NBER WORKING PAPER SERIES

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

Becky Staiger
Madeline S. Helfer
Jessica Van Parys

Working Paper 31557
http://www.nber.org/papers/w31557

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2023, revised December 2023

We thank Nicole Maestas and Lara Shore-Shepard for helpful comments and suggestions. The research reported herein was performed pursuant to grant RDR18000003 from the US Social Security Administration (SSA) funded as part of the Retirement and Disability Research Consortium. The views expressed herein are those of the authors and do not necessarily reflect the views of the SSA, any agency of the Federal Government, or the National Bureau of Economic Research.

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NBER Working Paper No. 31557
August 2023, revised December 2023
JEL No. I13,I14,J15,J22

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 respondents with disabilities living in Medicaid expansion states to respondents 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 by 10% overall, particularly among White and Hispanic respondents (10% and 21%, respectively). Medicaid expansion increased SSDI take-up by 8% overall, particularly among White and Black respondents (9% and 11%, respectively). Moreover, we find that Medicaid expansion reduced the probability that respondents with disabilities had employer-sponsored health insurance by approximately 8%, suggesting that expansion may have reduced job-lock among the SSDI-eligible, contributing to the observed increase in SSDI take-up.

Becky Staiger
2121 Berkeley Way
#5424
Health Policy & Management
School of Public Health
Berkeley, CA 94720
bstaiger@berkeley.edu

Jessica Van Parys
Department of Economics
Hunter College
695 Park Avenue, HW 1534
New York, NY 10065
and NBER
jessica.vanparys@hunter.cuny.edu

Madeline S. Helfer
mshelfer@nber.org

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.[1] 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). In particular, prior research has demonstrated that Medicaid expansion can affect overall SSI and SSDI take-up, though results are mixed and inconclusive (Burns and Dague, 2017; Chatterji and Li, 2016; Maestas et al., 2014; Schmidt et al., 2020; Soni et al., 2017).

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).

[1] 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).

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 and Maestas (2022) use CPS data and find that Medicaid expansion had no effect on the employment status of individuals with disabilities.

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).

Our study has two goals. First, we use an updated approach to identify SSI/SSDI-eligible populations and to quantify SSI and SSDI take-up rates by race and ethnicity. Second, we use a difference-in-differences approach to estimate the effect of Medicaid expansion on overall SSI/SSDI take-up, and we estimate heterogeneity in this effect by race/ethnicity. To conduct these analyses, we use the Current Population Survey (CPS) from 2009-2020, which is purported to accurately identify 84% of the working-age SSI and SSDI recipients in the survey (Burkhauser et al., 2014).[2]

Our study has three main results. First, we find that non-White respondents with disabilities have higher SSI take-up rates than White respondents. In contrast, White respondents with disabilities generally have higher SSDI take-up rates than non-White respondents. Given that SSDI payments are often larger than SSI payments, these baseline disparities are consistent with prior evidence that White respondents receive larger payouts from disability programs compared to non-White respondents. Second, we find that, among respondents with disabilities, Medicaid expansion reduced SSI take-up by 10% and increased SSDI take-up by 8%. Moreover, the effects vary by race/ethnicity; the decrease in SSI take-up is only statistically significant for White and Hispanic respondents (10% and 21%, respectively), and the increase in SSDI take-up is only significant for White and Black respondents (9% and 11%, respectively). Third, we explore the job lock channel as a potential mechanism driving increased SSDI take-up rates following Medicaid expansion. We show that respondents with disabilities are less likely to have employer sponsored health insurance (ESHI) following Medicaid expansion. We provide supporting

[2]Prior literature exploring the impact of Medicaid expansion on SSI and/or SSDI take-up has generally used the American Community Survey. For several reasons, we believe the CPS data is better suited to answer this question. For example, the American Community Survey has been reported to identify only 66% of working-age SSI and SSDI recipients. We discuss additional comparisons and perceived advantages of the CPS data below.

evidence that this reduction in ESHI is likely due to reduced labor force participation.

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. 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 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 in the CPS assessing hearing, vision, cognitive, ambulatory, self-care, and mobility difficulties

(Centers 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.[3]

Using this seven-question sequence definition, we characterize 158,078 (11.38%) of all working-age CPS respondents as having one or more disability.[4] 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 mutually exclusive 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 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 define 26 states as expanding in 2014 (Arkansas, California, Colorado, Connecticut, Delaware, Washington D.C., Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, North

[3]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?"

[4]Notably, this is very similar to the 11.6% identified in the paper that proposes this methodology (Burkhauser et al., 2014).

Dakota, Ohio, Oregon, Rhode Island, Vermont, Washington, West Virginia) and 17 states as never expanding 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).[5] 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.[6]

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 (Martin, 2016). Fourth, CPS under-reports SSDI recipients and significantly under-reports SSI recipients (Martin, 2016)[7]. 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.[8]

[5]Virginia and Maine are excluded from all analyses, since their expansion year of 2019 does not provide a sufficient post-expansion period for our specification.

[6]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.

[7]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 3). 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. Future work with larger data sets (ideally with higher reporting rates) is needed to further explore such concerns.

[8]Notably, the American Community Survey (ACS) is more commonly used in prior work exploring the impact of Medicaid expansion on take-up trends among SSI and SSDI populations. We believe the CPS data is better suited to our study for several reasons: First, and most crucially, the ACS data does not have the information required to implement the seven-question disability screening approach. Second, the ACS only reports whether a respondent receives Social Security payments, and is thus unable to distinguish between Old Age, Survivor, and Disability benefit receipt. Third, the ACS only reports whether a respondent's *household* receives income from SSI or Social security, therefore preventing us from separating SSI/SSDI-eligible respondents from other members of the household (such as eligible children, spouses, etc.).

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 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:

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

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, non-metropolitan residency, and resident state poverty rate) that may be correlated with take-up; and δ_s and δ_t are state and year fixed effects, respectively, to control for any secular trends in take-up. ε_{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.

