duration (*D*) using a set of 9 duration categories. The vector *W* consists of state characteristics. In addition to those that we used in the coverage regressions—cubics in the contemporaneous state unemployment rate and the rate of payroll employment growth (measured over the 3 months ending in the observation month, at an annual rate)—we include an indicator for the number of UI weeks available in each month. This is to account for the gradual elimination of extended UI benefits during the period 2010-2013, and the abrupt elimination of extended benefits between December 2013 and January 2014.[10] The sample size for these regressions is 144,941.

[9] We also include calendar month dummies in all regressions, to control for seasonal variation.
[10] The coefficients on this variable generally align with the results from the recent UI extensions literature, indicating little effect of UI availability on job finding but a negative effect on labor force withdrawals over our

C. **Regression Results**

We are primarily interested in the coefficients on the Y*EARxEXPANSION* interactions, which represents the expansion/non-expansion difference in transitions in each year. Results with and without regression-adjustment are displayed in Figures 8 and 9, respectively. In each figure we report UE (top panel) and UN (lower panel) results separately. The coefficients are transformed to average marginal effects and hence indicate percentage point differences expressed as fractions (relative to base exit rates of around 0.10 to 0.15). The red horizontal line is set at zero. Thus, if the 95 percent confidence interval for a coefficient crosses the line it means that in that year there was no significant difference in the transition rate between expansion and non-expansion states. Alternative difference-in-differences estimates of the effect of the Medicaid expansion can be formed by subtracting the coefficient for a pre-2014 year from the coefficient for a post-2014 year.

The results are similar between the uncontrolled and controlled specifications and hence are discussed together here. The figures generally show little difference in unemployment exits (to jobs or out of the labor force) between expansion and non-expansion states either before or after the expansions occurred in 2014. The pre-expansion differences generally are not statistically significant except in 2011 where unemployed workers in expansion states are 2.5 percentage points less likely to move to employment in the unadjusted model and 1.6 points less likely after covariate adjustment. In four of the pre-expansion years, the difference in UE transitions is less than one percentage point. Differences in UN transitions are even smaller.

broad sample frame (consistent with Rothstein 2011 and Valletta 2014). In subsequent versions of this paper, we will examine more refined specifications for the role of changes in extended UI.

The post-expansion differences (2014-forward) also do not exhibit a clear pattern. Between 2013 and 2014 the difference between the expansion and non-expansion states in exit rates to employment (top panel in each of the chart pairs) drops by 1.8 percentage points in the unadjusted model (from -0.007 to -0.025) and by 1.4 points in the adjusted model (from -0.002 to -0.016). These changes, which are statistically significant at the .05 level, might suggest that the increase in insurance coverage brought about by the Medicaid expansion led to a reduction in UE transitions. However, if that were the explanation, we should see a further reduction in 2015 coinciding with the additional gains in insurance documented in Section III. Instead, the difference in transition rates tightens in 2015 and 2016. By 2016, the regression-adjusted difference in UE transitions is a precisely estimated zero. Thus, difference-in-differences estimates that compare 2013 to these later years or to an average of the post-expansion period suggest no effect of the Medicaid expansion.

As a stronger test, we performed similar runs for samples restricted to individuals who were more strongly affected by the Medicaid expansions. As shown in Table 3, the Medicaid expansion led to larger than average coverage increases for childless adults. Therefore, we re-estimated the transition regressions for a sample of childless adults. We also restrict the sample to individuals with annual family incomes less than $20,000 (close to the common post-expansion eligibility threshold of 138% of the family poverty level). Figure 10 presents event history results for this targeted sample. As in the full sample, the difference in transition rates oscillates over time, exhibiting no clear pattern. In 2011 and 2012, individuals in expansion states were roughly 2 percentage points less likely to make UE transitions. However, in 2013, the difference was a statistically insignificant one-half of a percentage point. In the four years after

the ACA Medicaid expansion went into effect, the difference in transition rates ranged from a statistically insignificant 0.009 (in 2015) to an insignificant -0.015 (in 2017).

To better highlight the changes occurring around the enactment of the Medicaid expansion, we further restrict the sample to observations from 2012 to 2015 and interact *EXPANSION* with indicators for the two years before and after the Medicaid expansion. The results displayed in Figure 11 show no before/after difference in unemployment exit rates between expansion and non-expansion states.[11]

V. Conclusions

The fact that employer-sponsored insurance is the predominant source of health coverage in the United States means that workers who lose their jobs not only suffer a loss of income, but often lose access to health care as well. By creating new affordable insurance options that are not tied to employment, the Affordable Care Act was intended to strengthen the safety net for unemployed workers and other Americans with limited access to employer-sponsored insurance. The effect of the ACA on increasing insurance coverage was limited by the decision of some states to not implement the expansion of the Medicaid program as intended by the law.

Our analysis of health insurance coverage trends over a ten-year period finds that the ACA Medicaid expansion significantly expanded the safety net for unemployed workers. Difference-in-differences estimates indicate that after the law went into effect, the percent uninsured fell by 15 points in states that implemented the Medicaid expansion compared to nearly 8 percentage points in states that did not. Increases in insurance coverage were

[11] The sample sizes for the regressions underlying Figures 10 and 11 are 26,169 and 10,454, respectively.

particularly large for demographic groups that prior to 2014 had limited access to public insurance coverage.

A full evaluation of the ACA requires accounting for possible market distortions arising from incentives created by the program. Before the main coverage provisions of the law went into effect, much attention was given to potential labor market distortions. In the case of unemployed workers, access to means-tested health insurance might have reduced the intensity of job search, thereby increasing spells of unemployment. Our comparison of unemployment spells and transitions out of unemployment for expansion and non-expansion states provides no evidence of such effects. We show that prior to 2014, mean spells of unemployment and unemployment transition rates were essentially identical in expansion and non-expansion states. The same is true for the years after ACA implementation.

Although our results are quite clear, we still plan to conduct a number of additional sensitivity tests to strengthen their interpretation. The current analysis centers on a comparison of 25 states that expanded their Medicaid programs as of January 2014 with 19 states that as of 2016 had not expanded; seven "late expander" states are excluded from the analysis. In subsequent work we will consider the effect of including these other states as well as testing for differences among expansion states in terms of the extent to which the ACA increased insurance coverage. There is reason to believe that the results presented here on the overall effect of the Medicaid expansion understate the impact the policy had in states that had the lowest rates of insurance coverage at baseline. Evidence of such heterogeneous policy effects would allow us to sharpen the analysis of unemployment spells and transitions.

References

Abraham, Katharine G., and Melissa S. Kearney. 2018. "Explaining the Decline in the U.S. Employment-to-Population Ratio: A Review of the Evidence." NBER Working Paper No. 24333, February. http://www.nber.org/papers/w24333

Akosa Antwi, Y., Moriya, A.S., and Simon, K., 2013. "Effects of Federal Policy to Insure Young Adults: Evidence from the 2010 Affordable Care Act's Dependent-Coverage Mandate," *American Economic Journal: Economic Policy*, 5(4): 1-28.

Antonisse, Larisa, Rachel Garfield, Robin Rudowitz, and Samantha Artiga. 2017. The Effects of Medicaid Expansion under the ACA: Updated Findings from a Literature Review. Kaiser Family Foundation Issue Brief.

Baicker, K., Finkelstein, A., Song, J. and Taubman, S., 2014. The impact of Medicaid on labor market activity and program participation: evidence from the Oregon Health Insurance Experiment. American Economic Review, 104(5), pp.322-28.

Bailey, J. and Chorniy, A., 2016. "Employer-Provided Health Insurance and Job Mobility: Did the Affordable Care Act Reduce Job Lock?" *Contemporary Economic Policy*, 34(1): 173-83.

Baily, Martin N. 1978. "Some Aspects of Optimal Unemployment Insurance." *Journal of Public Economics.* 10 (December): 379–402.

Barbaresco, S., Courtemanche, C., and Qi, Y., 2015. "Impacts of the Affordable Care Act Dependent Coverage Provision on Health-Related Outcomes of Young Adults," *Journal of Health Economics*, 40(1)): 54-68.

Barnett, J.C. and Berchick, E.R., 2017. "Health Insurance Coverage in the United States: 2016," Current Population Reports, P60-260(September).

Browning, M. and Crossley, T.F., 2009. Shocks, stocks, and socks: Smoothing consumption over a temporary income loss. *Journal of the European Economic Association*, *7*(6), pp.1169-1192.

Buchmueller, T.C., Ham, J and Shore-Sheppard, L. 2016. "The Medicaid Program," in *The Economics of Means-Tested Transfer Programs* edited by Robert Moffit, Chicago: University of Chicago Press.

