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THE EFFECTS OF THE AFFORDABLE CARE ACT ON HEALTH INSURANCE COVERAGE AND LABOR MARKET OUTCOMES

Mark Duggan, Gopi Shah Goda, and Emilie Jackson

The Affordable Care Act (ACA) includes several provisions designed to expand health insurance coverage that also alter the tie between employment and health insurance. In this paper, we exploit variation across geographic areas in the potential impact of the ACA to estimate its effect on health insurance and labor market outcomes in its first four years. Our findings indicate that approximately 70 percent of the increase in health insurance coverage since 2013 is due to the ACA. We also find that these increases in health insurance coverage did not result in statistically significant changes in labor market outcomes.

Keywords: Affordable Care Act, health insurance, labor market outcomes

JEL Codes: H31, I13, J21

I. INTRODUCTION

The Affordable Care Act (ACA), passed in 2010, represents the largest reform to the U.S. health care system since the introduction of Medicare and Medicaid in 1965. The Congressional Budget Office (CBO) estimates that federal subsidies associated with health insurance coverage for people under age 65 were $93 billion higher in 2018 as a result of the ACA, and will amount to $1.3 trillion over the 2019–2028 fiscal years.[1] This amount includes federal subsidies for those made eligible for Medicaid by the ACA and premium tax credits and other outlays for the Basic Health Program,

[1] Source: Congressional Budget Office. Federal Subsidies for Health Insurance Coverage for People Under Age 65: 2018 to 2028, May 23, 2018, retrieved on December 14, 2018. Available at https://www.cbo.gov/publication/53826.

Mark Duggan: Stanford University, Stanford, CA, USA, and NBER, Cambridge, MA, USA (mgduggan@stanford.edu)

Gopi Shah Goda: Stanford University, Stanford, CA, USA, and NBER, Cambridge, MA, USA (gopi@stanford.edu)

Emilie Jackson: Stanford University, Stanford, CA, USA (emilyj91@stanford.edu)

and nets out taxes and penalties on individuals and employers related to coverage.[2] The federal government finances 100 percent of the cost of premium and cost-sharing subsidies for those who were eligible for premium tax credits. It also paid 100 percent of the additional cost of insuring newly eligible Medicaid beneficiaries from 2014 to 2016; this percentage declined to 95 percent in 2017 and will continue to decline each year until 2020 when it will reach 90 percent.[3]

One of the ACA's primary goals was to reduce the number of uninsured, which had hovered around one-fifth of the non-elderly population during the prior decade. Several provisions of the law aimed to achieve this goal, including expansions of the Medicaid program to cover low-income individuals, private health insurance subsidies provided to individuals with household incomes between 100 and 400 percent of the Federal Poverty Line (FPL), mandates on employers to offer health insurance coverage to employees, and penalties imposed on individuals without insurance. After many of these provisions were implemented in January of 2014, uninsurance rates among non-elderly adults fell substantially, from 20.1 percent in the fourth quarter of 2013 to 15.1 percent by the fourth quarter of 2014 and 12.6 percent by the fourth quarter of 2015, as shown in Figure 1.[4] However, these aggregate patterns do not indicate how health insurance coverage would have evolved in the absence of the ACA.

Many of these same provisions also serve to weaken the tie between employment and health insurance coverage, and therefore may affect both labor supply and labor demand. Consistent with this, the CBO estimated that the ACA will reduce the size of the labor force by 1.5–2 percent (2–2.5 million individuals) by 2024 (CBO, 2014). Aggregate labor force participation rates do not show any significant changes after the legislation was passed in 2010 or after key provisions were implemented in early 2014 (Figure 2). But again, these aggregate rates do not indicate how labor force participation would have changed if the ACA had not been implemented.

In this paper, we examine how the ACA affected health insurance coverage in the four years after the key provisions of the ACA took effect on January 1, 2014, and evaluate whether the additional coverage induced by the ACA affected labor market outcomes. Because the ACA is a national reform and affected all states, it is difficult to disentangle the effects of the law from other changes that would have happened without

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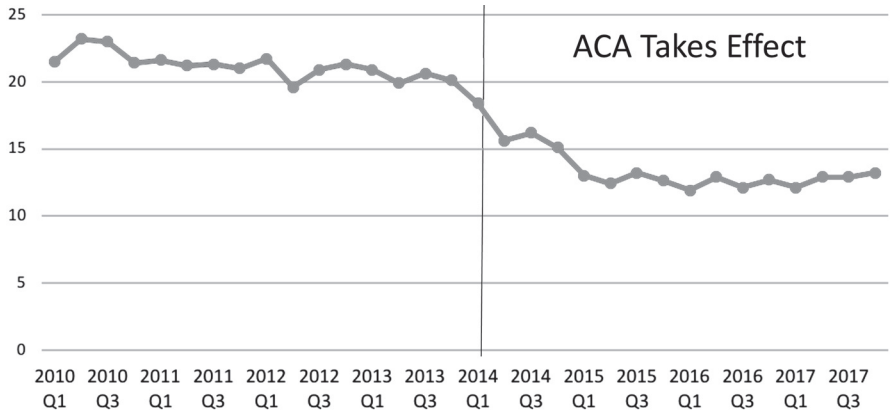
[2] Beyond expanding Medicaid and providing subsidies for coverage purchased through health insurance exchanges, the ACA also provided means for states to set up Basic Health Programs for residents with incomes above the Medicaid eligibility threshold and below 200 percent of the federal poverty line. Additionally, these programs would cover legal immigrants not eligible for Medicaid during the five-year waiting period after receiving qualified immigration status. Minnesota and New York implemented Basic Health Programs in January 2015 and January 2016, respectively.

[3] This enhanced federal match of 90–100 percent is substantially greater than the pre-ACA federal Medicaid match, which varied across states and averaged just 57 percent in the year prior to ACA implementation.

[4] Source: National Center for Health Statistics. Health Insurance Coverage: Early Release of Quarterly Estimates from the National Health Interview Survey, January 2010–December 2017, Table 3, retrieved on December 22, 2018. Available at https://www.cdc.gov/nchs/data/nhis/earlyrelease/Quarterly_estimates_2010_2018_Q12.pdf.

Figure 1

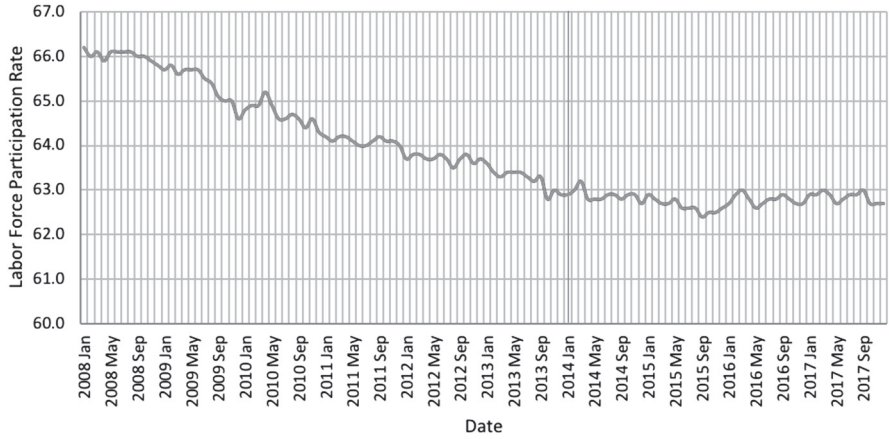
Percentage of Persons 18–64 Uninsured, January 2010–December 2017



Source: NCHS. National Health Interview Survey Early Release of Quarterly Estimates, retrieved December 22, 2018.

Figure 2

Labor Force Participation Rate, Seasonally Adjusted, Ages 16 and over



Source: Bureau of Labor Statistics. Series LNS11300000, monthly data from January 2008 to December 2017, retrieved December 22, 2018.

it. We address this issue by using individual-level data from the American Community Survey (ACS) to exploit geographic variation in the potential impact of the ACA. Our methodology is similar to that used by previous work to estimate the effect of the introduction of Medicare in 1965 (Finkelstein, 2007; Finkelstein and McKnight, 2008) and of the 2006 Massachusetts Health Reform (Kolstad and Kowalski, 2012; Miller, 2012). Our data allow us to estimate the share of each area that was uninsured and below 400 percent of FPL in 2010–2013, just prior to the implementation of the ACA's key provisions.[5] We interact these shares with an indicator of Medicaid expansion to account for the fact that the results may also depend on whether the state proceeded with the Medicaid expansion. We also divide this group into those affected to a greater extent by Medicaid expansions (i.e., those uninsured and below 138 percent of FPL) and those potentially affected to a greater extent by the rollout of the ACA's health insurance exchanges (i.e., those uninsured and between 139 and 399 percent of FPL). To the extent that these provisions raised health insurance coverage and changed labor market outcomes, one would expect areas with a higher fraction of the population both uninsured and below 400 percent of FPL prior to the implementation of the ACA to experience larger changes in insurance coverage and labor market outcomes.

Our results indicate that the ACA had a substantial impact on overall health insurance coverage. We estimate that health insurance coverage increased by 6.5 percentage points in states that expanded Medicaid, and by 2.6 percentage points in states that did not, as a result of this legislation. We also find evidence that regions with lower levels of baseline insurance coverage and/or higher shares of the population eligible for Medicaid coverage or financial assistance to purchase private health insurance saw larger increases in coverage. In particular, in regions with a 10-percentage-point higher share of the population less than 400 percent of FPL and uninsured (approximately two-thirds of a standard deviation), the average coverage increase was 2.5 percentage points larger. This increase was much larger in expansion states (4.3 percentage points) than in non-expansion states (1.4 percentage points). In addition, our results suggest that in non-expansion states, the increase in coverage was driven by areas with high shares of previously uninsured individuals eligible for exchange subsidies, while in expansion states, the increase was more affected by areas where the population shares of previously uninsured individuals eligible for Medicaid expansions were high.

We examine the labor market implications for populations gaining coverage from these main two provisions of the ACA by looking for differential changes in labor market outcomes across areas with varying levels of population shares uninsured and below 400 percent of FPL using the same research design. Our findings indicate that, overall, the ACA-induced increases in health insurance did not lead to significant reductions in labor force participation. Our point estimates suggest that for every 100 people who gained health insurance coverage as a result of the ACA, approximately 1 entered

[5] Other provisions that expanded health insurance to adults under the age of 26 through their parents' private health insurance plans took effect three years earlier in 2011 and also increased coverage (Antwi, Moriya, and Simon, 2013).

the labor force. Our 95 percent confidence interval rules out that more than 9 of 100 acquiring coverage left the labor force (or that more than 12 of 100 entered the labor force). We also explore the effect on employment, unemployment, part-time status, self-employment, and hours conditional on working. Overall, we find little evidence of impact on these other measures as well, though we find suggestive evidence that unemployment fell and employment increased in areas with the largest ACA-induced increases in coverage.

Our study makes two distinct contributions to the existing literature. First, we are able to exploit fine geographic variation in pre-existing characteristics to study the impact of the ACA on insurance coverage and labor market outcomes for four years after the ACA's implementation. Unlike previous work, we incorporate both uninsurance and the underlying income distribution in determining an area's potential ACA impact. The large sample size in the ACS along with the geographic identifiers allows us to divide the United States into more than 1,000 areas known as Public Use Microdata Areas (PUMAs).[6] This level of detail allows us to exploit differences in PUMAs with different potential ACA impacts within particular states while also comparing PUMAs with similar levels of shares uninsured and under 400 percent of FPL across states that did and did not choose to expand their Medicaid program. This combination of both within and across-state variation has not been leveraged in previous research examining the ACA's impact on labor market outcomes and allows for more precise estimates. Examining the effect of the ACA for four years after implementation also allows us to explore whether the medium-term effects of the reform differ from the short-term effects. When we estimate the year-by-year results, we find that the effects of the ACA on insurance coverage grow in the 2015–2017 period relative to 2014, the first year after implementation.

Second, we expand our focus of the ACA beyond Medicaid expansions and examine the effect of subsidies for insurance coverage through health insurance exchanges on both insurance coverage and labor market outcomes. Our analysis allows us to estimate the share of increased health insurance coverage due to each of these provisions overall as well as on the source of coverage. We find that increases in Medicaid coverage accounted for a large share of coverage increases in expansion states, while privately purchased health insurance, including policies purchased on the ACA exchanges, accounted for the majority in non-expansion states. We also find evidence that private employer coverage increased differentially in areas where the share of the population uninsured and under 400 percent of FPL was high, suggesting that some of the increases in coverage occurred due to either higher rates of offering insurance by employers, higher take-up of own/spouse's coverage, or more people employed. Our results for labor market outcomes indicate that including ACA-induced coverage changes from insurance exchanges (in addition to those induced by Medicaid expansions) corroborates the prevailing view that ACA-induced changes in insurance coverage did not result in significant changes in labor market outcomes in aggregate.

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[6] While there are more than 2,000 PUMAs, we focus on a consistent set of boundaries across census years, which results in fewer PUMAs of larger average size.

The rest of the paper proceeds as follows. Section II contains background information on the key features of the ACA for our analysis and describes the related literature. In Section III, we describe our empirical strategy. Section IV provides details regarding the data we use in the analysis including average characteristics prior to ACA implementation. We report our results and robustness exercises in Section V, and Section VI concludes.

II. BACKGROUND

In this section, we describe various features of the ACA designed to increase health insurance coverage and the primary channels through which this legislation may influence the labor market. We also review the growing literature on the impacts of the ACA on insurance coverage and labor market outcomes as well as the prior literature relevant to the impacts of similar policies on health insurance coverage and the tie between health insurance and labor market outcomes more generally.

A. The ACA

The ACA includes dozens of provisions to expand health insurance coverage, slow the growth rate in health care costs, and reform the market for private health insurance. In this section, we focus on two provisions designed to expand health insurance coverage, namely the Medicaid expansions and subsidies for health insurance purchased on federal or state exchanges. Theoretically, one would expect each of these provisions to increase health insurance coverage, though the magnitude and effects on different types of insurance coverage is ultimately an empirical question. In addition, other provisions, such as the individual mandate that imposed penalties on individuals without insurance under the ACA, also likely served to increase insurance coverage overall.

1. The Medicaid Expansion

Just prior to the passage of the ACA, the federal-state Medicaid program provided health insurance to 57 million people.[7] There was substantial variation across states with respect to which individuals were eligible, what health care services were covered, the generosity of reimbursement to providers, and the role of private managed care organizations (Duggan and Hayford, 2013). The Medicaid program is means tested and there is virtually no cost sharing, with Medicaid premiums essentially equal to zero in most states. Medicaid provides valuable protection to many of the nation's most vulnerable residents, with many studies finding that it improves health outcomes (e.g., Currie and Gruber, 1996; Sommers, Baicker, and Epstein, 2012) and enhances economic well-being (Baicker et al., 2014).

[7] These data and state-by-state enrollment data were obtained from https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html in March 2017.

The ACA substantially expanded eligibility for the Medicaid program. More specifically, all individuals with household incomes less than or equal to 138 percent of FPL (adjusted for family size) would become eligible for the program. In early 2010, prior to the ACA's passage, virtually all states already covered children in this income range, and thus the ACA's primary effect was to expand eligibility among non-elderly adults. Projections from the CBO initially estimated that Medicaid enrollment would — by 2016 — increase by 16 million as a result of the ACA. This represented half of the increase in projected insurance coverage resulting from the ACA. However, this projection was later reduced to just 11 million after the 2012 Supreme Court decision made it optional for states to move forward with the Medicaid expansion and many states elected not to do so (CBO, 2015).[8]

The actual impact of the ACA Medicaid expansion is likely to vary substantially across states for three reasons. First, only 25 states (including the District of Columbia) chose to expand Medicaid by January 2014 following the Supreme Court decision, as shown in Figure 3.[9] While the number of Medicaid recipients nationally increased from 57 million in July–September 2013 to 74.8 million in November 2016, the increase was substantially greater among states that elected to expand their Medicaid programs. These changes amplified the difference in coverage between the two groups of states, given that 19 percent of non-elderly adults were uninsured just prior to ACA implementation in states that expanded Medicaid versus 23 percent in states that did not. Consider the contrast between California, which did expand its Medicaid program, and Texas, which did not. In California, Medicaid enrollment increased by 57 percent (to 12.2 million) from September 2013 to November 2016. In contrast, in Texas, enrollment rose just 8.2 percent over the same time period, to 4.8 million.

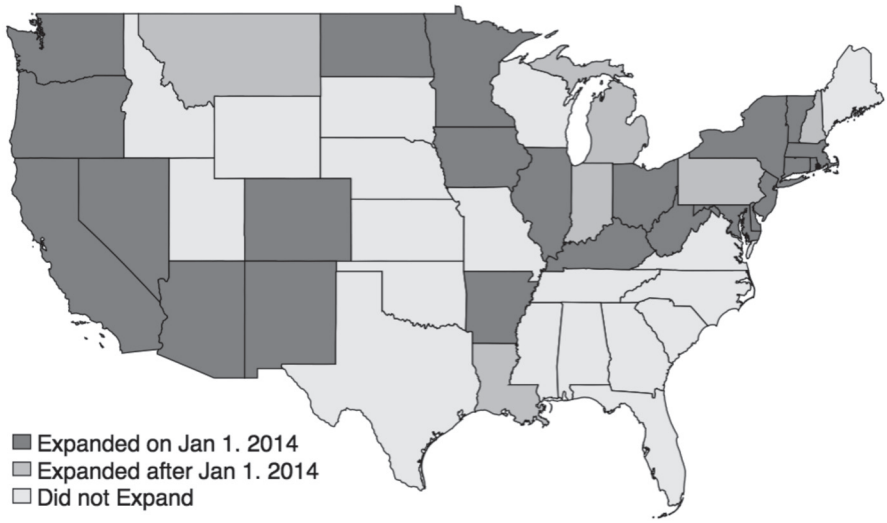
A second reason for a differential effect is that some states already covered a substantial fraction of adults below 138 percent of FPL at the time the ACA was passed. All else equal, the likely increase in coverage would be smaller in these states. For example, non-disabled childless adults in California were not eligible for Medicaid in 2013 regardless of income level. In contrast, their counterparts in New York were eligible if their incomes were below the poverty line. This may partially explain why California's 57 percent increase in Medicaid enrollment since 2013 is much larger than New York's 13 percent increase (to 6.4 million) despite the fact that both expanded their programs as a result of the ACA.