β_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 the model's dependent variable (Y_{ist}). Next, we estimate heterogeneous treatment effects by race/ethnicity. Specifically, we interact $\{Expansion\}_s \times \{Post\}_t$ with indicator variables for all race categories: $\{White\}_i$, $\{Black\}_i$, $\{Hispanic\}_i$, $\{Asian\}_i$, $\{AIAN\}_i$, $\{Other\}_i$. Then, the triple interaction term of $\{Expansion\}_s \times \{Post\}_t \times \{Black\}_i$, 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

Finally, the ACS has many of the same drawbacks as the CPS data, such as some respondents mistaking SSI for SSDI payments (or vice versa), and the general under-reporting of SSDI and SSI recipients (Martin, 2016).

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 the assumption that take-up trends in expansion and non-expansion states would have been similar in the absence of Medicaid expansion. 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

This study's primary objective is to show how Medicaid expansion affected SSI and SSDI take-up rates by race/ethnicity. Our results are divided into three sections. First we show how baseline levels of SSI and SSDI take-up vary by race/ethnicity. Second, we show how Medicaid expansion affected take-up of SSI and SSDI by race/ethnicity. Third, we explore potential mechanisms that could have lead to the (relatively) higher SSDI take-up following Medicaid expansion that we observe.

4.1 SSI and SSDI Take-Up by Race/Ethnicity

Figure 1 reports differences in the prevalence of disability by race, while Figure 2 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 Figure 2, 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 have the highest rates of SSI receipt (26% and 24%, respectively), while White and Asian respondents have the lowest rates of SSI receipt (15% and 13%, respectively). Black, White, and AIAN race respondents report 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.

4.2 Effects of Medicaid Expansion on SSI and SSDI Take-Up

Given that our empirical approach compares changes in disability program take-up rates across expansion and non-expansions states, pre- and post-expansion, we first explore whether expansion and non-expansion states differ in observable ways. 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% receive SSI, 26.8% receive SSDI, and 32.1% are enrolled in Medicaid. Of the 49,007 respondents in expansion states in the pre-expansion period, 18.3%, 23.5%, 37.7% receive 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 are 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 are 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 3 provides descriptive evidence on changes in SSI and SSDI take-up over time. Specifically, Figure 3 plots smoothed means of overall unadjusted take-up of these two programs separately in expansion and non-expansion states across our study period.[9] 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. These plots show suggestive evidence of changes in take-up trends post-expansion between expansion and non-expansion states. We turn to our difference-in-differences strategy to more rigorously explore these differences.

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 of people with disabilities. Overall, respondents with disabilities in expansion states are 6.8 percentage points (21%) more likely to enroll in Medicaid following Medicaid expansion, relative to respondents with disabilities in non-expansion states post-2014 (column 1). There is a significant (relative) increase in the probability of 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 have an average take-up rate of 32%. These findings are largely consistent with

[9]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.

the Medicaid take-up literature (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 is 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). Given that the magnitude of the coefficients are relatively similar across racial/ethnic groups, we test whether the effect sizes are statistically significantly different from each other. We find that the effect for Hispanic respondents is statistically different from the effect sizes estimated for Black, Asian, and Other race respondents. We find that the effect for White respondents is not statistically different from the effect sizes estimated for non-White respondents.

Figure 4 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-trend. 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.

The estimated effects of Medicaid expansion on SSDI take-up are arguably more compelling. Specifically, Medicaid expansion increased overall SSDI take-up by 2.0 percentage points (8.1%), an effect which is statistically significant at the 1% level (Table 2, column 5). This increase is 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)). However, these effect sizes are not statistically different from one another or from the effect sizes associated with other race/ethnicity categories, suggesting that we can not rule out that Medicaid expansion uniformly impacted SSDI take-up across different races and ethnicities.

Across all panels, Figure 5 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 remains 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.[10]

4.3 Mechanisms Behind the Increase in SSDI Take-Up

The hypothesis of "job lock" predicts that SSDI take-up would increase following Medicaid expansion. To explore whether job lock contributes to the results we observe, we estimate our main difference-in-differences model with a binary dependent variable that equals 1 if respondents had ESHI, and equals 0 otherwise. We prefer this measure of workforce engagement to more direct measures, such as employment or income (which are observable in our data), because we cannot separately estimate those effects for SSI vs. SSDI-eligible individuals. Specifically, we predict that Medicaid expansion would i) increase employment among those who would otherwise apply for SSI; ii) decrease employment among those who would otherwise not apply for SSDI. These countervailing effects may lead us to estimate a null result on employment or income in the pooled SSI- and SSDI-eligible 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 to gain Medicaid coverage, then we would predict ESHI would decline. Thus, in principle, 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

[10]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 observe 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.

expansion has 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 is significant at the 5% level (column 1). This effect is 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). A possible interpretation of these results is that they support the job lock hypothesis 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; we find generally null effects, suggesting that our concerns about these outcomes may be substantiated.

There is an important caveat to our interpretation of the ESHI results: we are unable to rule out that they reflect crowd-out of private insurance following Medicaid expansion. Crowd-out refers to situations in which newly Medicaid-eligible individuals who had ESHI are induced by expansion to switch to Medicaid.[11] To explore this possibility, we estimate the same model (with ESHI as the outcome) for non-disabled respondents, for whom we would in principle expect a change in ESHI to more likely reflect crowd-out, as opposed to labor market exit. We find an imprecisely estimated null effect of Medicaid expansion on ESHI take-up among a population of Medicaid enrollees without disabilities who are matched by income to our sample of persons with disabilities.[12,13] These results cautiously suggest that Medicaid expansion had relatively little to no crowd-out effect on non-disabled survey respondents. While this result does not conclusively rule out crowd-out as a contributing factor in our ESHI estimates in Table A1, it lends support to our interpretation that the reduction in ESHI among people with disabilities is primarily driven by job lock instead of crowd-out.