Buchmueller, T.C., Levinson, Z.M., Levy, H.G. and Wolfe, B.L., 2016. Effect of the Affordable Care Act on racial and ethnic disparities in health insurance coverage. *American Journal of Public Health*, *106*(8), pp.1416-1421.

Buchmueller, T.C. and Valletta, R.G., 2017. Work, Health, and Insurance: A Shifting Landscape for Employers and Workers Alike. *Health Affairs*, *36*(2), pp.214-221.

Card, David, Raj Chetty, and Andrea Weber. 2007. "The Spike at Benefit Exhaustion: Leaving the Unemployment System or Starting a New Job?" *American Economic Review* 97(2): 113-118.

Card, David, and Phillip B. Levine. 2000. "Extended benefits and the duration of UI spells: evidence from the New Jersey extended benefit program." *Journal of Public Economics* 78: 107-138.

Chan, S. and Stevens, A.H., 1999. Employment and retirement following a late-career job loss. *The American Economic Review*, *89*(2), pp.211-216.

Chetty, R. (2006). A General Formula for the Optimal Level of Social Insurance. *Journal of Public Economics*, 90, 1879–1901.

Chetty, R., 2008. Moral hazard versus liquidity and optimal unemployment insurance. *Journal of Political Economy*, *116*(2), pp.173-234.

Coleman, G. and Dave, D., 2018. "It's About Time: Effects of the Affordable Care Act Dependent Coverage Mandate on Time Use," *Contemporary Economic Policy* 36(1):44-58.

Courtemanche, C., Marton, J., Ukert, B., Yelowitz, A., and Zapata, D., 2017. "Early Impacts of the Affordable Care Act on Health Insurance Coverage in Expansion and Non-Expansion States," *Journal of Policy Analysis and Management*, 36(1): 178-210.

Dague, L., DeLeire, T. and Leininger, L., 2017. The effect of public insurance coverage for childless adults on labor supply. *American Economic Journal: Economic Policy*, 9(2), pp.124-54.

Deleire, T., 2018, "The Effect of Disenrollment from Medicaid on Employment, Insurance Coverage, Health and Health Care Utilization," NBER Working Paper No. 24899.

Duggan, M., Goda, G.S. and Jackson, E., 2017. "The Effects of the Affordable Care Act on Health Insurance Coverage and Labor Market Outcomes," NBER Working Paper No. 23607 (July).

Farber, H.S., 2017. Employment, hours, and earnings consequences of job loss: US evidence from the displaced workers survey. *Journal of Labor Economics*, *35*(S1), pp. S235-S272.

Farber, H.S. and Valletta, R.G., 2015. Do extended unemployment benefits lengthen unemployment spells? Evidence from recent cycles in the US labor market. *Journal of Human Resources*, *50*(4), pp.873-909.

Farber, H.S., Rothstein, J. and Valletta, R.G., 2015. "The Effect of Extended Unemployment Insurance Benefits: Evidence from the 2012-2013 Phase-Out," *American Economic Review*, 105(5): 171-176.

Frisvold, D.E., and Jung, Y., 2018. "The Impact of Expanding Medicaid on Health Insurance Coverage and Labor Market Outcomes," *International Journal of Health Economics and Management*, 18(2): 99-121.

Garthwaite, C., Gross, T. and Notowididgo, M., 2014. "Public Health Insurance, Labor Supply and Employment Lock," *Quarterly Journal of Economics*, 129(2): 653-696.

Gooptu, A., Moriya, A.S., Simon, K.I. and Sommers, B.D., 2016. Medicaid expansion did not result in significant employment changes or job reductions in 2014. *Health Affairs*, *35*(1), pp.111-118.

Gruber, J., 1997. The Consumption Smoothing Benefits of Unemployment Insurance. *The American Economic Review*, *87*(1), pp.192-205.

Gruber, J. and Madrian, B.C., 1997. Employment separation and health insurance coverage. *Journal of Public Economics*, 66(3), pp.349-382.

Gruber, J. and Madrian, B.C., 2002. "Health Insurance, Labor Supply and Job Mobility: A Critical Review of the Literature," NBER Working Paper No. 8817 (February).

Hacker, J.S., 2006. *The Great Risk Shift: The New Economic Insecurity and the Decline of the American Dream*. Oxford University Press.

Ham, J.C. and Ueda, K., The Perils of Relying Solely on the March CPS: The Case of Estimating the Effect on Employment of the TennCare Public Insurance Contraction.

Harris, E., Mok, S., 2015. "How CBO Estimates the Effects of the Affordable Care Act on the Labor Market," Congressional Budget Office Working Paper Series No. 2015-09 (December).

Heim, B., Lurie, I., and Simon, K., 2015. "The Impact of the Affordable Care Act Young Adult Provision on Labor Market Outcomes: Evidence from Tax Data," in *Tax Policy and the Economy*, 29(1): 133-157.

Jolly, N.A. and Phelan, B.J., 2017. The Long-Run Effects of Job Displacement on Sources of Health Insurance Coverage. *Journal of Labor Research*, pp.1-19.

Jurajda, S. and F.J. Tannery. 2003. "Unemployment Durations and Extended Unemployment Benefits in Local Labor Markets." *Industrial and Labor Relations Review* 56(2): 324-348.

Kaestner, R., Garrett, B., Chen, J., Gangopadhyaya, A. and Fleming, C., 2017. Effects of ACA Medicaid expansions on health insurance coverage and labor supply. *Journal of Policy Analysis and Management*, *36*(3), pp.608-642.

Kalil, A. and Wightman, P., 2011. Parental Job Loss and Children's Educational Attainment in Black and White Middle-Class Families. *Social Science Quarterly*, *92*(1), pp.57-78.

Katz, L. and Krueger, A.B. 2016. "The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015," NBER Working Paper No. 22667.

Katz, L., and Meyer, B. 1990. "The Impact of the Potential Duration of Unemployment Benefits on the Duration of Unemployment." *Journal of Public Economics* 41 (Feb.): 45-72.

Kreuger, A. and B. Meyer., 2002. "Labor Supply Effects of Social Insurance," *Handbook of Public Economics*,

Kucko, K., Rinz, K. and Solow, B. 2018. "Labor Market Effects of the Affordable Care Act: Evidence from a Tax Notch. Unpublished working paper.

Leung, P. and Mas, A., 2016. *Employment effects of the ACA Medicaid expansions* (No. w22540). National Bureau of Economic Research.

Levy, H., Buchmueller, T.C. and Nikpay, S., 2016a. Health reform and retirement. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, p.gbw115.

McMorrow, S., Long, S.K., Kenney, G.M. and Anderson, N., 2015, "Uninsured Disparities Have Narrowed for Black and Hispanic Adults under the Affordable Care Act," *Health Affairs*, 34(10):1774-1778.

Miller, S. and Wherry, L.R., 2017. "Health and Access to Care During the First 2 Years of the ACA Medicaid Expansions," *New England Journal of Medicine*, 376 (10): 947-956.

Moffitt, R. 1985. "Unemployment Insurance and the Distribution of Unemployment Spells." *Journal of Econometrics* 28: 85-101.

Morduch, J. and Schneider, R., 2017. *The Financial Diaries: How American Families Cope in a World of Uncertainty*. Princeton University Press.

Obama, B., 2016. "United States Health Care Reform. Progress to Date and Next Steps." *JAMA*, 316(5): 525-532.

Rothstein, J. 2011. "Unemployment Insurance and Job Search in the Great Recession." *Brookings Papers on Economic Activity* (Fall):143–96.

Rothstein, J. and Valletta, R.G., 2017. Scraping by: Income and program participation after the loss of extended unemployment benefits. *Journal of Policy Analysis and Management*, 36(4), pp.880-908.

Schaller J, Stevens AH (2015) Short-run effects of job loss on health conditions, health insurance, and health Care utilization. *Journal of Health Economics, 43*, pp.190–203.

Schwartz, J. 2013. "Do Temporary Extensions to Unemployment Insurance Benefits Matter? The Effects of the US Standby Extended Benefit Program." *Applied Economics* 45 (March): 1167-83.

Sommers, B.D., Gunja, M.Z., Finegold, K. and others. 2015. "Changes in Self-Reported Insurance Coverage, Access to Care and Health Under the Affordable Care Act," *JAMA*, 314(4): 366-374.

Sommers, B.D., Buchmueller, T., Decker, S.L., Carey, C. and Kronick, R., 2013. "The Affordable Care Act Has Led to Significant Gains in Health Insurance and Access to Care for Young Adults," *Health Affairs*, 32(1): 165-174.

