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THE EFFECT OF MEDICAID EXPANSION ON THE TAKE-UP OF DISABILITY  
BENEFITS BY RACE AND ETHNICITY

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The Effect of Medicaid Expansion on the Take-up of Disability Benefits by Race and Ethnicity  
Becky Staiger, Madeline S. Helfer, and Jessica Van Parys  
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**ABSTRACT**

Public disability programs provide financial support to 12 million working-age individuals per year, though not all eligible individuals take up these programs. Mixed evidence exists regarding the impact of Medicaid eligibility expansion on program take-up, and even less is known about the relationship between Medicaid expansion and racial and ethnic disparities in take-up. Using 2009-2020 Current Population Survey (CPS) data, we compare changes in Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) take-up among people with disabilities living in Medicaid expansion states, compared to people with disabilities living in non-expansion states, before and after Medicaid expansion. We further explore heterogeneity by race/ethnicity. We find that Medicaid expansion reduced SSI take-up among White and Hispanic respondents by 10% and 21%, respectively, and increased SSDI take-up among White and Black respondents by 9% and 11%, respectively. We further find that Medicaid expansion reduced the probability that disabled respondents had employer-sponsored health insurance by approximately 8%, an effect primarily observed among Black and other-race respondents, suggesting that expansion reduced job-lock among the SSDI-eligible, contributing to the observed increase in SSDI take-up.

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A data appendix is available at <http://www.nber.org/data-appendix/w31557>

# 1 Introduction

Approximately 7.5% of the working-age population in the United States has a self-reported disability (Bureau of Labor Statistics, 2022). The Social Security Administration (SSA) administers two financial assistance programs for people with disabilities. Supplemental Security Income (SSI) acts as a safety net of “last resort” to low-income people with disabilities who have limited employment history, while Social Security Disability Insurance (SSDI) provides benefits to people with disabilities who have significant prior work history (at least five of the last ten years) (Social Security Administration, 2022b). These payments represent a significant safety net against extreme poverty for this population.<sup>1</sup> Nearly 29% of the approximately 9.9 million SSDI recipients and 25% of the approximately 7.6 million SSI recipients derive 90-100% of their personal income from SSDI or SSI benefit payments (Messel and Trenkamp, 2022). And yet, there is evidence that not all individuals who are eligible for SSI or SSDI enroll, ultimately leaving money on the table (Elder and Powers, 2004).

Incomplete take-up of public programs is a broader policy puzzle (Currie, 2004). Among a wide portfolio of existing work seeking to answer this question, some studies have demonstrated that take-up in one public program can have spillover effects on take-up in another (Ham and Shore-Sheppard, 2005; Schmidt et al., 2020). For example, prior research has demonstrated that Medicaid expansion affects overall SSI and SSDI take-up, though results are mixed (Burns and Dague, 2017; Chatterji and Li, 2016; Maestas et al., 2014; Schmidt et al., 2020; Soni et al., 2017). Some studies have documented small but significant decreases in SSI enrollment following the Affordable Care Act’s (ACA) Medicaid expansion (Burns and Dague, 2017; Soni et al., 2017), suggesting that for some SSI enrollees who wish to remain in the workforce (and are unable to do so while receiving SSI), becoming eligible for Medicaid outside of the SSI pathway may have been a more attractive option. Other studies show no relationship between Medicaid expansion and SSI applications or benefit receipt (Chatterji and Li, 2016; Schmidt et al., 2020). Likewise, some studies show that Medicaid expansion increased SSDI take-up as more individuals became eligible for Medicaid coverage (Maestas et al., 2014), while other studies find no

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<sup>1</sup>Supplemental Security Income (SSI) provides an average monthly stipend of approximately \$623. Social Security Disability Insurance (SSDI) provides average monthly cash benefits of approximately \$1,358 (Social Security Administration, 2022a).

relationship (Schmidt et al., 2020).

Furthermore, very little research explores differences in SSI and SSDI take-up by race or ethnicity. This gap in the literature is significant given the higher rates of self-reported disability among Black individuals relative to non-Hispanic Whites (Goodman et al., 2017), and the ubiquity of racial inequities in other health domains, including life expectancy (Case and Deaton, 2021; Cullen et al., 2012; Dwyer-Lindgren et al., 2022), underlying chronic health conditions (Alexander and Currie, 2017; Boustan and Margo, 2014; Hicken et al., 2014; McGuire and Miranda, 2008; Morenoff et al., 2007), and health care access (Brown et al., 2016; Dickman et al., 2022; Johnston et al., 2021; Mahajan et al., 2021; Shi et al., 2014). Much of this gap is due to a lack of data, as the SSA stopped collecting race information in 2002 (Martin, 2016). Despite this limitation, researchers have used survey data to provide evidence that racial/ethnic minorities make up a disproportionate share of the SSI population, with Black and American Indian and Alaska Native (AIAN) Americans twice as likely to enroll in SSI as White individuals (Musumeci and Orgera, 2021).

Existing research also suggests that Black, Hispanic, and AIAN recipients report higher levels of poverty and smaller benefit payments than non-minority recipients in SSI and SSDI, on average (Hendley and Bilimoria, 1999; Martin, 2007; Martin and Murphy, 2014; Smith-Kaprosy et al., 2012; Tamborini et al., 2011). Though race/ethnicity is unlikely to be a causal determinant of any of these disparities, it could be a proxy for shared experiences and conditions that result in systematically distinct patterns of take-up and benefit receipt (Hendley and Bilimoria, 1999; Martin, 2007; Smith-Kaprosy et al., 2012). After adjusting for individual characteristics such as income, education, and geography, racial disparities in take-up may persist, and could reflect a broader context of structural bias and exclusionary actions towards non-white individuals. Policies that expand access to other safety net programs—such as Medicaid expansion—may exacerbate or mitigate racial and ethnic disparities in disability program receipt (Creedon et al., 2022).

Prevailing hypotheses regarding how Medicaid expansion affects take-up of SSI or SSDI among eligible individuals often consider the following trade-offs that individuals face. To qualify for SSI or SSDI, individuals must meet certain disability criteria and have earnings below a substantial gainful activity (SGA) threshold. Expanding income thresholds for Medicaid eligibility has two different hypothetical

implications for SSI and SSDI participation. For individuals with disabilities who are not otherwise eligible for public health insurance programs, SSI receipt triggers automatic enrollment into Medicaid in many states, and thus can act as a pathway to health insurance (Social Security Administration, 2022b). Therefore, Medicaid expansion could theoretically reduce SSI take-up among people who could qualify for Medicaid outside of the SSI program and who would potentially prefer to remain in the workforce.

