The Impact of the ACA Medicaid Expansion on Disability Program Participation[⊗]

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ABSTRACT

In addition to providing cash payments, the disability benefit programs Supplemental Security Income (SSI) and Social Security Disability Income (SSDI) offer health insurance to recipients, increasing the value of participating in those programs. However, individuals with disabilities typically must leave their jobs to apply for disability benefits, and may therefore be without health insurance during the disability application process. The Affordable Care Act (ACA) expanded the availability of Medicaid for individuals with family incomes somewhat higher than the means-tested income limits for SSI, changing the relative benefit of participating in disability programs as well as the cost of exiting the labor market to apply for disability program benefits. In this paper, we explore the impact of expanded access to Medicaid through the ACA on participation in disability benefit programs. Using the fact that the Supreme Court decision of June 2012 made the Medicaid expansion optional for the states, we compare changes in county-level SSI and SSDI caseloads in contiguous county pairs that cross state lines. This approach allows us to focus narrowly on differences arising from the ACA Medicaid expansion choice by comparing changes over time in outcomes from U.S. counties on either side of a state border in cases where one state expanded Medicaid and the other did not. We find robust evidence of increases in insurance coverage due to the Medicaid expansion using our county border discontinuity identification strategy, of magnitudes similar to those found in previous work. However, our results for disability program participation indicate any effects are small and are limited to effects on SSI. We find that Medicaid expansion increased SSI participation by between 1.5 and 3 percent, with the larger effect occurring in counties with high rates of SSI participation among children prior to the expansion. We find no statistically significant impacts on SSDI caseloads.

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I. Introduction

One of the primary goals of the Affordable Care Act (ACA) of 2010 was to expand health insurance coverage and reduce the number of uninsured. As noted by Buchmueller, Ham, and Shore-Sheppard (2016), expanded eligibility for Medicaid was to be an important element in achieving this goal, in the process fundamentally changing the nature of Medicaid. From its inception, Medicaid was narrowly targeted at only subgroups of the poor: those who were elderly, disabled, or single parent families who also qualified for cash assistance. By including a provision intended to expand Medicaid to cover all individuals up to 138 percent of the federal poverty level, the ACA initiated a significant increase in the availability of public insurance beyond those narrowly targeted groups.

Prior to the Medicaid expansion, the disability benefit programs Supplemental Security Income (SSI—the federally financed program providing cash assistance to low-income individuals with disabilities) and Social Security Disability Income (SSDI—the portion of the Social Security program that pays benefits to workers with sufficient work history who have become disabled) represented paths to public health insurance for beneficiaries (Medicaid in the case of SSI, and Medicare in the case of SSDI). These health benefits increase the value of participating in those programs beyond the cash payments, particularly for a population with health conditions that make them likely to value health insurance highly. The ACA, by expanding the availability of Medicaid for individuals with family incomes somewhat higher than the means-tested income limits for disability programs, may reduce participation in SSI, and to a lesser extent, SSDI. Alternatively, as noted by Maestas, Mullen, and Strand (2014), individuals with disabling health conditions may be reluctant to quit their jobs to apply for disability benefits, since they would lose employer-provided health insurance during the lengthy

application process. The expansion of Medicaid access through the ACA might reduce this "employment lock" and increase disability program applications and participation. Improved access to health insurance could also help individuals diagnose and document health conditions, making it easier for their disability benefit applications to be approved.

Understanding the effects of the ACA Medicaid expansion on disability benefit caseloads is important for a number of reasons. First, disability rates in the United States are high and rising. Evidence suggests that roughly 13-19 percent of the population have disabilities, and about half of those are in the age 18-64 population that would be most likely to be affected by the ACA (Brault 2012, p. 4). In addition, rates of disabling health conditions and disability benefit receipt have grown substantially in recent decades (Autor and Duggan, 2003; Case and Deaton, 2015). The growth in disability benefit receipt is of particular concern given the sizeable public outlays on these programs (approximately $143 billion for SSDI and $55 billion for SSI respectively in 2015 (Congressional Budget Office 2016, Social Security Administration 2016), and concerns about the possible work disincentives associated with these programs. More generally, understanding the relationship between health insurance provision and disability assistance has important policy implications.

In this paper we explore the impact of expanded access to Medicaid through the ACA on participation in disability benefit programs. To identify the impact of expanded access to Medicaid, we use the fact that the Supreme Court decision of June 2012 changed the implementation of the ACA, making the Medicaid expansion optional to the states. In particular, we compare changes in county-level SSI and SSDI caseloads from the Social Security Bulletin's Annual Statistical Supplement in approximately 500 contiguous county pairs that cross state lines where one state took up the expansion and the other did not. Counties bordering each other

are more likely to share similar labor markets, are likely to be affected by the same local trends, and are more likely to share macroeconomic shocks than are bordering states more generally. This state border county approach allows us to focus narrowly on differences arising from the ACA Medicaid expansion choice by comparing changes over time in outcomes from U.S. counties on either side of a state border. We examine both an indicator of whether the county was in a state that expanded Medicaid after the ACA and continuous measures of the state Medicaid income eligibility limits over time. This second approach allows us to exploit additional variation across states and over time in Medicaid income eligibility. One concern that might arise with this identification strategy is the possibility that individuals might migrate across county lines in order to obtain Medicaid. However, evidence to date suggests that any such migration is likely to be minimal. Goodman (2017) finds no evidence of a migration response to the ACA Medicaid expansion at the public-use microdata area (PUMA) level, consistent with findings by Schwartz and Sommers (2014) for earlier health insurance expansions. The results suggest that low-income people do not migrate in response to Medicaid eligibility, and the authors can rule out all but very small migration responses.

Using data from the Census Bureau's Small Area Health Insurance Estimates at the county level, we first show that our border-county expansion discontinuity strategy successfully estimates Medicaid expansion effects of magnitudes similar to those found in the existing literature. We then examine SSI and SSDI caseloads and find that any effects on disability program participation are small and are limited to effects on SSI. We find that Medicaid expansion increased SSI participation by between 1.5 and 3 percent, with the larger effect occurring in counties with high rates of SSI participation among children prior to the expansion. We find no statistically significant impacts on SSDI caseloads.

II. Background and Previous Literature

Both SSI and SSDI have two sets of eligibility criteria for potential beneficiaries. To receive SSI, an individual must meet the medical standard of disability and must have income and resources below certain standards, but need not have a work history. To receive SSDI, an individual must meet the same medical standard of disability and must have sufficient work history to qualify. One main criterion for eligibility is that the individual must be unable to engage in "substantial gainful activity"—work that would pay more than a set amount.[1] Thus it is unlikely that potentially SSI- or SSDI-eligible individuals with disabilities could obtain health insurance through an employer, the most common source of health insurance for nonelderly adults in the United States. In the case of SSI, it is also unlikely that the recipient would have health insurance through a spouse's employer; most jobs offering health insurance would pay a salary that exceed the very low household income limits for SSI.

