Center for Financial Security
UNIVERSITY OF WISCONSIN-MADISON
Retirement & Disability Research Center

Effects of SNAP-Associated Work Requirements on Disability Claiming

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Acknowledgements: I thank Richard Santos and Jeffrey Smith for serving as mentors on this project and Michael Collins and Hallie Leinhardt for crucial feedback. I also would like to thank Timothy Harris for sharing the data from the United States Department of Agriculture on county-level work requirements, Judy Bartfeld for her institutional knowledge, seminar participants at the University of Wisconsin Center for Financial Security's Household Finance Seminar Series for helpful comments, and Usamah Wasif, Avinandan Chakraborty, and Samsun Naher for excellent research assistance. Required disclaimer: "The research reported herein was derived in whole or in part from research activities performed pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Research Consortium. The opinions and conclusions expressed are solely those of the author(s) and do not represent the opinions or policy of SSA or any agency of the Federal Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States Government or any agency therof.

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Abstract

Between 2010 and 2017, 42 states added work requirements as a food assistance eligibility criterion for Able-Bodied Adults Without Dependents (ABAWDs). As these work requirements apply only to ABAWDs, who are aged 18-49 and not administratively determined to have a disability, qualifying for Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI) would enable an individual to receive food assistance without meeting the work requirements. This study is the first to examine whether work requirements associated with the Supplemental Nutrition Assistance Program (SNAP) lead to an increase in disability claiming. Based on difference-in-differences and event study analyses of administrative claims data from the Social Security Administration, no overall change in disability applications or receipt for SSI and SSDI is evident between 2010 and 2017. However, I find evidence of a 4 percent increase in SSI applications in the first half of the sample period (2010-2013) and delayed increases in SSI applications and receipt documented among states that had work requirements reinstated earlier in the sample period. Further, I use the Current Population Survey (CPS) data to explore the demographics driving these effects and find an increase in SSI receipt among individuals with self-reported disabilities and incomes below 150 percent of the Federal Poverty Line. These results are strongest among women, Whites, and those with less than a high school education or disabilities other than blindness. These results indicate that overall effects from work requirements are not large, but that the affected population is particularly vulnerable.

Keywords: disability, public assistance, work requirement, food stamps, time limit waiver, welfare

JEL codes: H53, I38, J22

Acronyms

ABAWD	Able-Bodied Adult Without Dependents
ACA	Patient Protection and Affordable Care Act
AFDC	Aid to Families with Dependent Children
CPS	Current Population Survey
CPS – ASEC	Current Population Survey – Annual Social and Economic Supplement
FNS	Food and Nutrition Service
FPL	Federal Poverty Line
PDMP	Prescription Drug Monitoring Program
PRWORA	Personal Responsibility and Work Opportunity Reconciliation Act of 1996
SAMWD	Social Security Administration State Agency Monthly Workload Data
SNAP	Supplemental Nutrition Assistance Program
SSA	Social Security Administration
SSDI	Social Security Disability Insurance
SSI	Supplemental Security Income
TANF	Temporary Assistance for Needy Families
USDA	United States Department of Agriculture

1. Introduction

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) reformed the welfare system with a focus on incentivizing re-entry of welfare recipients into the workforce and decreasing welfare dependency. Two important components of the welfare reforms were time limits on receipt of benefits followed by work requirements in order to maintain welfare eligibility once the time limit had been exceeded. In the case of the Supplemental Nutrition Assistance Program (SNAP), the PRWORA added a time limit for receipt with a subsequent work requirement component for continued eligibility for the Able-Bodied Adults Without Dependents (ABAWD) category of individuals. An ABAWD is between 18 and 49, with no administratively determined disability and no dependents. Such individuals are only eligible to receive SNAP for three months within a span of three years unless the individual meets certain ABAWD-specific work requirements; this component is referred to as the ABAWD time limit. If an ABAWD meets the minimum work requirement, which entails working a minimum of 20 hours per week, and their income remains below 130 percent of the Federal Poverty Level, that person will continue to receive SNAP benefits.