In contrast, SSDI-eligible individuals face a different trade-off: forgo health insurance through their employer (which is often linked to full-time employment) in order to meet the SGA threshold and be (potentially) uninsured for the two-year period between qualifying for SSDI and obtaining Medicare coverage; or continue working to maintain employer sponsored health insurance, an example of “job lock” (Maestas et al., 2014). In these cases, Medicaid expansion could increase SSDI take-up as a portion of the eligible population will qualify for health insurance via Medicaid during their waiting period for Medicare. With respect to the “job lock” channel, the evidence on how Medicaid expansion affects employment is mixed. Hall et al. (2017) find that Medicaid expansion increased workforce participation among individuals with disabilities using data from the Health Reform Monitoring Survey (Hall et al., 2017), while Ne’eman et al. (2022) use CPS data and find that Medicaid expansion had no effect on the employment status of individuals with disabilities.

Our study has two goals. First, we quantify racial/ethnic disparities in SSI/SSDI take-up rates. Second, we determine whether expanding access to Medicaid can affect racial/ethnic disparities in SSI/SSDI take-up rates. We seek to fill these gaps by using the Current Population Survey (CPS) from 2009-2020, which is purported to accurately identify 84% (as opposed to the American Community Surveys’ 66%) of the working-age SSI and SSDI recipients in the survey (Burkhauser et al., 2014).

We use a difference-in-differences strategy to estimate the causal effect of Medicaid expansion on overall SSI and SSDI take-up, as well as take-up by race. We find that SSI take-up decreases for White and Hispanic respondents with disabilities, while SSDI take-up increases for White and Black respondents with disabilities following Medicaid expansion. We explore the job lock channel by showing that respondents with disabilities are less likely to have health insurance through their employer following Medicaid expansion, an indirect measure of labor market participation among the likely SSDI-eligible respondents.

The rest of the paper proceeds as follows. Section 2 discusses the data. Section 3 introduces our empirical strategy. We present results in Section 4, and conclude in Section 5.

## 2 Data

The Current Population Survey (CPS) is the primary data source for labor force statistics in the US, surveying 60,000 to 90,000 households annually via field and telephone interviews. The survey samples non-institutionalized individuals who are 15 years or older, and it does not oversample minority populations (in contrast to the American Community Survey (ACS), which is often used in analyses of disability program take-up). Each observation thus represents a household member of the surveyed residence aged 15 or older. We use the Annual Social and Economic Supplement (ASEC) sample from 2009 to 2020, which includes 2,314,863 respondent-years. Since the ASEC asks about SSI, SSDI, and Medicaid enrollment retrospectively (referring to the previous calendar year), we lagged survey years by 1, and thus our study period is 2008-2019. We additionally restricted our sample to working-age respondents between the ages of 18 and 64 years and dropped respondents with a household income above the 90th percentile of the sample.

Among other respondent characteristics, the ASEC reports race and ethnicity, household income, employment, earnings, SSI and SSDI participation, Medicaid enrollment, insurance status, and self-reported disability. While there are multiple questions aimed at assessing whether a respondent has a disability, we seek to identify respondents who most closely fit the definition of having a disability used by the SSA as qualifying for SSI or SSDI. Specifically, the SSA defines qualifying individuals as those unable “to engage in any substantial gainful activity because of a medically determinable physical or mental disability(ies) that is either expected to result in death or has lasted or is expected to last for a continuous period of at least 12 months” (Social Security Administration, 2023).

Prior research suggests that previous strategies used to identify people with disabilities who may potentially be eligible for disability programs (such as SSI and SSDI) may have been insufficient (Burkhauser et al., 2014). For example, one study demonstrates that only 63.3% of SSDI and SSI recipients were correctly identified in the CPS data when using a common “six-question sequence” approach. Specifically, this approach characterizes individuals as having a disability if they respond in

the affirmative to any of six questions (6Q) in the CPS assessing hearing, vision, cognitive, ambulatory, self-care, and mobility difficulties (for Disease Control and Prevention, 2019). However, combining this six-question sequence approach with another question regarding the respondent’s ability to work (such that the respondent will be characterized as having one or more disability when answering affirmatively to any of these seven questions) has been proposed as more appropriate.<sup>2</sup>

Using this seven-question sequence definition, we characterize 158,078 (11.38%) of all working-age CPS respondents as having one or more disability. Notably, this is very similar to the 11.6% identified in the paper that proposes this methodology (Burkhauser et al., 2014). In additional analyses, we show that our results are robust to using only the six-question sequence to identify the relevant sample.

Respondents report their race and ethnicity as one of six categories: White, Black, Asian, American Indian or Alaska Native (AIAN), Hispanic, or Other. While respondents in the CPS can report multiple races and ethnicities, we define the White, Black, Asian, AIAN, and Hispanic race identifiers for respondents who identify as the respective race alone, and capture respondents who report multiple race identities in the Other race identifier. All reported races are non-Hispanic unless otherwise specified. SSI receipt is identified for respondents who report SSI income in the previous calendar year, and who list the primary reason for eligibility as a disability. SSDI receipt is identified for respondents who report Social Security income in the previous calendar year and list the primary reason for eligibility as a disability. Medicaid coverage is identified for respondents who report being covered by Medicaid in the previous calendar year. Employer-based health insurance is identified for all respondents who report being the policy holder for employer-sponsored group health insurance within the past calendar year. Variables for current marital status, bachelor’s education, home ownership, state poverty rates, and residence in a non-metropolitan area are also identified from the sample.

Our study compares differential changes in SSI and SSDI take-up among CPS respondents in states that expanded Medicaid in 2014 (“expansion states”) to states that never expanded Medicaid (“non-expansion states”). In our sample, we characterize 26 states as expanding in 2014 (Arkansas, California, Colorado, Connecticut, Delaware, Washington D.C., Hawaii, Illinois, Iowa, Kentucky, Maryland, Mas-

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<sup>2</sup>This additional survey question is as follows: “At any time in the previous year, did anyone in the household have a disability or health problem which prevented them from working, even for a short time, or which limited the work they could do?”

sachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oregon, Rhode Island, Vermont, Washington, West Virginia) and 17 states that never expanded Medicaid during our study period (Alabama, Florida, Georgia, Indiana, Kansas, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Wisconsin, Wyoming). We check the robustness of our results against the inclusion of the six states that expanded Medicaid after 2014. Specifically, four states expanded in 2015 (Alaska, Arizona, Indiana, Pennsylvania), and two states expanded in 2016 (Louisiana, Montana).<sup>3</sup> We prefer to exclude these states from the main analysis to maximize the potential post-period of our treatment group, and to have one clearly-defined pre and post period (relative to 2014) for both expansion and never-expansion states.<sup>4</sup>

There are several key CPS data quality concerns. First, while the CPS surveys respondents from all 50 US states and Washington, D.C., large sampling errors for smaller states are possible (Martin, 2016). In addition, small sample sizes may lead us to estimate results with large standard errors. Second, some data errors have been reported for individuals older than 65 (Martin, 2016); however, we focus exclusively on respondents aged 18 to 64 years old. Third, respondents may confuse SSI and SSDI receipt in their response, or fail to report benefits, which is also a concern in the ACS (Martin, 2016). Fourth, CPS under-reports SSDI recipients and significantly under-reports SSI recipients, though this issue exists in the ACS as well, and the ACS does not clarify what makes respondents eligible for SSI/SSDI (Martin, 2016). We discuss under-reporting implications below. Despite these limitations, we believe that the CPS is the best available data set for the purposes of our study.