A third reason that the effect of the Medicaid expansion is likely to vary across states is that the fraction of individuals in poverty differs substantially across states. Because of this, any expansion of Medicaid coverage would, all else equal, lead to a larger increase in insurance coverage in states with high rates of poverty. Consider the

[8] On June 28, 2012, the Supreme Court ruled that the ACA's Medicaid expansion was "unconstitutionally coercive" and that the appropriate remedy was to constrain the federal government's power in enforcing state compliance.

[9] As of November 2018, 7 additional states have followed suit, bringing the total to 32 states. Additionally, expansion has been adopted but not yet implemented in 4 more states: Idaho, Maine, Nebraska, and Utah.

Figure 3
State Medicaid Expansion Decsions



Notes: Data on each state's decision to expand or not expand its Medicaid program were retrieved from the Kaiser Family Foundation, Status of State Action on the Medicaid Expansion Decision, on September 30, 2017. Additionally, as of November 2018, expansion was adopted but not yet implemented in Idaho, Maine, Nebraska, and Utah.

difference between New Mexico and Colorado, two states that expanded Medicaid as a result of the ACA. In 2013, just prior to this coverage expansion, 22 percent of New Mexico's residents had household incomes below the poverty line. In contrast, just 13 percent of Colorado residents were below the poverty line in that same year. Because of this difference, one would expect the ACA to have a greater impact on Medicaid enrollment in New Mexico. Consistent with this, the fraction of New Mexico residents with Medicaid coverage increased by substantially more in New Mexico (from 22 to 36 percent) than in Colorado (from 15 to 25 percent) from 2013 to 2016.

2. Subsidized Coverage through State or the Federal Health Insurance Exchanges

Subsidies for private health insurance purchased on the ACA exchanges are calculated by first determining a household's (modified adjusted gross) income as a percentage of FPL.[10] This percentage maps to a maximum percentage of income that one is responsible for paying towards the cost of health insurance, ranging from just 2 percent (at low levels of income) to 9.5 percent (from 300 to 400 percent of FPL). The subsidy level is

[10] Gross income includes salary, investment, and business income. Qualified deductions, such as student loan interest and Individual Retirement Account contributions, are subtracted to arrive at adjusted gross income (AGI). Tax-exempt interest income is added to AGI to arrive at modified AGI.

the cost of the second lowest cost "silver tier" plan available on the exchange less the maximum premium payment for which the person is responsible.[11] Once a household's income exceeds 400 percent of FPL, members are no longer eligible for subsidies for purchasing private health insurance through the exchanges. If a household earns less than 100 percent of the poverty line, members are expected to be covered by Medicaid and, therefore, do not receive a subsidy (even in non-expansion states). Therefore, subsidies vary considerably by income.[12]

Just as the growth in Medicaid enrollment since 2013 has varied substantially across states, so too has the increase in coverage through the health insurance exchanges.[13] The variation in Medicaid enrollment combined with variation in exchange enrollment is associated with differential changes in the share uninsured by state, ranging on the low end from an estimated 0.7-percentage-point reduction in Virginia to 12.9 percent reductions in both Arkansas and Kentucky (Appendix Table A1). Virginia is a relatively high-income state that did not expand Medicaid, while Arkansas and Kentucky are two low-income states that did expand Medicaid.

B. The ACA and the Labor Market

The two primary channels for the 1.5-2 percent reduction in the size of the labor force estimated by CBO are the incentive effects resulting from the availability of subsidies for private health insurance coverage and the expanded coverage for the Medicaid program.

Because Medicaid provides a source of insurance coverage regardless of employment, and its means-tested nature may result in a high marginal tax on working, Medicaid expansions could affect labor market outcomes by reducing the amount of labor supplied by workers. The private health insurance exchanges could affect labor market outcomes through several channels. First, prior to the ACA, it is likely that some near-elderly workers were continuing to work until they were eligible for Medicare at age 65 because they obtained health insurance through their employer. Because it is now less expensive for individuals to purchase coverage outside of employment, some may elect to retire or shift to part-time work sooner as a result of the ACA. Second, the magnitude of the subsidy declines with income. This may reduce the incentive to work, causing some to scale back their hours or to shift to another job with lower earnings (or to drop out of

[11] If a person chooses a more expensive plan, the ACA subsidy does not change, and so the premium paid by the enrollee increases. If a person chooses a less expensive plan, the subsidy does not change, and so the premium paid by the enrollee falls. The only exception is that the enrollee's premium cannot fall below zero.

[12] Premiums also vary considerably across states and counties due to the variation in private health insurance premiums. This leads to a large divergence in the effective subsidy available to individuals in high- versus low-cost areas.

[13] For example, despite having a similar number of non-elderly individuals, there are 1.09 million residents of Texas enrolled in the state's ACA exchange versus just 0.22 million in New York's. This partly reflects the substantially higher fraction uninsured in Texas in 2013, but this is not the only driver of the difference. For example, while Florida has a smaller population and a smaller share uninsured than Texas in 2013, there are substantially more Florida residents enrolled in the exchange (1.44 million versus 0.96 million). Exchange enrollment is available by state as of February 2017 from http://kff.org/health-reform/state-indicator/total-marketplace-enrollment-and-financial-assistance/.

the labor force if their spouse is working). Third, a "cliff" in the subsidy exists at 400 percent of FPL, at which point the subsidy drops to zero. This may lead some workers to lower their labor supply to stay below this threshold and retain the subsidy. Fourth, the availability of subsidized coverage in the exchange may encourage workers to shift to smaller firms (which are less likely to offer coverage) or to start their own businesses. Indeed, just prior to the ACA, workers in firms with fewer than 10 employees were three times more likely than their counterparts in firms with 1,000 or more employees to be uninsured. This difference was partially driven by the substantially higher health insurance premiums that small firms or the self-employed tended to face relative to their larger counterparts (Gabel et al., 2006).

In addition, it is important to note that while many of the ACA's provisions may be theoretically expected to reduce labor supply, one possible mechanism working in the opposite direction is that those under 100 percent of FPL in non-expansion states receive subsidized health insurance from the exchanges only if they earn more than the FPL. These individuals are not eligible for Medicaid unless they fall in certain coverage groups. Relatedly, individuals may prefer private coverage to Medicaid and, therefore, increase their earnings to qualify for private coverage even in expansion states. Finally, expansions in coverage may improve health, which could, in turn, reduce the disutility of work. This final mechanism may not be instantaneous but might instead grow over time as the duration of exposure to additional insurance coverage increases.

While many of the channels mentioned above relate to labor supply decisions, the ACA may also influence firm behavior and thus labor demand. For example, the ACA's employer mandate applies to firms with 50 or more full-time employees and may, therefore, encourage some firms to stay below that threshold or to hire more part-time workers. The ACA's Small Business Tax Credit encourages firms with 25 or fewer employees and with low-wage workers to provide health insurance coverage to their employees. This tax credit may lead to an increase in firm offering and may, therefore, make jobs at these smaller employers more attractive. Related to this, if smaller firms that previously offered coverage can drop it while sending their workers to the exchange, this could lead to increases in wages and in employment as well. A less appreciated feature of the ACA is that it may give some employers an incentive to "contract out" for low-wage workers because the existing employer-sponsored insurance (ESI) system (with its large tax subsidies for high-income workers) may be more attractive for high-wage workers while coverage through the exchanges (which provides larger subsidies to those with lower incomes) is more appealing for low-income workers. To the extent that employers respond to the ACA by changing the number of workers, the composition of full- versus part-time work, wages, or the use of contracting out, this could substantially affect labor market outcomes. Finally, increases in insurance coverage may increase the demand for labor in areas that previously had a large share uninsured in health care occupations.[14]

[14] Note that the implementation of some of these provisions has been delayed and, therefore, would not affect the results in this paper. An additional provision that could affect labor market outcomes is the "Cadillac tax on high-cost plans," which has been delayed until 2020. This provision may cause firms to provide less generous health insurance to their workers, which could then pass through to higher wages. The CBO estimated that more than 80 percent of the budgetary savings from this tax resulted from an increase in earnings rather than in direct tax revenue.

Our analysis focuses on labor market outcomes that could be the result of either changing supply, changing demand, or both. Given the different channels through which the ACA-induced changes in health insurance coverage could influence the labor market, both the sign and the magnitude of these effects are theoretically ambiguous. It is thus ultimately an empirical question, which we investigate below.

C. Prior Research on the ACA, Coverage Expansions, Health Insurance, and Labor Market Outcomes

An active area of prior research examines the effect of policies that increase access to health insurance on coverage outcomes and crowd-out, from Medicaid expansions in the 1980s and 1990s (Cutler and Gruber, 1996; Aizer and Grogger, 2003; Hamersma and Kim, 2013) to the 2006 Massachusetts health reform (Long, Stockley, and Yemane, 2009; Yelowitz and Cannon, 2010; Kolstad and Kowalski, 2012; Sonier, Boudreaux, and Blewett, 2013). An advantage of the policies examined in these earlier papers is that they varied across states and, therefore, lent themselves to quasi-experimental variation using difference-in-difference or instrumental variables strategies to identify the impacts on health insurance coverage and other outcomes.

For several decades, private health insurance in the United States has been tied to employment due to the exclusion of employer-based health insurance premiums from individual income taxation. Because health insurance outside of the employer context has historically been difficult and/or costly to obtain, economic theory predicts that employer-sponsored health insurance could affect workers' likelihood of being employed, their job-to-job mobility, and decisions to retire. These predictions have spurred a large body of literature investigating the link between health insurance and labor market outcomes. Early literature found evidence of health insurance–induced "job lock," or the tendency for workers to stay in jobs they would rather leave due to concerns about losing health insurance (Madrian, 1994a). Several studies that followed examined the availability of health insurance in retirement on retirement decisions.[15] While the exact estimates vary, this literature largely finds a substantial role for post-retirement health insurance availability in explaining retirement behavior (Gruber and Madrian, 2004).

A limited recent literature examines the effect of Medicaid expansions or contractions on employment outcomes. In particular, Garthwaite, Gross, and Notowidigdo (2014) examine a contraction of Medicaid in Tennessee that led to a marked increase

[15] Some studies took a reduced form approach, estimating the impact of employer-provided post-retirement health insurance on retirement, and found statistically significant effects of post-retirement health insurance coverage on retirement (Madrian, 1994b; Karoly and Rogowski, 1994; Blau and Gilleskie, 2001). However, these studies often suffered from potential bias due to the potential selection of workers with high tastes for leisure into firms that offered post-retirement health insurance coverage. In an effort to address these concerns, Gruber and Madrian (1995) used variation in continuation-of-coverage regulations and found evidence that retirement behavior responds to health insurance availability. Other studies used variation stemming from policy changes or eligibility rules for identification (Boyle and Lahey, 2010; Fitzpatrick, 2014; Leiserson, 2013; Coe, Kahn, and Rutledge, 2013; Nyce et al., 2013; Shoven and Slavov, 2014). Another strand of literature took a structural approach to identify the effect of post-retirement health insurance availability on retirement (Gustman and Steinmeier, 1994; Lumsdaine, Stock, and Wise, 1996; Rust and Phelan, 1997; Blau and Gilleskie, 2006; Blau and Gilleskie, 2008; French and Jones, 2011).

in employment in that state; Dague, DeLeire, and Leininger (2017) and Baicker et al. (2014) find more modest effects of Medicaid on employment in Wisconsin and Oregon, respectively. Since these expansions or contractions were often targeted to childless adults, similar to the ACA, their experiences are valuable in informing expectations of the effects of ACA Medicaid expansions on employment. However, the difference in estimates leaves considerable ambiguity regarding the expected effects of the ACA's Medicaid expansions on labor market outcomes. Additionally, Medicaid's effect may be different with the ACA because — in contrast to the pre-ACA setting — individuals would remain eligible for private health insurance subsidies even if their income rose above the Medicaid-eligible threshold.

There is a growing literature on the effects of the ACA on health insurance coverage and labor market outcomes. Previous literature suggests that the ACA substantially increased health insurance coverage (Sommers et al., 2014, 2015, 2016; Courtemanche et al., 2017; Frean, Gruber, and Sommers, 2017) but that it had little impact on the labor market (Gooptu et al., 2016; Gustman, Steinmeier, and Tabatabai, 2016; Moriya, Selden, and Simon, 2016; Abraham and Royalty, 2017; Kaestner et al., 2017; Buchmueller, Levy, and Nikpay, 2018; Frisvold and Jung, 2018; Leung and Mas, 2018; Buchmueller, Levy, and Valletta, 2018). Other studies examine the effects on employer-sponsored health insurance (Blavin et al., 2015; Abraham, Royalty, and Drake, 2016) and the effects of the dependent care mandate that took effect in late 2010 (Cantor et al., 2012; Sommers and Kronick, 2012; Antwi, Moriya, and Simon, 2013; Bailey and Chorniy, 2015; Heim, Lurie, and Simon, 2015). In addition to these studies, several descriptive analyses use a variety of novel data sources to document the ACA's impact on coverage (Long et al., 2014; Smith and Medalia, 2014; Carman, Eibner, and Paddock, 2015; Black and Cohen, 2015; Courtemanche, Marton, and Yelowitz, 2016) and some authors model the impact of the ACA on labor supply (Heim et al., 2014; Mulligan, 2014, 2015a, 2015b; Fang and Shephard, 2015) and labor demand for the health care workforce (Parente et al., 2017). Some studies find evidence of changes in labor demand in occupations and industries most affected by the employer shared responsibility requirement, resulting in an increase in involuntary part-time work (Dillender, Heinrich, and Houseman, 2016; Even and Macpherson, 2018), while others find little evidence of an increase in part-time work (Mathur, Slavov, and Strain, 2016; Moriya, Selden, and Simon, 2016). Though most work shows little impact on the labor market, research using border county pairs shows evidence of limited and transient decreases in employment resulting from Medicaid expansion (Peng, Guo, and Meyerhoefer, 2018). Others show the role of health insurance from the ACA in decreasing shocks in employment and earnings among low-income households, with the strongest effects among households with previous health care costs (Gallagher et al., 2017).

III. EMPIRICAL METHODS

Our empirical approach leverages geographic variation in characteristics that were determined prior to the ACA's implementation and that influence the potential impact of different provisions of the law. We use variation stemming from differences in the

share of an area that is uninsured, the area's income distribution, and its Medicaid expansion status. For each geographic area, we calculate the pre-ACA share of the population uninsured and with income less than 400 percent of FPL, denoting this by *U*. The variable *U* represents the potential increase in coverage through the ACA's main provisions, assuming all uninsured individuals gain coverage through either Medicaid or exchange enrollment and no crowd-out of other sources of coverage. Note that for a region to have a high value of *U*, it must have both a high share of individuals under 400 percent FPL *and* a high share of individuals without health insurance.

For some analyses, we divide the proportion *U* into two groups: the proportion with incomes at or below 138 percent of FPL (denoted by *M*) and the proportion with incomes between 139 and 399 percent of FPL (denoted by *E*). Decomposing *U* into *E* and *M* allows us to explore whether changes were occurring primarily because of the exchange subsidies or the Medicaid expansion channels, respectively.

Formally, our regression equation is as follows:

$$(1) \quad INS_{iast} = \delta_1 POST_t \times U_a^* + \beta X_{it} + \gamma_t + \mu_a + \varepsilon_{iast},$$

where INS_{iast} represents an indicator for whether individual *i* living in area *a* and state *s* has any health insurance, private employer coverage, privately purchased coverage, or Medicaid coverage in time *t*; $POST_t$ is an indicator equal to 1 in 2014 or later, and 0 otherwise; U_a^* represents the demeaned pre-ACA measures of potential Medicaid and exchange enrollment for area *a*, as described above; X_{it} includes demographic controls for gender, race, and ethnicity and age fixed effects; γ_t represents year fixed effects; and μ_a represents area fixed effects. Since U_a^* is demeaned, the coefficients on other variables can be interpreted as the effects for locations with an average level of the share uninsured and under 400 percent of FPL. Note that because we include geographic area-level fixed effects, the main effect of U_a^* is not included in the regression and the main effect of $POST_t$ drops out due to year fixed effects. We hypothesize that δ_1 is positive, that is, insurance coverage grew more rapidly in places with higher pre-existing shares of uninsured individuals under 400 percent of FPL.

In this and the following empirical specifications, we wish to account for differential pre-trends in our outcome variables that could vary across geographic regions due to, for instance, some areas recovering more quickly from the Great Recession than others, which could influence both health insurance coverage and labor market outcomes. Rather than controlling for area-specific time trends, which cannot distinguish between time-varying treatment effects and pre-existing trends (Lee and Solon, 2011; Goodman-Bacon, 2018), we use a two-step procedure where we first estimate the area-specific time trends in the pre-period (2010–2013) and then use these estimates to detrend our dependent variables before estimating the specification on the full sample (Bhuller et al., 2013; Goodman-Bacon, 2016). Due to the fact that the detrended dependent variables are estimated with error, we bootstrap our standard errors in the second estimation stage. In Section V.C, we explore the robustness of our results to alternative specifications of time trends.