In acknowledgment of circumstances where the ABAWD requirements would be unduly burdensome due to insufficient job opportunities, the PRWORA allows for ABAWD time limits and associated work requirements to be suspended if unemployment is sufficiently high. A "time limit waiver" entails that ABAWD work requirements and the associated time limit on SNAP receipt are no longer applicable in the region granted the waiver. Waivers are typically assessed on an annual basis.[1]

Those with a disability are exempt from SNAP work requirements. In order to be classified as disabled in the context of SNAP enrollment, an individual must be receiving federal disability payments under the Social Security Act (including Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI)) or alternatively receiving state disability payments based on SSI rules.[2] Apart from disability requirements, SSI is only available to low-income individuals with assets worth less than $2,000 for individuals ($3,000 for couples), while SSDI requires a

[1] https://www.fns.usda.gov/snap/ABAWD/waivers. Accessed 08/03/20.
[2] Some states supplement federal SSI payments, while others administer their own SSI programs. Details do not appear readily available with individuals directed by the federal Social Security Administration to contact their state offices. https://www.ssa.gov/ssi/text-benefits-ussi.htm. Accessed 08/05/20. The University of Kentucky Center for Poverty Research stopped recording this information in 2011.

sufficient work history for eligibility. The implementation of ABAWD work requirements could thus incentivize SNAP recipients, who are not enrolled in a disability program, to apply for disability benefits in order to be exempt from the newly implemented work requirements, in addition to gaining benefits in terms of direct payments and healthcare through Medicaid (SSI) or Medicare (SSDI). This leads to my primary research question: Do ABAWD work requirements increase the number of disability claimants? I anticipate stronger effects for SSI than for SSDI for two reasons: (1) SSDI eligibility includes prior work force participation while SSI does not, suggesting SSI applicants may have greater difficulty meeting the work requirement, and (2) SSI targets a more financially vulnerable population for whom opting out of public assistance is less likely to be an option.

I use administrative claims data on all SSI only, concurrent SSI and SSDI, and SSDI only applications and receipt from the Social Security Administration (SSA) to study whether SNAP-associated work requirements increased SSI and SSDI applications or receipt overall. Eight states began my sample period from 2010 to 2017 with work requirements; all states except Rhode Island had added them by the end of 2017. In order to address the possibility of institutional changes over time, I conduct subgroup analyses, running regressions differentiating between the first half and the second half of the sample period (2010 to 2013 and 2014 to 2017) and using SSI applications and receipt by children with disabilities as an outcome variable. Because the administrative claims data do not include demographic information, I use survey data from the Current Population Survey (CPS) to focus on the population most likely to attempt to obtain SNAP through a qualifying disability, individuals with self-reported disabilities and income less than 150 percent of the federal poverty line, approximately the income eligibility requirement for both SNAP and SSI. (The SNAP income threshold is 130 percent of the FPL.) I also conduct subgroup analyses by gender, race/ethnicity, education, and whether the qualifying disability is blindness. Female households traditionally tend to be more likely to participate in public assistance programs (Irving and Loveless, 2015) and recent work found that the negative impact of SNAP work requirements on SNAP receipt differed by race and ethnicity (Brantley, Pillau, and Ku, 2020). More educated individuals are likely to find obtaining a job less burdensome due to their greater human capital. Individuals who are blind receive more generous benefits from both SSI and SSDI than do individuals with another qualifying disability, making the benefits of receiving disability higher for this subset of the sample.

The findings from this study indicate that work requirements are not associated with a consistently detectable increase in SSI, SSDI, or concurrent SSI and SSDI disability applications or receipt using the SSA administrative claims data from 2010 to 2017. In particular, I find no increase in applications or receipt using the SSA administrative claims data and a standard difference-in-differences approach, and all pre- and post-period coefficients are insignificant in the event studies. However, when I follow Borusyak and Jaravel (2017), who show that including policy leads can lead to under-identification, and focus on the policy lags alone, the results show a delayed effect for both SSI applications and receipt. The analyses by sub-period support this result with evidence of an increase in SSI applications following the reinstatement of work requirements in the first half of the sample period between 2010 and 2013. Thus, it may be that effects of work requirements are too delayed to be detectable in response to work requirements reinstated later in the sample period, which is why they are not evident in the overall sample results. The difference in effects between the first and second half of the sample period also could be affected by unobservable time-varying state-level institutional factors. This is supported by a statistically significant delayed increase in SSI receipt by children with disabilities paralleling the delayed increase in receipt among adults. No effect, immediate or lagged, is evident for SSDI or concurrent SSI and SSDI applications or receipt. Using the CPS data and focusing on SSI receipt among individuals earning less than 150 percent of the FPL, I find that, among individuals with self-reported disabilities, work requirements are associated with a 6.7 percentage point increase in the likelihood of reporting SSI receipt. This effect appears to be driven by women, Whites, those without a high school diploma, and those with a disability other than blindness. I find no change in SNAP receipt for individuals with self-reported disabilities, supporting a marginal group switching from SNAP alone to SSI, but I also find no effect from work requirements on SNAP receipt among individuals without self-reported disabilities.