Sullivan, D. and Von Wachter, T., 2009. Job displacement and mortality: An analysis using administrative data. *The Quarterly Journal of Economics*, *124*(3), pp.1265-1306.

Sullivan, J.X., 2008. Borrowing during unemployment unsecured debt as a safety net. *Journal of Human Resources*, *43*(2), pp.383-412.

Valletta, R.G. 2014. "Recent Extensions of U.S. Unemployment Benefits: Search Responses in Alternative Labor Market States." *IZA Journal of Labor Policy*, 3, pp. 1–25.

Wherry, L.R. and Miller, S., 2016. Early Coverage, Access, Utilization, and Health Effects Associated With the Affordable Care Act Medicaid Expansions: A Quasi-experimental Study. *Annals of Internal Medicine*, *164*(12), pp.795-803.

Wooldridge, J.M. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

Figure 1: Trends in insurance coverage for the unemployed and the employed, in states that did and did not expand Medicaid under the ACA

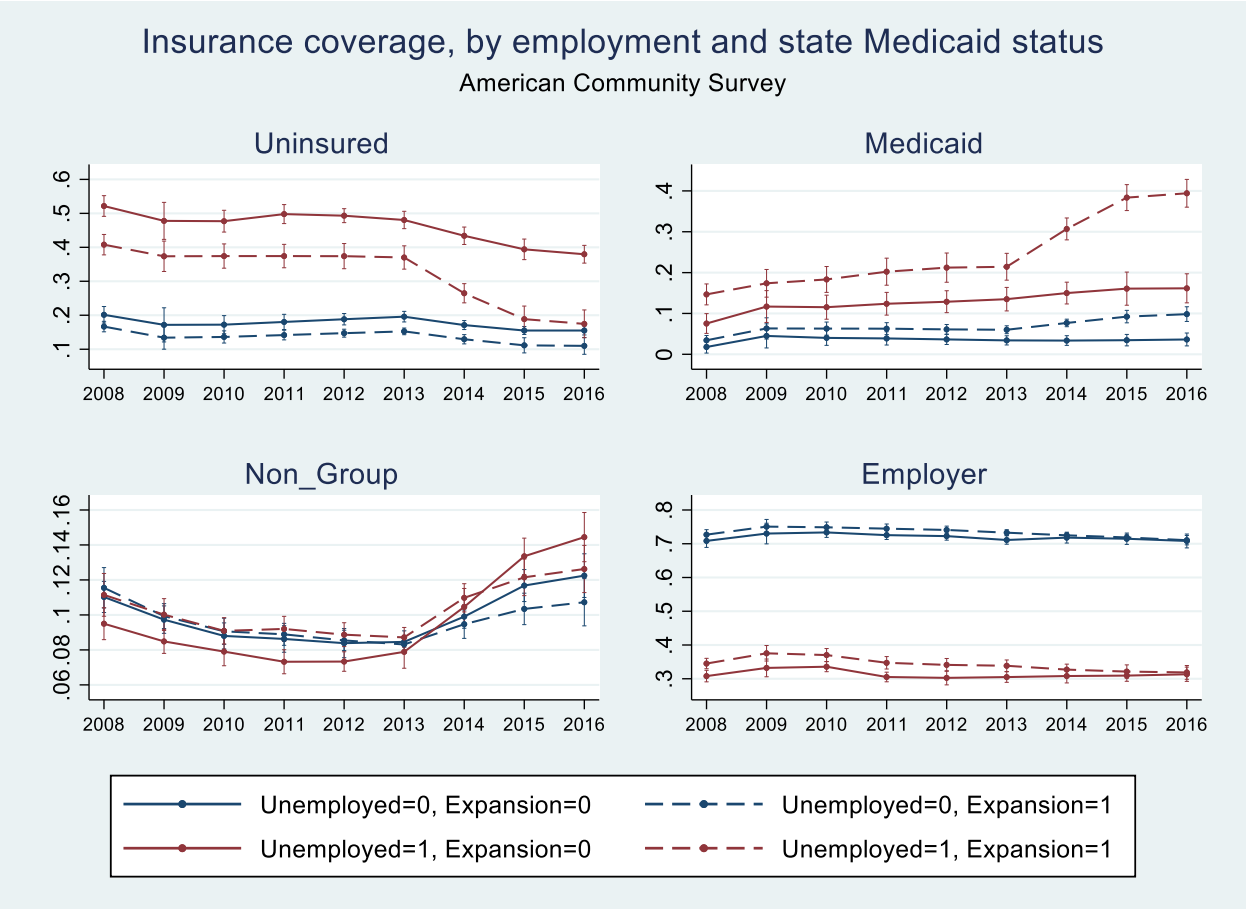
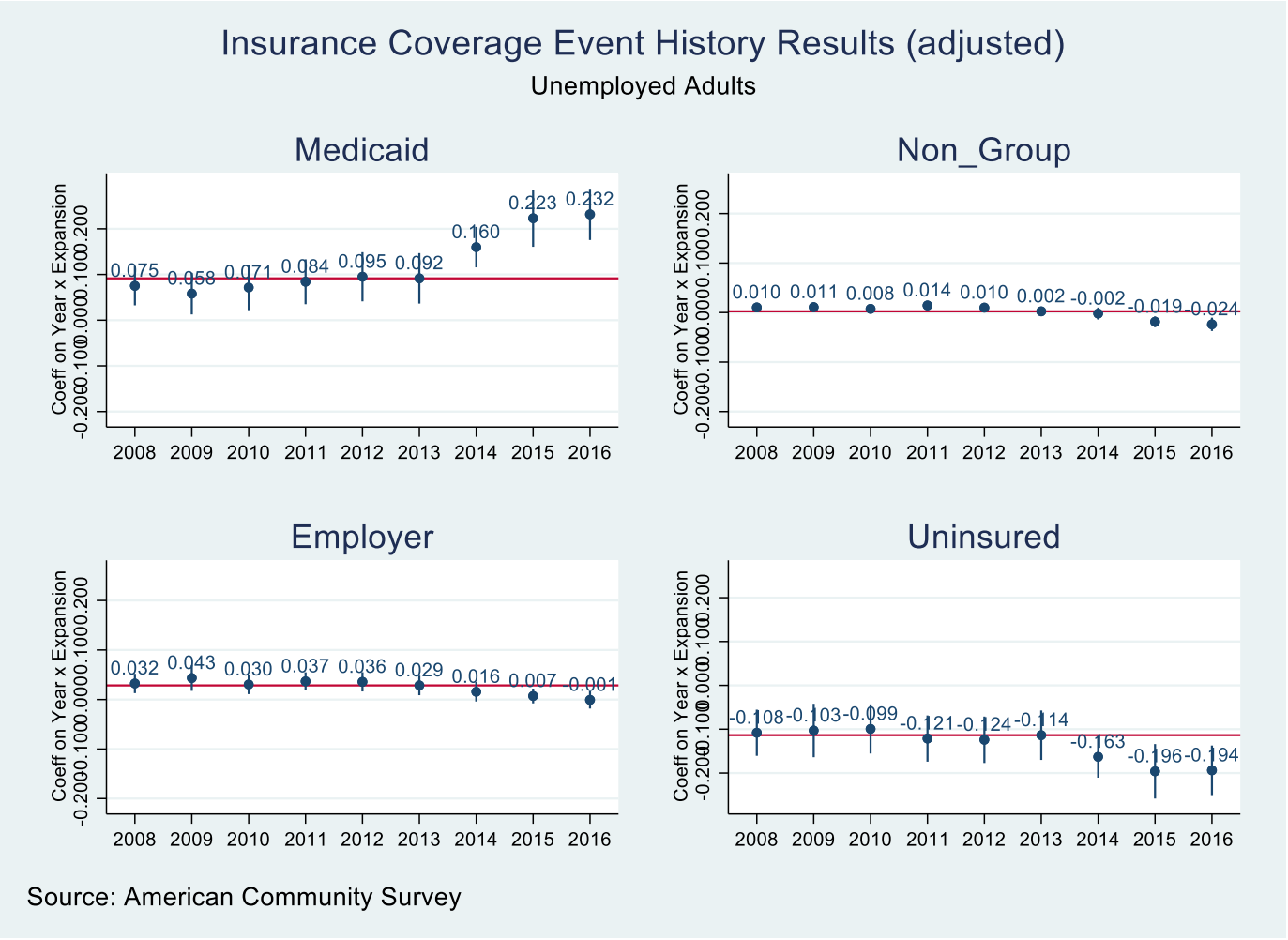
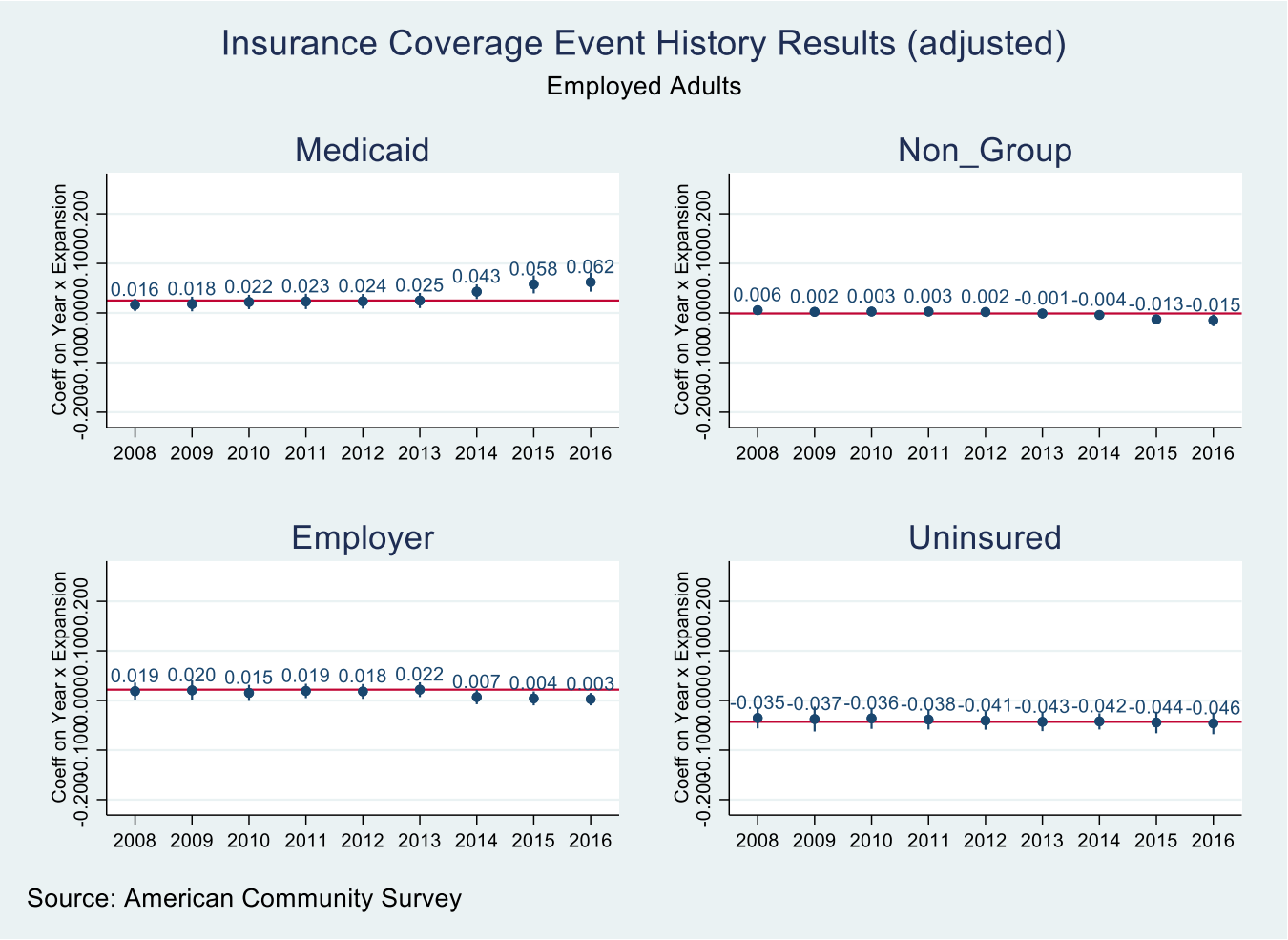