Our second empirical specification includes interactions between U_a^* and $POST_t$ with a binary variable $EXPANSION_S$ that indicates whether the region is in a state s that expanded its Medicaid program on or before January 1, 2014. In particular, we also estimate Equation (2) as follows:

$$(2) \quad INS_{iast} = \theta_1 POST_t \times U_a^* + \theta_2 POST_t \times EXPANSION_S + \theta_3 POST_t \times EXPANSION_S \times U_a^* + \beta X_{it} + \gamma_t + \mu_a + \varepsilon_{iast}$$

In our specifications, we block bootstrap by state in the second estimation stage given that $EXPANSION_S$ varies at the state level and to account for possible serial correlation (Bertrand, Duflo, and Mullainathan, 2004). As for Equation (1), we hypothesize that places with higher pre-existing shares of uninsured individuals under 400 percent of FPL had higher increases in insurance coverage, that is, $\theta_1 > 0$. In addition, it is plausible that the overall level of health insurance increased after the ACA in areas with average U differentially more in expansion states, that is, $\theta_2 > 0$. The sign of θ_3 is also expected to be positive, which would indicate that the relationship between potential Medicaid and exchange enrollment prior to the ACA and changes in insurance is stronger in expansion states relative to non-expansion states.

We also estimate analogous specifications replacing U_a^* with the vector $[M_a^*, E_a^*]$, where M_a^* represents the demeaned value of M for area a and E_a^* represents the demeaned value of E for area a. Specifically, we estimate Equations (3) and (4):

$$(3) \quad INS_{iast} = \alpha_1 POST_t \times M_a^* + \alpha_2 POST_t \times E_a^* + \beta X_{it} + \gamma_t + \mu_a + \varepsilon_{iast}$$

$$(4) \quad INS_{iast} = \rho_1 POST_t \times M_a^* + \rho_2 POST_t \times E_a^* + \rho_3 POST_t \times EXPANSION_S + \rho_4 POST_t \times EXPANSION_S \times M_a^* + \rho_5 POST_t \times EXPANSION_S \times E_a^* + \beta X_{it} + \gamma_t + \mu_a + \varepsilon_{iast}$$

Including measures of the area-level income distribution in our specification allows us to explore the channels through which the ACA affects health insurance coverage. We hypothesize that regions with a larger M^* will have larger increases in Medicaid coverage but that this effect would be much more important in expansion states. Regions with a larger E^* are expected to have larger increases in privately purchased coverage.

We also hypothesize that the sources of coverage increases are different for expansion and non-expansion states. In expansion states, Medicaid coverage is expected to increase, while Medicaid coverage would not be expected to change by as much in non-expansion states. Since subsidies to purchase private coverage from the exchanges are available in all states, we expect the ACA to induce higher levels of privately purchased insurance in both expansion and non-expansion states. The increases in privately purchased insurance may even be larger in non-expansion states since individuals there with incomes between 100 and 138 percent of the poverty line are eligible for subsidies towards health insurance purchased on the exchanges but are not eligible for Medicaid. It is possible that the ACA also influenced coverage from private employers through

the individual mandate, as workers with access to health insurance from their own or their spouse's employer may increase take-up.

To estimate the effect of the ACA on labor market outcomes, we perform an analogous set of reduced-form regressions, as specified in Equations (1)–(4), using labor market outcomes as the dependent variables instead of insurance coverage. We investigate whether regions with larger ACA-induced increases in health insurance coverage also have larger changes in labor market outcomes. Finally, we perform a subsample analysis to determine if the results for both insurance coverage and labor market outcomes vary across observable characteristics such as marital status and age.

In our labor market outcomes analysis, the empirical predictions are somewhat less clear, but we provide a conceptual framework to use as a lens through which our empirical estimates can be interpreted. Appendix Table A2 shows a transition matrix, where the rows indicate one's status prior to the ACA and the columns indicate one's possible status after the ACA. Because our empirical strategy relies on variation in the share of the population uninsured and under 400 percent of FPL, the estimates are not designed to reflect any labor market impacts on those already insured prior to the ACA (bottom half of table). These individuals may substitute away from health insurance coverage conditional on employment towards health insurance that can be obtained through other channels and that is no longer conditional on working. Specifically, we interpret our results as shedding light on labor market transitions associated with movements from uninsurance to insurance (top right quadrant of table).

If changes in insurance status are not accompanied by changes in labor market status, the mass would fall along the diagonal of the top right quadrant in Appendix Table A2 and we would see increases in insurance coverage but no changes in labor market outcomes. We would interpret these changes as coming from increases in take-up of coverage, through one's existing employer, Medicaid, or subsidized coverage in the exchanges, with no impacts on the labor market. Otherwise, our pattern of estimates will inform the net effect of ACA-induced changes in insurance on labor market outcomes and potential mechanisms. For instance, if we find that labor force participation and employment declines, with no change in unemployment, we would infer that the labor market transitions were predominantly from employed and uninsured individuals moving out of the labor force and gaining insurance. This could reflect the availability of subsidized health insurance outside of employment inducing those employed at firms that did not offer health insurance to leave the labor force due to an income effect. If we find that unemployment declines, we would infer that the unemployed and uninsured individuals are moving either out of the labor force (because they stop searching for employment due to subsidized coverage available outside of employment and/or an income effect) or into employment (because of more incentives to find a job with health insurance due to the ACA's individual mandate or because take-up of employment may allow one to be eligible for subsidies in non-expansion states).[16]

[16] Autor and Duggan (2003) find that an increase in the generosity of the Social Security Disability program reduced unemployment because unemployed workers became more likely to drop out of the labor force rather than search for a new job.

Our identification strategy isolates the impact of the ACA on insurance coverage under the assumption that, absent the ACA, geographic areas with larger shares of individuals uninsured and under 400 percent of FPL would have evolved similarly as those with smaller shares, after controlling for fixed area-level characteristics, area-specific pre-trends, and person-level demographics. In our second specification, we assume that places with a given share of individuals both uninsured and under 400 percent of FPL in expansion states would have evolved similarly as those with a similar share in non-expansion states, absent the ACA. Importantly, these assumptions do not rule out different levels of insurance coverage or labor market outcomes across areas for reasons other than the ACA that are fixed over time (and captured by area-level fixed effects). In addition, by allowing pre-trends in insurance coverage and labor market outcomes to vary across areas, we account for potentially differential rates of economic recovery following the recession that could be related to the underlying income distribution in an area.

IV. DATA

For our analysis, we use data from the ACS. Specifically, we use the annual Public-Use Micro Sample (PUMS) files, which contain individual- and household-level responses that have been edited to protect the confidentiality of respondents.[17] The ACS is an ongoing household survey conducted by the U.S. Census Bureau focusing on a variety of topics including demographic, social, and economic related questions. The ACS includes detailed information relating to employment, demographics, health insurance coverage, and measures of poverty/income. Questionnaires are mailed to approximately 295,000 addresses each month (or 3,540,000 annually). Follow-up phone interviews are conducted for addresses that have not responded and personal visits are conducted by Census field representatives to a sample of addresses that have not responded. The extensive follow-up results in a high response rate, typically around 97 percent.[18]

We restrict the sample to observations from 2010 through 2017 for civilians age 26–64, resulting in 12,679,327 person-year observations. This sample restriction provides four years of data prior to the ACA and four years after the ACA was implemented.[19] We focus on ages 26–64 as these are the ages most likely to be affected by Medicaid expansions and the availability of subsidies given the high rates of insurance coverage for the elderly and children prior to the ACA from Medicare and Medicaid, respectively, along with other provisions of the ACA that extended coverage to dependents under age 26 starting in late 2010.

[17] The ACS was originally developed to provide continuous information on communities across the U.S. between the decennial Census. See http://www.census.gov/programs-surveys/acs/data/pums.html for additional details.

[18] In 2013, there was a drop in the final number of housing units due to the government shutdown, as telephone and in-person follow-up interviews were not conducted during this time.

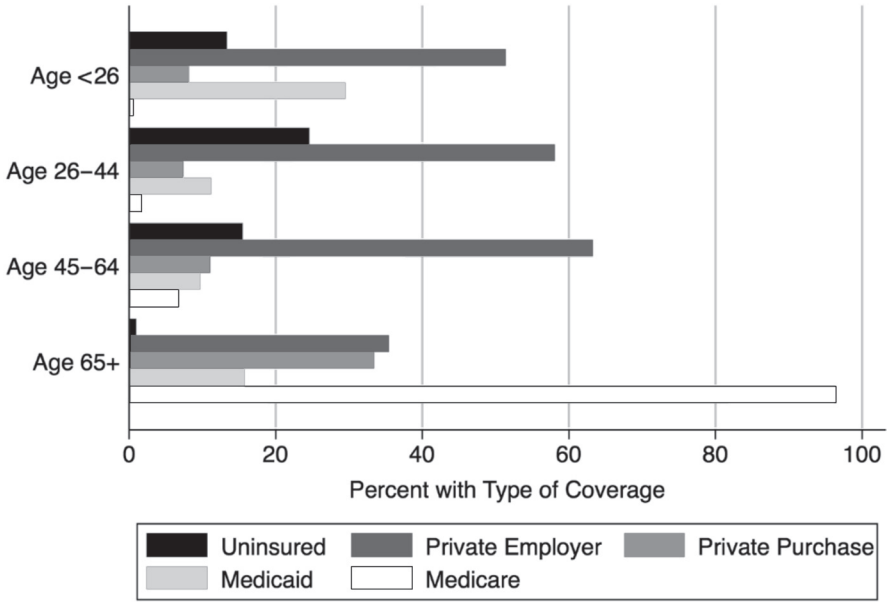
[19] While the ACS offers many advantages in sample size, response rate, and survey measures, one of the main disadvantages is that the month of interview is not available in the public use microdata for privacy reasons.

The ACS asks whether an individual has health insurance coverage at the point of interview. This differs from the CPS, which asks about insurance coverage in the last calendar year. Each individual is provided with a list of seven different types or categories of insurance coverage and can indicate *all* the types of coverage through which they were insured. The choices include insurance from a current or former employer; insurance purchased directly from an insurance company; Medicare; Medicaid, Medical Assistance, or any kind of government-assistance plan for those with low incomes or a disability; Tricare or other military healthcare; Veterans Affairs; and Indian Health Service. It is worth noting that the wording of these choices combined with self-reporting can lead to some measurement error in the source of insurance coverage if, for instance, "any kind of government-assistance plan for those with low incomes" is interpreted as subsidies that allow individuals to purchase private insurance on the exchanges.

The ACS creates a variable indicating any insurance coverage as having any of the coverage types other than Indian Health Service. We show insurance coverage in the ACS between 2010 and 2013 for four different age groups (0–25, 26–44, 45–64, and 65+) in Figure 4. Note that since individuals can choose more than one type of coverage, the percentages total more than 100 percent. As shown in the figure, uninsurance rates are highest for 26- to 64-year-olds at baseline and the highest source of coverage for

Figure 4

Insurance Coverage in the ACS in 2010–2013



this group is private employer-provided coverage. The elderly are almost universally covered by Medicare, but many have supplemental coverage from other sources. Children and young adults have relatively high rates of coverage from Medicaid at baseline since the Medicaid eligibility criteria are generally broader for children.

Several labor market outcomes are included in the ACS. We examine whether an individual reports being employed over the last week or out of the labor force (i.e., not employed last week and not looking for employment over the last four weeks). The ACS also includes information about self-employment, usual hours worked per week over the past 12 months, and wage or salary and self-employment income over the past 12 months. We construct an indicator for part-time employment, which equals 1 for individuals employed last week whose hours are less than 30 per week over the past 12 months. Self-employment is measured by an indicator variable that equals 1 for individuals employed last week whose chief job activity was self-employment. We examine the effect of the ACA on hours worked conditional on being currently employed. Our baseline labor market outcomes prior to the implementation of the ACA are summarized for different age groups in Table 1. Table 1 also includes baseline demographic characteristics such as gender, race, and ethnicity.[20]

Table 1

Baseline Demographics and Labor Market Outcomes

	Ages			
	26–34	35–44	45–54	55–64
# of observations (unweighted)	1,280,749	1,497,595	1,818,968	1,729,822
Female	50%	50%	51%	52%
White	72%	73%	77%	81%
Black	13%	13%	12%	11%
Asian	7%	7%	5%	4%
Other	8%	7%	5%	4%
Hispanic	20%	19%	13%	9%
% of FPL	287%	309%	336%	344%
NILF	18%	18%	20%	36%
Employed	74%	76%	74%	60%
Self-employed	4%	7%	9%	8%
Part-time	8%	7%	7%	7%
Hours	40	41	41	40
Single coverage	68%	72%	74%	74%
Double coverage	4%	6%	7%	11%
# of health insurance plans	0.78	0.85	0.92	1.02

Notes: Baseline summary statistics for years 2010–2013. ACS survey weights used.

[20] Races other than black, white, or Asian are assigned as Other. A person reporting only one race is given a value of 1 for that race, and those reporting a mix of two races are credited 0.5 to each race. If a person reports more than two races, they are assigned to Other.

Our analysis leverages geographic variation in the income distribution and the share uninsured prior to the ACA. The finest geographic levels identified in the PUMS data are PUMAs.[21] PUMAs are defined so as to not cross state borders and are population based rather than based on physical area. Each PUMA has a population of at least 100,000 at the time of the decennial census and the largest PUMA population in the 2010 Census is approximately 280,000. Large urban areas, such as Los Angeles or Chicago, typically are divided into many PUMAs based on census tracts, while PUMAs in rural areas are typically based on counties.

PUMAs are redefined every 10 years following the decennial Census. The ACS used 2,071 PUMAs based on the 2000 Census for years 2010 and 2011 and then switched to 2,351 PUMAs based on the 2010 Census for years 2012 and later. In order to use data spanning this change, we use consistent PUMAs, which are an aggregation of 2000 and 2010 PUMAs with boundaries that align across decennial Censuses.[22] While this harmonization reduces the number of distinct geographic areas by approximately half to 1,078, it does not drop any observations from the data. In addition, the aggregated PUMAs have a larger average population (including only those aged 26–64) of 148,682 and some of the aggregated PUMAs expand to cover the entire state (such as Montana). [23]

We aggregate the individual level data on health insurance coverage and income to poverty ratio to the PUMA level to calculate our measures of *U*, *M*, and *E*. Figures 5–7 show the heterogeneity in *U*, *M*, and *E* for our sample averaged over the pre-ACA years that we examine (2010–2013). Figure 5 displays the variation in each measure in histograms, with each ranging from 0 to 100. The average value of *U* across PUMAs is 15.9 percent, with a standard deviation of 7.4 percent, and the share varies from 1.1 to 54.7 percent. When we break down *U* into its components, slightly more than half of the uninsured represents individuals who became eligible for exchange subsidies (*E*), while slightly less than half represents individuals who then became eligible for Medicaid in expansion states (*M*). The average value of *M* across PUMAs is 7.3 percent, and the average value of *E* is 8.6 percent. Note that these shares can vary either because the share of the population within certain income bands varies or because the share of that population that is uninsured varies. A list of PUMAs with the highest and lowest values of *U* is provided in Appendix Table A3.

Figure 6 shows a "heat map" for the entire United States, California, and Los Angeles County, with darker shaded regions representing regions with a larger value of *U*. Focusing on Los Angeles County, which has the largest population of any county in the United States, illustrates the level of geographic detail that PUMA identifiers provide and the significant variation present within highly populated counties. Analogous figures for *M* and *E* are shown in Appendix Figures A1–A2.

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[21] For more information on PUMAs, refer to https://www.census.gov/geo/reference/webatlas/pumas.html.

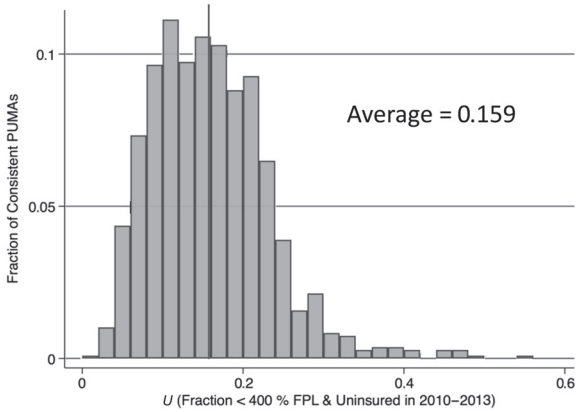
[22] Consistent PUMAs are an aggregation of 2010 and 2000 PUMAs that align, within a 1 percent population error tolerance, over our time period. For more information, refer to https://usa.ipums.org/usa/volii/cpuma0010.shtml.

[23] For simplicity, we refer to these consistent PUMA areas as PUMAs in the remainder of the text.