[11]Existing literature suggests that early Medicaid expansions had large, persistent effects on crowd-out during the 1987-1992 period (Cutler and Gruber, 1996; Gruber and Simon, 2008). Wagner (2015) finds evidence that later expansions in the late-1990s and 2000s may have disproportionately increased crowd-out among respondents with disabilities, with crowd-out rates as high as 100% for some estimates. It is possible that crowd-out is less significant in our context, as we capture a larger sample of respondents with disabilities than Wagner (2015), as she restricts to respondents with income below 100% of the federal poverty line and only examines respondents with a work-limiting disability. Additionally, later evidence suggests ACA expansions did not significantly impact rates of crowd-out among those previously or newly eligible (Frean et al., 2017). Future work could examine whether Medicaid eligibility expansions significantly affected crowd-out among persons with disabilities.

[12]We estimate an effect size of -0.001, with a standard error of 0.009.

[13]We match the income distribution of respondents without a disability to that of our main sample in the following manner: We sort the reported incomes of our main sample into 20 bins, and count the number of respondents within each bin. We then match the reported incomes of respondents without disabilities to these bins, and remove respondents at random until the number of respondents without a disability within each bin matches that of our main sample.

4.4 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 the endogeneity of income with respect to Medicaid expansion and disability program take-up,[14] we prefer the estimates from the non-income-restricted 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.[15] Table A4 shows 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

We find that expanding Medicaid eligibility has significant (and opposite) effects on SSI vs. SSDI program take-up, decreasing overall SSI take-up by 10% and increasing overall SSDI take-up by 8.1%.

[14] Income in the CPS is measured contemporaneously with disability program receipt.

[15] See for example: Frean et al. (2017); Ghosh et al. (2019); Miller and Wherry (2017)

These results are consistent with the set of prior studies that have documented small but significant decreases in SSI enrollment following 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. Similarly, our SSDI results agree with prior studies that show that Medicaid expansion increased SSDI take-up as more individuals became eligible for Medicaid coverage (Maestas et al., 2014).

However, not all prior studies find evidence that Medicaid expansion affected SSI and SSDI receipt (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.[16] 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. We find evidence of heterogeneity by race/ethnicity in both baseline levels of take-up and in the impact of Medicaid expansion on take-up. We show that SSI take-up is higher among non-White respondents compared to White respondents (consistent with prior literature), while SSDI take-up is generally higher among White respondents compared to non-White respondents. 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. Considering that SSDI payments are significantly larger

[16]However, we did not pioneer this seven-question approach; to our knowledge, it was first proposed in Burkhauser et al. (2014)

on average than SSI payments, these differences in take-up may be interpreted as exacerbating existing income disparities, particularly if broader structural inequities (such as programmatic knowledge, employment opportunities, and unemployment risk) systematically allow White individuals with disabilities to disproportionately qualify for the higher-paying SSDI program over SSI (Wilson and Darity, 2022; Knapp and Perez-Arce, 2022). In this context, our finding that Medicaid expansion decreased SSI take-up primarily among White (and Hispanic) respondents and increased SSDI take-up primarily among White (and Black) respondents might be viewed as exacerbating existing disparities between White and non-White individuals with disabilities in terms of the dollar value of the public support received.

The fact that our estimated effects for SSI and SSDI are similar in magnitude yet opposite in sign for White respondents is potentially interesting. One possible interpretation is that White respondents are switching from SSI to the more-generous SSDI program, following access to guaranteed health insurance coverage via Medicaid expansion. Unfortunately we are unable to test this mechanism, as we do not know the work histories of respondents in the CPS. Future work could more rigorously examine the effect of Medicaid expansion on transitions (or substitutions) between the SSI and SSDI programs.

This study may help the Social Security Administration (SSA) forecast changes in SSI/SSDI take-up following future public health insurance expansions. 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 (Social Security Administration, 2021, 2022b). Future work could determine whether health insurance expansions affect the duration of disability program benefit receipt in order to forecast changes in total federal disability program expenditures.

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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 (SD)	47.8 (12.6)	47.5 (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.
Note: This table presents descriptive statistics for the study population for the variables used in analysis.

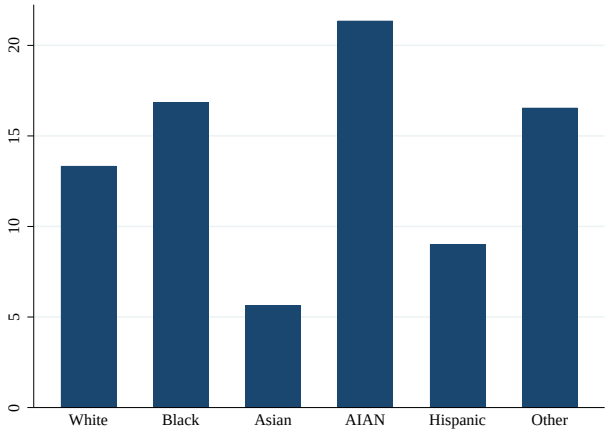
Table 2: Medicaid expansion, coverage, SSI, and SSDI receipt

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

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

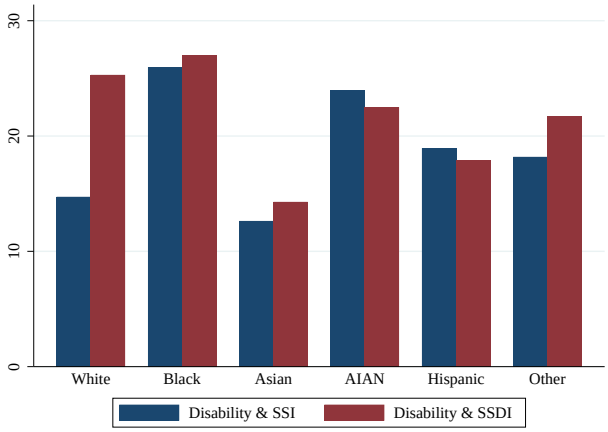
Sources: Data is obtained from the CPS Annual Social and Economic Supplement for the years 2009-2020. Data on state Medicaid expansion and timing of expansion is derived from KFF. *Notes:* This table reports results from estimating the difference-in-difference regression given in Equation 1. Observations from the year of expansion are omitted from the estimation. Expansion, Post, and race variables are defined as above. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Figure 1: Rates of disability among CPS respondents