Figure 2: Event history dummies for insurance coverage outcomes: Unemployed adults



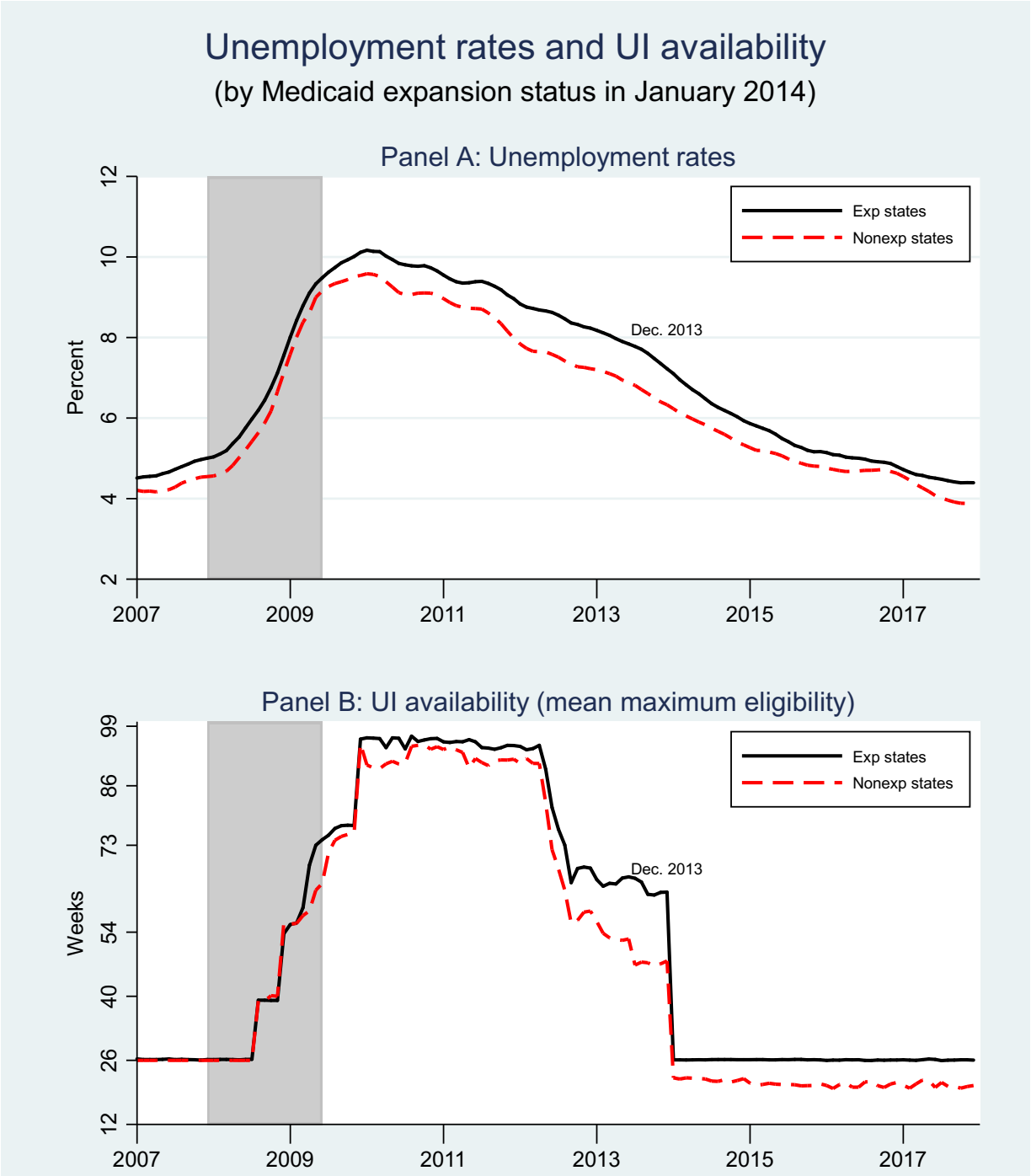
Source: American Community Survey

Figure 3: Event history dummies for insurance coverage outcomes: Employed adults



Source: American Community Survey

Figure 4



Note: Authors' calculations from BLS data in Panel A, CPS data in Panel B (unemployed excl. new entrants, weighted), merged with U.S. DOL data on UI availability and Kaiser Family Foundation data on Medicaid expansion status (states that expanded after January 2014 are excluded). Temporary suspensions of extended UI programs (Apr, Jun/Jul, and Dec 2010) ignored. Gray areas denote NBER recession dates.