Since the process for determining whether an individual meets the medical standard for disability is lengthy, an individual with disabilities faces the prospect of a substantial delay between the time of application and the time of disability determination. Moreover, for SSDI there is a five-month waiting period after disability begins before payments can begin and an additional 24 months before Medicare can begin. For those ineligible for Medicaid, applying for disability may require going without health insurance for a period of months or years.

There are several pathways through which the changes in health insurance access provided by the ACA Medicaid expansion may affect SSI and SSDI participation. First, the Medicaid expansion represents an alternative means of obtaining health insurance that does not

[1] The disability determination process contains five steps, of which the substantial gainful activity test is the first. See Lahiri et al. (1995) for a detailed discussion of the disability determination process.

require participation in a disability program and a lengthy disability determination process. Since its enactment until the ACA expansion, Medicaid has had a categorical requirement as well as an income requirement—that is, only individuals who are members of an eligible category may receive coverage under Medicaid, no matter how poor an individual is. These categories include children and their parents, and the disabled, blind, and elderly, with each category having its own set of income limits. Thus prior to the ACA Medicaid expansion, a disabled individual could only receive Medicaid if he or she was officially determined to be disabled and had income below the state's disability eligibility income limit. This income limit was typically the limit to receive SSI, after the state's optional SSI supplement, if it provided one, was accounted for, although in some cases states raised their disability limits somewhat higher under a provision allowing states to cover disabled individuals with somewhat higher incomes (see Wagner 2015 for a discussion of this pathway). The ACA Medicaid expansion allowed states to base Medicaid eligibility solely on income, eliminating the categorical requirement. By giving access to health insurance solely as a function of income, this channel would tend to reduce participation in SSI and SSDI, particularly for those individuals who valued the health insurance benefit highly relative to the cash payment.

Second, as Maestas, Mullen, and Strand (2014) point out, the expansion of Medicaid access through the ACA may allow disabled individuals to quit their jobs to apply for disability benefits by giving them health insurance coverage throughout the lengthy application process. Reducing this "employment lock" would thereby increase disability program applications and participation. Such employment lock could also apply across different members of a family; since disability program participation leads to insurance coverage only for the disabled individual, Medicaid expansion could allow multiple members of a family to have insurance

coverage even if the former primary earner began receiving SSI or SSDI. Third, expanded access to Medicaid may make individuals more aware of the possibility of eligibility for additional public programs. This "information channel" would tend to increase participation in disability programs. Finally, by improving access to health insurance, the ACA Medicaid expansion could lead to an increase in disability program participation by giving individuals additional resources to diagnose and document health conditions. This is likely to be a longer run channel that would not be evident in the early years of the Medicaid expansion. The various pathways by which Medicaid expansion could affect disability program participation thus go in both directions. In the caseload-based analysis we use in this paper it will not be possible to distinguish the relative magnitude of the different pathways; we will only be able to see the overall sign of any effect. For this reason, we expect any measured effects to be relatively small since effects going in both directions may cancel each other out. Moreover, particularly since we only have data from the first two years of the Medicaid expansion, we expect estimated effects to be smaller for SSDI than for SSI both because SSI is means-tested and more likely to be taken up by individuals under 138 percent of the poverty line and because SSDI has a waiting period before benefits receipt.[2]

There is a small but growing literature on the relationship between public health insurance and disability program participation. Prior to the ACA Medicaid expansion, there was very little work done since there were few sources of variation in public health insurance independent of variation in disability program parameters. One exception is Yelowitz (1998), who uses data on changes in state average Medicaid expenditures between 1987-1993 and finds

[2] Even in the absence of a waiting period for SSDI, the work history requirement for SSDI means that potential SSDI recipients are relatively higher income and more likely to have had employer sponsored insurance, so the Medicaid expansion may be relatively less important for this group.

that increases in average Medicaid expenditures per disabled individual lead to increased growth in SSI program participation, indicating that the value of Medicaid affects the value of participation in SSI.

More directly relevant to our work, Maestas, Mullen, and Strand (2014) use changes in access to public health insurance that occurred as a result of health insurance reform in Massachusetts in 2006, comparing the change in county-level disability program applications in Massachusetts relative to the change in a group of counties in comparison states. They find modest increases in disability applications (1–3 percent) in Massachusetts relative to neighboring states in the first year after reform, and no difference after the first year. In addition, they look for evidence of heterogeneity in response to the reform, estimating the effect of the reform separately for counties with low versus high rates of insurance coverage prior to the reform. Interestingly, they find that the total number of disability applications (SSDI and SSI combined) *increased* in counties with relatively high rates of health insurance coverage prior to the reform (consistent with the release of employment lock) while applications for SSI *decreased* in counties with low rates prior to the reform (consistent with a decrease in the relative value of SSI). Somewhat surprisingly, applications for SSDI alone increased everywhere, even in counties with low coverage rates, where employment lock would have been relatively low. The authors suggest this pattern may occur due to the state's desire to shift individuals away from SSI, with its partially state-financed Medicaid, to SSDI, with its federally funded Medicare. In the case of the ACA Medicaid expansion, where state contributions to Medicaid for the newly eligible were considerably lower than for typical Medicaid, this pattern may be less likely to arise.

Following Maestas, Mullen, and Strand (2014), we investigate the possibility of heterogeneity in response to the ACA expansion by prior levels of health insurance coverage and also by prior levels of disability program participation among children. Counties where SSI participation among children is high may be more likely to have greater knowledge about the program and the steps needed to enroll. As a result, individuals in those counties may be more aware of the length of time disability enrollment requires and thus may be more prone to employment lock. Previous work by Furtado and Theodoropoulos (2016) suggests that information sharing is important in explaining SSI participation. In addition, different levels of child SSI participation may reflect unobserved differences in underlying health conditions or in the medical determination process in those areas.

Two other papers have used variation in Medicaid eligibility prior to the ACA expansion to investigate disability program participation. Using results from the Oregon Medicaid experiment (2008), in which a group of childless adults entered into a lottery to obtain Medicaid, Baicker et al. (2014) find no effect of being assigned Medicaid via the lottery on SSI participation. It is important to note, however, that in this case the treated group was designed to exclude the disabled (although some of the group undoubtedly were disabled) because the lottery targeted people who could not obtain Medicaid through some other avenue. Burns and Dague (2016) use Medicaid expansions to childless adults that occurred between 2001 and 2013 and individual data from the American Community Survey, comparing states with coverage for childless adults to states without coverage and also estimating similar specifications taking account of differences in income eligibility limits for childless adults across states. They find declines in SSI participation due to the expansion of Medicaid of 0.17 percentage points, a 7 percent relative decrease, which is consistent with a decrease in the relative value of SSI.