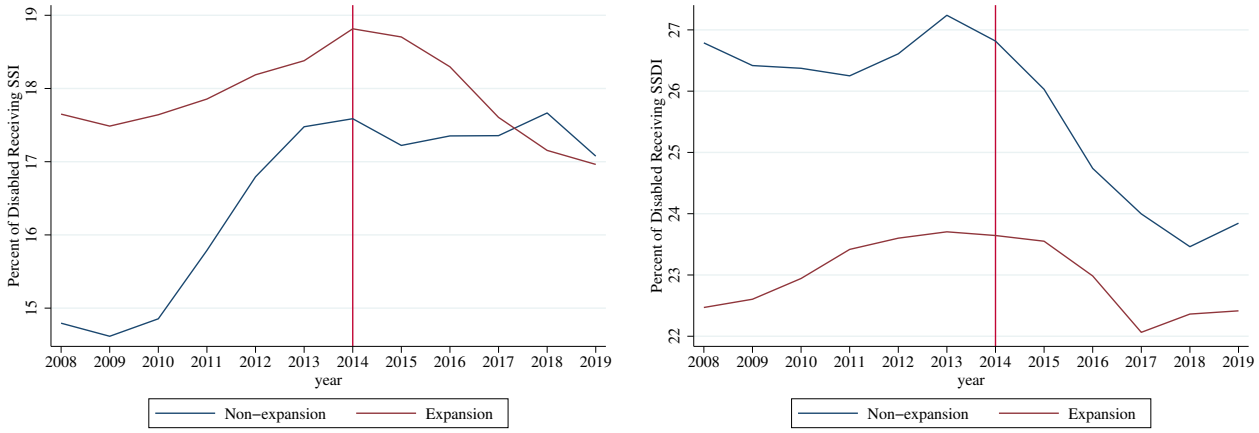
This figure depicts the rate of disability by race among respondents in our study population.

Figure 2: Rates of SSI/SSDI receipt among CPS respondents



This figure depicts the rate of SSI and SSDI receipt, by race, among respondents with a disability in our study population. Respondents who receive both SSI and SSDI payments are represented in both bars.

Figure 3: Trends in SSI and SSDI receipt among disabled respondents over time, by state expansion status

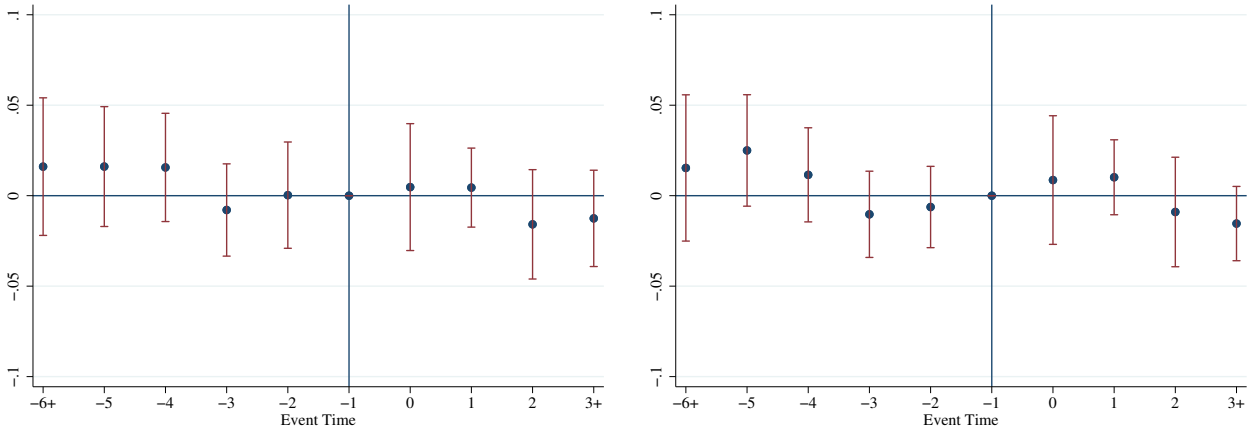


(a) SSI

(b) SSDI

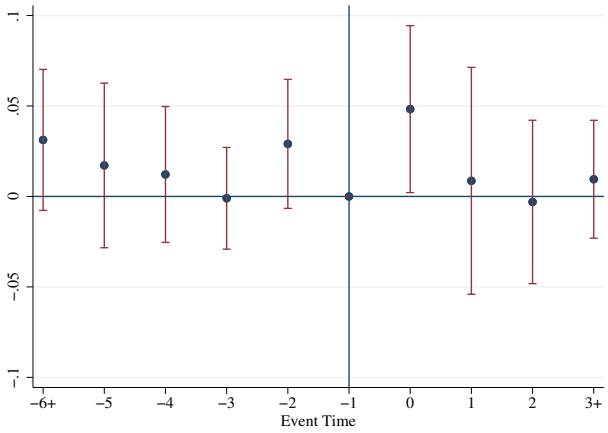
This figure depicts trends in SSI and SSDI receipt among the study population of respondents with a disability over time. Rates of receipt are plotted as 3 year moving averages.