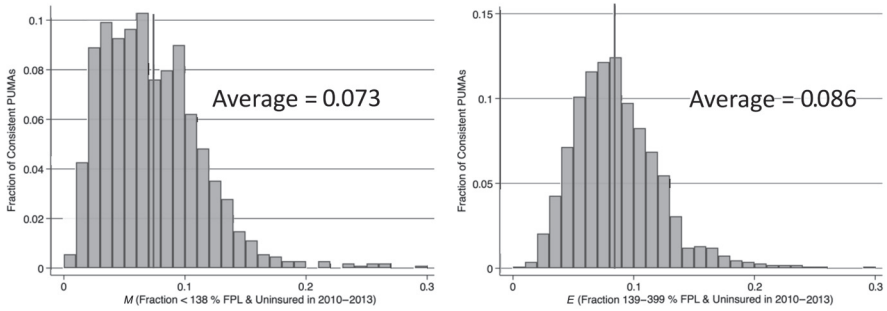
Figure 5

Heterogeneity across PUMAs in *U, M,* and *E*

(a) Share <400 Percent FPL and Uninsured in 2010–2013



(b) Share <138 Percent FPL and Uninsured in 2010–2013 and Share 139–399 Percent FPL and Uninsured in 2010–2013



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

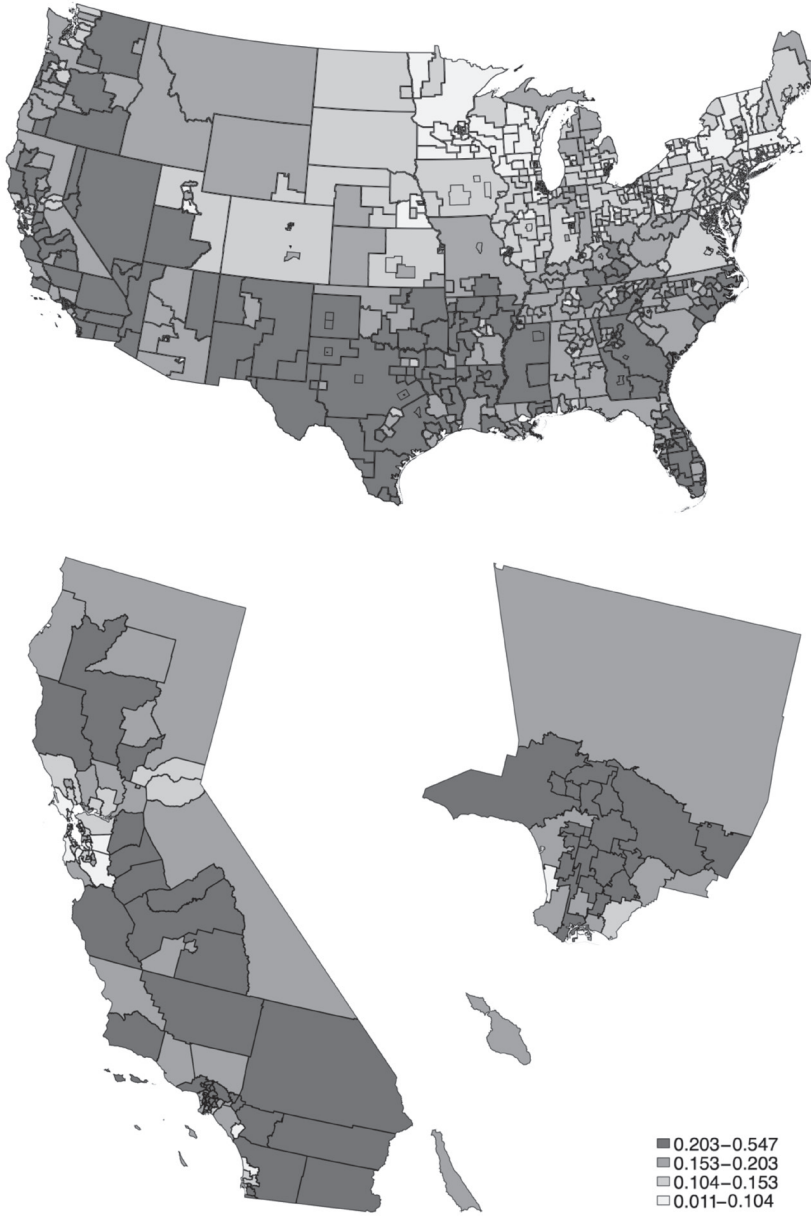
V. RESULTS

A. Health Insurance Coverage

We estimate Equations (1)–(4) on outcome variables pertaining to overall health insurance coverage and its source. Table 2 displays these results. All of the specifications include controls for gender, race, ethnicity, single year-of-age fixed effects, year fixed effects, and PUMA fixed effects, and are adjusted for PUMA-specific pre-trends.

Figure 6

U in PUMAs across the United States, California, and Los Angeles County



Note: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013.

Table 2

Effect of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Overall Health Insurance Coverage

Variables	(1) Health Insurance Coverage	(2) Health Insurance Coverage	(3) Medicaid Coverage	(4) Medicaid Coverage	(5) Private Purchase	(6) Private Purchase	(7) Private Employer	(8) Private Employer
Panel A								
Post × *U**	0.2467***	0.1416**	0.0477	–0.0827***	0.1252***	0.1704**	0.0833***	0.0822***
	(0.0636)	(0.0599)	(0.0682)	(0.0285)	(0.0414)	(0.0800)	(0.0163)	(0.0289)
Expansion × Post		0.0270***		0.0367***		–0.0019		–0.0021
		(0.0044)		(0.0050)		(0.0028)		(0.0032)
Exp × Post × *U**		0.2884***		0.3685***		–0.0925		–0.0047
		(0.0667)		(0.0500)		(0.0828)		(0.0429)
Panel B								
Post × *M**	0.0615	0.1120	0.0802	0.1249*	–0.0340	–0.0839	0.0376	0.1226
	(0.115)	(0.0857)	(0.1495)	(0.0741)	(0.0388)	(0.0705)	(0.0601)	(0.0932)
Post × *E**	0.4567**	0.1766	0.0109	–0.3279***	0.3055***	0.4708**	0.1352**	0.0345
	(0.1895)	(0.1747)	(0.2570)	(0.1046)	(0.1058)	(0.1991)	(0.0650)	(0.0814)
Expansion × Post		0.0270***		0.0390***		–0.00336		–0.00261
		(0.00448)		(0.00467)		(0.0028)		(0.0035)
Expansion × Post × *M**		0.3559**		0.5669***		0.0281		–0.2265*
		(0.1536)		(0.1944)		(0.0934)		(0.1173)
Expansion × Post × *E**		0.2140		0.1905		–0.2535		0.2321*
		(0.2024)		(0.1914)		(0.2157)		(0.1361)
Observations	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327
Pre-ACA DV mean	0.7988	0.7988	0.1053	0.1053	0.0931	0.0931	0.6075	0.6075
Non-Exp states	0.7798	0.7798	0.0920	0.0920	0.0932	0.0932	0.5954	0.5954
Expansion states	0.8174	0.8174	0.1183	0.1183	0.0931	0.0931	0.6194	0.6194

Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0. Sample includes civilians ages 26–64 in the years 2010–2017. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls include demographic controls (female, black, white, Asian, other, and Hispanic), age FEs, year FEs, PUMA FEs, and PUMA-specific pre-period time trends.

The outcome variable is listed in the column header, and the regression results are shown in Panel A for Equation (1) in the odd-numbered columns and for Equation (2) in the even-numbered columns and in Panel B for Equation (3) in the odd-numbered columns and for Equation (4) in the even-numbered columns. We include the mean of the dependent variable in the bottom row of the table averaged over the pre-ACA sample years for the overall sample and separately for expansion and non-expansion states. Because the measures of U_a^*, M_a^*, and E_a^* that we use are demeaned, the coefficient on $POST_t \times EXPANSION_S$ in Equation (2) represents the difference in coverage in expansion relative to non-expansion states after the ACA for PUMAs with average shares of the population under 400 percent of FPL and uninsured (15.9 percentage points). Similarly, the coefficient on $POST_t \times EXPANSION_S$ in Equation (4) represents the difference in coverage in expansion relative to non-expansion states after the ACA for PUMAs with average shares of the population under 138 percent of FPL and uninsured (7.3 percentage points) and between 139 and 399 percent of FPL and uninsured (8.6 percentage points).

The results in the table show evidence that the ACA induced statistically significant increases in insurance coverage in both expansion and non-expansion states. In Column 1 of Panel A, we see that after controlling for PUMA-level fixed effects and PUMA-specific pre-trends, areas with a higher share of the population under 400 percent of FPL and uninsured had larger increases in health insurance coverage; specifically, coverage rates increased by 2.5 percentage points more in regions where U_a^* was 10 percentage points higher. When we interact our measure of Medicaid expansion status with $POST_t$ and U_a^* (Panel A, Column 2), we see that coverage increases were 2.7 percentage points higher in states that expanded Medicaid relative to states that did not after controlling for demographics, year fixed effects, PUMA fixed effects, and PUMA-specific pre-trends. In addition, we see that the relationship between U_a^* and health insurance coverage was stronger in expansion states relative to non-expansion states. In non-expansion states, coverage increased by 1.4 percentage points for every 10-percentage-point increase in U_a^*, while in expansion states, the corresponding coverage increase was 4.3 percentage points. All of these results are statistically significant. The larger impact in expansion states is unsurprising given that uninsured individuals under 400 percent of FPL in expansion states could have gained coverage both through Medicaid enrollment and by purchasing insurance on the exchange, while those in non-expansion states likely did not have new access to Medicaid after the ACA.

In Columns 1 and 2 of Panel B, we investigate the channels through which individuals gained coverage further by decomposing U_a^* into M_a^* and E_a^*, where M_a^* reflects the demeaned share of area *a* uninsured and under 138 percent of FPL and E_a^* reflects the demeaned share of area *a* uninsured and between 139 and 399 percent of FPL. Column 1, where expansion and non-expansion states are pooled together, shows that areas with a higher share of the population between 139 and 399 percent of FPL and uninsured had higher increases in health insurance coverage: coverage rates increased by 4.6 percentage points more in regions where E^* was 10 percentage points higher. This specification does not show evidence that coverage changes varied significantly with the share under 138 percent of FPL and uninsured.

We interact $POST_t$ with our measure of Medicaid expansion status and its interaction with both M^*_a and E^*_a and report the results in Column 2 of Panel B. In states that did not expand Medicaid, the point estimate of the increase in coverage was higher in regions with a larger share of the population uninsured and between 139 and 399 percent of FPL; however, decomposing U^*_a into M^*_a and E^*_a results in the coefficients no longer being statistically significant. In states that did choose to expand Medicaid, the increase in coverage is strongly related to the share under 138 percent of FPL and uninsured: here, a 10-percentage-point increase in M^*_a led to a 4.7-percentage-point increase in health insurance coverage.[24] By contrast, there is no evidence that non-expansion states had larger coverage increases in places with a higher M^*_a. In expansion states, the relationship between E^*_a and increases in health insurance coverage from the ACA is slightly larger than that in non-expansion states, though the difference is not statistically significant.

We depict the relationship between U, M, and E and the change in health insurance coverage captured in Column 2 of Table 2 graphically in Figure 7. The top panel shows scatterplots of PUMA-level detrended changes in health insurance coverage by U, condensed into 100 bins, differentially by Medicaid expansion status. The slopes of the dashed and solid lines, from Column 2 of Table 2, represent the relationship between U and the change in health insurance coverage for expansion states and non-expansion states, respectively. Panels (b) and (c) are similar but plot the change in coverage against M (while controlling for E) and E (while controlling for M) on the x-axis.

Under the assumption that our demographic controls, PUMA-level fixed effects, and PUMA-specific pre-trends capture the determinants of health insurance coverage aside from the ACA, we can attribute any larger increase in health insurance coverage occurring for regions with a positive U^*, M^*, or E^* as causally driven by the ACA. Using the results from Column 2 of Panel A to generate these ACA-driven increases at the PUMA level and weighting by PUMA population suggests that the increases in health insurance coverage due to the ACA were 2.6 percentage points in non-expansion states and 6.5 percentage points in expansion states.[25] These effects are substantial relative to the overall increase of 5.5 percentage points in non-expansion states and 7.5 percentage points in expansion states, and represent 48 and 87 percent of the observed increase during our study period, respectively, with the rest potentially due to improving economic conditions.[26]

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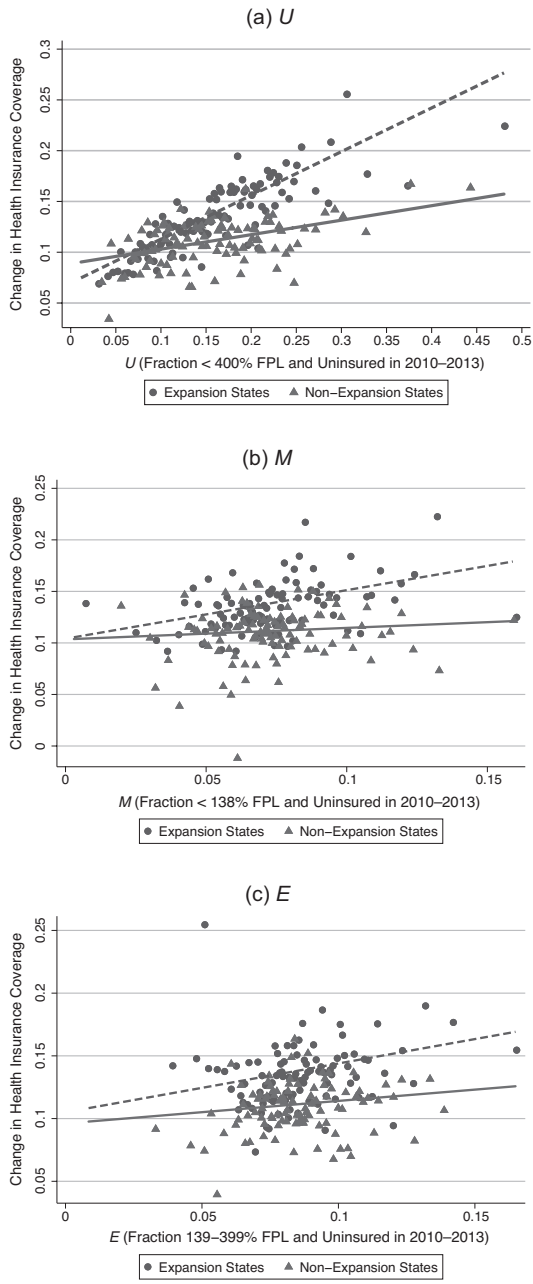
[24] To obtain the estimate for states that chose to expand, add together the coefficients ($EXPANSION_S \times M^*_a$) + ($POST_t \times EXPANSION_S \times M^*_a$) = 0.1120 + 0.3559 = 0.4679. This denotes the increase in health insurance coverage in a place with $M^*_a = 1$ relative to $M^*_a = 0$. Thus, to obtain an estimate for a 10-percentage-point increase in M^*_a, multiply 0.4679 × 0.1 = 0.04679 to obtain a 4.7-percentage-point increase in health insurance. This similarly applies to all calculations that follow.

[25] If we use M^*_a and E^*_a from Panel B to calculate the increase in health insurance coverage due to the ACA, we find similar increases of 2.7 percentage points in non-expansion states and 6.4 percentage points in expansion states.

[26] The overall increases in non-expansion and expansion states of 5.5 and 7.5 come from the coefficients of $POST_t$ and $EXPANSION_S \times POST_t$ in regressions that are similar to Equation (2) but do not include year fixed effects nor U^*_a, M^*_a, and E^*_a. We also find that — as one would expect given that, as shown in Figure 1, the change in coverage was not instantaneous — the estimated effects are substantially larger in 2015–2017 than in 2014.

Figure 7

Change in Health Insurance Coverage by *U, M, E,* and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

In Columns 3–8, we examine how the ACA affected source of coverage. As before, Panel A includes U_a^*, while Panel B decomposes U_a^* into M_a^* and E_a^*. The results come from regressions in which the dependent variable is a binary indicator of whether an individual reports having any Medicaid coverage, privately purchased coverage, or coverage from a private employer, but are otherwise identical to the specifications in Columns 1 and 2. As described earlier, individuals surveyed by the ACS may choose multiple sources of insurance and do not indicate which is primary. Therefore, the outcome variables represent whether an individual has the indicated insurance at all at the time of the survey.

As shown in Column 3, when we do not distinguish between expansion and non-expansion states, we find no evidence that Medicaid coverage changes differentially in places with higher U_a^*, M_a^*, or E_a^*. However, when we interact these variables with expansion status in Column 4, we find strong evidence that Medicaid coverage increases more when the share of the population thought to gain coverage under the ACA provisions increases, but only in expansion states. In Panel A, we see that for expansion states with average levels of U_a, Medicaid coverage was 3.7 percentage points higher in the post period. This increase occurred differentially in areas with higher levels of pre-ACA uninsured. In expansion states, areas with a 10-percentage-point higher share of uninsured and under 400 percent of FPL had a Medicaid coverage rate that was 2.9 percentage points higher. In non-expansion states, the relationship has the opposite sign, but the coefficient is small, suggesting little relationship between U_a^* and Medicaid coverage in non-expansion states.

In Panel B, when we decompose U_a^* into M_a^* and E_a^*, we see that the relationship in Panel A appears to be driven specifically by the share of each area uninsured and under 138 percent of FPL. Specifically, in expansion states, in regions where M_a^* is 10 percentage points higher, Medicaid coverage is 6.9 percentage points higher. We would not expect Medicaid coverage to change by as much in non-expansion states as a result of the ACA. Consistent with this, the estimated relationship between M_a^* and the change in Medicaid coverage is only about one-sixth as large in states that did not expand coverage (0.12 versus 0.69). Some uninsured individuals who were Medicaid eligible before the ACA in non-expansion states may have signed up due to the individual mandate or because of the additional publicity surrounding the ACA.[27] The point estimate of –0.328 for the coefficient on $POST_t \times E_a^*$ suggests Medicaid coverage declined among those uninsured and with incomes between 139 and 399 percent of FPL. This suggests that, because private health insurance became more affordable for this group, some dropped Medicaid coverage to sign up for a subsidized private plan through their state exchange.[28] Performing an exercise similar to that described earlier, we find that

[27] This is referred to as the "woodwork effect." Frean, Gruber, and Sommers (2017) find the woodwork effect accounted for 30 percent of the ACA's impact on coverage, and similar spillovers have also been documented in earlier expansions (Aizer and Grogger, 2003; Dubay and Kenny, 2003). Other estimates, just prior to the ACA's implementation, also suggest the large potential magnitude of the woodwork effect in the ACA (Sommers and Epstein, 2011; Sonier, Boudreaux, and Blewett, 2013).