Figure 5

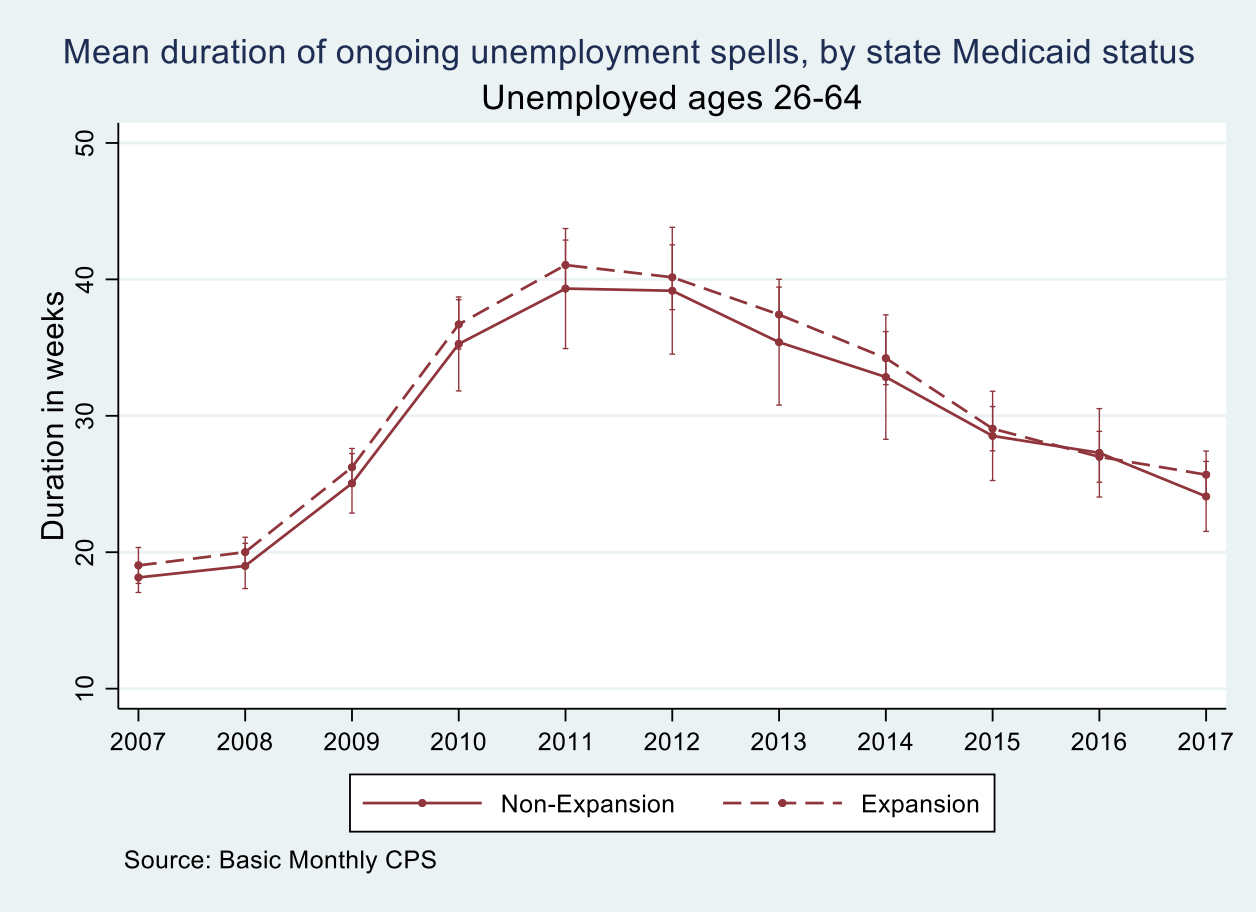
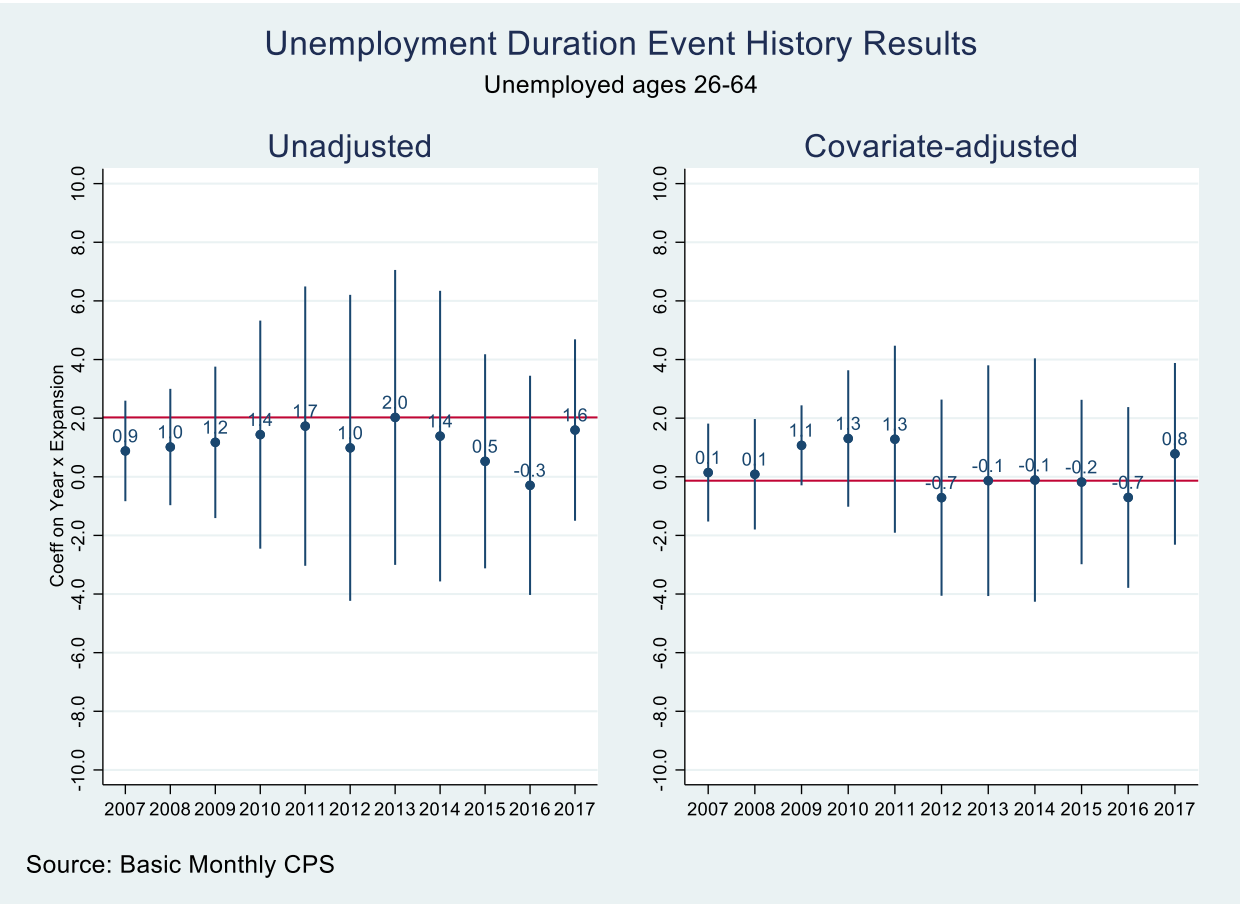
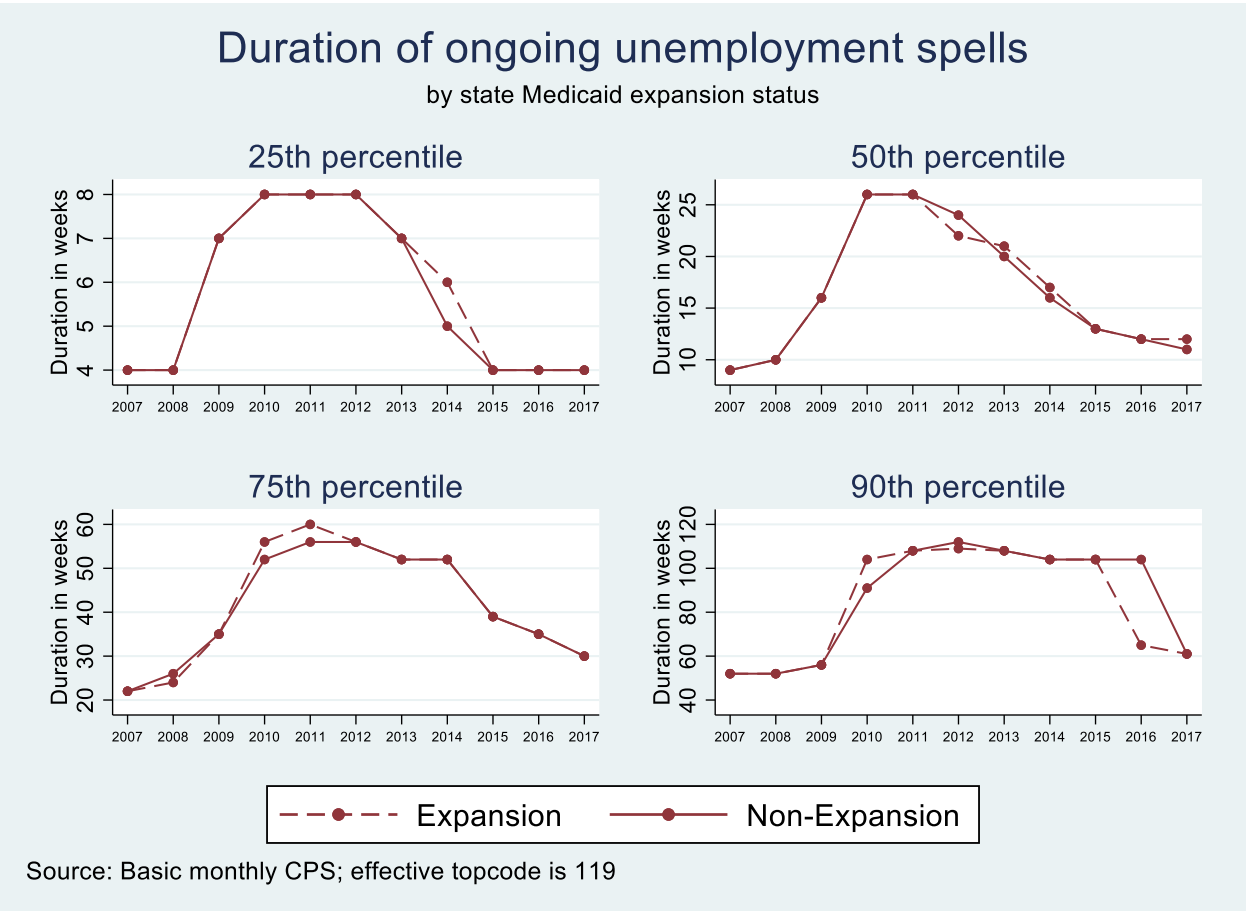