Figure 4: Change in SSI participation over time, relative to Medicaid expansion, by race

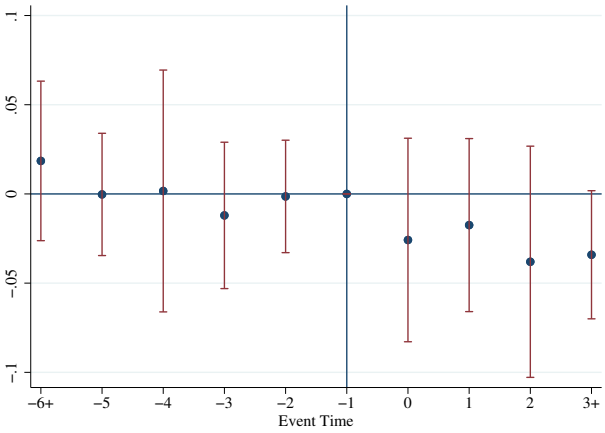


(a) Full Sample

(b) White Respondents



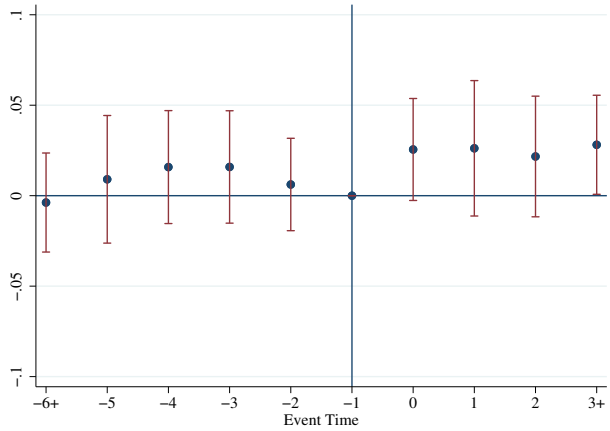
(c) Black Respondents



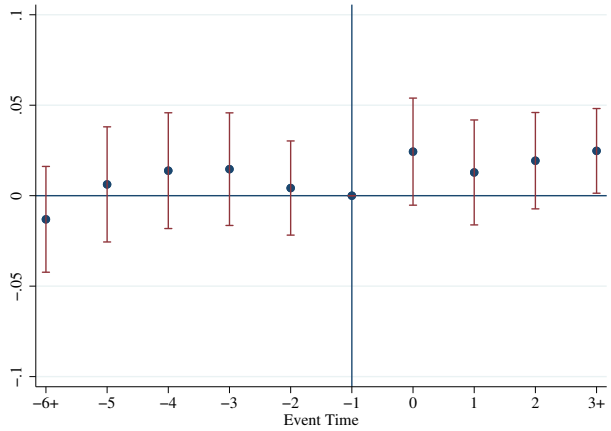
(d) Hispanic Respondents

Sources. Data is obtained from the Annual Social and Economic Supplement of the CPS for the years 2009-2020. *Notes:* This figure plots coefficients estimated from the dynamic version of Equation 1 in which the Post indicator variable is interacted with indicator variables for relative time. The interaction for 1 year prior to expansion is omitted for reference. Standard errors are clustered at the state-level.

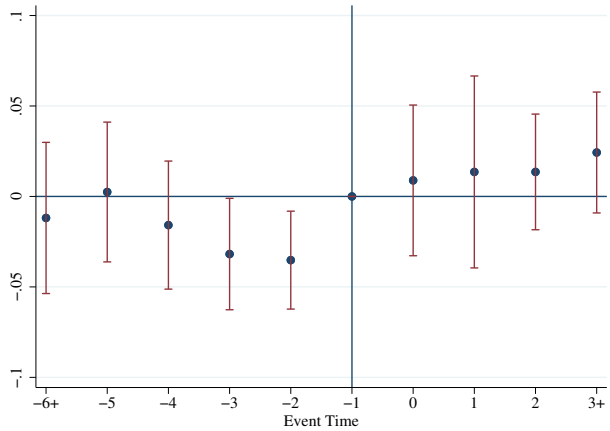
Figure 5: Change in SSDI participation over time, relative to Medicaid expansion



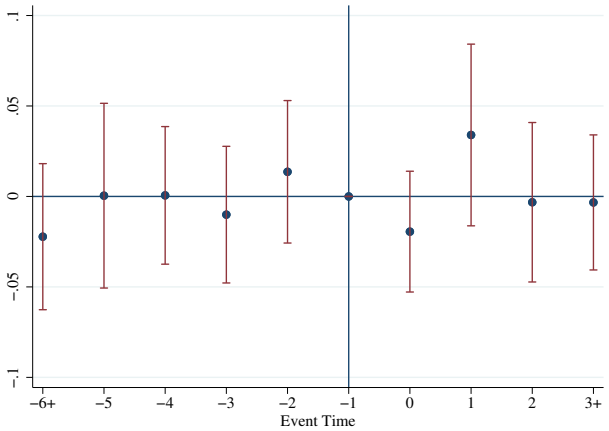
(a) Full Sample



(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. *Notes:* This figure plots coefficients estimated from the dynamic version of Equation 1 in which the Post indicator variable is interacted with indicator variables for relative time. The interaction for 1 year prior to expansion is omitted for reference. Standard errors are clustered at the state-level.

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Appendix A Additional Tables and Figures