This study contributes to the literature attempting to understand substitution effects across public assistance programs and the literature on the effects of public assistance-related work requirements. Burns and Dague (2017) find substitution between Medicaid obtained via the Affordable Care Act expansions and SSI participation, but Baicker et al. (2014) do not. Other studies find substitution between TANF/AFDC and SSI (Garrett and Glied, 2000; Schmidt and Sevak, 2004), but not between Workers' Compensation and SSDI (McInerney and Simon, 2012). The literature on SNAP-related work requirements so far has been limited to the association

between work requirements and employment outcomes (Harris, 2020; Wasif and Stith, 2020; Brantley, Pillai and Ku, 2020). Theoretical work predicts that work requirements deter enrollment in the affected welfare program (Besley and Coate, 1992). The lack of a change in SNAP among those with self-reported disabilities is consistent with this prediction if individuals are switching to SSI or SSDI following implementation of SNAP-related work requirements in large enough numbers to outweigh the deterrent effect of the work requirements on SNAP alone. The isolation of the effect among those with incomes less than 150 percent of the federal poverty line with self-reported disabilities may support predictions that work requirements will most affect those of lowest ability (Moffitt, 2006).

I contribute as well to the literature on factors driving SSI and SSDI receipt, which include economic conditions, employment opportunities, especially among less skilled workers (Autor and Duggan, 2003; Schmidt, 2012), and local area earnings (Black, Daniel and Sanders, 2002; Charles, Li, and Stephens, 2018; Vachon, 2015). A recent study by the SSA shows that even after controlling for business cycle affects, disability incidence, and determination backlogs, SSDI has been declining since 2010, leaving a complete explanation for the decline unknown. The study also notes a decline in SSI applications in recent years (SSA, 2019b). None of these studies addresses the possible spillover effects of work requirements for food assistance, which my results indicate may be affecting SSI receipt. In addition, the fact that work requirements are becoming more widespread, coupled with the possible increase in applications and receipt, suggests that declines related to other factors may be even greater than indicated in these prior studies once the effects of work requirements are taken into account.

This study also evaluates a particularly vulnerable population, those on the margin between applying for and potentially obtaining disability versus continuing to be counted among the "able-bodied" population, and shows that while a disability itself may not change, public policy can affect whether or not an individual chooses to opt out of the labor market into disability assistance programs. An increase in SSI receipt among women, Whites, those without a high school diploma, and those with a disability other than blindness suggests these are the groups most likely to successfully transition into disability benefits following the implementation of SNAP-related work requirements. It also or alternatively may be that these groups comprise a disproportionate share of individuals on the margin between claiming disability or not.

The results of this study are relevant to recent and proposed changes in U.S. federal public assistance programs. In December 2019, the Trump administration proposed making SNAP-related ABAWD waivers more difficult to obtain. Historically, a local unemployment rate exceeding the national average unemployment rate by 20 percent qualified a county or state for a time limit waiver, but the December 2019 administrative change would have added the qualification that the unemployment rate must also exceed six percent.[3] The change was challenged in the courts and the Trump administration decided to wait on attempting to add the qualification, given the current national emergencies (Fadulu, 2020). Other public assistance programs also have work requirements that could affect individuals on the margin of continuing enrollment versus opting into a disability assistance program. Understanding whether SNAP work requirements simply shift claimants to disability benefits and burden Social Security is also of policy relevance from a government expenditure standpoint.

2. Institutional Background

This study looks at the intersection of three large federal programs: the Supplemental Nutrition Assistance Program (SNAP) run through the U.S. Department of Agriculture's Food and Nutrition Service (FNS) and Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) administered by the Social Security Administration (SSA).

Each state administers its own SNAP program, following federal guidelines. Typically, households apply in person at local offices, but can also apply by mail, via facsimile, or online. Eligibility is based on residency, immigration status, household composition, income and resources, and deductible expenses. Eligible households receive an electronic benefits card that can be used to purchase food, but excludes alcoholic beverages, cigarettes, vitamin supplements, non-food grocery items such as household supplies and hot foods. In July 2020, 241,793 retailers were authorized to participate in the program.[4] In 2019, 38 million individuals received SNAP

[3] If the national unemployment rate were four percent, an unemployment rate of 4.8 percent would be 20 percent higher than the national rate and thus that area would have qualified for a time limit waiver under the old rule. Under the new rule, the local unemployment rate would have to both exceed the national rate by 20 percent and exceed 6 percent in absolute terms, meaning that same area with 4.8 percent unemployment would no longer qualify for a time limit waiver.