### 3 Empirical Strategy

We first compare unadjusted rates of SSI and SSDI take-up across non-expansion and expansion states, before and after Medicaid expansion in 2014. The unadjusted comparison of take-up rates provides a descriptive overview that helps contextualize our adjusted results. We then formalize these

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<sup>3</sup>Two states—Virginia and Maine—expanded Medicaid in 2019. However, we do not include these states in our analysis given their insufficient post-expansion period.

<sup>4</sup>Note that due to the data lag described above, data from the expansion year (i.e. year 0 in our analysis) is obtained from the 2015 survey.



comparisons in a difference-in-differences design: we compare changes in the probability that respondents with disabilities report receiving Medicaid, SSI, and/or SSDI in expansion states compared to non-expansion states, before and after expansion. Specifically, we estimate the effect of Medicaid expansion on the probability that  $Y = 1$  for respondent  $i$  living in state  $s$  in year  $t$  using the following model:

$$P(Y_{ist} = 1) = \beta_1 \{Expansion\}_s * \{Post\}_t + \mathbf{\Omega}X_{it} + \delta_s + \delta_t + \varepsilon_{ist} \quad (1)$$

where  $\{Expansion\}_s$  is an indicator that the state expanded Medicaid;  $\{Post\}_t$  is an indicator for the post-period (defined as years greater than or equal to 2014);  $X_{it}$  is a vector of respondent characteristics (race indicators, marital status, home ownership status, bachelor’s degree, and non-metropolitan residency, and state poverty rate) that may be correlated with take-up; and  $\delta_s$  and  $\delta_t$  are state and year fixed effects, respectively, to control for any secular trends in take-up.  $\varepsilon_{ist}$  is the error term, and we cluster standard errors at the state level. We drop the year of expansion since it is a “transitional” year, where a state may only have expanded Medicaid access for part of the year. Since  $Y_{ist}$  is binary, we estimate Equation 1 as a linear probability model.

$\beta_1$  is the coefficient of interest; it represents an estimate of how Medicaid expansion affects the average probability of Medicaid/SSI/SSDI take-up, depending on model ( $Y_{ist}$ ). Next, we estimate heterogeneous treatment effects by race/ethnicity. Specifically, we interact  $\{Expansion\}_s * \{Post\}_t$  with indicator variables for all race categories:  $\{White\}_i$ ,  $\{Black\}_i$ ,  $\{Hispanic\}_i$ ,  $\{Asian\}_i$ ,  $\{AIAN\}_i$ ,  $\{Other\}_i$ . Then, the triple interaction term on  $\{Expansion\}_s * \{Post\}_t * \{Black\}_i$ , for example, can be interpreted as the effect of Medicaid expansion on take-up among Black respondents living in expansion states, relative to Black respondents living in non-expansion states (with analogous interpretations for each race).

To benchmark the effect of Medicaid expansion relative to existing racial disparities in take-up probabilities, we report the coefficients associated with each race indicator (omitting White as the comparison group). For example, the coefficient on  $\{Black\}_i$  can be interpreted as the average take-up rate of Black respondents relative to White respondents, in the absence of Medicaid expansion. Comparing these coefficients to the coefficients on the triple interaction term allows us to evaluate whether Medicaid expansion closed or exacerbated any existing gaps in take-up between White and

non-White respondents.

The validity of our empirical approach in identifying the causal effect of Medicaid expansion on take-up relies on an assumption that, but-for the expansion, take-up trends in expansion and non-expansion states would have been similar. While this is not directly testable, we can test for the presence of differential trends in take-up prior to the expansion. We do this using an event study in which event time is measured as years from 2014. We estimate the same model as in our main difference-in-differences specification, but we interact indicators for years relative to 2014 with an indicator for whether the state expanded Medicaid, and with indicators for respondent race/ethnicity. Because of the relatively small sample size, we expect this model to generate less precisely estimated coefficients. However, an additional advantage of this approach is that it allows us to evaluate whether Medicaid expansion's effects on SSI/SSDI take-up change in magnitude or significance over time.

## 4 Results

Table 1 reports differences in the characteristics of respondents with disabilities in our sample between expansion and non-expansion states in the pre-expansion period. Of the 30,138 respondents reporting in non-expansion states prior to expansion, 16.6% received SSI, 26.8% received SSDI, and 32.1% were enrolled in Medicaid. Of the 49,007 respondents in expansion states in the pre-expansion period, 18.3%, 23.5%, 37.7% received SSI, SSDI, and Medicaid prior to the expansion, respectively. While non-expansion and expansion states report similar average age and share male, respondents in non-expansion states were more likely to be Black (7.7 percentage point difference), and less likely to be White, Asian, or Hispanic (3.1, 2.4, and 2.6 percentage point difference, respectively). Respondents living in non-expansion states were also more likely to own a home (7.7 percentage point difference) and more likely to be living in a non-metro area (8.5 percentage point difference). There are smaller differences in marriage rates, bachelor's education, and poverty rates. These imbalances motivate our difference-in-differences and event study approaches.

Figure 1 Panel (a) reports differences in the prevalence of disability by race, while Figure 1 Panel (b) reports SSI and SSDI receipt among respondents with disabilities by race. We observe the highest rates of disability among AIAN respondents (21%), followed by Black and Other (16.9% and 16.6%,

respectively). We characterize 13% of White, 9% of Hispanic, and 6% of Asian respondents as having a disability.

In panel (b), the blue bars report the percent of working-age respondents with disabilities who receive SSI. The red bars report the percent of working-age respondents with disabilities who receive SSDI. Black and AIAN respondents had the highest rates of SSI receipt (26% and 24%, respectively), while White and Asian respondents had the lowest rates of SSI receipt (15% and 13%, respectively). Black, White, and Asian respondents had the lowest rates of SSI receipt (15% and 13%, respectively). Black, White, and AIAN race respondents reported the highest rates of SSDI receipt (27%, 25%, and 22% respectively). The rate of SSI receipt is higher than SSDI receipt for AIAN and Hispanic respondents, although rates are relatively close for Black and Asian respondents as well, reflecting underlying differences in program enrollment for people with disabilities by race.