Table A1: Medicaid expansion and employment sponsored insurance

	(1) ESHI	(2) ESHI	(3) Employed	(4) Employed	(5) Income	(6) Income
Expansion x Post	-0.0150**		0.00254		70.78	
	(0.00676)		(0.00783)		(449.5)	
Expansion x Post x White		-0.0128		0.00370		141.7
		(0.00797)		(0.00982)		(529.5)
Expansion x Post x Black		-0.0236**		-0.00679		-203.8
		(0.0112)		(0.0102)		(502.1)
Expansion x Post x Hispanic		-0.00826		0.0210*		442.5
		(0.00881)		(0.0107)		(624.7)
Expansion x Post x Asian		-0.0255		-0.0452**		-433.6
		(0.0163)		(0.0198)		(1332.1)
Expansion x Post x AIAN		-0.00630		-0.00992		-1313.6
		(0.0294)		(0.0402)		(1285.1)
Expansion x Post x Other		-0.0506***		-0.0143		-1065.8
		(0.0180)		(0.0263)		(811.4)
Black race, non-Hispanic	-0.0377***	-0.0355***	-0.0941***	-0.0920***	-3557.5***	-3487.3***
	(0.00487)	(0.00530)	(0.00696)	(0.00825)	(271.0)	(290.3)
Hispanic ethnicity	-0.0470***	-0.0485***	-0.0226*	-0.0278**	-4938.3***	-5033.7***
	(0.00678)	(0.00756)	(0.0116)	(0.0116)	(306.7)	(310.2)
Asian race, non-Hispanic	-0.0565***	-0.0525***	-0.0311**	-0.0145	-6191.1***	-6005.8***
	(0.00906)	(0.0100)	(0.0151)	(0.0150)	(513.8)	(465.5)
AIAN, non-Hispanic	-0.0644***	-0.0658***	-0.0747***	-0.0712***	-3785.6***	-3428.8***
	(0.0101)	(0.0121)	(0.0166)	(0.0228)	(556.4)	(670.4)
Other race, non-Hispanic	-0.0285***	-0.0184*	0.0115	0.0163	-2509.5***	-2186.1***
	(0.00833)	(0.00924)	(0.0146)	(0.0186)	(447.2)	(526.5)
Observations	121494	121494	121494	121494	121494	121494
Dep Var Mean (White)	0.23	0.23	0.40	0.40	21850.45	21850.45
Dep Var Mean (Non-Exp)	0.19	0.19	0.36	0.36	18965.57	18965.57

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression examining the effect of Medicaid expansion on employment-sponsored health insurance (ESHI), work status, and income among respondents with disabilities. Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A2: Medicaid expansion, part-time, and full-time employment

	(1) Part-Time	(2) Part-Time	(3) Full-Time	(4) Full-Time
Expansion x Post	0.000352		0.000596	
	(0.00555)		(0.00583)	
Expansion x Post x White		0.00392		-0.000668
		(0.00662)		(0.00656)
Expansion x Post x Black		-0.00797*		-0.00225
		(0.00451)		(0.0105)
Expansion x Post x Hispanic		0.0000431		0.0152*
		(0.00837)		(0.00876)
Expansion x Post x Asian		-0.0378***		-0.0124
		(0.0132)		(0.0147)
Expansion x Post x AIAN		0.000634		-0.0184
		(0.0253)		(0.0251)
Expansion x Post x Other		0.0171		-0.0168
		(0.0196)		(0.0170)
Black race, non-Hispanic	-0.0345***	-0.0320***	-0.0494***	-0.0492***
	(0.00393)	(0.00428)	(0.00644)	(0.00709)
Hispanic ethnicity	-0.0135**	-0.0126**	-0.0118	-0.0164**
	(0.00514)	(0.00591)	(0.00743)	(0.00720)
Asian race, non-Hispanic	-0.00434	0.00948	-0.0111	-0.00693
	(0.00993)	(0.0113)	(0.00882)	(0.00986)
AIAN, non-Hispanic	-0.0266**	-0.0259	-0.0432***	-0.0387***
	(0.0119)	(0.0157)	(0.00732)	(0.00926)
Other race, non-Hispanic	0.00903	0.00528	-0.00944	-0.00501
	(0.00812)	(0.0110)	(0.00729)	(0.00873)
Observations	121494	121494	121494	121494
Dep Var Mean (White)	0.11	0.11	0.18	0.18
Dep Var Mean (Non-Exp)	0.10	0.10	0.17	0.17

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression examining the effect of Medicaid expansion on part-time and full-time work status among respondents with disabilities. Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A3: Medicaid expansion, coverage, SSI, and SSDI receipt among low income respondents

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0842***		-0.0260**		0.0178	
	(0.0190)		(0.0113)		(0.0122)	
Expansion x Post x White		0.0916***		-0.0270**		0.0234
		(0.0223)		(0.0118)		(0.0150)
Expansion x Post x Black		0.0592**		-0.00965		0.0141
		(0.0222)		(0.0283)		(0.0163)
Expansion x Post x Hispanic		0.0819***		-0.0463**		0.00651
		(0.0222)		(0.0176)		(0.0166)
Expansion x Post x Asian		0.121***		-0.0104		0.00406
		(0.0258)		(0.0270)		(0.0253)
Expansion x Post x AIAN		0.0419		-0.0362		-0.0215
		(0.0333)		(0.0599)		(0.0348)
Expansion x Post x Other		0.118***		-0.000513		0.0436
		(0.0383)		(0.0343)		(0.0344)
Black race, non-Hispanic	0.0736***	0.0799***	0.0721***	0.0688***	-0.0158	-0.0140
	(0.00899)	(0.00948)	(0.00948)	(0.00835)	(0.0101)	(0.0117)
Hispanic ethnicity	0.0381***	0.0401***	-0.000991	0.00428	-0.0829***	-0.0788***
	(0.0121)	(0.0147)	(0.0210)	(0.0173)	(0.0118)	(0.0133)
Asian race, non-Hispanic	-0.0171	-0.0275*	-0.0290**	-0.0342*	-0.0876***	-0.0821***
	(0.0112)	(0.0160)	(0.0121)	(0.0198)	(0.0126)	(0.0149)
AIAN, non-Hispanic	0.0877***	0.0995***	0.0842**	0.0859**	-0.0511*	-0.0407
	(0.0175)	(0.0222)	(0.0314)	(0.0400)	(0.0278)	(0.0263)
Other race, non-Hispanic	0.0384***	0.0306	0.0270**	0.0197	-0.0200	-0.0260
	(0.0138)	(0.0187)	(0.0117)	(0.0140)	(0.0137)	(0.0156)
Observations	47633	47633	47633	47633	47633	47633
Avg White Take-up	0.52	0.52	0.23	0.23	0.27	0.27
Avg Non-Exp Take-up	0.49	0.49	0.25	0.25	0.27	0.27

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1, but among low income respondents with disabilities (Income below 138% FPL). Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A4: Medicaid expansion, coverage, SSI, and SSDI receipt among respondents in non-ABAWD states