Finally, there are a few papers investigating the relationship between the ACA Medicaid expansion and disability benefit receipt directly. Chatterji and Li (2016) use the fact that states could expand Medicaid early under the ACA (between 2010 and 2013). Considering Connecticut, Minnesota, California, and the District of Columbia as "Early Expanders," Chatterji and Li try a difference-in-differences approach, comparing the change in state-level SSI/SSDI outcomes (applications, awards, and recipients for SSI, awards and recipients for SSDI) before and after the early Medicaid expansions in early-expanding states to the change in outcomes for that same time period in states that expanded Medicaid later, in January 2014 ("Later Expanders"). However, they find evidence that the assumption of parallel trends in the outcomes in the absence of the policy is likely not credible due to a lack of evidence for parallel trends in the pre-policy period. Instead they use a synthetic control approach, examining outcomes before and after the Medicaid expansion in each Early Expander state using a weighted combination of Later Expanders as a comparison group. They find that the early Medicaid expansion is associated with a reduction in SSI beneficiaries, but only in Connecticut. In the other states, they find little evidence that the early Medicaid expansions affected receipt of SSI/SSDI benefits.

Schimmel Hyde et al. (2016) also use a synthetic comparison approach to examine the ACA Medicaid expansion, but they focus on the full expansion in 2014 rather than the early expanding states. Sorting states into groups based on whether SSI and Medicaid were automatically linked in the state and whether the state had a "medically needy" program,[3] for each expansion state they construct a synthetic comparison state from non-expansion states in the same group. For each group, they estimate a propensity score model for the probability of

[3] "Medically needy program" refers to a potential element of a state Medicaid program in which the state allows members of potentially eligible groups whose incomes are above the state Medicaid program cutoff but who have high enough medical expenses to bring their income after medical expenses below the cutoff to qualify for Medicaid.

expansion at the Public Use Microdata Area (PUMA) level based on pre-expansion characteristics including SSI and SSDI application rates, demographics, and socioeconomic status and match PUMAs in expansion states to up to four PUMAs in the relevant comparison states. They find positive effects of the expansion on SSI and SSDI applications, but the estimates are small and statistically insignificant.

Our work represents several important contributions over the existing literature. First, we use a new identification strategy (differences in adjacent county pairs across state lines that differ in their Medicaid expansion status) that, compared to a state differences model, more plausibly satisfies the requirement that the differences be unrelated to local economic conditions or other factors that could be correlated with the outcome of interest. Second, we examine both the early expansions and the later expansions. Third, we allow for a richer specification of Medicaid eligibility, treating the Medicaid expansion not just as something that turns "on" or not at a given time, but allowing for the possibility of differential effects based on the levels of Medicaid income eligibility limits applying to disabled individuals prior to the ACA expansion. Finally, we examine heterogeneity based on the extent of insurance coverage in the county prior to a change in Medicaid eligibility and on the extent of SSI coverage among children in the county prior to the change in eligibility.

III. Empirical Approach

To identify the impact of expanded access to Medicaid via the ACA on SSI and SSDI caseloads, we use variation in non-disability-related Medicaid eligibility resulting from the June 2012 Supreme Court decision making the Medicaid expansion optional to the states. Like other studies of the ACA, we take advantage of variation by state and over time in the Medicaid

expansion. However, we conduct our analysis at the county level, and compare changes in disability benefit participation within contiguous county pairs that cross state lines, where one county is in a state that expanded while the other is in a state that did not. This approach has been used effectively to study the employment effects of state minimum wages (see Dube, Lester, and Reich 2010, 2016). Counties bordering each other are more likely to share similar labor markets, are likely to be affected by the same local trends, and are more likely to share macroeconomic shocks than are counties that do not share a common border (Allegretto et al. 2013; Dube, Lester, and Reich 2016). This state border county approach allows us to focus narrowly on differences arising from the ACA Medicaid expansion choice by comparing changes over time in outcomes from U.S. counties on either side of a state border. In this approach, the identifying assumption is that the change in the outcome of interest in the county in the non-expanding state is a reasonable counterfactual estimate for how the outcome of interest would have changed in its neighboring county across the border if the Medicaid expansion had not occurred.

A simple illustration of the nature of our research design can be seen in Figure 1, where the sub-state divisions shown are counties, and contiguous border county pairs that differed in their Medicaid expansion status as of April 2014 are highlighted. At that time, there were 488 discordant county pairs (where one county was in a state that had expanded Medicaid and the neighboring county was in a state that did not) out of a total of 1197 county pairs. In addition, we take advantage of two sources of variation not shown in Figure 1. First, states had different income eligibility limits for Medicaid for disabled individuals prior to the ACA expansion, which means that the ACA expansion represented a more substantial increase in access to public insurance in some states than in others. Second, the timing of Medicaid expansion was not

uniform, with some states choosing to expand earlier or in a gradual way, and others choosing to expand later. Some states began to expand starting in 2010, and while 21 states officially adopted the ACA Medicaid expansion on January 1, 2014, other states did not expand until later in 2014 or as late as 2016. (There is also some variation at the county level in the timing, although that variation is limited to California, which was the only state to roll out its early Medicaid expansion on a county-by-county basis.)[4]

More formally, consider the following specification estimated on a sample of all counties in the continental U.S. for the period 2010-2015:

$$(1) \qquad y_{ct} = \alpha + \beta Expand_{s(c)t} + X_{ct}\Gamma + \varphi_c + \tau_t + \varepsilon_{ct}$$

where y_{ct} denotes the various outcomes of interest (described in detail in the Data section below) for county *c* in time *t*, where *t* denotes year. The variable $Expand_{s(c)t}$, which is set at the state level (and thus denoted by s(c)), equals one for expansion states after they have expanded and equals zero for non-expansion states and for expansion states prior to their expansion.[5] The vector X_{ct} includes time-varying controls such as county unemployment rates, poverty rates, and demographic characteristics, and φ_c and τ_t are county and time fixed effects, included to account for unmeasured heterogeneity in outcomes across space and time that may be correlated with expansion status. This equation corresponds to the difference-in-differences approach used in the ACA Medicaid expansion literature thus far, although it has typically been estimated at the state level or individual level with state and year fixed effects rather than at the county level. The identifying assumption implicit in this approach is that after removing county-specific and time-

[4] The number of county pairs that are discordant using this method is considerably higher, varying by year from a high of 913 discordant county pairs in 2010 to 768 in 2015.