Figure 1 provides additional evidence on changes in SSI and SSDI take-up over time. Specifically, Figure 1 plots smoothed means of overall unadjusted take-up of these two programs separately in expansion and non-expansion states across our study period.<sup>5</sup> Panel (a) shows increasing SSI take-up leading up to 2014 for both non-expansion and expansion states, with generally lower take-up rates in non-expansion states versus expansion states. After 2014, SSI take-up among expansion states begins to decline, while take-up in non-expansion states becomes relatively stable.

Panel (b) shows increasing SSDI take-up among our study population for both expansion and non-expansion states in most years prior to 2014, with greater take-up in non-expansion states versus expansion states. Following 2014, take-up in non-expansion states declines significantly, while take-up in expansion states has a smaller overall decline, then starts increasing again from 2017 until the end of our sample period.

Table 2 presents results from estimating Equation 1. Columns (1) and (2) report changes in Medicaid take-up overall and by race, respectively, verifying that Medicaid expansion increased Medicaid take-up in our sample. Overall, respondents with disabilities in expansion states were 6.8 percentage points (21%) more likely to enroll in Medicaid following Medicaid expansion, relative to respondents with disabilities in non-expansion states (column 1) post-2014. There was a significant increase in the probability of

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<sup>5</sup>These figures are calculated using 3-year equally-weighted moving averages. For observations for the years 2010-2019, average program take-up is weighted by .33 for the year of interest and summed with the previous 2 years (each also weighted by .33). For 2009, averages are summed for 2009 and 2008, and divided by 2. Observations for the year 2008 are plotted as is.

Medicaid enrollment among respondents of all races, with the largest percent increase among Hispanic, Asian, and Other race respondents (approximately 20-29%) relative to White respondent take-up rates in the absence of Medicaid expansion (which are given by the estimated coefficients on the individual race terms) (column 2). At baseline (i.e. without Medicaid expansion), we observe a higher likelihood of Medicaid take-up among non-White respondents than White respondents, who had an average take-up rate of 32%. These findings are largely consistent with the Medicaid take-up literature (see, e.g., Artiga et al. (2022)).

Medicaid expansion decreased overall SSI take-up among respondents with disabilities by approximately 1.5 percentage points (10%), significant at the 5% level (column 3). This reduction was driven predominantly by a 1.5 percentage point (10%) and 3.6 percentage point (21%) relative decrease in take-up among White and Hispanic respondents, respectively (column 4). Figure 3 plots the corresponding event study. There is a suggestive, weakly significant (at the 10% level) decrease in SSI take-up among the full sample (panel a) and among White respondents (panel b), with the largest effects occurring two-plus years post-expansion. However, a potential pre-trend (while insignificant) in the pre-period of both panels warrants caution in interpreting the results as causal. There is a stronger negative effect of Medicaid expansion on SSI take-up among Hispanic respondents (panel d), with a more compelling lack of pre-trends. Specifically, Medicaid expansion decreased SSI take-up among Hispanic respondents, with the effect increasing in magnitude over time. Overall, our results cautiously suggest that Medicaid expansion reduced SSI take-up, with the largest effects among Hispanic populations.

Moreover, the higher rates of take-up among non-White respondents, relative to White respondents, in the absence of Medicaid expansion, suggests that non-White populations with disabilities are more likely to enroll in SSI compared to White populations with disabilities. The estimated effect for Hispanic respondents suggests that Medicaid expansion may have narrowed the SSI take-up gap between Hispanic and White respondents from a 2.5 percentage point difference to a less than one percentage point difference (taking the estimates for White and Hispanic respondents at face value).

The estimated effects of Medicaid expansion on SSDI take-up are arguably even more compelling. Specifically, Medicaid expansion increased overall SSDI take-up by 2.0 percentage points (8.1%), an effect which was statistically significant at the 1% level (Table 2, column 5). This increase was primarily driven

by significant increases in SSDI take-up among White and Black respondents (2.2 (9.1%) and 2.7 (11.0%) percentage points, respectively (column 6)). Notably, Black respondents were no less likely than White respondents to take up SSDI in the absence of Medicaid expansion. The relatively similar magnitude of our estimates then suggests that Medicaid expansion did not generate White-Black disparities in SSDI take-up. However, at baseline, there were significant disparities in SSDI take-up between White/Black respondents and Hispanic, Asian, and Other race/ethnicity respondents. White and Black respondents had higher levels of SSDI take-up than these other groups. Therefore, Medicaid expansion increased disparities in SSDI take-up between White/Black and Hispanic/Asian/Other respondents.

Across all panels, Figure 4 shows no significant differences in pre-trends for SSDI take-up across expansion and non-expansion states, supporting our interpretation that any observed changes in take-up is causal. Panel (a) reports an overall relative increase in SSDI take-up following expansion. We observe similar trends in SSDI take-up following expansion among White (panel b) and Black (panel c) respondents. There is also some evidence of heterogeneity in the timing of the effect of Medicaid expansion on take-up over time, by race. Among White respondents, SSDI take-up appears to increase immediately after the expansion, and remain relatively constant over the post-period. Among Black respondents, the effect on take-up is lagged, such that take-up begins to increase approximately three years after the expansion.<sup>6</sup>

## Labor Market Participation

The hypothesis of “job lock” predicts that SSDI take-up would increase following Medicaid expansion. To explore whether job lock may drive the results we observe, we estimated our main difference-in-differences model with a dependent variable representing whether respondents had employer sponsored health insurance (ESHI). We prefer this measure of workforce engagement to more direct measures such as employment or income (which are observable in our data) since we cannot separately estimate those effects for SSI vs. SSDI-eligible individuals. Specifically, we predicted that Medicaid expansion would

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<sup>6</sup>Notably, SSDI take-up among Black respondents appears to decrease prior to the expansion. While this technically violates the parallel trends assumption, the trend is in the opposite direction of the estimated effect. To test the robustness of the estimated effect in the absence of this trend, we re-estimate our difference-in-differences model for Black respondents, excluding the second and third years prior to expansion (where we exhibit significant, negative pre-trends). Our estimated effect among Black respondents remains statistically significant and large in magnitude even after excluding 2011 and 2012 (see Table A8). This suggests our results are robust to the exclusion of these pre-trends.

i) increase employment among SSI recipients; ii) decrease employment among SSDI recipients. These countervailing effects may lead us to estimate a null result on employment or income in the pooled SSI- and SSDI-receiving populations. However, the requirements of SSDI eligibility mean that many SSDI-eligible adults once worked at firms that offered ESHI (Guth et al., 2023); if they leave those jobs post-Medicaid expansion, then we would predict ESHI would decline. Thus, we can indirectly test for the effect of Medicaid expansion on the probability of employment among SSDI recipients by estimating the effect on ESHI receipt.