[28] According to individual-level data from the 2010–2013 ACS, 41 percent of those aged 26–64 and enrolled in Medicaid had household incomes above 138 percent of FPL.

the ACA increased Medicaid coverage by 4.3 percentage points in expansion states (two-thirds of the total increase in health insurance coverage) and decreased Medicaid coverage slightly in non-expansion states.[29]

Columns 5 and 6 show that while the relationship between the area's share uninsured and under 400 percent of FPL and post-ACA privately purchased health insurance was significant overall, the relationship is somewhat smaller in magnitude in states that expanded their Medicaid programs (though the results for the two groups of states are not significantly different from one another). In non-expansion states, the increase is strongly positively related with the share of the population between 139 and 399 percent of FPL and uninsured who are most likely to purchase subsidized insurance from the exchanges. Our calculations suggest that the ACA increased privately purchased insurance by 3.2 percentage points (accounting for more than the overall increase) in non-expansion states but by just 1.2 percentage points (or 18 percent of the overall increase) in expansion states. The estimate of –0.0839 in Column 6 for the $POST_t \times M_a^*$ coefficient is comparable in magnitude but opposite in sign to the corresponding estimate for Medicaid coverage in Column 4. This suggests that even in states that did not expand Medicaid, some low-income individuals shifted from private to public coverage.

Finally, Columns 7 and 8 in Panel A show some evidence that health insurance coverage from private employers increased as a result of the ACA, suggesting that the ACA individual mandate may have led people with access to health insurance from an employer to take up this coverage or led individuals to switch to employers offering health insurance as a result of the ACA. This effect is not statistically different in expansion versus non-expansion states. In Panel B, the relationship is weaker and statistically insignificant. Figures similar to Figure 8 but for Medicaid coverage, privately purchased coverage, and coverage from private employers are included in the Appendix.

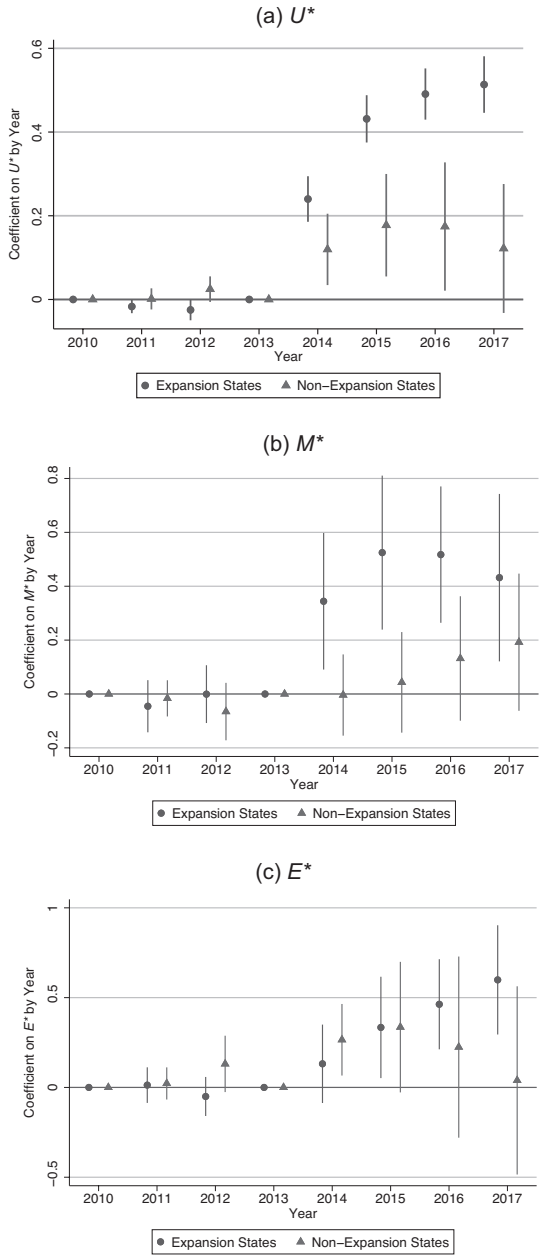
Our identification rests on the assumption that, absent the ACA, geographic areas with larger shares of uninsured individuals under 400 percent of FPL would have evolved similarly as those with smaller shares, after controlling for person-level demographics, year effects, area-level fixed effects, and area-specific pre-trends. We further assume that places with a given share of individuals both uninsured and under 400 percent of FPL in expansion states would have evolved similarly as those with a similar share in non-expansion states, absent the ACA.

We investigate how the relationship between M_a^*, E_a^*, and health insurance changes over time by estimating versions of Equation (2) where we replace $POST_t$ with a full set of year indicator variables to trace out the relationship between health insurance coverage and potential Medicaid and exchange enrollment before and after the ACA took effect. Because our data do not permit analysis on a quarterly or monthly basis, the estimates represent the effects, on average, throughout the year. Because we adjust for PUMA-specific pre-trends, two coefficients on year drop out of the equation, and the coefficients displayed represent the effect relative to the 2010 level and the 2010–2013 trend.

[29] Specifically, we use the results from Column (4) to generate ACA-driven increases in Medicaid coverage at the PUMA level and weight by the population age 26–64 in each PUMA.

Figure 8

Relationship between *U*, M*, E*,* and Health Insurance Coverage by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M*, E*, and U** are standardized to have a mean of 0.

The results of running year-by-year specifications with health insurance coverage as the outcome are provided in Figure 8. The effects mirror those shown in Table 2 but also show that the relationship between potential Medicaid/exchange enrollment and health insurance coverage was generally stable and statistically indistinguishable from zero in the pre-ACA period, while it increased markedly in the post-ACA period. The figure also shows that health insurance coverage is not related to M_a^* in non-expansion states post-ACA, which is consistent with our findings and intuitive. The figure also shows that the effects were smaller in 2014, the first year following implementation, reflecting the fact that our 2014 effect represents the average over the calendar year. We include similar figures for the different sources of coverage, namely, Medicaid, privately purchased insurance, and coverage from private employers, in the Appendix.

We examine the heterogeneity in the effects of the ACA on health insurance coverage by minority status, presence of a dependent child, education, sex, age, and marital status in Table 3. In these specifications, we retain the definition of U_a^* used above, so that these two variables represent the averages for the overall adult population rather than for the sub-populations considered here. The results corroborate the results in Column 2 in Panel A of Table 2 that coverage gains are, on average, higher in expansion states (i.e., the coefficients on $EXPANSION_S \times POST_t$ are positive and significant) and the relationship between U_a^* and coverage in the post-ACA period is stronger in expansion states (i.e., the coefficients on $POST_t \times EXPANSION_S \times U_a^*$ are positive and significant). Estimates for the $EXPANSION_S \times POST_t$ coefficients suggest a relatively large average gain in health insurance coverage in states that expanded Medicaid for males, childless adults, and for adults with only a high school degree or less. This is consistent with the prediction that the Medicaid expansion would differentially affect coverage for these groups. The results also indicate that the relationship between U_a^* and insurance coverage is statistically similar across minority status, education, and gender but higher for childless adults in expansion states, married individuals in non-expansion states, and the near elderly in both sets of states.[30]

B. Labor Market Outcomes

We provide evidence regarding the effect of the ACA on labor market outcomes in Tables 4 and 5, which display the results of estimating Equations (1)–(4) on the labor market outcomes summarized in Table 1. Table 4 sheds light on how the ACA affected labor market outcomes on the extensive margin (labor force participation, employment, and unemployment), and Table 5 examines labor market outcomes on the intensive margin (part-time status, self-employment, and hours of work). As in earlier tables, the column heading denotes the dependent variable. All of the results reported are from regressions that include basic demographic controls, year fixed effects, and PUMA fixed effects and adjust for PUMA-specific pre-trends. Pre-ACA means of the dependent variables are reported in the final three rows below the regression results.

[30] These results come from fully interacted versions of the regressions shown and the estimates from tests for equality of coefficients across each pair of subsamples. The coefficients of $EXPANSION_S \times POST_t$ are significantly different across these groups with $p < 0.05$.

Table 3

Heterogeneity in Effect of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Health Insurance Coverage by Observable Characteristics

Variables	(1) Non-Minority	(2) Minority	(3) Childless Adult	(4) Has Child under 18	(5) HSG or Less	(6) Some College or More
Post × *U**	0.0830*	0.0892	0.1207*	0.1806***	0.1083*	0.1424*
	(0.0491)	(0.0873)	(0.0684)	(0.0591)	(0.0555)	(0.0733)
Expansion × Post	0.0233***	0.0247***	0.0314***	0.0178***	0.0402***	0.0168***
	(0.0044)	(0.0083)	(0.0048)	(0.0058)	(0.0086)	(0.0038)
Exp × Post × *U**	0.3005***	0.2925***	0.3372***	0.1813***	0.3049***	0.2227***
	(0.0680)	(0.0948)	(0.0778)	(0.0693)	(0.0788)	(0.0779)
Observations	8,687,410	3,991,917	8,392,147	4,287,180	4,746,421	7,932,906
Pre-ACA DV mean	0.8556	0.6939	0.7807	0.8319	0.6873	0.8703
Non-Exp states	0.8385	0.6585	0.7643	0.8082	0.6679	0.8569
Expansion states	0.8735	0.7239	0.7968	0.8550	0.7080	0.8826

Variables	(7) Male	(8) Female	(9) Young (26–44)	(10) Near Elderly (45–64)	(11) Married	(12) Not Married
Post × *U**	0.1510***	0.1322*	0.0954	0.1829***	0.2021***	0.0251
	(0.0490)	(0.0719)	(0.0601)	(0.0655)	(0.0480)	(0.0760)
Expansion × Post	0.0325***	0.0217***	0.0290***	0.0247***	0.0208***	0.0321***
	(0.0043)	(0.0049)	(0.0071)	(0.0040)	(0.0042)	(0.0080)
Exp × Post × *U**	0.2894***	0.2881***	0.3177***	0.2564***	0.2043***	0.3761***
	(0.0520)	(0.0826)	(0.0690)	(0.0771)	(0.0563)	(0.0884)
Observations	6,190,333	6,488,994	5,579,169	7,100,158	7,816,808	4,862,519
Pre-ACA DV mean	0.7753	0.8216	0.7525	0.8426	0.8602	0.7117
Non-Exp states	0.7575	0.8013	0.7279	0.8282	0.8475	0.6816
Expansion states	0.7925	0.8416	0.7761	0.8568	0.8729	0.7402

Notes: The dependent variable is health insurance coverage, and each column corresponds to a separate subsample drawn from the full sample that includes civilians ages 26–64 in the years 2010–2017. "Non-Minority" indicates white non-Hispanic. "Has Child under 18" refers to individuals with at least one child living in the same household who is under 18. "HSG or Less" indicates that a high-school degree (including GED) or less is the highest educational attainment. "Male" refers to gender. "Young" is ages 26–44. "Married" refers to marital status. *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. All shares *U** are standardized to have a mean of 0. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls include demographic controls (female, black, white, Asian, other, and Hispanic), year FEs, age FEs, PUMA FEs, and PUMA-specific pre-period time trends.

Table 4

Effect of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Labor Market Outcomes: Extensive Margin

Variables	(1) Not in the Labor Force	(2) Not in the Labor Force	(3) Employed	(4) Employed	(5) Unemployed	(6) Unemployed
Panel A						
Post × *U**	–0.0033	0.0133	0.0233	0.0092	–0.0200*	–0.0225*
	(0.0133)	(0.0135)	(0.0142)	(0.0168)	(0.0108)	(0.0133)
Expansion × Post		0.0022		0.0018		–0.0040*
		(0.0023)		(0.0019)		(0.0021)
Exp × Post × *U**		–0.0245		0.0328		–0.0084
		(0.0271)		(0.0284)		(0.0208)
Panel B						
Post × M*	–0.1066**	–0.0892	0.1135**	0.1485**	–0.0069	–0.0593*
	(0.0427)	(0.0660)	(0.0503)	(0.0697)	(0.0337)	(0.0347)
Post × E*	0.1137**	0.1342*	–0.0789	–0.1553*	–0.0348	0.0211
	(0.0534)	(0.0789)	(0.0559)	(0.0818)	(0.0296)	(0.0390)
Expansion × Post		0.0014		0.0026		–0.0041*
		(0.0024)		(0.0021)		(0.0021)
Expansion × Post × M*		–0.0302		–0.0273		0.0575
		(0.1150)		(0.1193)		(0.0704)
Expansion × Post × E*		–0.0327		0.1149		–0.0821
		(0.1238)		(0.1242)		(0.0604)
Observations	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327
Pre-ACA DV mean	0.2256	0.2256	0.7121	0.7121	0.0623	0.0623
Non-Exp states	0.2333	0.2333	0.7070	0.7070	0.0597	0.0597
Expansion states	0.2181	0.2181	0.7171	0.7171	0.0648	0.0648

Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0. Sample includes civilians ages 26–64 in the years 2010–2017. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls include demographic controls (female, black, white, Asian, other, and Hispanic), age FEs, year FEs, PUMA FEs, and PUMA-specific pre-period time trends.

Table 5

Effect of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Labor Market Outcomes: Intensive Margin

Variables	(1) Part-Time	(2) Part-Time	(3) Self-Employed	(4) Self-Employed	(5) Hours	(6) Hours
Panel A						
Post × *U**	–0.0029	0.0078	0.0047	0.0073	–0.1130	–1.2727
	(0.0079)	(0.0105)	(0.00742)	(0.0131)	(1.0460)	(1.5342)
Expansion × Post		–0.0011		–0.0012		0.0705
		(0.0013)		(0.0011)		(0.0828)
Exp × Post × *U**		–0.0241		–0.0089		2.4403
		(0.0204)		(0.0159)		(1.5506)
Panel B						
Post × *M**	0.0448	0.0352	0.0165	0.0019	0.3011	2.2187
	(0.0326)	(0.0475)	(0.0278)	(0.0264)	(1.8355)	(2.9392)
Post × *E**	–0.0571*	–0.0245	–0.0088	0.0137	–0.5767	–5.3506
	(0.0345)	(0.0436)	(0.0399)	(0.0408)	(1.8573)	(4.6700)
Expansion × Post		–0.0008		–0.0011		.0771
		(0.0013)		(0.0011)		(.0892)
Expansion × Post × *M**		0.0034		0.0140		(4.6700)
		(0.0642)		(0.0570)		(3.5435)
Expansion × Post × *E**		–0.0489		–0.0334		7.7133
		(0.0562)		(0.0757)		(5.1571)
Observations	12,679,327	12,679,327	12,679,327	12,679,327	9,028,702	9,028,702
Pre-ACA DV mean	0.0719	0.0719	0.0726	0.0726	40.65	40.65
Non-Exp states	0.0673	0.0673	0.0708	0.0708	40.97	40.97
Expansion states	0.0764	0.0764	0.0744	0.0744	40.34	40.34

Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0. Sample includes civilians ages 26–64 in the years 2010–2017. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls include demographic controls (female, black, white, Asian, other, and Hispanic), age FEs, year FEs, PUMA FEs, and PUMA-specific pre-period time trends.

If the ACA-induced changes in health insurance coverage were influencing labor market outcomes, one would expect to detect a significant coefficient on $POST_t \times U_a^*$, $POST_t \times M_a^*$, $POST_t \times E_a^*$, and/or their interactions with the state's Medicaid expansion decision. In Columns 1 and 2 of Panel A, we do not see evidence that labor force participation changed significantly in areas where there was a greater share of the population uninsured and less than 400 percent of FPL. In aggregate, our point estimates suggest that for every 100 people who gained insurance coverage, approximately 1.3 people *entered* the labor force.[31] The 95 percent confidence interval indicates that we can rule out reductions in labor force participation above 9.2 for every 100 people who gained insurance coverage. When we look differentially across non-expansion and expansion states, our estimates are again statistically indistinguishable from zero. Our point estimates suggest a modest increase in labor force participation in expansion states and a corresponding reduction in non-expansion states. We can reject that more than 28 of the 100 people who gained insurance in non-expansion states and more than 8 out of the 100 people who gained insurance in expansion states left the labor force.

While we find little evidence to support large changes in labor force participation stemming from ACA-induced changes in health insurance, it is possible that the ACA affected employment and unemployment, leaving overall labor force participation unchanged. In Columns 3–6, we repeat the specifications in Columns 1 and 2 for these two outcomes. The relationship between employment and U_a^* is positive and not statistically significant, while the relationship between unemployment and U_a^* is negative and marginally significant at the 10 percent level. These effects are not statistically different across expansion and non-expansion states. The magnitudes of the point estimates suggest that for every 100 people who gained insurance coverage, 9 entered employment and 8 exited unemployment. Given the lack of precision in these estimates, we are unable to pin down a dominant mechanism.

In Panel B, when we decompose U_a^* into M_a^* and E_a^*, the results in Columns 1 and 2 suggest that the change in the share of adults aged 26–64 out of the labor force is significantly related with both M_a^* and E_a^* but in opposing directions. Specifically, the results indicate that there is an *increase* in labor force participation in areas where the share uninsured and under 138 percent of FPL is larger and a *reduction* in labor force participation in areas where the share uninsured and between 139 and 399 percent of FPL is larger. While it is possible that the Medicaid and the exchange channels had countervailing effects, we caution overinterpretation of these results as we are unable to pin down a mechanism. The results in Column 2 do not corroborate countervailing effects given that there is no significant differential for expansion states as we see with health insurance coverage. The results in Columns 3–6 of Panel B suggest that the employment effect stems from the Medicaid channel and that the unemployment effect stems from the exchange channel, but these results again do not differ among expansion and non-expansion states in the expected way.