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0783***		-0.0120**		0.0225***	
	(0.00967)		(0.00581)		(0.00697)	
Expansion x Post x White		0.0743***		-0.0103		0.0241***
		(0.0111)		(0.00618)		(0.00640)
Expansion x Post x Black		0.0832***		0.00800		0.0312***
		(0.0173)		(0.0117)		(0.0114)
Expansion x Post x Hispanic		0.0816***		-0.0413***		0.00942
		(0.0114)		(0.0116)		(0.0123)
Expansion x Post x Asian		0.0926***		-0.00116		0.0198
		(0.0232)		(0.0144)		(0.0194)
Expansion x Post x AIAN		0.0529		-0.0448		0.0277
		(0.0376)		(0.0385)		(0.0260)
Expansion x Post x Other		0.122***		0.0135		0.0155
		(0.0238)		(0.0157)		(0.0216)
Black race, non-Hispanic	0.103***	0.101***	0.0769***	0.0739***	0.00955*	0.00840
	(0.00698)	(0.00751)	(0.00567)	(0.00556)	(0.00528)	(0.00685)
Hispanic ethnicity	0.0652***	0.0634***	0.00625	0.0144	-0.0503***	-0.0464***
	(0.00742)	(0.00923)	(0.0128)	(0.00963)	(0.00839)	(0.00875)
Asian race, non-Hispanic	0.0400**	0.0347**	0.00572	0.00239	-0.0563***	-0.0552***
	(0.0152)	(0.0138)	(0.00973)	(0.00924)	(0.00852)	(0.00962)
AIAN, non-Hispanic	0.102***	0.107***	0.0704***	0.0779**	-0.0295	-0.0305
	(0.0235)	(0.0283)	(0.0258)	(0.0316)	(0.0220)	(0.0244)
Other race, non-Hispanic	0.0429***	0.0310**	0.0115*	0.00525	-0.0296**	-0.0276**
	(0.0122)	(0.0136)	(0.00626)	(0.00780)	(0.0109)	(0.0136)
Observations	108495	108495	108495	108495	108495	108495
Avg White Take-up	0.30	0.30	.14	.14	.24	.24
Avg Non-Exp Take-up	0.32	0.32	0.16	0.16	0.25	0.25

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1. Observations from the year of expansion are omitted from the estimation. Following Miller & Wherry (2017), states with generous income limits for able-bodied adults without disabilities (ABAWD) prior to ACA expansion are omitted from estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A5: Medicaid, SSI, & SSDI take-up, 6Q disability

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0668***		-0.0143*		0.0296***	
	(0.0128)		(0.00782)		(0.00806)	
Expansion x Post x White		0.0612***		-0.0157*		0.0348***
		(0.0143)		(0.00885)		(0.00725)
Expansion x Post x Black		0.0679***		0.00808		0.0333**
		(0.0230)		(0.0173)		(0.0164)
Expansion x Post x Hispanic		0.0766***		-0.0356**		0.0121
		(0.0108)		(0.0140)		(0.0146)
Expansion x Post x Asian		0.0964***		0.0152		0.0209
		(0.0219)		(0.0233)		(0.0250)
Expansion x Post x AIAN		0.0682*		-0.00463		0.0272
		(0.0359)		(0.0319)		(0.0285)
Expansion x Post x Other		0.104***		-0.0156		-0.000907
		(0.0351)		(0.0240)		(0.0220)
Black race, non-Hispanic	0.0976***	0.0962***	0.0758***	0.0713***	0.00129	0.00171
	(0.00767)	(0.00727)	(0.00692)	(0.00633)	(0.00793)	(0.00867)
Hispanic ethnicity	0.0798***	0.0759***	0.0206	0.0261**	-0.0552***	-0.0493***
	(0.00984)	(0.0104)	(0.0155)	(0.0126)	(0.0113)	(0.0121)
Asian race, non-Hispanic	0.0469***	0.0365**	0.000846	-0.00877	-0.0732***	-0.0695***
	(0.0150)	(0.0142)	(0.0108)	(0.0107)	(0.0143)	(0.0139)
AIAN, non-Hispanic	0.0970***	0.0954***	0.0597***	0.0567***	-0.0326	-0.0310
	(0.0212)	(0.0253)	(0.0173)	(0.0207)	(0.0203)	(0.0229)
Other race, non-Hispanic	0.0555***	0.0448***	0.0288***	0.0287**	-0.0285**	-0.0196
	(0.0148)	(0.0155)	(0.00822)	(0.0118)	(0.0133)	(0.0152)
Observations	79249	79249	79249	79249	79249	79249
Avg White Take-up	0.31	0.31	0.14	0.14	0.25	0.25
Avg Non-Exp Take-up	0.32	0.32	0.17	0.17	0.26	0.26

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1, but among respondents with a disability according to the six-question sequence. Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A6: Medicaid expansion, coverage, SSI, and SSDI receipt in all expansion states

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0700***		-0.0123*		0.0216***	
	(0.0106)		(0.00626)		(0.00732)	
Expansion x Post x White		0.0676***		-0.0112		0.0230***
		(0.0112)		(0.00685)		(0.00736)
Expansion x Post x Black		0.0670***		-0.00159		0.0316***
		(0.0185)		(0.0118)		(0.0113)
Expansion x Post x Hispanic		0.0750***		-0.0303**		0.00706
		(0.00962)		(0.0123)		(0.0117)
Expansion x Post x Asian		0.0938***		-0.00419		0.0141
		(0.0241)		(0.0134)		(0.0145)
Expansion x Post x AIAN		0.0514		-0.0402		0.0159
		(0.0321)		(0.0332)		(0.0204)
Expansion x Post x Other		0.0995***		0.00608		0.0260
		(0.0229)		(0.0160)		(0.0192)
Black race, non-Hispanic	0.103***	0.103***	0.0771***	0.0751***	0.00285	0.00106
	(0.00643)	(0.00696)	(0.00527)	(0.00519)	(0.00599)	(0.00773)
Hispanic ethnicity	0.0790***	0.0770***	0.0204	0.0259**	-0.0603***	-0.0557***
	(0.00939)	(0.00997)	(0.0143)	(0.0110)	(0.00946)	(0.0103)
Asian race, non-Hispanic	0.0481***	0.0394***	-0.00205	-0.00469	-0.0675***	-0.0647***
	(0.0125)	(0.0139)	(0.0118)	(0.0104)	(0.00943)	(0.0105)
AIAN, non-Hispanic	0.0907***	0.0948***	0.0670***	0.0740***	-0.0343*	-0.0327
	(0.0225)	(0.0266)	(0.0220)	(0.0275)	(0.0189)	(0.0209)
Other race, non-Hispanic	0.0414***	0.0327**	0.0162**	0.0113	-0.0259***	-0.0269**
	(0.0109)	(0.0126)	(0.00705)	(0.00922)	(0.00933)	(0.0118)
Observations	136016	136016	136016	136016	136016	136016
Avg White Take-up	0.32	0.32	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
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1. Observations from the year of expansion are omitted from the estimation. States that never expanded or expanded in 2014, 2015, and 2016 are included in estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A7: Medicaid expansion, coverage, SSI, and SSDI receipt in late expansion states