Column (1) of Table A1 reports the results of estimating our model on ESHI take-up. Medicaid expansion had a negative effect on the probability of having ESHI (for the pooled SSI- and SSDI-eligible populations), decreasing the likelihood by 1.5 percentage points (7.9%), which was significant at the 5% level (column 1). This effect was especially significant for Black and Other race respondents, whose rate of ESHI decreased by 2.4 (11%) and 5.1 (24%) percentage points respectively (column 2). We interpret these results as providing suggestive evidence in support of job lock among the SSDI-qualifying cohort. We also estimate our model on “any employment” (columns 2 and 3), income (columns 4 and 5), part-time employment, and full-time employment (Table A2) as direct tests for the effect of Medicaid expansion on workforce participation, finding generally null effects that suggest that our concerns about these outcomes may be substantiated.

## **Robustness Checks**

One plausible explanation for the small effects we estimated for SSI take-up in our main analysis is that our population includes individuals whose income would disqualify them from SSI. Table A3 reports estimates from our main difference-in-differences model, limiting the sample to low-income respondents with disabilities. Notably, while this population may be most suitable for an evaluation of the effects of Medicaid expansion on the take-up of public programs targeted towards low-income individuals, due to small sample size and the endogeneity of income with respect to Medicaid expansion, we prefer the estimates from the pooled study population. Specifically, the low-income population may change in composition between pre- and post-expansion if individuals reduce their income to qualify for Medicaid. Nevertheless, after restricting to low-income respondents with disabilities, we estimate an overall

reduction in SSI take-up of 2.6 (10.4%) percentage points and an overall increase in SSDI take-up of 1.8 (6.7%) percentage points, although only the SSI results are statistically significant at the 5% level.

In other work examining the impact of Medicaid expansion on various outcomes, researchers often test the robustness of their results to excluding states that had generous eligibility criteria for able-bodied adults without disabilities (ABAW) prior to the expansion.<sup>7</sup> Table A4 reports that our results are robust to excluding these generous states.

We include several additional robustness tests of our main results. Table A5 shows the robustness of our results to using the six-question sequence definition for respondents with disabilities. Table A6 similarly shows the robustness of our results to the inclusion of all expansion states, including late-expanders. Notably, Table A7 reports the results of estimating our model on only the late-expansion states, showing qualitatively the same effects, though estimated with less precision.

## 5 Conclusion

Our study shows that expanding Medicaid eligibility has opposing effects on SSI vs. SSDI program take-up. We also find differential effects by race and ethnicity. First, we find suggestive evidence that Medicaid expansion decreased SSI take-up primarily among White and Hispanic respondents, and that SSI take-up in general tends to be higher among racial and ethnic minorities (consistent with prior literature). Given that White respondents were less likely in general to take-up SSI relative to other races, our results suggest that Medicaid expansion may have exacerbated disparities in take-up between White and non-White respondents, though the equity implications of this result is unclear.

The equity implications for the decrease in SSI take-up among Hispanics respondents is similarly unclear, though we also observe that Medicaid enrollment among this cohort increased, suggesting that if Hispanic individuals were particularly likely to seek healthcare coverage via SSI relative to other populations, then Medicaid expansion allowed them to attain healthcare coverage and (potentially) remain in the workforce.

Second, we find the most compelling evidence that Medicaid expansion increased SSDI take-up, primarily among White and Black respondents. White respondents were already more likely to take

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<sup>7</sup>See for example Frean et al. (2017); Ghosh et al. (2019); Miller and Wherry (2017)

up SSDI than most other non-white racial minorities (specifically, AIAN, Hispanic, Asian, and Other cohorts, but not Black cohorts). This suggests that Medicaid expansion may have exacerbated some existing racial and ethnic disparities in SSDI take-up, though further work is needed to understand the implications for well-being that this disparity represents. For example, future research could show whether a greater degree of job lock among certain minority populations contributes to inequities in other health dimensions (such as quality of life).

Notably, existing work exploring lower rates of SSI and SSDI take-up among racial/ethnic minorities relative to White individuals with disabilities is limited. Reports by the SSA attribute the higher rate of SSI receipt among Black and AIAN individuals to higher rates of poverty and disabilities in general (Martin and Murphy, 2014; Smith-Kaprosy et al., 2012). Other possible contributing factors proposed by the SSA include more limited work history and gaps in education rates among certain racial/ethnic groups.

While some prior studies find evidence that Medicaid expansion decreased SSI take-up (Burns and Dague, 2017; Soni et al., 2017) and that Massachusetts' health reform increased SSDI take-up (Maestas et al., 2014), other studies find no connection between health insurance expansion and disability program take-up (Chatterji and Li, 2016; Schmidt et al., 2020). Our study may provide some insights regarding these inconsistencies. First, our findings provide additional context to research that found no impact of the 2014 Medicaid expansion on applications to SSI and SSDI from 2010—2016 (Schmidt et al., 2020). Our study, which focuses on SSI and SSDI take-up among enrollees with disabilities, extends to 2019 and reports significant results particularly in later years, highlighting the dynamic, long-term effects of Medicaid expansion on SSI and SSDI take-up.

Second, to our knowledge, our study is the first to limit the study population to individuals who answered in the affirmative to at least one of seven relevant questions assessing disability and ability to work. By focusing on this cohort of individuals, we sought to estimate the effects of Medicaid expansion on SSI and SSDI take-up among people who are most likely to be eligible for disability insurance (i.e, people with disabilities). Third, depending on the racial composition of the populations studied, estimated effects may or may not be visible. Racial disparities in take-up are key features of understanding the overall effect.



To the extent that CPS under-reports SSI/SSDI take-up, our results could be biased if underreporting is correlated with the timing of Medicaid expansion. While we have no reason to believe that such systematic bias exists, we cannot rule it out. However, for underreporting to drive our results, it would need to work in opposite directions for SSI relative to SSDI; namely, underreporting would have to increase for SSI in expansion states (relative to non-expansion, post-expansion), while it would have to decrease for SSDI in expansion states (relative to non-expansion, post-expansion) (see Figure 1). Absent such evidence, it is more likely that under-reporting leads to statistically imprecise estimates for some subgroups, though the implications for the bias in our estimates is unclear, given that under-reporting across sub-groups may be nonrandom. Further work with larger data sets (ideally with higher reporting rates) is needed to replicate these results.