[31] This represents the ratio of the coefficient estimate of –0.00331 in Column 1 of Panel A of Table 4 and the corresponding estimate of 0.247 in Column 1 of Panel A of Table 2.

Table 5 presents results on the effects of the ACA on part-time employment, self-employment, and hours worked (conditional on working). Overall, we find no evidence of statistically significant changes in any of these margins in places where the share of the population uninsured and under 400 percent of FPL is higher. Our results do not change dramatically when we decompose U_a^* into M_a^* and E_a^* in Panel B.[32]

We estimate Equation (2) for each of the subsamples defined in Table 3 with labor force non-participation as the outcome variable and display the results in Table 6. The results reveal that only 2 of the 12 sub-populations we consider had a differential change in labor force participation in states that expanded their Medicaid programs; these estimates are for racial minorities in Column 2 and adults with only a high school degree or less in Column 4 and are significant at the 10 and 5 percent levels, respectively. In contrast, 33 of the 36 estimates in the corresponding table for health insurance coverage were statistically significant, of which 28 were at the 1 percent level. Moreover, we formally test for equality of coefficients across each pair of subsamples and find no evidence that the coefficients vary across any of the characteristics we examine.

Figures 9 and 10 are analogous to Figures 7 and 8 but for the outcome of labor force non-participation. The scatterplots in Figure 9 show no systematic relationship between the change in labor force participation and the share of the area uninsured and under 400 percent of FPL prior to the ACA. Similarly, Figure 10, which shows the results year by year, also suggests that the null results we estimate, on average, for the post-ACA period do not appear to change dramatically over the 2014–2017 period.

C. Robustness Checks

We explore the sensitivity of our analysis to the treatment of pre-trends and other alternative specifications. Table 7 reports the results from running variations of Equations (1) and (2) after adjusting for one U^*-specific linear pre-trend (instead of 1,078 PUMA-specific trends) and including state-by-year fixed effects in addition to adjusting for PUMA-specific pre-trends with our two main outcome variables, an indicator for health insurance coverage and an indicator for not in the labor force. This table also includes our original results from Tables 2 and 4 for comparison. As shown in the table, both the signs and magnitudes of our results are consistent with those we report in our main analysis across these specifications.

We also examine the robustness of our results to different definitions of geographic areas. As mentioned previously, our analysis uses aggregated PUMAs in order to include years prior to the change in PUMA definition, which allows a more systematic analysis of pre-trends that could otherwise confound our results. However, using these aggregated PUMAs results in approximately half the number of geographic areas and coarser variation than would be present otherwise. We examine the robustness of our

[32] We also estimate the effect on hours unconditional on working and find qualitatively and quantitatively similar findings.

Table 6

Effect of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Not in the Labor Force by Observable Characteristics

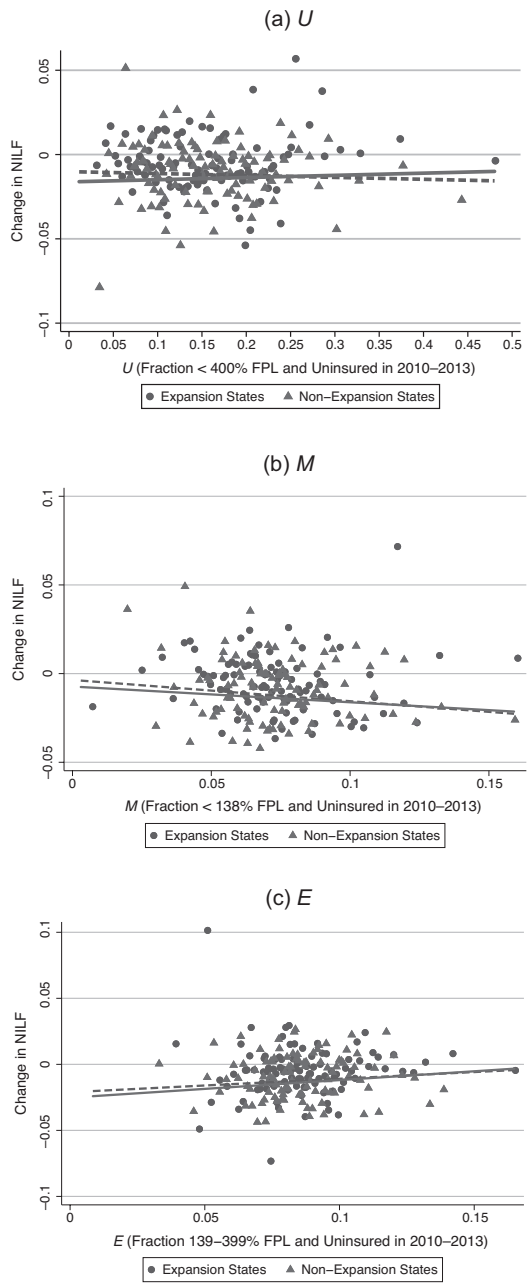
Variables	(1) Non-Minority	(2) Minority	(3) Childless Adult	(4) Has Child Under 18	(5) HSG or Less	(6) Some College or More
Panel A						
Post × *U**	–0.0084	0.0414*	–0.0067	0.0472**	0.0284	0.0025
	(0.0214)	(0.0240)	(0.0285)	(0.0201)	(0.0328)	(0.0209)
Expansion × Post	0.0018	0.0025	0.0026	0.0011	0.0033	0.0017
	(0.0027)	(0.0037)	(0.0028)	(0.0029)	(0.0041)	(0.0023)
Exp × Post × *U**	–0.0207	–0.0315	–0.0137	–0.0353	0.0002	–0.0491
	(0.0369)	(0.0378)	(0.0374)	(0.0395)	(0.0424)	(0.0312)
Observations	8,687,410	3,991,917	8,392,147	4,287,180	4,746,421	7,932,906
Pre-ACA DV mean	0.2158	0.2438	0.2539	0.1738	0.3060	0.1741
Non-Exp states	0.2234	0.2539	0.2661	0.1732	0.3133	0.1782
Expansion states	0.2078	0.2352	0.2421	0.1743	0.2982	0.1703

Variables	(7) Male	(8) Female	(9) Young (26–44)	(10) Near Elderly (45–64)	(11) Married	(12) Not Married
Panel B						
Post × *U**	0.0298	–0.0048	0.0228	0.0052	0.0188	0.0047
	(0.0304)	(0.0208)	(0.0227)	(0.0259)	(0.0187)	(0.0301)
Expansion × Post	0.0001	0.0043	0.0025	0.0018	0.0030	0.0008
	(0.0030)	(0.0030)	(0.0024)	(0.0030)	(0.0025)	(0.0032)
Exp × Post × *U**	–0.0391	–0.0089	–0.0367	–0.0103	–0.0304	–0.0099
	(0.0380)	(0.0325)	(0.0320)	(0.0353)	(0.0271)	(0.0437)
Observations	6,190,333	6,488,994	5,579,169	7,100,158	7,816,808	4,862,519
Pre-ACA DV mean	0.1714	0.2782	0.1774	0.2711	0.2123	0.2445
Non-Exp states	0.1794	0.2853	0.1812	0.2819	0.2177	0.2560
Expansion states	0.1635	0.2712	0.1737	0.2605	0.2070	0.2335

Notes: The dependent variable is a dummy variable for not in the labor force, and each column corresponds to a separate subsample. "Non-Minority" indicates white non-Hispanic. "Has Child under 18" refers to individuals with at least one child living in the same household who is under 18. "HSG or Less" indicates that a high-school degree (including GED) or less is the highest educational attainment. "Male" refers to gender. "Young" is ages 26–44. "Married" refers to marital status. *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. All shares are standardized to have a mean of 0. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls include demographic controls (female, black, white, Asian, other, and Hispanic), age FEs, year FEs, PUMA FEs, and PUMA-specific pre-period time trends.

Figure 9

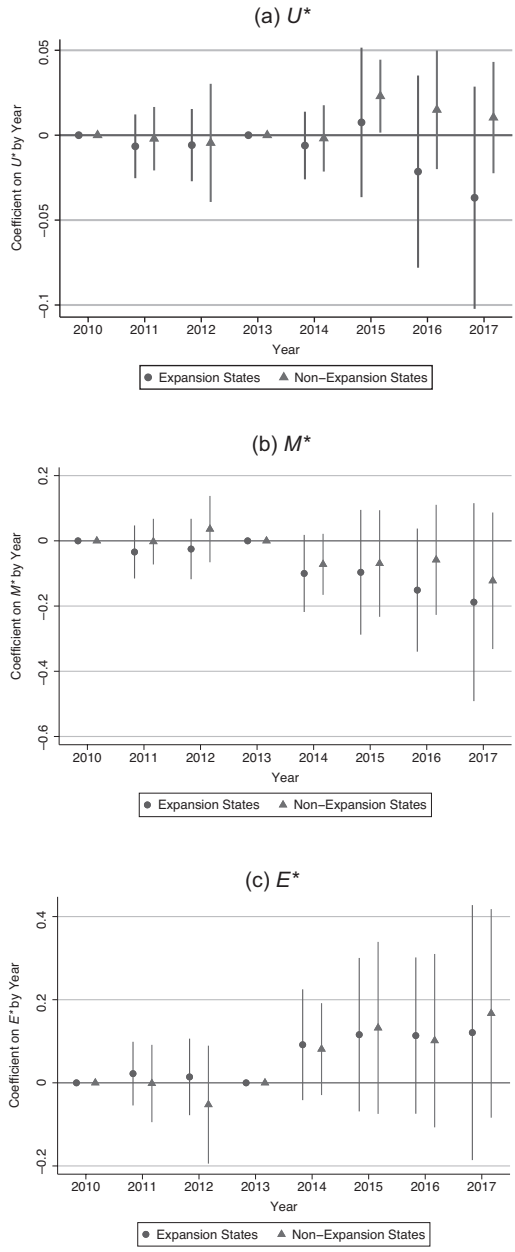
Change in Not in the Labor Force by *U*, *M*, *E*, and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure 10

Relationship between *U**, *M**, *E**, and Not in the Labor Force by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M*, E*, and U** are standardized to have a mean of 0.

Table 7

Robustness of Effects of Potential Medicaid/Exchange Enrollment and Medicaid Expansion on Health Insurance Coverage and Labor Force Participation

	Original with PUMA Specific Pre-Trends		*U** Pre-Trends		State × Year FEs and PUMA-Specific Pre-Trends	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Health Insurance Coverage						
Post × *U**	0.2467***	0.1416**	0.2469***	0.1644**	0.2829***	0.2169***
	(0.0636)	(0.0599)	(0.0671)	(0.0734)	(0.0338)	(0.0561)
Expansion × Post		0.0270***		0.0301***		
		(0.0044)		(0.0050)		
Expansion × Post × *U**		0.2884***		0.2557***		0.1096*
		(0.0667)		(0.0787)		(0.0615)
*U** × Trend			0.0123***	0.0123***		
			(0.0026)	(0.0026)		
Panel B. Not in the Labor Force						
Post × *U**	–0.0033	0.0133	–0.0038	–0.0059	0.0083	0.0225
	(0.0133)	(0.0135)	(0.0076)	(0.0164)	(0.0179)	(0.0277)
Expansion × Post		0.0022		–0.0011		
		(0.0023)		(0.0011)		
Expansion × Post × *U**		–0.0245		0.0002		–0.0237
		(0.0271)		(0.0199)		(0.0461)
*U** × Trend			0.0048**	0.0048**		
			(0.0025)	(0.0025)		
Observations	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327	12,679,327

Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0. Sample includes civilians ages 26–64 in the years 2010–2017. Block-bootstrapped standard errors, blocked by state, are in parentheses (***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$). Controls vary by column but all include demographic controls (female, black, white, Asian, other, and Hispanic), age FEs, year FEs, and PUMA FEs. Additionally, Columns 1 and 2 include PUMA-specific pre-period trends, Columns 2 and 3 include *U** pre-period trends, and Columns 4 and 5 include both PUMA-specific pre-period trends and state × year FEs. Coefficients reported for *U** × trend are taken from the regression estimates on the pre-period sample.

results to using the finer set of PUMAs, limiting the sample years to 2012–2017.[33] These results are consistent with our results using the full sample period and the aggregated PUMAs and provide additional evidence that the ACA led to increases in health insurance coverage with little evidence that labor market outcomes changed due to the ACA's provisions. Finally, we also examine the sensitivity of including states that expanded their Medicaid programs after January 1, 2014 as expansion states in our analysis and find that our results are qualitatively and quantitatively similar. Both of these sets of results are available upon request.

VI. CONCLUSION

The ACA represents the most significant change to the U.S. health care system since the mid-1960s and implemented a variety of policies that sought to reduce the number uninsured while simultaneously slowing the growth rate of health care spending. Our paper shows that a large share (70 percent) of the increase in health insurance coverage that occurred after the key components of the ACA were implemented was due to these provisions and occurred differentially in regions where a greater share of the population was uninsured and eligible for Medicaid or for private insurance subsidies.

We contribute to the literature by exploiting fine geographic variation in both pre-existing uninsurance and income to examine the ACA's impact on insurance coverage, its source, and the effect that ACA-induced increases in insurance coverage had on the labor market. Our analysis moves beyond looking for differences between states that chose to expand Medicaid and states that did not by exploiting differences in PUMAs with different potential ACA impacts within particular states while also comparing PUMAs with similar levels of shares uninsured and under 400 percent of FPL across states that did and did not choose to expand their Medicaid program. Our estimates also consider a wider set of labor market outcomes than in previous work, allow for more precise estimates of these effects, and explore whether the medium-term effects differ from those just a year or two after the policy change.

Due to the strong link between health insurance coverage and employment, the CBO predicted a sizable reduction in the labor force as a result of the ACA. Many opponents of the ACA pointed to these and similar predictions when criticizing the legislation (e.g., Heritage Foundation, 2013). On the other hand, many proponents of the ACA predicted that the legislation would have substantial positive economic effects, by, for example, reducing job lock and increasing self-employment (e.g., Council of Economic Advisors (CEA), 2014).

We examine what is arguably the most important component of the ACA's potential effect on the labor market, specifically that related to ACA-induced increases in health insurance coverage. We find no evidence that labor force participation changed significantly as a result of the uninsured having greater access to Medicaid and subsidized

[33] Due to the limited number of years, we omit PUMA-specific pre-trends from these specifications.

insurance. We find suggestive evidence that unemployment fell slightly as a result of the ACA in the areas where coverage was most affected by it but that the ACA had little impact on other margins such as self-employment or part-time work. The modest effects of the ACA-induced coverage increase on the labor market are, to some extent, surprising given many provisions of the ACA that, for example, substantially increased workers' incentives to retire, encouraged employers to hire part-time rather than full-time workers, increased the marginal tax rate for workers with coverage through the ACA exchanges, and encouraged self-employment.

The results in this paper take on additional significance when one considers recent legislative activity at both the state and federal level. For example, many states have recently decided to expand their Medicaid programs. Most recently, in November 2018, voters in Idaho, Nebraska, and Utah voted to expand their Medicaid programs as called for by the ACA, and these changes will take effect in 2019. Our results suggest that health insurance coverage will increase significantly in these states among those with low incomes but that there will be little effect (either positive or negative) on their labor force participation.

This evidence on the insurance coverage and labor market effects of the ACA may also be relevant for the 14 states that have not expanded their Medicaid programs, such as Texas, Florida, Georgia, and Mississippi.[34] These states may consider expanding Medicaid in the near future given the generous 90 percent federal match and given that their residents actually have more to gain from the legislation. Just prior to the ACA, 10.1 percent of residents aged 26–64 in these 14 states were uninsured and had incomes below 138 percent of FPL (our measure M from above). This is fully 50 percent greater than the corresponding share of 6.7 percent in the other 36 states and the District of Columbia. Further, these 14 states account for 8 of the 10 states with the highest share of residents who were without health insurance in 2017, with the other 2 states (Idaho and Nebraska) not having expanded yet by 2017 (Gallup, 2018).

Recent changes in federal policy could also have substantial effects on ACA-induced health insurance enrollment. Perhaps most importantly, the 2017 federal tax law eliminated the individual mandate, with this change taking effect in the 2019 calendar year. This change eliminated the tax penalty for going without health insurance, thereby reducing individuals' financial incentive to acquire coverage. Recent data from the Centers for Medicare and Medicaid Services (CMS) suggest that this change has had little effect on enrollment in the federal health insurance exchanges, with a decline of just 3 percent (from 8.8 million for 2018 to 8.5 million for 2019) in enrollment during the November 1–December 15 signup period (for the subsequent year) in the 39 states that use the federal marketplace for exchange enrollment (CMS, 2018).[35]

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[34] The other 10 states that have not yet expanded Medicaid are Alabama, Kansas, Missouri, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Wisconsin, and Wyoming. Survey evidence suggests that health insurance coverage fell in all but 1 (Alabama) of these 14 states from 2016 to 2017 (Gallup, 2018).

[35] The states of California, Colorado, Connecticut, Idaho, Maryland, Massachusetts, Minnesota, New York, Rhode Island, Vermont, Washington, and Washington, D.C. administer their own health insurance exchanges.