[5] As noted above California expanded early, offering access to insurance with a more limited benefits package and rolling out this expansion by county. In future versions of the paper we will incorporate this variation; currently we are accounting only for the expansion to full Medicaid coverage that occurred in 2014.

specific fixed effects, outcomes in expansion and non-expansion counties would be changing in the same way over time if the expansion had not occurred. We estimate this model using our county-level data, clustering our standard errors at the state level to account for the fact that the variation in expansion status is at the state level.

One empirical challenge is that there is a strong geographic correlation in which states chose to expand, and our outcomes of interest may be trending differently in different parts of the country. For example, if disability program participation is the outcome of interest and trends in Southern states in disability status are different from trends in states outside the South, the fact that many of the non-expansion states are in the South could lead to spurious correlation between expansion status and disability program participation. There are two primary ways researchers have dealt with this potential geographic heterogeneity. One possibility is to include state-specific trends (either linear trends or higher order such as quadratic or cubic) to try to control for different trends in outcomes in treated and untreated states. In future drafts we will estimate a second set of models using this method. The second possibility is the discordant state border county approach described above. In this approach, we will estimate a modified version of equation (1), limiting our sample to contiguous border counties:

$$(2) \qquad y_{cpt} = \alpha + \beta Expand_{s(c)t} + X_{ct}\Gamma + \varphi_c + \tau_{pt} + \varepsilon_{cpt}$$

where the subscript p denotes a county-pair and τ_{pt} is a pair-specific time effect instead of a national time effect. The use of the pair-specific time effect means that we are using only variation in expansion status within each contiguous border county pair. The identifying assumption is thus that a difference in expansion status within a contiguous border county pair is uncorrelated with pair-specific unobservables, that is, within a pair the outcome in the county with the expansion would have changed in the same way as in the non-expansion county if the

expansion had not occurred.[6] As a robustness check, we estimate the model of equation (1) on the subsample of counties used in the estimates of equation (2). This check is useful in determining the impact of the loss of statistical power resulting from moving to a smaller number of counties in our estimation sample as we can examine the changes both in parameter estimates and in confidence intervals as we change samples and estimation strategies.

In addition to estimating the models described above, we also estimate versions of equations (1) and (2) (and in future drafts, the extensions to (1) that include state-specific trends) using a measure of actual Medicaid income eligibility limits for disabled individuals in place of the *Expand* dummy. These eligibility limits are the maximum of the limit that applies to disabled individuals under previous Medicaid rules and the noncategorical Medicaid income limit established under the ACA, if a state chose to take the Medicaid expansion. Using the sample of all counties, we estimate

(1') $$y_{ct} = \alpha + \delta DisabledLimit_{s(c)t} + X_{ct}\Gamma + \varphi_c + \tau_t + \varepsilon_{ct}$$

and using the sample of contiguous border counties we estimate

(2') $$y_{ct} = \alpha + \delta DisabledLimit_{s(c)t} + X_{ct}\Gamma + \varphi_c + \tau_{pt} + \varepsilon_{cpt} \ .$$

where *DisabledLimit* denotes the maximum Medicaid income limits as a percent of the poverty line. Using the actual Medicaid income limits has the advantage that we incorporate information on the generosity of Medicaid eligibility prior to Medicaid expansion. Again we cluster the standard errors as discussed above.

[6] In this approach, one county may be paired with multiple other counties along a border (and thus will be in the data set multiple times), which may lead to correlation across county-pairs along the same border. Thus in addition to clustering our standard errors at the state level, in future drafts we will follow Dube, Lester, and Reich (2010, 2016) and cluster on state "border segment" also, where border segment is defined as the set of all counties on both sides of a border between two states.

In order to explore the possibility of heterogeneity in the response of SSI and SSDI caseloads to the ACA Medicaid expansion, following Maestas, Mullen, and Strand (2014) we conduct all of our analyses stratifying by whether the level of health insurance coverage among individuals with family incomes below 250 percent of the poverty level in the county was low in 2010 (measured as being below the median level for counties in 2010 using the Census Bureau's Small Area Health Insurance Estimates) or high. Counties with below-median health insurance levels could have relatively lower levels of "employment lock" while individuals in high-insurance counties may be more likely to have employment-related insurance that they would be hesitant to lose in order to apply for a disability program. We would thus expect that δ would be less negative in high-coverage counties than in low-coverage counties.

In addition to stratifying by health insurance coverage levels, we also estimate our models stratifying by the level of SSI participation among children in 2010. High pre-expansion child SSI participation (measured as being above the median level for counties in 2010) may indicate areas where there is greater knowledge about the program and the steps needed to enroll. As a result, individuals in those counties may be more aware of the length of time disability enrollment requires and thus may be more prone to employment lock. In addition, different levels of child SSI participation may reflect unobserved differences in underlying health conditions or in the medical determination process in those areas.

While the county border discontinuity approach has strong intuitive appeal since it narrows the comparison to an arguably more similar counterfactual, it is important to evaluate it against the typical state difference-in-difference approach that is common in the literature. While it is not possible to test the models against each other explicitly, since each involves a different identifying assumption, various methods of examining the validity of these models have

been suggested in the literature (see Dube, Lester, and Reich (2010, 2016), Allegretto, et al. (2013), and Neumark, Salas, and Wascher (2014)). In future drafts we will look for whether there is evidence that neighboring counties are more similar in observable characteristics than are randomly selected counties (an argument in favor of narrowing the comparison to neighboring counties) and we will compare trends in the outcomes of interest prior to the Medicaid expansions in the expansion counties, in the neighboring county controls, and in the all other county controls, since similar pre-trends in treatment and comparison counties would be evidence in favor of the assumption of similarity in the absence of the expansion.

IV. Data

We combine data from a number of different sources for our analysis. Our primary outcome of interest is disability program participation, which we measure using SSI and SSDI administrative caseload counts at the county level for the month of December. Both sets of caseloads are available on an annual basis from the Social Security Administration (the Social Security Bulletin's Annual Statistical Supplement in the case of SSI and OASDI Beneficiaries by State and County in the case of SSDI). We use data from 2010-2015, and we denominate these county caseloads by estimates of the prime age (20-64) population from the Census Bureau.

In addition to disability program participation, we examine health insurance coverage at the county level. While other researchers have already shown that the Medicaid expansion was associated with a significant increase in health insurance coverage (see, for example, Kaestner et al. 2015, Courtemanche et al. 2016), it is useful to investigate whether a similar increase can be seen at the county level using our border county identification strategy. Health insurance coverage data at the county level are only available from the Census Bureau's Small Area Health

Insurance Estimates (SAHIE) program, which produces estimates of the fraction with and without health insurance coverage by age, sex, and income group at the county level.[7] The SAHIE estimates are model-based, incorporating information from the American Community Survey, federal tax return data, data on Supplemental Nutrition Assistance Program caseloads, Medicaid and Children's Health Insurance Program caseloads, Census population estimates, County Business Patterns, and the 2010 Census. Unfortunately, SAHIE data are currently available only for the period 2010-2014, with 2015 data projected to become available in late spring 2017.