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0749***		-0.00822		0.0334*	
	(0.0249)		(0.0154)		(0.0183)	
Expansion x Post x White		0.0750***		-0.0106		0.0380
		(0.0239)		(0.0187)		(0.0229)
Expansion x Post x Black		0.0638		0.00356		0.0369
		(0.0587)		(0.0235)		(0.0242)
Expansion x Post x Hispanic		0.0793***		0.00136		-0.00735
		(0.0153)		(0.0171)		(0.0181)
Expansion x Post x Asian		0.246**		-0.0570*		0.0214
		(0.0898)		(0.0289)		(0.0280)
Expansion x Post x AIAN		0.0293		-0.0758*		0.00976
		(0.0401)		(0.0409)		(0.0236)
Expansion x Post x Other		0.0462		0.0164		0.0979*
		(0.0351)		(0.0325)		(0.0551)
Black race, non-Hispanic	0.105***	0.105***	0.0748***	0.0739***	0.0119	0.0121
	(0.00795)	(0.00785)	(0.00612)	(0.00625)	(0.00860)	(0.00905)
Hispanic ethnicity	0.0653***	0.0649***	0.0260***	0.0250***	-0.0520***	-0.0489***
	(0.0133)	(0.0134)	(0.00817)	(0.00717)	(0.0144)	(0.0136)
Asian race, non-Hispanic	0.00789	-0.00902	-0.0174	-0.0129	-0.0802***	-0.0786***
	(0.0173)	(0.0188)	(0.0134)	(0.0142)	(0.0129)	(0.0144)
AIAN, non-Hispanic	0.0715**	0.0753**	0.0767**	0.0819**	-0.0447***	-0.0428**
	(0.0332)	(0.0343)	(0.0355)	(0.0373)	(0.0153)	(0.0157)
Other race, non-Hispanic	0.0276*	0.0295*	0.00808	0.00625	-0.0177	-0.0216
	(0.0142)	(0.0153)	(0.0106)	(0.0104)	(0.0171)	(0.0185)
Observations	64856	64856	64856	64856	64856	64856
Avg White Take-up	0.29	0.29	0.13	0.13	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
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1, but among respondents with disabilities living in states that expanded in 2015 or 2016. Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.

Table A8: Medicaid expansion, coverage, SSI, and SSDI receipt, 2011 & 2012 omitted

	(1) Medicaid	(2) Medicaid	(3) SSI	(4) SSI	(5) SSDI	(6) SSDI
Expansion x Post	0.0688***		-0.0192***		0.0222***	
	(0.0112)		(0.00701)		(0.00718)	
Expansion x Post x White		0.0641***		-0.0194**		0.0253***
		(0.0125)		(0.00770)		(0.00659)
Expansion x Post x Black		0.0668***		-0.00412		0.0236**
		(0.0190)		(0.0135)		(0.0114)
Expansion x Post x Hispanic		0.0806***		-0.0381***		0.0102
		(0.00950)		(0.0122)		(0.0141)
Expansion x Post x Asian		0.0926***		0.00278		0.0156
		(0.0262)		(0.0177)		(0.0164)
Expansion x Post x AIAN		0.0417		-0.0529		0.0302
		(0.0401)		(0.0432)		(0.0292)
Expansion x Post x Other		0.102***		0.00143		0.0183
		(0.0270)		(0.0172)		(0.0198)
Black race, non-Hispanic	0.105***	0.104***	0.0737***	0.0701***	0.0119*	0.0124
	(0.00642)	(0.00721)	(0.00568)	(0.00527)	(0.00616)	(0.00772)
Hispanic ethnicity	0.0753***	0.0700***	0.0165	0.0229*	-0.0561***	-0.0511***
	(0.0108)	(0.0118)	(0.0167)	(0.0131)	(0.0110)	(0.0126)
Asian race, non-Hispanic	0.0400***	0.0292**	-0.00614	-0.0152*	-0.0620***	-0.0586***
	(0.0117)	(0.0133)	(0.00992)	(0.00822)	(0.0116)	(0.0136)
AIAN, non-Hispanic	0.105***	0.112***	0.0768***	0.0860**	-0.0372	-0.0388
	(0.0253)	(0.0326)	(0.0274)	(0.0361)	(0.0228)	(0.0270)
Other race, non-Hispanic	0.0473***	0.0354**	0.0146*	0.00795	-0.0252***	-0.0231*
	(0.0121)	(0.0149)	(0.00811)	(0.0105)	(0.00919)	(0.0118)
Observations	99283	99283	99283	99283	99283	99283
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
* $p < .10$, ** $p < .05$, *** $p < .01$

This table reports results from estimating the difference-in-difference regression given in Equation 1, but with the years 2011 and 2012 omitted. Observations from the year of expansion are omitted from the estimation. Controls for respondent characteristics as well as year and state fixed effects are included in all specifications. Standard errors are clustered at the state level.