In this study, we focused on binary measures of health insurance coverage rather than on the generosity of that coverage. Future work that sheds light on the financial protection that this coverage provides and its effects on both access to health care and quality of that care is surely warranted given the large expenditure amounts involved and the millions of individuals with this coverage. Relatedly, while we consider several labor market outcomes, more work is clearly needed to estimate the effect of the legislation on wages and productivity. To the extent that the increase in health insurance coverage improves health, this may make workers more productive and lead to increased wages. Similarly, if workers are now more mobile, they may sort to jobs that are a better match for their skills, which could also influence productivity and wages. Employers may also adjust wages in response to changes in the costs of providing health insurance to workers and their dependents.[36] More work on these issues and related ones is important given the tens of millions of U.S. residents directly affected by the legislation through the ACA-induced increases in health insurance coverage.

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[36] On the one hand, some employers (especially large ones with more than 50 full-time workers) may start providing coverage to comply with the ACA's employer mandate. This could pass through in the form of lower worker wages. On the other hand, the cost to employers may fall if they choose to drop coverage given the availability of subsidies. This latter effect would be most relevant for small employers that are not directly affected by the employer mandate.

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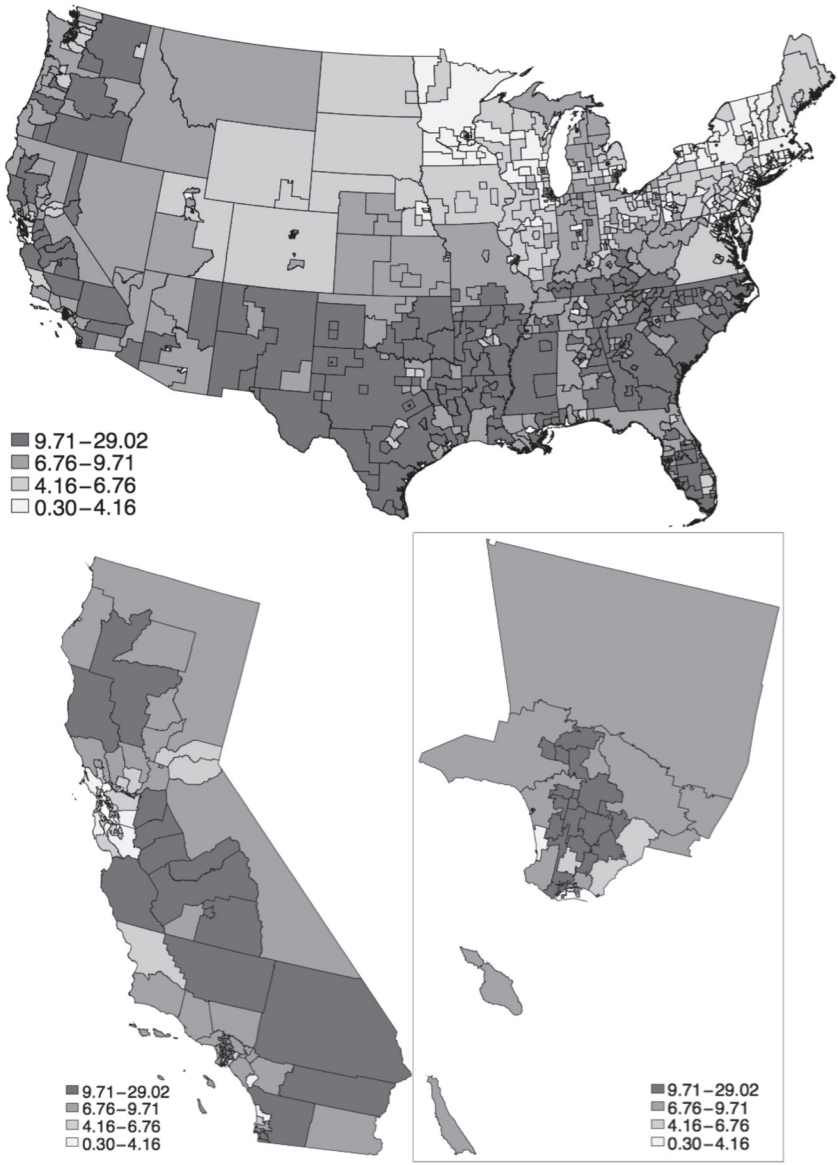
APPENDIX A: ADDITIONAL TABLES AND FIGURES

Figure A1

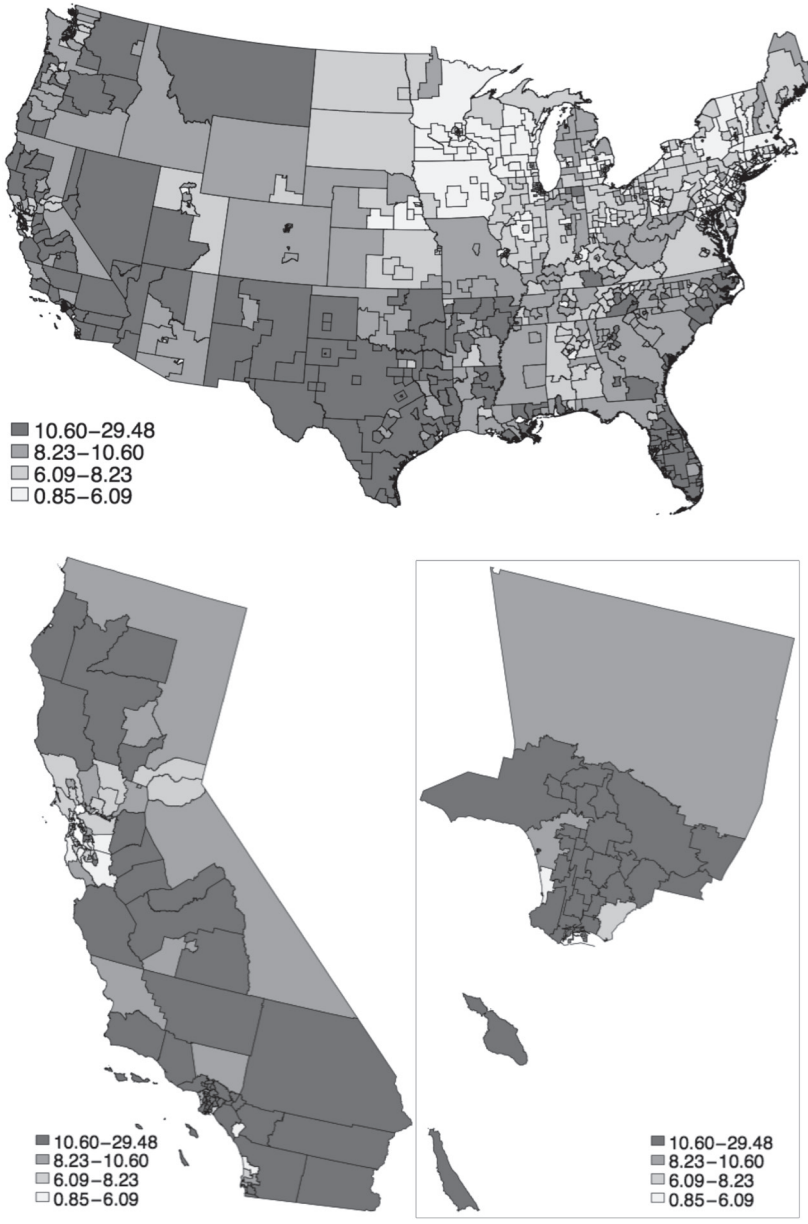
M in PUMAs across the United States, California, and Los Angeles County



Notes: *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013.

Figure A2

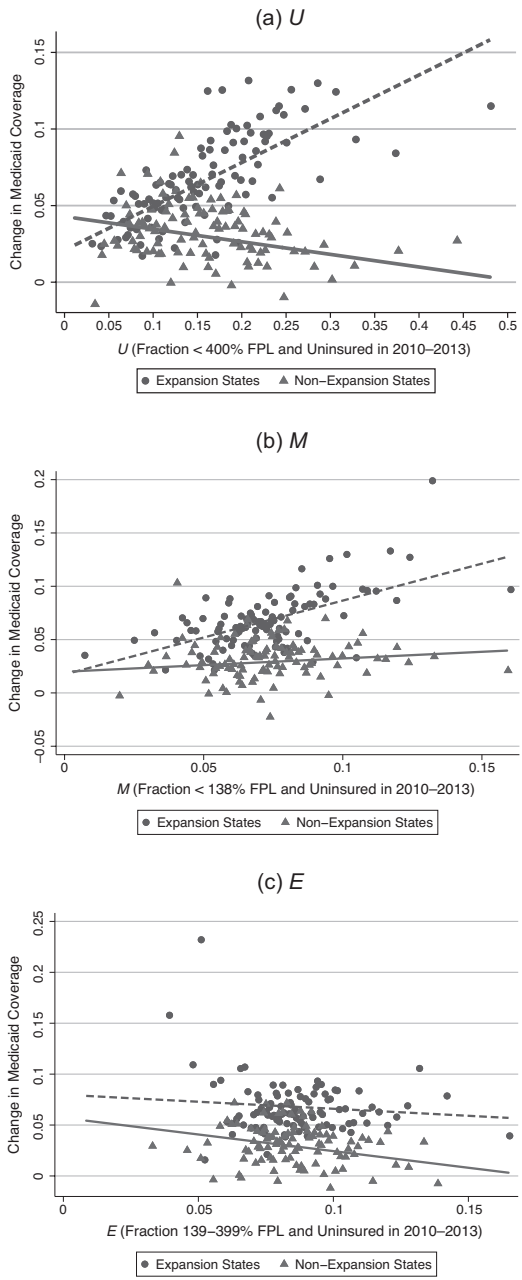
E in PUMAs across the United States, California, and Los Angeles County



Notes: *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399% FPL in 2010–2013.

Figure A3

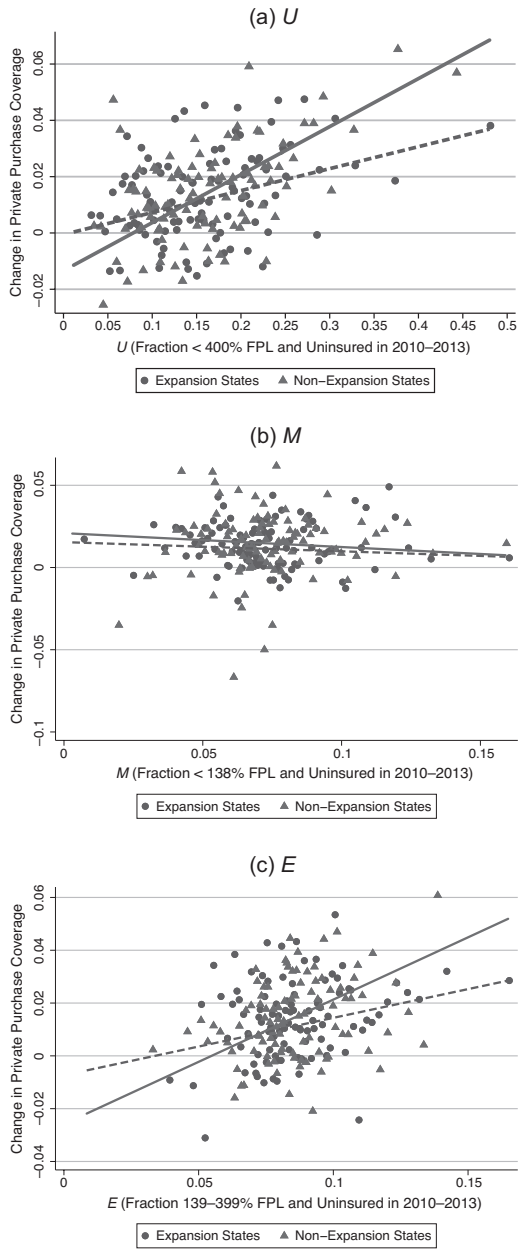
Change in Medicaid Coverage by *U, M, E,* and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure A4

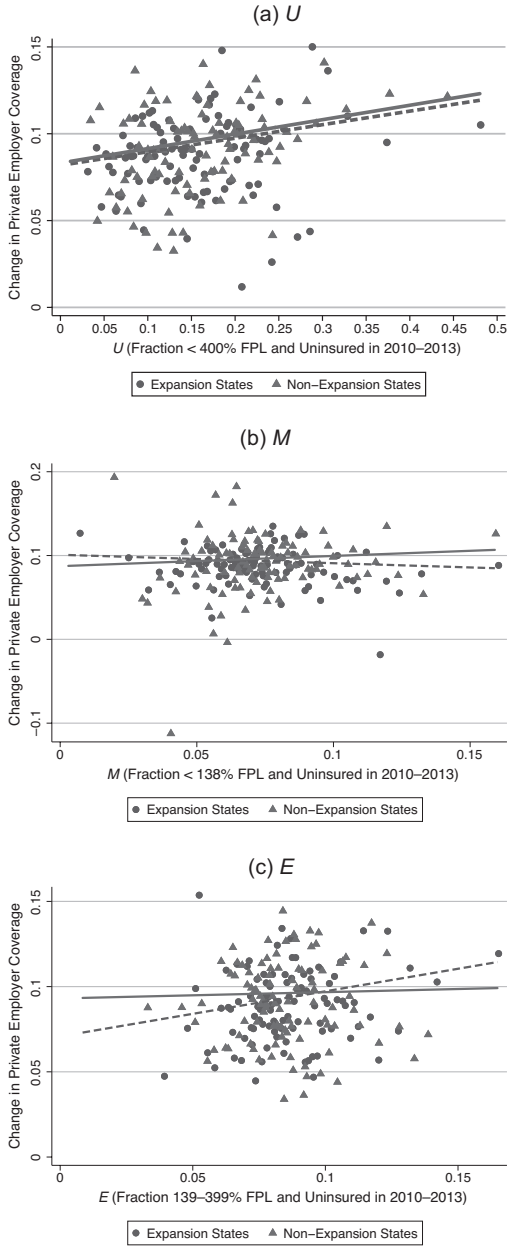
Change in Privately Purchased Coverage by *U, M, E,* and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure A5

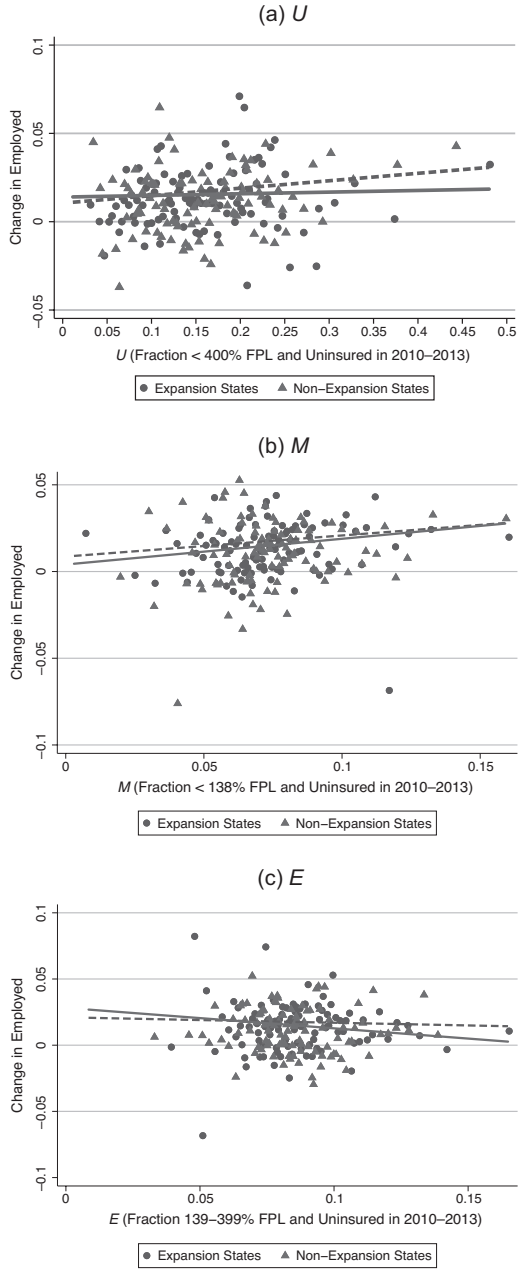
Change in Private Employer Coverage by *U*, *M*, *E*, and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure A6

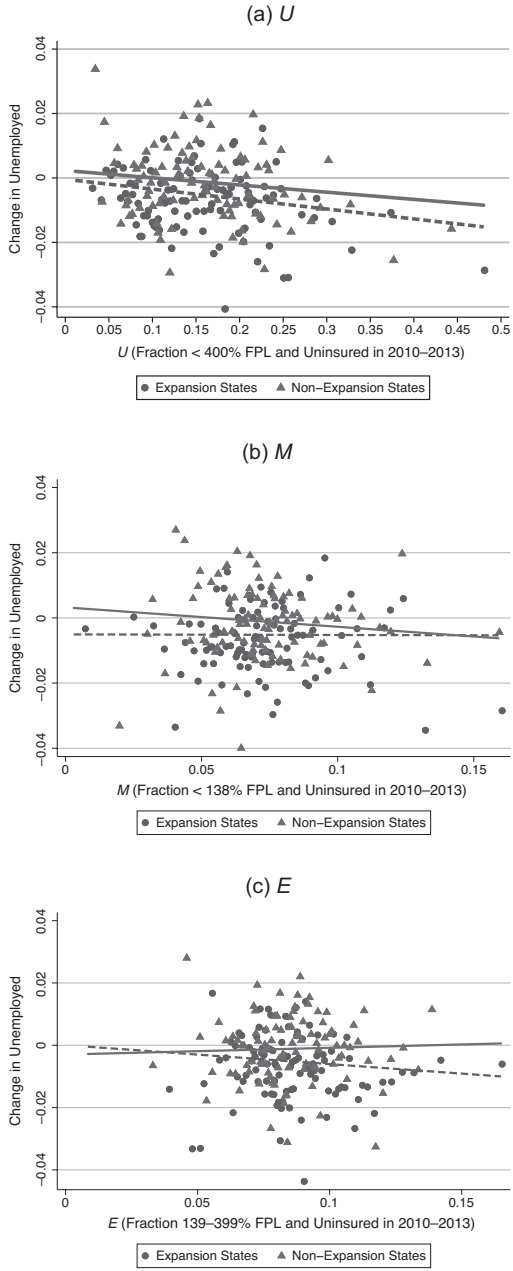
Change in Employment by *U, M, E,* and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure A7