We determine the Medicaid income eligibility levels applying to the disabled and to all adults following Medicaid expansion from a variety of sources. Prior to the ACA, there were two eligibility pathways to Medicaid for disabled individuals: SSI-related eligibility and poverty-related eligibility. In most states, SSI-related eligibility includes all individuals eligible for federal SSI payments or for the optional state supplements. The income cutoffs for SSI recipients were typically below the poverty line, and in some states disabled individuals could access Medicaid with higher incomes. After the ACA-related Medicaid expansions, income limits were raised for adults regardless of disability status in a number of states. In our empirical work, we focus on the maximum income limit facing disabled adults or non-categorical recipients of Medicaid. We collected data on SSI and state supplement eligibility levels from the Social Security Administration State Assistance Programs for SSI Recipients through 2011 (when the SSA stopped publishing this report) and from state-specific resources collected on the Nolo website disabilitysecrets.com for 2012-2015. Our primary sources for Medicaid income eligibility levels are reports published by the Kaiser Family Foundation (Cohen Ross et al. 2009,

[7] While we would also like to examine Medicaid caseloads, unfortunately such data do not exist at the county level.

Heberlein et al. 2011, Heberlein et al. 2012, Heberlein et al. 2013, Brooks et al. 2015, Brooks et al. 2016, Kaiser Commission on Medicaid and the Uninsured 2010 and 2013, Watts, Cornachione and Musumeci 2016) and the Urban Institute's TRIM3 program rules database supplemented by information from state plan amendments available from the Centers for Medicare and Medicaid Services and state websites.

Our county level control variables include the unemployment rate, which we obtained from the Bureau of Labor Statistics Local Area Unemployment series, poverty rates obtained from the Census Bureau's Small Area Income and Poverty Estimates, and the share of the county level population that is non-Hispanic black and Hispanic, from the Census Bureau. We determined which counties are contiguous using two files from the Census Bureau, a 2015 county adjacency file, which lists all adjacent counties, regardless of type of adjacency, and a county adjacency file from 1991 which gives the type of adjacency. We adjusted the 2015 county-pair list to keep only counties that share a common land border or that are separated by a body of water but connected by a bridge or boat.[8]

Table 1 presents summary statistics for our sample. Panel A presents statistics for the all counties sample, and Panel B presents statistics for the contiguous counties sample. The two samples are very similar in their unemployment rates and poverty rates, but the contiguous counties sample has slightly higher rates of disability receipt and slightly lower percentages of black and Hispanic residents.

[8] We eliminated counties that meet at a corner only and counties that are separated by a body of water and that have no direct bridge or boat connection.

V. Results

A. Insurance Rates

We begin by estimating the impact of Medicaid expansion on uninsurance rates using our county-level data (Table 2). Column 1 examines all counties and includes county and year fixed effects while column 2 restricts to contiguous county pairs with the same specification. Column 3 is the sample from column 2 including contiguous-pair*year fixed effects, meaning identifying variation comes only from differential expansion in adjacent counties. There is a clear impact in all specifications: counties with Medicaid expansions had statistically significant reductions in the rate of uninsured of 1.5 percentage points or more. Moving from the all counties sample to the sample of contiguous counties only leads to no loss of statistical power; the estimated coefficient is slightly larger in absolute value in column 2, although the confidence intervals in the two columns are substantially overlapping. Our preferred specification in column 3 shows slightly larger effects relative to column 2, although again the confidence intervals largely overlap. Our estimate in this column is similar to those found in other work on the expansion that used state-level variation, albeit slightly smaller in magnitude (Kaestner et al. 2015, Courtemanche et al. 2016). In this specification, the only control variable that is statistically different from 0 is the percent Hispanic in the county, indicating that within a border county pair, an increase in the Hispanic population is associated with an increase in uninsurance. Given the model-based nature of the estimates of uninsured rates, however, we hesitate to place much weight on this finding. Columns 4 through 6 of Table 2 illustrate the effects on uninsured rates among the population under 250 percent of the poverty line. Not surprisingly, the effects are larger for this group. There is a more substantial impact of the Medicaid expansion on uninsurance rates for lower-income individuals.

In Table 3, we move away from the binary Medicaid expansion indicator used in Table 2, and instead focus on the income eligibility limit for disabled adults. As noted above, this is the maximum of the limit for the disabled and the non-categorical limit. Column 1 of Table 3 suggests that uninsurance falls when the Medicaid income limit rises, consistent with the Table 2 results. This result holds when restricting to the contiguous counties sample in column 2 and when including county-pair*year fixed effects in column 3. Using our preferred specification in column 3, raising the income limit from 0.75 (the rate applying to states with only SSI-related Medicaid eligibility in 2010) to 1.38 (the rate for the non-categorically eligible under the ACA) implies a 2.99 percentage point reduction in the uninsured, a nearly 18 percent reduction relative to the mean rate of 16.69 percent uninsured. Taking Tables 2 and 3 together, it is clear that the Medicaid expansions had the effect of increasing insurance coverage rates, even when comparing adjacent counties on either side of a state border. Counties with larger increases in Medicaid eligibility experienced larger drops in uninsured rates than their neighbors.

B. Supplemental Security Income

Next we turn to our main estimates of interest, the impact of Medicaid expansion on caseloads for the SSI program. Table 4 presents results from the simplest specification, where we classify a state as having taken up the Medicaid expansion if the noncategorical income limit was greater than zero. Column 1 presents results from our all counties sample and shows no statistically significant effect of the Medicaid expansion on SSI participation, as does the result in column 2 which uses the same specification but only contiguous counties. However, when we add the county pair by year fixed effects in Column 3, so that our results are driven entirely from variation within contiguous county pairs, the coefficient increases in magnitude and attains marginal statistical significance. The positive effect of the Medicaid expansion on SSI caseloads

is consistent with the employment lock channel outlined above dominating effects that would reduce SSI participation. The estimated overall impact of Medicaid expansion on SSI participation is small, however: the coefficient implies a 1.5 percent increase (based on an SSI participation rate of 3.2 percent).

In Table 5, we use the actual Medicaid income eligibility limit for disabled adults. While the signs of the estimated coefficients on the income limits are the same as in the expansion dummy specification in Table 4, the estimates are not statistically distinguishable from 0. The standard errors are large, suggesting we lack the statistical power to capture modest impacts.