Our study may provide guidance to the Social Security Administration (SSA) in forecasting changes in SSI/SSDI take-up following future public health insurance expansion. Our results suggest that expanding Medicaid eligibility to middle-income populations could reduce SSI take-up rates, particularly among Hispanic-eligible populations, while increasing SSDI take-up, particularly among White and Black-eligible populations. On a per-person, per-year basis, the SSDI program's expenditures are higher than SSI; however, the average SSDI recipient receives benefits for a shorter period of time than the average SSI recipient Social Security Administration (2021, 2022b). Therefore, it is ambiguous how another Medicaid expansion would impact federal disability insurance expenditures. Nevertheless, given the significant overlap between Medicaid eligibility and disability insurance eligibility, future research could use Medicaid claims data to better understand how individuals with disabilities receive health care and manage their conditions while receiving Medicaid coverage. Their access to care via Medicaid could have important implications for their workforce participation and quality-of-life.

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# Tables and Figures

Table 1: Respondent Characteristics, 2009-2014

	Non-expansion state	Expansion state
Respondent Characteristics		
SSI Receipt (%)	16.6	18.3
SSDI Receipt (%)	26.8	23.5
Enrolled in Medicaid (%)	32.1	37.7
Average Age	48	48
Average Age (SD)	12.6	12.5
Male (%)	48.7	48.9
Race/Ethnicity		
White (%)	62.2	65.1
Black (%)	21.7	14.0
Asian (%)	1.1	3.5
American Indian or Alaska Native (%)	1.4	1.0
Hispanic (%)	11.4	14.0
Percent Married (%)	42.1	39.5
Percent w/ Bachelor's (%)	12.2	13.9
Individuals that Own Home (%)	61.9	54.2
Living in Non-metro Area (%)	25.0	16.5
State Poverty Rate (%)	14.7	13.3
Total respondents	30138	49007
Total States	17	26

**Sources.** Individual and state characteristics are obtained from the Annual Social and Economic Supplement of the CPS for the years 2009-2014. **Notes.** This table presents descriptive statistics for the variables used in analysis. The sample is restricted to disabled respondents aged 18-64 years. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. Respondents with household income within the 90th percentile or above are removed from the sample. States that expanded after 2014 are removed from the sample.

Table 2: Medicaid Expansion, Coverage, SSI, and SSDI Receipt

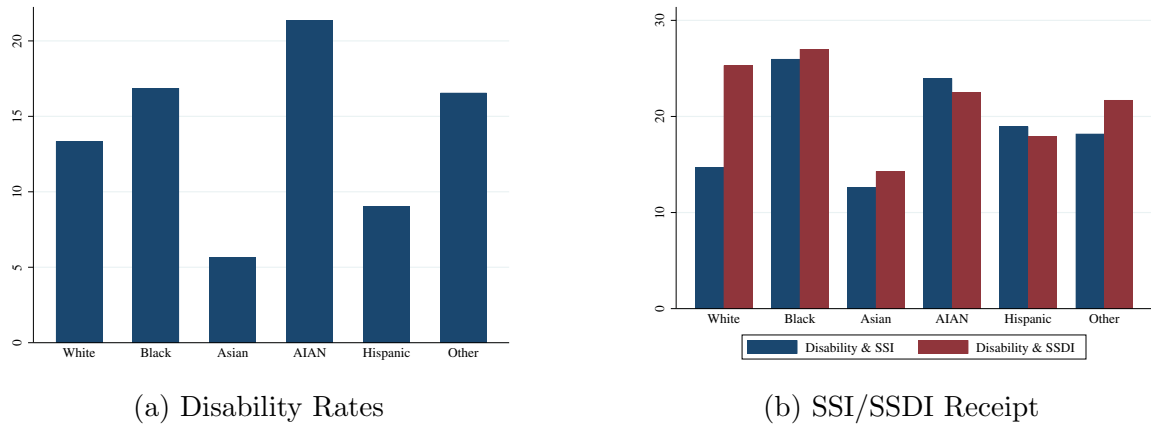
	(1)	(2)	(3)	(4)	(5)	(6)
	Medicaid	Medicaid	SSI	SSI	SSDI	SSDI
Treatment x Post	0.0679*** (0.0113)		-0.0154** (0.00600)		0.0202*** (0.00680)	
Treatment x Post x White		0.0638*** (0.0124)		-0.0145** (0.00682)		0.0220*** (0.00624)
Treatment x Post x Black		0.0689*** (0.0182)		-0.00198 (0.0130)		0.0271** (0.0111)
Treatment x Post x Hispanic		0.0762*** (0.00972)		-0.0356*** (0.0118)		0.00791 (0.0122)
Treatment x Post x Asian		0.0793*** (0.0238)		-0.00160 (0.0132)		0.0167 (0.0154)
Treatment x Post x AIAN		0.0464 (0.0368)		-0.0416 (0.0378)		0.0208 (0.0246)
Treatment x Post x Other		0.105*** (0.0237)		0.00392 (0.0166)		0.0189 (0.0204)
Black race, non-Hispanic	0.102*** (0.00655)	0.101*** (0.00715)	0.0750*** (0.00566)	0.0725*** (0.00533)	0.00632 (0.00572)	0.00536 (0.00719)
Hispanic ethnicity	0.0784*** (0.0101)	0.0751*** (0.0107)	0.0193 (0.0153)	0.0254** (0.0118)	-0.0572*** (0.00988)	-0.0532*** (0.0107)
Asian race, non-Hispanic	0.0479*** (0.0132)	0.0433*** (0.0138)	-0.000486 (0.0119)	-0.00505 (0.0107)	-0.0661*** (0.00996)	-0.0646*** (0.0111)
AIAN, non-Hispanic	0.104*** (0.0229)	0.108*** (0.0278)	0.0726*** (0.0250)	0.0788** (0.0310)	-0.0316 (0.0215)	-0.0315 (0.0239)
Other race, non-Hispanic	0.0440*** (0.0116)	0.0331** (0.0131)	0.0150** (0.00651)	0.00999 (0.00866)	-0.0283*** (0.0103)	-0.0276** (0.0129)
Observations	121494	121494	121494	121494	121494	121494
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Avg White Take-up	0.31	0.31	0.14	0.14	0.24	0.24
Avg Non-Exp Take-up	0.32	0.32	0.16	0.16	0.25	0.25