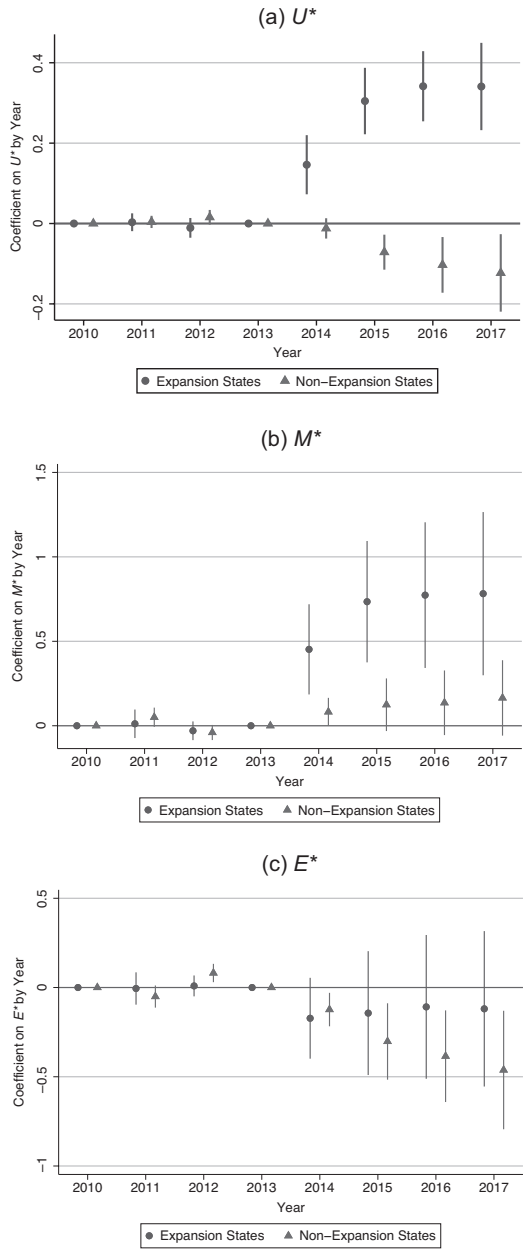
Change in Unemployment by *U, M, E,* and Medicaid Expansion Status



Notes: *U* refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M* refers to the share of individuals in a PUMA who are uninsured and within 0–138 percent FPL in 2010–2013. *E* refers to the share of individuals in a PUMA who are uninsured and within 139–399 percent FPL in 2010–2013.

Figure A8

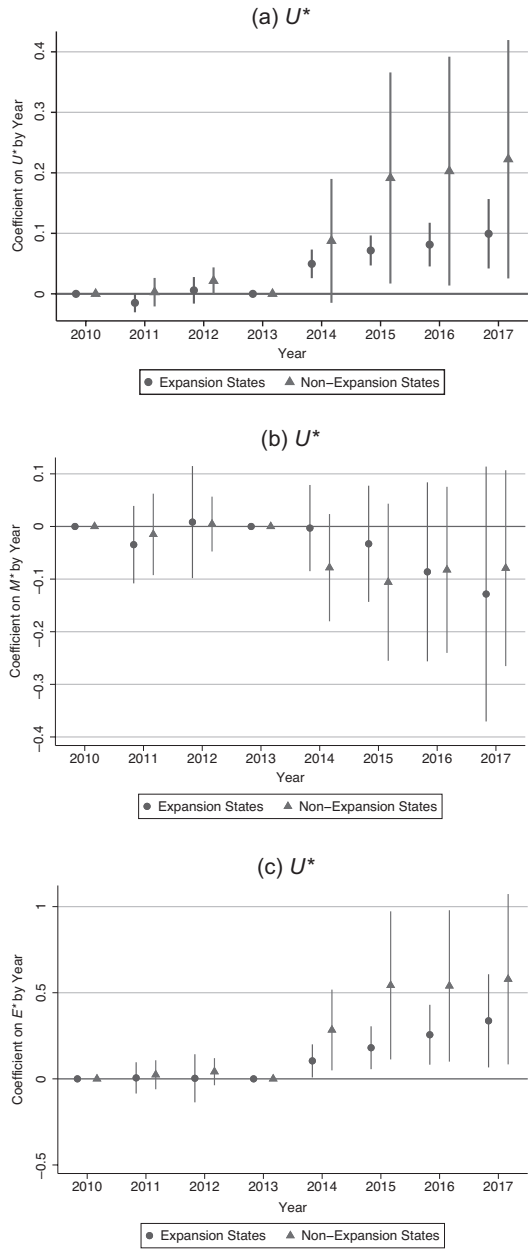
Relationship between *U**, *M**, *E**, and Medicaid Coverage by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0.

Figure A9

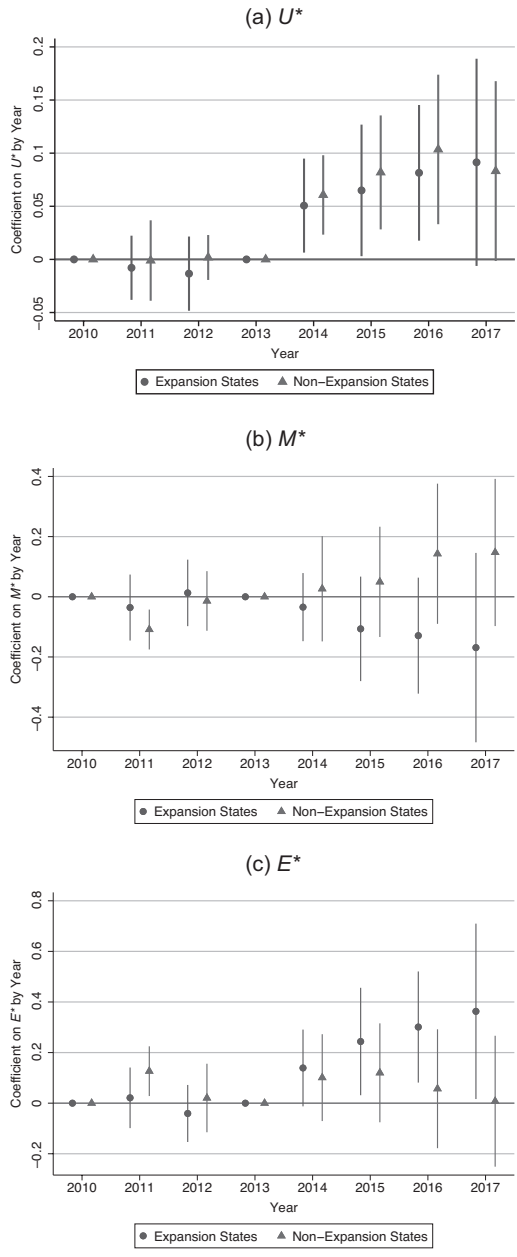
Relationship between *U**, *M**, *E**, and Privately Purchased Coverage by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0.

Figure A10

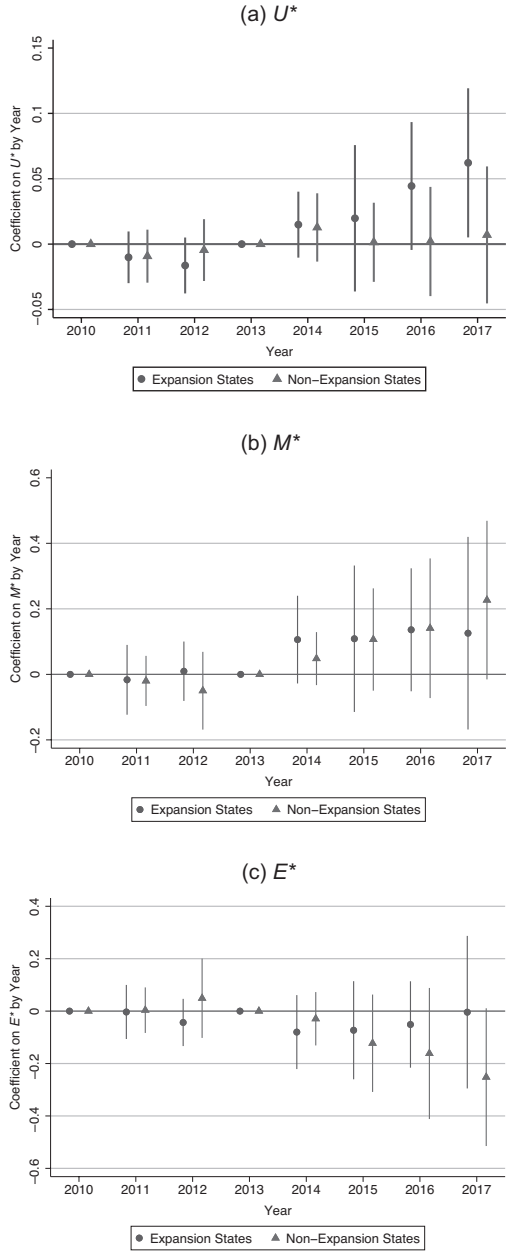
Relationship between *U**, *M**, *E**, and Private Employer Coverage by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0.

Figure A11

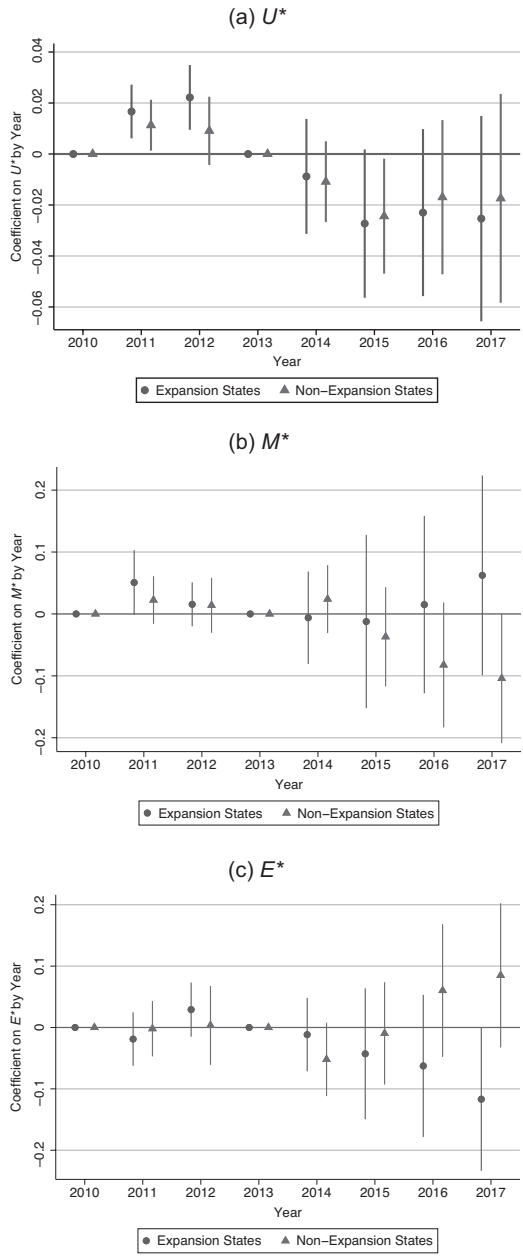
Relationship between *U**, *M**, *E**, and Employment by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0.

Figure A12

Relationship between *U**, *M**, *E**, and Unemployment by Year and Medicaid Expansion Status



Notes: *U** refers to the share of individuals in a PUMA who are uninsured and <400 percent FPL in 2010–2013. *M** refers to the share of individuals in a PUMA who are uninsured and 0–138 percent FPL in 2010–2013. *E** refers to the share of individuals in a PUMA who are uninsured and 139–399 percent FPL in 2010–2013. All shares *M**, *E**, and *U** are standardized to have a mean of 0.

Table A1

Reductions in Uninsured Rates by State, 2013 to 2016

Do you have health insurance coverage? (% No)

State	Uninsured, 2013 %	Uninsured, 2016 %	Change pct. pts.	Medicaid Expansion	2016 Sample
Alabama	17.7	13.6	–4.1	No	3,013
Alaska	18.9	11.7	–7.2	Yes	567
Arizona	20.4	11.0	–9.4	Yes	4,403
Arkansas	22.5	10.2	–12.3	Yes	2,014
California	21.6	10.5	–11.1	Yes	17,251
Colorado	17.0	9.3	–7.7	Yes	3,479
Connecticut	12.3	6.2	–6.1	Yes	2,055
Delaware	10.5	8 .0	–2.5	Yes	465
Florida	22.1	14.6	–7.5	No	10,943
Georgia	21.4	15.6	–5.8	No	5,309
Hawaii	7.1	3.2	–3.9	Yes	507
Idaho	19.9	14.0	–5.9	No	1,253
Illinois	15.5	7.7	–7.8	Yes	5,513
Indiana	15.3	8.6	–6.7	Yes	3,836
Iowa	9.7	3.9	–5.8	Yes	2,028
Kansas	12.5	12.3	–0.2	No	1,740
Kentucky	20.4	7.8	–12.6	Yes	2,638
Louisiana	21.7	12.5	–9.2	Yes	2,426
Maine	16.1	9.1	–7.0	No	979
Maryland	12.9	7.3	–5.6	Yes	3,204
Massachusetts	4.9	3.2	–1.7	Yes	3,860
Michigan	12.5	7.0	–5.5	Yes	4,872
Minnesota	9 .5	5.6	–3.9	Yes	3,395
Mississippi	22.4	17.2	–5.2	No	1,655
Missouri	15.2	10.4	–4.8	No	3,341
Montana	20.7	11.3	–9.4	Yes	1,074
Nebraska	14.5	11.2	–3.3	No	1,460
Nevada	20.0	11.2	–8.8	Yes	1,481
New Hampshire	13.8	7.6	–6.2	Yes	743
New Jersey	14.9	9.3	–5.6	Yes	4,569
New Mexico	20.2	9 .0	–11.2	Yes	1,443
New York	12.6	7.0	–5.6	Yes	10,303
North Carolina	20.4	13.6	–6.8	No	5,785
North Dakota	15.0	6 .9	–8.1	Yes	514
Ohio	13.9	7.4	–6.5	Yes	6,432
Oklahoma	21.4	16.3	–5.1	No	2,667
Oregon	19.4	9 .1	–10.3	Yes	3,015
Pennsylvania	11.0	6.3	–4.7	Yes	7,980
Rhode Island	13.3	7.0	–6.3	Yes	635
South Carolina	18.7	13.1	–5.6	No	2,692
South Dakota	14.0	9.9	–4.1	No	546
Tennessee	16.8	11.8	–5.0	No	4,194
Texas	27.0	20.5	–6.5	No	13,280
Utah	15.6	9.7	–5.9	No	2,090
Vermont	8.9	6.1	–2.8	Yes	527
Virginia	13.3	9 .8	–3.5	No	5,044
Washington	16.8	7.2	–9.6	Yes	4,491
West Virginia	17.6	6.1	–11.5	Yes	1,107
Wisconsin	11.7	6.2	–5.5	No	3,384
Wyoming	16.6	12.9	–3.7	No	549

GALLUP-HEALTHWAYS WELL-BEING INDEX

Source: Witters (2017)

Table A2

Illustration of Hypothetical ACA-Induced Changes in Labor Market Outcomes

	Post-ACA Status					
Pre-ACA Status	Not in the Labor Force/Uninsured	Employed/ Uninsured	Unemployed/ Uninsured	Not in the Labor Force/ Insured	Employed/ Insured	Unemployed/ Insured
Not in the labor force/Uninsured				No change in LM outcomes	↑ LFP, ↑ Emp, no change in Unemp	↑ LFP, no change in Emp, ↑ Unemp
Employed/Uninsured				↓ LFP, ↓ Emp, no change in Unemp	No change in LM outcomes	No change in LFP, ↓ Emp, ↑Unemp
Unemployed/Uninsured				↓ LFP, no change in Emp, ↓Unemp	No change in LFP,↑ Emp, ↓Unemp	No change in LM outcomes
Not in the labor force/Insured						
Employed/Insured						
Unemployed/Insured						

Table A3

PUMAs with Lowest and Highest Values of *U*

Lowest Values of *U*
Middlesex (Southeast) and Norfolk (Northeast) Counties—Newton City and Brookline Town
District of Columbia (West)
Honolulu County—Moanalua to Pearl City
NYC–Manhattan Community District 8—Upper East Side
Montgomery County (South)—Bethesda, Potomac, and North Bethesda
Highest Values of *U*
Los Angeles County (Central)—LA City (Central/Koreatown)
Hidalgo County—Alamo, Donna, McAllen, Mission, Pharr, San Juan, Hidalgo, Weslaco, Mercedes, and Edinburg City
Los Angeles County—LA City (Central/University of Southern California and Exposition Park)
Los Angeles County (Central)—East Los Angeles
Los Angeles County (South and Central)—LA City (Southeast/East Vernon, South Central/Westmont, and South Central/Watts)