We next stratify our sample to account for initial levels of disability benefit receipt among children, as a proxy for both general knowledge about disability programs and potential county-level differences in underlying health conditions. Table 6 presents these results. For each of the three specifications shown in previous tables, we now break out by whether the county had a 2010 child SSI participation rate below versus at or above the median. In this case, since the identification in our preferred specification comes from differences within a county pair, only county pairs where both are either low participation rate counties or high participation rate counties contribute to the identification.[9] In both sets of specifications that do not rely on identification across state borders the estimates are statistically insignificant. However, the contiguous county sample with county-pair*year effects now shows a positive and significant effect of the nonparent income limit, but only for the subsample with high initial disability receipt. The magnitude of this estimate indicates that moving from an initial eligibility limit of

[9] Overall, there are 435 county pairs where both counties are at or above the median, 347 county pairs where both are below the median, and 415 county pairs where one is at or above the median and one is below it.

75 percent of the poverty line to 138 percent would lead to a roughly 3 percent increase in SSI participation, still a small effect.

In Table 7 we do a similar exercise, but here we stratify by whether the counties had high or low rates of uninsurance among low-income individuals in 2010. Results from our preferred specifications, in Columns 5 and 6, show no significant effects of the income limit when we divide the sample in this manner. In this case, both of the estimated coefficients are positive, but the standard errors are so large we are unable to rule out a wide variety of magnitudes.

B. Social Security Disability Insurance

Our results for SSDI are shown in Tables 8-11. Here, although the point estimates are consistently positive, we do not find a statistically significant impact of Medicaid expansion on SSDI participation for our preferred specification incorporating county-pair*year effects for any specification of the expansion or for any subsample. It is possible that the effects are not evident within our sample because of the time horizon; the process of enrolling in SSDI is lengthy and it seems likely that impacts would not be immediately evident in the data.

Of more concern is the fact that the unemployment rate tends to enter negatively and statistically significantly, even in the specifications where the identification comes from differences within contiguous county pairs. While the identifying assumption of no correlation between differences in expansion status and pair-specific unobservables is not violated by the existence of observable variation in other variables within a county pair, the unemployment rate estimates for SSDI differ considerably from the estimates for the SSI and uninsurance outcomes (where the unemployment rate was smaller and consistently insignificant in the within-county specifications). The strength of the estimated unemployment rate relationship with the SSDI caseload points to a need for further exploration of the unemployment rate specification and

possible inclusion of dynamic measures such as lagged unemployment rates (see Klerman and Haider 2004 for a discussion of such issues in the context of welfare caseloads).

VI. Discussion and Conclusion

In this paper, we use a contiguous county approach to identify the effects of the ACA Medicaid expansion on disability benefit caseloads. We find robust evidence of increases in insurance coverage due to the Medicaid expansion using our county border discontinuity identification strategy, of magnitudes similar to those found in previous work. However, our results for disability program participation indicate any effects are small and are limited to effects on SSI. We find that Medicaid expansion increased SSI participation by between 1.5 and 3 percent, with the larger effect occurring in counties with high rates of SSI participation among children prior to the expansion. We find no statistically significant impacts on SSDI caseloads, a finding that is not entirely surprising given the fact that changes in SSDI applications would take longer to be seen in SSDI caseloads.

While our estimates are reasonable, this work is preliminary and subject to a number of caveats. First, our SSI and SSDI data are stocks of beneficiaries and not flows of applicants. Disability programs usually have very low exit rates, and as a result the stocks do not respond quickly to external policy changes (Klerman and Haider 2004). We are working on obtaining data at the county level from the Social Security Administration that would allow us to look at application flows directly. We are also applying for access to geocoded American Community Survey data with county identifiers. Individual data will allow us to examine responses by individuals who are observably affected by the income limit expansions as well as within-family interactions in program participation.

Thus far, our estimates indicate that there was very little net impact of the Medicaid expansion portion of the Affordable Care Act on disability program participation. However, there is potential for spillover effects across other safety net programs, and including spillover effects is important when considering the full costs and benefits of the Medicaid expansion. In other work, we are examining impacts of the ACA Medicaid expansion on participation in the Supplemental Nutrition Assistance Program, Temporary Assistance to Needy Families, receipt of the Earned Income Tax Credit, and impacts on low-skill employment.

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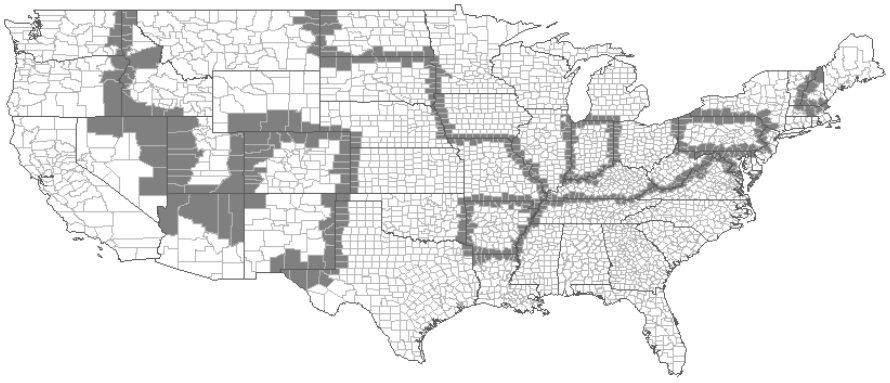
Figure 1: Contiguous Border County Pairs in the US with a Medicaid Expansion Differential, April 2014



Source: Medicaid expansion status determined from data on state actions collected by the Kaiser Family Foundation.

Table 1: Summary Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
	A. All Counties Sample			
SSI Adult Participation Rate	3.077	2.144	0.0	25.8
SSDI Adult Participation Rate	6.182	2.656	0.0	22.3
SSI Child Participation Rate	1.527	1.152	0.0	9.8
Percent Uninsured	17.132	5.544	2.7	41.4
Percent Individuals Below 250% FPL Uninsured	25.071	6.540	5.6	51.2
ACA Medicaid Expansion (Y/N)	0.179	0.383	0.0	1.0
Medicaid Disabled Income Limit (fraction of poverty line)	0.910	0.221	0.6	2.2
Percent of population in poverty	16.957	6.468	2.9	55.1
Unemployment Rate	7.499	2.970	1.1	28.9
Percent Nonhispanic Black	9.520	14.449	0.0	85.6
Percent Hispanic	8.806	13.464	0.0	95.8
County-Year Observations	18540			
B. Contiguous Counties Sample				
SSI Adult Participation Rate	3.209	2.169	0.0	19.1
SSDI Adult Participation Rate	6.410	2.749	0.0	22.3
SSI Child Participation Rate	1.553	1.257	0.0	9.4
Percent Uninsured	16.686	5.305	2.7	41.4
Percent Individuals Below 250% FPL Uninsured	24.404	6.323	5.6	49.2
ACA Medicaid Expansion (Y/N)	0.198	0.398	0.0	1.0
Medicaid Disabled Income Limit (fraction of poverty line)	0.926	0.234	0.6	2.2
Percent of population in poverty	16.987	6.562	3.7	55.1
Unemployment Rate	7.476	2.943	1.1	28.9
Percent Nonhispanic Black	9.134	14.496	0.0	85.6
Percent Hispanic	7.518	11.028	0.2	82.7
County-Year Observations	14364			

Notes: Data from 2010-2015, with the exception of uninsurance data which cover 2010-2014. For sources, see text.