Standard errors in parentheses

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ 

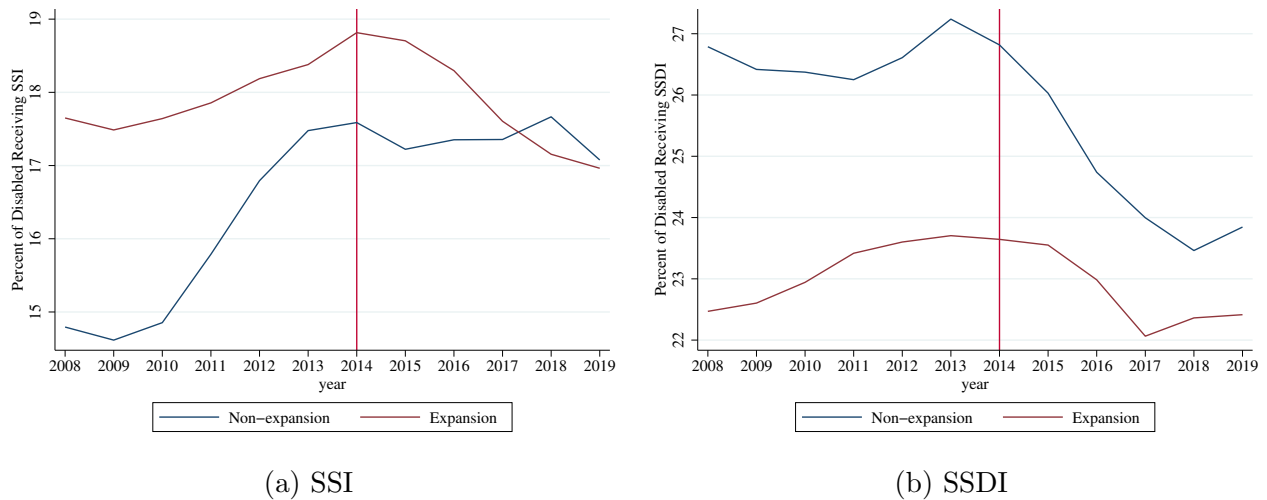
**Sources.** Data is obtained from the CPS Annual Social and Economic Supplement for the years 2009-2020. Data on state Medicaid expansion and timing of expansion is derived from KFF. **Notes.** This table contains results from a difference-in-difference regression correlating individual Medicaid coverage, SSI, and SSDI take-up with Medicaid expansion. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. The sample is restricted to respondents with a self-reported disability and a household income below the 90th percentile. Observations from the year of expansion are additionally removed from the sample, as are observations from expansion states that expanded after 2014. Treatment is defined as a dummy variable indicating that a state expanded Medicaid in 2014, and Post defined as a dummy variable indicating time periods for a given state post Medicaid expansion. SSI and SSDI receipt is identified for all individuals who report receiving SSI or SSDI income due to a disability in the previous year. Medicaid coverage is identified for all individuals who report Medicaid coverage in the previous year. A dummy variable indicating individual Medicaid, SSI, or SSDI receipt is regressed on the interaction of the treatment and post-treatment variables, as well as indicators for race, interactions of treatment and post-period treatment variables with race, and a series of controls, such as marital status, home ownership status, bachelor’s degree, and non-metropolitan residency. Year and state fixed effects are included in every specification. Standard errors are clustered at the state level.

Figure 1: Rates of Disability and SSI/SSDI Receipt Among CPS Respondents



This figure depicts the rate of disability and the rate of SSI and SSDI receipt among the disabled by race. Data is collected from the 2009-2020 Annual Social and Economic Supplement of the CPS. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. The sample is restricted to working-age, disabled respondents aged 18-64 years, and individuals within the 90th percentile or above of household income are removed from the sample. SSI and SSDI receipt are defined for all respondents who report receiving SSI or SSDI payments in the previous year.

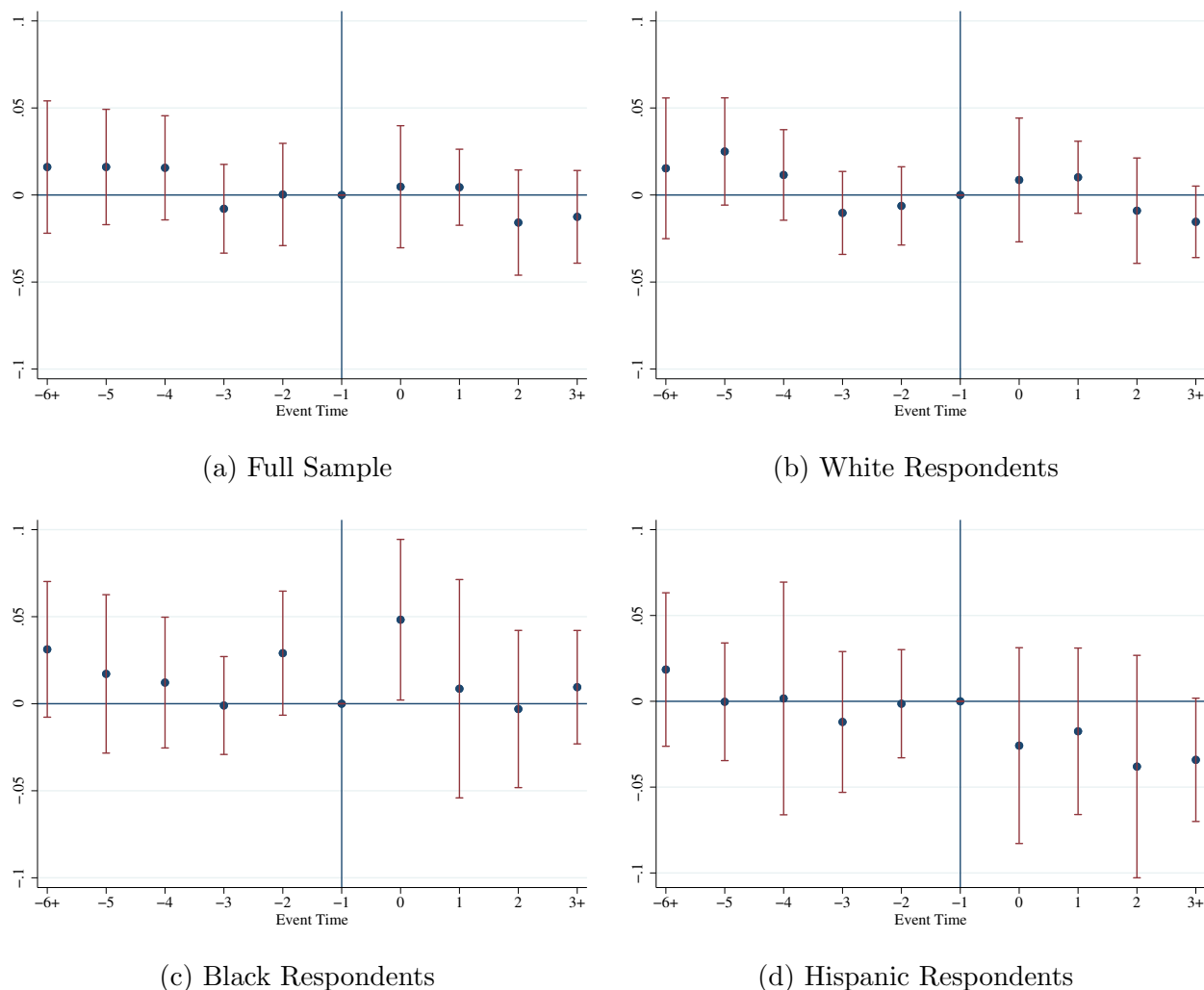
Figure 2: Trends in SSI and SSDI Receipt Among Disabled Respondents Over Time, by State Expansion Status