Mean duration of ongoing unemployment spells, by state Medicaid status
Unemployed ages 26-64
Duration in weeks
10
20
30
40
50
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Non-Expansion
Expansion
Source: Basic Monthly CPS

Figure 6



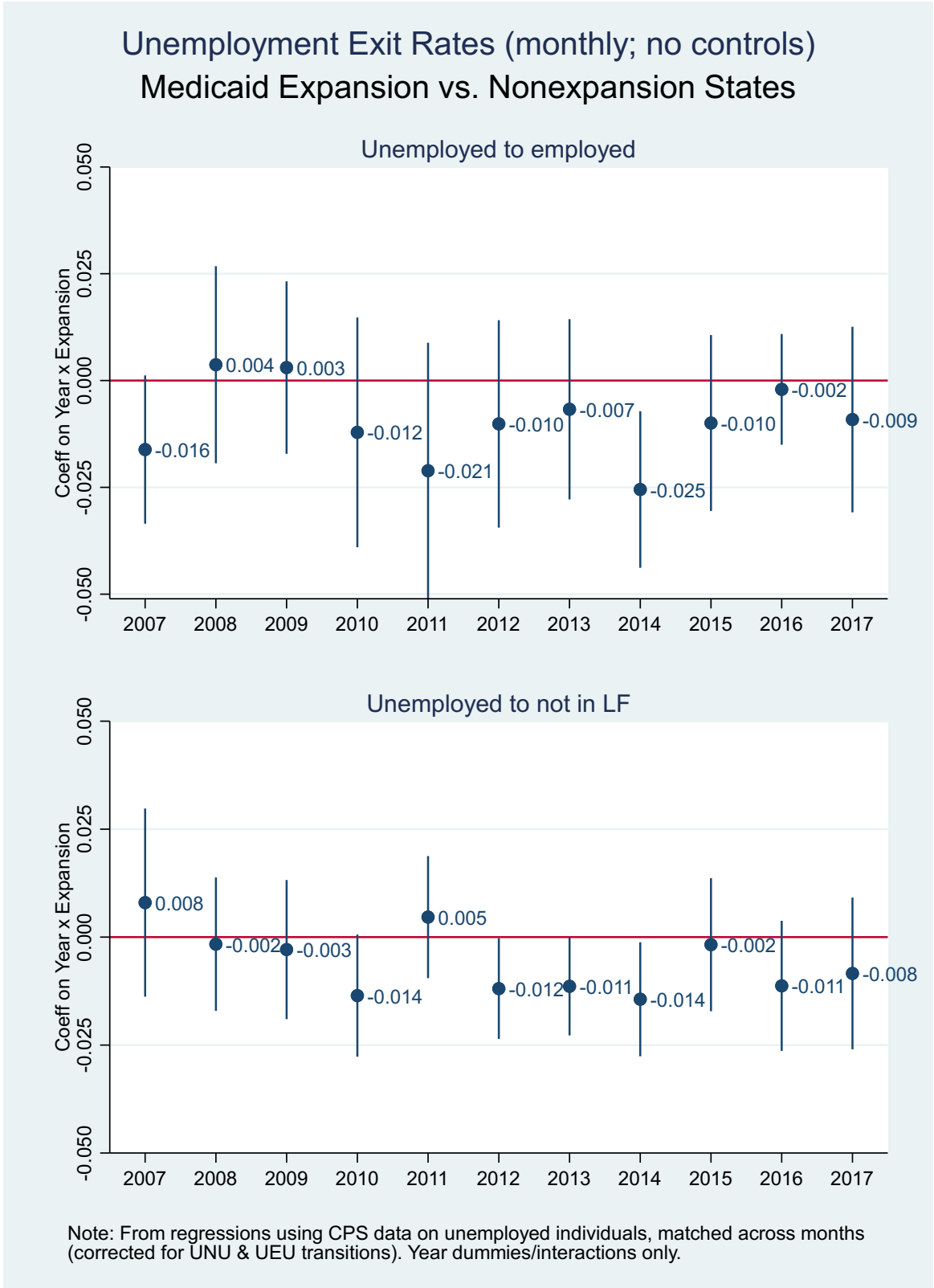
Source: Basic Monthly CPS

Figure 7



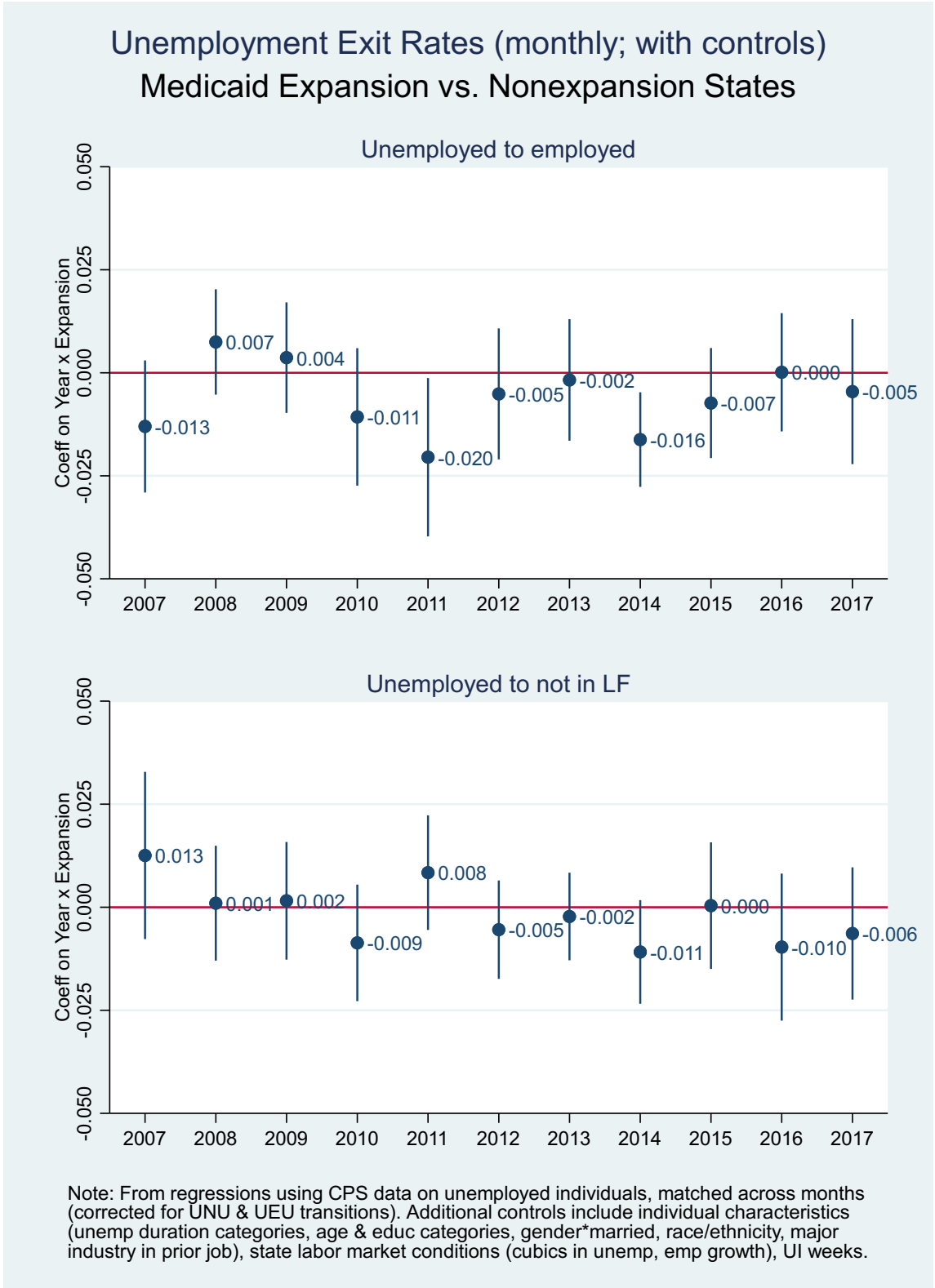
Source: Basic monthly CPS; effective topcode is 119