Table 2. Effects of Medicaid Expansion on Uninsured Rates

Dependent variable:	Fraction Uninsured in County			Under 250% of Poverty Fraction Uninsured		
	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample	(4) All Counties Sample	(5) Contig Counties Sample	(6) Contig Counties Sample
Medicaid expansion	-1.500***	-1.664***	-1.977***	-2.724***	-2.896***	-3.129***
	(0.506)	(0.475)	(0.521)	(0.734)	(0.719)	(0.757)
Unemployment rate	0.093	0.082	0.051	0.125	0.128	0.009
	(0.061)	(0.056)	(0.083)	(0.086)	(0.082)	(0.121)
% in poverty	0.046***	0.071***	0.020	0.013	0.057**	0.007
	(0.015)	(0.022)	(0.021)	(0.019)	(0.027)	(0.022)
% Nonhispanic black	0.029	0.051	0.050	-0.169	-0.134	-0.111
	(0.094)	(0.128)	(0.124)	(0.117)	(0.179)	(0.196)
% Hispanic	-0.126	-0.008	0.398**	0.021	0.088	0.500**
	(0.150)	(0.146)	(0.155)	(0.169)	(0.233)	(0.216)
Observations	15,450	11,970	11,970	15,450	11,970	11,970
R-squared	0.970	0.967	0.985	0.957	0.954	0.978
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	NO	YES	YES	NO
County Pair*Year FE	NO	NO	YES	NO	NO	YES

Notes: Dependent variable is the percent of individuals uninsured in a county from the Small Area Health Insurance Estimates 2010-2014. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 3. Effects of the ACA Medicaid Expansion on Uninsured Rates, Specific Income Limits

	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample
Disabled income limit	-3.676***	-4.092***	-4.749***
	(1.059)	(0.899)	(0.843)
Unemployment rate	0.086	0.069	0.064
	(0.068)	(0.061)	(0.076)
% in poverty	0.052***	0.077***	0.025
	(0.015)	(0.021)	(0.020)
% Nonhispanic black	0.056	0.078	0.106
	(0.099)	(0.130)	(0.118)
% Hispanic	-0.151	-0.016	0.417**
	(0.147)	(0.132)	(0.164)
Observations	15,450	11,970	11,970
R-squared	0.972	0.970	0.987
County FE	YES	YES	YES
Year FE	YES	YES	NO
County Pair*Year FE	NO	NO	YES

Notes: Dependent variable is the percent of individuals uninsured in a county from the Small Area Health Insurance Estimates 2010-2014. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Effects of ACA Medicaid Expansion on SSI Participation

	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample
Medicaid expansion	-0.013	0.034	0.047*
	(0.034)	(0.021)	(0.025)
Unemployment rate	-0.023***	-0.028***	-0.005
	(0.008)	(0.007)	(0.011)
% in poverty	0.007	0.009***	0.008***
	(0.007)	(0.003)	(0.003)
% Nonhispanic black	0.007	-0.030	-0.048
	(0.016)	(0.039)	(0.034)
% Hispanic	-0.016	-0.025	-0.024
	(0.018)	(0.018)	(0.017)
Observations	18,540	14,364	14,364
R-squared	0.983	0.991	0.996
County FE	YES	YES	YES
Year FE	YES	YES	NO
County Pair*Year FE	NO	NO	YES

Notes: Dependent variable is the number of adult disabled SSI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Effects of the ACA Medicaid Expansion on SSI Participation, Specific Income Limits

	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample
Disabled income limit	-0.048	0.049	0.069
	(0.076)	(0.043)	(0.059)
Unemployment rate	-0.023***	-0.028***	-0.005
	(0.008)	(0.007)	(0.011)
% in poverty	0.007	0.009***	0.008***
	(0.006)	(0.003)	(0.003)
% Nonhispanic black	0.008	-0.030	-0.049
	(0.016)	(0.039)	(0.033)
% Hispanic	-0.017	-0.025	-0.023
	(0.017)	(0.018)	(0.017)
Observations	18,540	14,364	14,364
R-squared	0.983	0.991	0.996
County FE	YES	YES	YES
Year FE	YES	YES	NO
County Pair*Year FE	NO	NO	YES

Notes: Dependent variable is the number of adult disabled SSI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of ACA Medicaid Expansion on SSI Participation, Stratified by 2010 SSI Child Participation Rate

	(1) All Counties Sample Below Median	(2) All Counties Sample At/Above Median	(3) Contig Counties Sample Below Median	(4) Contig Counties Sample At/Above Median	(5) Contig Counties Sample Below Median	(6) Contig Counties Sample At/Above Median
Disability income limit	0.030	-0.125	0.066	0.047	-0.072	0.175**
	(0.044)	(0.128)	(0.058)	(0.053)	(0.099)	(0.079)
Unemployment rate	-0.019**	-0.025**	-0.020**	-0.032***	0.010	-0.009
	(0.008)	(0.009)	(0.009)	(0.010)	(0.025)	(0.016)
% in poverty	0.012*	0.005	0.011***	0.007**	0.010	0.010**
	(0.006)	(0.007)	(0.004)	(0.003)	(0.006)	(0.005)
% Nonhispanic black	0.025	0.005	-0.052	-0.015	-0.010	-0.055
	(0.038)	(0.022)	(0.039)	(0.052)	(0.036)	(0.056)
% Hispanic	-0.019	-0.017	-0.026	-0.006	-0.031	-0.052
	(0.012)	(0.032)	(0.017)	(0.044)	(0.024)	(0.073)
Observations	9,126	9,414	7,062	7,302	7,062	7,302
R-squared	0.944	0.979	0.964	0.989	0.988	0.996
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	NO	NO
County Pair*Year FE	NO	NO	NO	NO	YES	YES

Notes: Dependent variable is the number of adult disabled SSI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Effects of ACA Medicaid Expansion on SSI Participation, Stratified by 2010 Low Income Uninsurance Rate