This figure depicts trends in SSI and SSDI receipt among the disabled over time. Data is collected from the 2009-2020 Annual Social and Economic Supplement of the CPS. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. The sample is restricted to working-age, disabled respondents aged 18-64 years. Respondents within the 90th percentile or above of household income are removed from the sample. SSI and SSDI receipt are defined for all respondents who report receiving SSI or SSDI payments in the previous year. Survey years are lagged to reflect the retrospective nature of the questionnaire. Rates of receipt are plotted as three year moving averages.

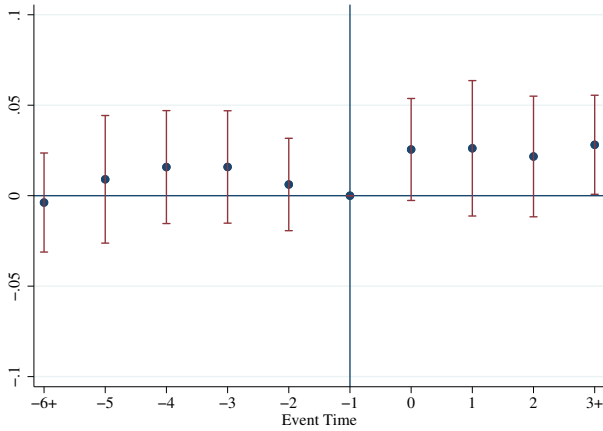


Figure 3: Change in SSI Participation Over Time, Relative to Medicaid Expansion, By Race

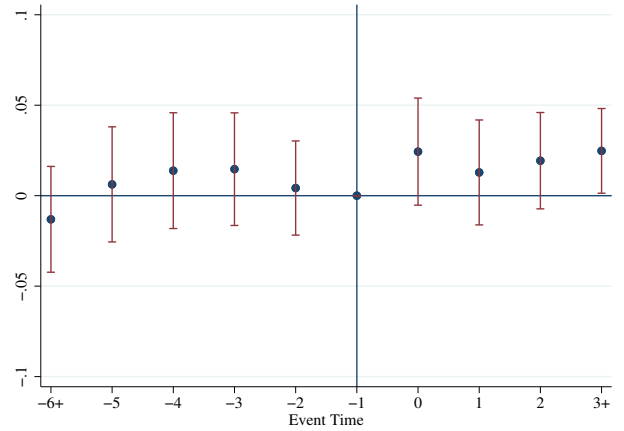


**Sources.** Data is obtained from the Annual Social and Economic Supplement of the CPS for the years 2009-2020. The sample is restricted to respondents with a self-reported disability and household income below the 90th percentile. States that expanded Medicaid after 2014 are removed from the sample. **Notes.** This figure depicts an event study examining the impact of Medicaid expansion on SSI participation among disabled Americans. SSI participation is defined for all respondents who report receiving SSI payments in the past year. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. Dummy variables are generated interacting Medicaid expansion status with pre- and post-expansion time variables, which are then interacted with race identifiers. The interaction for 1 year prior to expansion is omitted for reference. Controls for marital status, home ownership, college education, non-metropolitan residence, and state poverty rate are included, as well as state and year fixed effects. Standard errors are clustered at the state-level.

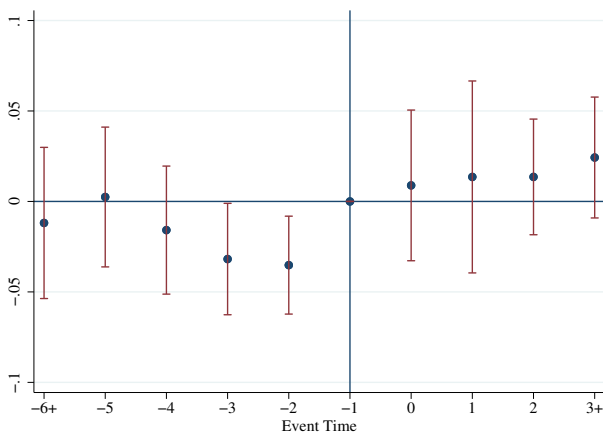
Figure 4: Change in SSDI Participation Over Time, Relative to Medicaid Expansion



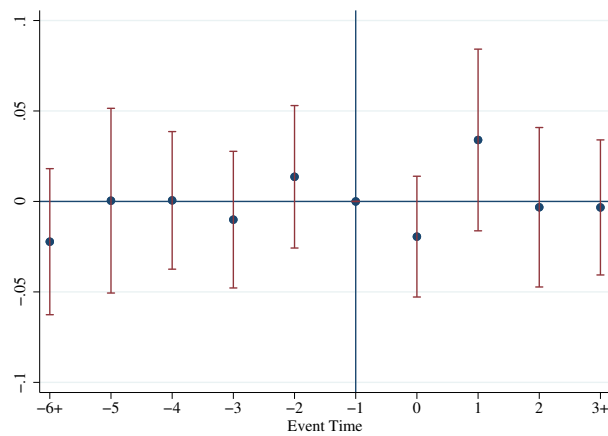
(a) Full Sample



(b) White Respondents



(c) Black Respondents



(d) Hispanic Respondents

**Sources.** Data is obtained from the Annual Social and Economic Supplement of the CPS for the years 2009-2020. The sample is restricted to respondents with a self-reported disability and household income below the 90th percentile. States that expanded Medicaid before or after 2014 are removed from the sample. **Notes.** This figure depicts an event study examining the impact of Medicaid expansion on SSDI enrollment among disabled respondents. SSDI participation is defined for all respondents who report receiving SSDI payments in the past year. Individuals are considered to have a disability if they answer affirmatively to at least 1 of the 6 questions related to disability or if they answer affirmatively to having a “work-limiting” disability. Dummy variables are generated interacting Medicaid expansion status with pre- and post-expansion time variables, which are then interacted with race identifiers. The interaction for 1-year prior to expansion is omitted for reference. Controls for marital status, home ownership, college education, non-metropolitan residence, and state poverty rate are included, as well as state and year fixed effects. Standard errors are clustered at the state-level.