Figure 8



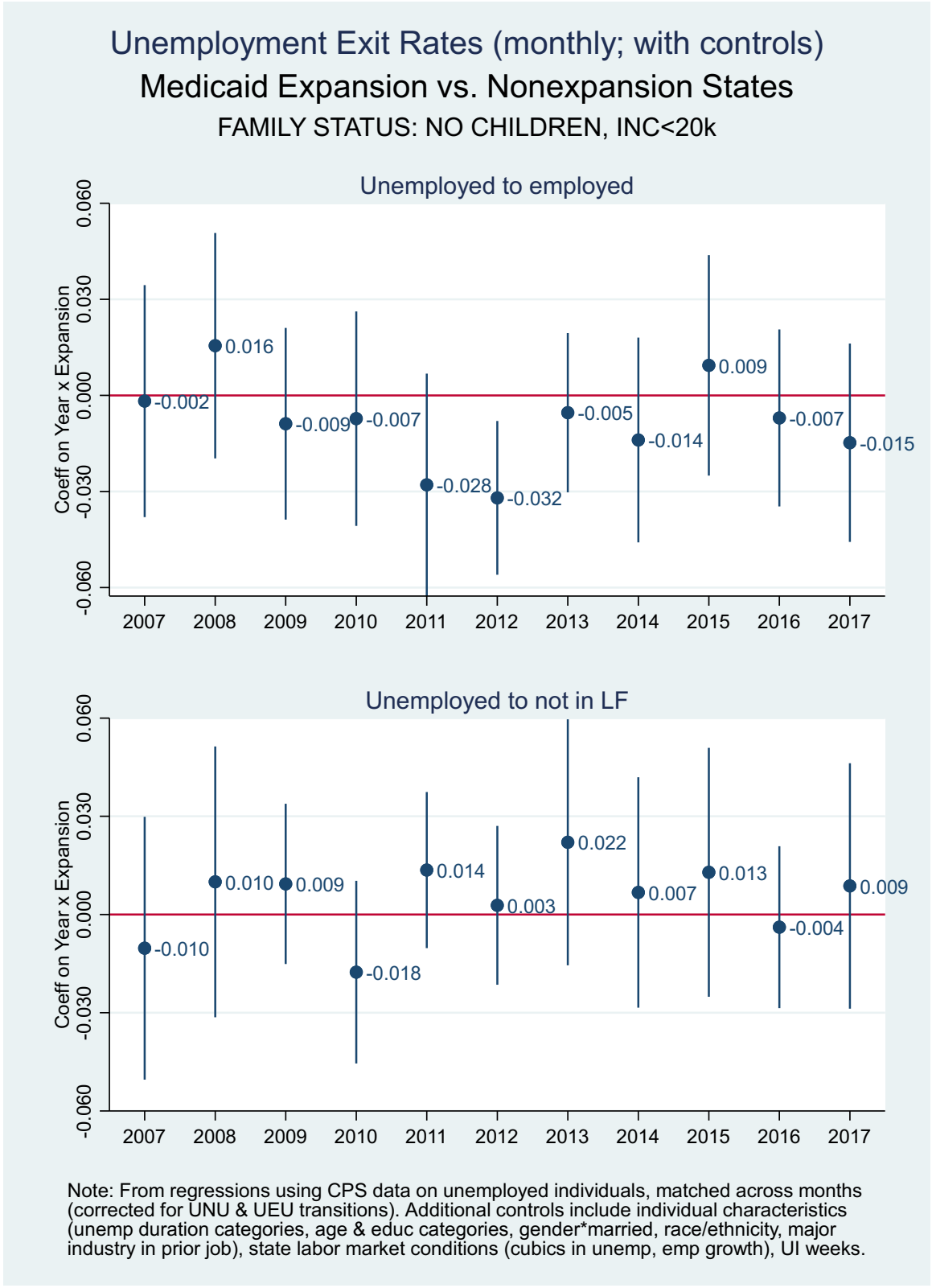
Note: From regressions using CPS data on unemployed individuals, matched across months (corrected for UNU & UEU transitions). Year dummies/interactions only.

Figure 9



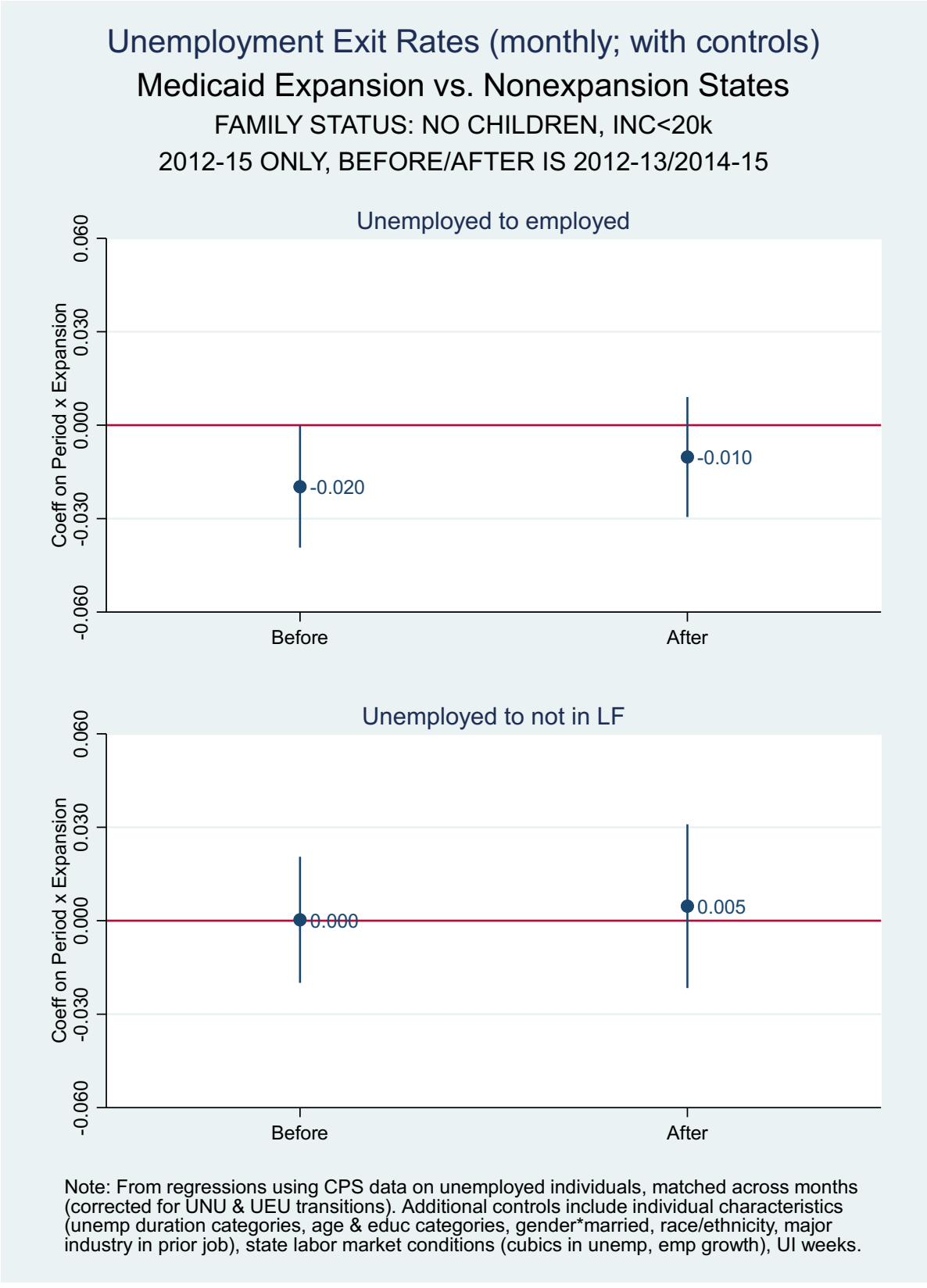
Note: From regressions using CPS data on unemployed individuals, matched across months (corrected for UNU & UEU transitions). Additional controls include individual characteristics (unemp duration categories, age & educ categories, gender*married, race/ethnicity, major industry in prior job), state labor market conditions (cubics in unemp, emp growth), UI weeks.