	(1) All Counties Sample Below Median	(2) All Counties Sample At/Above Median	(3) Contig Counties Sample Below Median	(4) Contig Counties Sample At/Above Mean	(5) Contig Counties Sample Below Median	(6) Contig Counties Sample At/Above Median
Disability income limit	-0.069	-0.026	0.081*	0.029	0.118	0.064
	(0.089)	(0.091)	(0.045)	(0.082)	(0.117)	(0.092)
Unemployment rate	-0.034***	-0.013	-0.033***	-0.021**	-0.023*	0.006
	(0.010)	(0.010)	(0.010)	(0.008)	(0.012)	(0.012)
% in poverty	-0.000	0.015*	0.007*	0.012***	0.010	0.008
	(0.008)	(0.008)	(0.004)	(0.004)	(0.007)	(0.006)
% Nonhispanic black	0.032	-0.006	-0.026	-0.031	-0.040	-0.053
	(0.032)	(0.019)	(0.063)	(0.022)	(0.048)	(0.043)
% Hispanic	0.007	-0.026*	-0.001	-0.042***	-0.059	-0.033**
	(0.030)	(0.014)	(0.037)	(0.015)	(0.061)	(0.016)
Observations	9,270	9,270	7,788	6,576	7,788	6,576
R-squared	0.986	0.977	0.993	0.984	0.998	0.996
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	NO	NO
County Pair*Year FE	NO	NO	NO	NO	YES	YES

Notes: Dependent variable is the number of adult disabled SSI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Table 8: Effects of ACA Medicaid Expansion on SSDI Participation

	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample
Medicaid expansion	0.037	0.055*	0.010
	(0.037)	(0.031)	(0.030)
Unemployment rate	-0.059***	-0.051***	-0.035***
	(0.013)	(0.011)	(0.012)
% in poverty	0.015**	0.013**	0.006
	(0.006)	(0.005)	(0.004)
% Nonhispanic black	-0.107***	-0.139***	-0.150***
	(0.019)	(0.043)	(0.052)
% Hispanic	-0.118***	-0.118***	-0.050
	(0.021)	(0.028)	(0.058)
Observations	18,540	14,364	14,364
R-squared	0.989	0.991	0.996
County FE	YES	YES	YES
Year FE	YES	YES	NO
County Pair*Year FE	NO	NO	YES

Notes: Dependent variable is the number of adult disabled worker SSDI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9: Effects of the ACA Medicaid Expansion on SSDI Participation, Specific Income Limits

	(1) All Counties Sample	(2) Contig Counties Sample	(3) Contig Counties Sample
Disability income limit	0.071	0.098	0.042
	(0.074)	(0.064)	(0.062)
Unemployment rate	-0.059***	-0.051***	-0.035***
	(0.013)	(0.011)	(0.012)
% in poverty	0.015**	0.013**	0.006
	(0.006)	(0.005)	(0.004)
% Nonhispanic black	-0.107***	-0.139***	-0.150***
	(0.018)	(0.043)	(0.052)
% Hispanic	-0.118***	-0.117***	-0.051
	(0.021)	(0.028)	(0.059)
Observations	18,540	14,364	14,364
R-squared	0.989	0.991	0.996
County FE	YES	YES	YES
Year FE	YES	YES	NO
County Pair*Year FE	NO	NO	YES

Notes: Dependent variable is the number of adult disabled worker SSDI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Effects of ACA Medicaid Expansion on SSDI Participation, Stratified by 2010 SSI Child Participation Rate

	(1) All Counties Sample Below Median	(2) All Counties Sample At/Above Median	(3) Contig Counties Sample Below Median	(4) Contig Counties Sample At/Above Median	(5) Contig Counties Sample Below Median	(6) Contig Counties Sample At/Above Median
Disability income limit	0.090	0.043	0.119	0.063	0.053	0.063
	(0.080)	(0.096)	(0.074)	(0.068)	(0.129)	(0.126)
Unemployment rate	-0.067***	-0.051***	-0.069***	-0.033**	-0.049*	-0.040
	(0.015)	(0.015)	(0.017)	(0.013)	(0.027)	(0.025)
% in poverty	0.026***	0.009	0.030***	0.004	0.014	0.005
	(0.006)	(0.006)	(0.010)	(0.004)	(0.010)	(0.007)
% Nonhispanic black	-0.113**	-0.097***	-0.240***	-0.095*	-0.319***	-0.135**
	(0.044)	(0.025)	(0.077)	(0.050)	(0.116)	(0.067)
% Hispanic	-0.105***	-0.128***	-0.105***	-0.096*	-0.015	-0.218**
	(0.022)	(0.035)	(0.027)	(0.057)	(0.072)	(0.105)
Observations	9,126	9,414	7,062	7,302	7,062	7,302
R-squared	0.977	0.988	0.977	0.992	0.991	0.997
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	NO	NO
County Pair*Year FE	NO	NO	NO	NO	YES	YES

Notes: Dependent variable is the number of adult disabled worker SSDI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Effects of ACA Medicaid Expansion on SSDI Participation, Stratified by 2010 Low Income Uninsurance Rate

	(1) All Counties Sample Below Median	(2) All Counties Sample At/Above Median	(3) Contig Counties Sample Below Median	(4) Contig Counties Sample At/Above Median	(5) Contig Counties Sample Below Median	(6) Contig Counties Sample At/Above Median
Disability income limit	0.017	0.075	0.070	0.114	0.048	0.064
	(0.068)	(0.099)	(0.065)	(0.097)	(0.059)	(0.180)
Unemployment rate	-0.076***	-0.043***	-0.061***	-0.042***	-0.080***	-0.028
	(0.015)	(0.015)	(0.013)	(0.014)	(0.020)	(0.027)
% in poverty	0.005	0.024***	0.008**	0.018*	0.005	0.007
	(0.004)	(0.007)	(0.004)	(0.009)	(0.004)	(0.009)
% Nonhispanic black	-0.118***	-0.101***	-0.128**	-0.154***	-0.113*	-0.174*
	(0.035)	(0.021)	(0.063)	(0.046)	(0.060)	(0.096)
% Hispanic	-0.143***	-0.094***	-0.117*	-0.110***	-0.106*	-0.011
	(0.043)	(0.022)	(0.062)	(0.028)	(0.056)	(0.071)
Observations	9,270	9,270	7,788	6,576	7,788	6,576
R-squared	0.991	0.986	0.994	0.986	0.999	0.994
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	NO	NO
County Pair*Year FE	NO	NO	NO	NO	YES	YES

Notes: Dependent variable is the number of adult disabled SSI cases divided by the prime age population. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10