Figure 10



Note: From regressions using CPS data on unemployed individuals, matched across months (corrected for UNU & UEU transitions). Additional controls include individual characteristics (unemp duration categories, age & educ categories, gender*married, race/ethnicity, major industry in prior job), state labor market conditions (cubics in unemp, emp growth), UI weeks.

Figure 11



Note: From regressions using CPS data on unemployed individuals, matched across months (corrected for UNU & UEU transitions). Additional controls include individual characteristics (unemp duration categories, age & educ categories, gender*married, race/ethnicity, major industry in prior job), state labor market conditions (cubics in unemp, emp growth), UI weeks.

Table 1. Summary of State Medicaid Expansion Decisions as of 1/1/2017 and UI Benefit Policy

Expansion States		Non-Expansion States (19)
By January 2014 (25)	**After January 2014 (7)**	
Arizona	4/14: Michigan	Alabama
Arkansas	8/14: New Hampshire	Florida
California*	1/15: Pennsylvania	Georgia
Colorado	2/15: Indiana	Idaho
Connecticut*	9/15: Alaska	Kansas
Delaware (63)	1/16: Montana	Maine
District of Columbia*	7/16: Louisiana	Mississippi
Hawaii		Missouri
Illinois		Nebraska
Iowa		North Carolina
Kentucky		Oklahoma
Maryland		South Carolina
Massachusetts		South Dakota
Minnesota*		Tennessee
Nevada		Texas
New Jersey		Utah
New Mexico		Virginia
New York		Wisconsin
North Dakota		Wyoming
Ohio		
Oregon		
Rhode Island		
Vermont		
Washington*		
West Virginia		
Mean possible Weeks of UI Benefits: Dec. 2013/Jan. 2014		
60.8/25.8	60.7/26.1	46.5/22.6

Notes: * denotes state began implementing Medicaid expansion before January 2014. Federal extended UI benefits expired in January 2014. Figures represent mean weeks for each category of states weighted by non-farm payroll employment in each state.

Table 2. Percent Uninsured by Employment Status, 2008-2010

	Non-Expansion States			Expansion States		
	Employed	**Unemployed**	**Difference**	**Employed**	**Unemployed**	**Difference**
All Adults 26-64	0.182	0.561	0.379	0.138	0.443	0.305
By Age						
26 to 39	0.237	0.612	0.376	0.185	0.499	0.314
40 to 54	0.162	0.561	0.399	0.120	0.433	0.312
55 to 64	0.112	0.415	0.303	0.084	0.324	0.240
By Education						
Ed: HS or less	0.311	0.646	0.335	0.244	0.520	0.277
Ed: More than HS	0.109	0.461	0.352	0.084	0.366	0.282
By Race/Ethnicity						
White	0.125	0.502	0.377	0.095	0.399	0.304
Black	0.199	0.594	0.395	0.156	0.462	0.306
Hispanic	0.431	0.733	0.302	0.334	0.576	0.243
Other	0.204	0.507	0.303	0.141	0.427	0.286
By Gender						
Women	0.158	0.500	0.342	0.116	0.370	0.254
Men	0.202	0.611	0.409	0.157	0.499	0.342
By Parental Status						
Non-Parent	0.181	0.597	0.416	0.141	0.489	0.348
Parent	0.182	0.497	0.315	0.133	0.360	0.228

Notes: Estimates are for employed and unemployed adults between the ages of 26 and 64. Individuals not in the labor force are excluded.

Table 3. Differences-in-Differences Estimates of the Effect of the ACA Medicaid Expansion on the Probability of Being Uninsured

	Full Sample	Male	Female	Education: HS or Less	Education: More than HS	Parent	Non-Parent
A. Unemployed Adults, Age 26-64							
Expansion	-0.129***	-0.119***	-0.141***	-0.148***	-0.110***	-0.154***	-0.112***
	(0.0225)	(0.0221)	(0.0235)	(0.0276)	(0.0183)	(0.0287)	(0.0206)
Post	-0.0769***	-0.0684***	-0.0875***	-0.0607***	-0.0916***	-0.105***	-0.0647***
	(0.0141)	(0.0152)	(0.0139)	(0.0168)	(0.0136)	(0.0171)	(0.0140)
Expansion x Post	-0.0738***	-0.0942***	-0.0501*	-0.106***	-0.0459*	-0.0250	-0.0984***
	(0.0185)	(0.0178)	(0.0205)	(0.0212)	(0.0175)	(0.0177)	(0.0202)
N	637,315	338,788	298,527	305,984	331,331	214,960	412,454
B. Employed Adults, Age 26-64							
Expansion	-0.0433***	-0.0439***	-0.0427***	-0.0739***	-0.0277***	-0.0501***	-0.0390***
	(0.00961)	(0.0101)	(0.00939)	(0.0148)	(0.00717)	(0.0108)	(0.00919)
Post	-0.0364***	-0.0381***	-0.0347***	-0.0468***	-0.0286***	-0.0342***	-0.0379***
	(0.00642)	(0.00691)	(0.00593)	(0.00987)	(0.00442)	(0.00697)	(0.00621)
Expansion x Post	-0.00717	-0.00790	-0.00627	-0.0239	-0.00203	-0.00587	-0.00797
	(0.00976)	(0.0106)	(0.00898)	(0.0157)	(0.00670)	(0.0106)	(0.00928)
N	9,251,819	4,790,429	4,461,390	2,931,618	6,320,201	3,603,409	5,617,146

Notes: *** $p < 0.01$; ** $0.01 < p < 0.05$; $0.05 < p < 0.10$

Table A1: Unadjusted rates of coverage by different types of insurance (data for Figure 1)

		Unemployed		Employed	
		Non-Expansion	Expansion	Non-Expansion	Expansion
Medicaid	2008	0.104	0.173	0.022	0.039
	2009	0.124	0.178	0.032	0.050
	2010	0.126	0.190	0.030	0.051
	2011	0.139	0.214	0.032	0.054
	2012	0.150	0.228	0.034	0.056
	2013	0.160	0.235	0.035	0.059
	2014	0.179	0.334	0.038	0.081
	2015	0.192	0.415	0.041	0.100
	2016	0.193	0.426	0.043	0.107
Non-group	2008	0.078	0.091	0.104	0.105
	2009	0.073	0.088	0.094	0.096
	2010	0.072	0.082	0.090	0.090
	2011	0.066	0.084	0.089	0.090
	2012	0.070	0.082	0.090	0.088
	2013	0.074	0.080	0.089	0.086
	2014	0.104	0.103	0.108	0.097
	2015	0.130	0.114	0.123	0.106
	2016	0.137	0.115	0.124	0.106
Employer	2008	0.248	0.296	0.734	0.762
	2009	0.248	0.303	0.731	0.756
	2010	0.243	0.294	0.724	0.748
	2011	0.212	0.265	0.716	0.741
	2012	0.210	0.255	0.712	0.737
	2013	0.218	0.256	0.707	0.732
	2014	0.217	0.253	0.712	0.731
	2015	0.230	0.254	0.719	0.732
	2016	0.250	0.261	0.723	0.735
Uninsured	2008	0.571	0.449	0.182	0.139
	2009	0.557	0.444	0.182	0.140
	2010	0.560	0.446	0.189	0.145
	2011	0.578	0.447	0.194	0.150
	2012	0.566	0.445	0.196	0.152
	2013	0.546	0.435	0.197	0.152
	2014	0.496	0.317	0.167	0.117
	2015	0.446	0.233	0.143	0.091
	2016	0.423	0.213	0.138	0.082