[4] USDA SNAP Store Locations. https://usda-fns.hub.arcgis.com/datasets/USDA-FNS::snap-store-locations?geometry=-48.912%2C-9.798%2C19.643%2C74.211 Accessed 07/09/20.

benefits at an average amount of $1.40 per meal or $127 per month for an individual and $256 for a household (CBPP, 2019a).

For households receiving SNAP on the basis of income alone, they typically must reapply every six to twelve months. Households receiving SNAP on the basis of disability only have to reapply every 12 to 24 months. SNAP benefits are automatically terminated if the household does not reapply, but can also be denied, suspended, or terminated by the state SNAP administrator. Households may appeal these decisions through the Department of Human Services' Bureau of Hearings and Appeals, which receives approximately 100,000 appeals per year.[5]

Concerns exist that individuals receiving SNAP and other forms of welfare are disincentivized to work. Perhaps the largest single piece of legislation enacted to incentivize work rather than public assistance was the PRWORA, which expanded incentives for states to move public assistance beneficiaries from welfare receipt back to employment.

Relevant to this study, the PWORA included additional work requirements for ABAWDs receiving SNAP. These work requirements are dependent on local economic conditions and are waived at the county level. According to the Food and Nutrition Service (FNS), during the sample period from 2010 to 2017, the common criteria by which states could qualify for a time limit waiver were: (1) a recent 12-month unemployment rate above 10 percent overall in the county or state, (2) a recent 3-month unemployment rate above 10 percent, (3) designation as a Labor Surplus Area[6] by the Department of Labor; (4) qualification for extended unemployment benefits, or (5) a recent 24-month average unemployment rate 20 percent above the national average for the same 24-month period (SNAP, 2019). Due to the Great Recession, in 2008, no states had work requirements. In 2010, the start of the sample period, eight states had work requirements reinstated in at least some counties. By the end of the sample period in 2017, all states except Rhode Island had work requirements in place in at least some counties. (Rhode Island followed in 2018.)

SNAP has two sets of work requirements. Even prior to the PRWORA, applicants between the ages 16 and 59 and able to work needed to meet general work requirements to get SNAP benefits. The general work requirements include registering for work, participating in SNAP

[5] https://www.dhs.pa.gov/about/DHS-Information/Pages/Hearing-and-Appeals-Process.aspx. Accessed 07/09/20.
[6] A jurisdiction is classified as a labor surplus area when its average unemployment rate is at least 20 percent above the average unemployment rate for the nation during the previous two calendar years, with a ceiling of 10 percent and a floor of 6 percent for periods of very high or low national unemployment.

Employment and Training or workfare if assigned by their state SNAP agency, taking a suitable job if offered, and not voluntarily quitting a job or reducing work hours below 30 a week without a good reason. The work requirement for ABAWDs added by the PWORA differs in that an individual can only receive SNAP benefits for more than three months within three years (the time limit) if that person finds employment. In other words, if an individual is aged 18 to 49, does not have any dependents, and is able to work, but does not find a job within the time limit, that person loses SNAP benefits while other SNAP recipients do not. States can also voluntarily institute work requirements, but these are not tracked in the USDA correspondence on which the work requirements data are based. The Center for Budget and Policy Priorities reports several instances where states implemented work requirements before exhausting their time limit waivers through the USDA (CBPP, 2019c).

The USDA does allow states to exempt up to 15 percent of ABAWDs from work requirements, with some states taking advantage of these exemptions while others do not. Based on correspondence from the USDA to states between 2012 and 2017, not all states that could use exemptions did. Even states that used exemptions typically do not use the full 15 percent. In 2012, four of eleven states with work requirements used exemptions, exempting about 1.6 percent of their ABAWDs on average. In 2017, 32 of 50 states with work requirements used exemptions, exempting about 3.6 percent of their ABAWDs on average. States also can be banned from using exemptions due to exempting more than 15 percent of their ABAWD population in previous years. Both Florida and New Mexico were unable to take exemptions during the entire sample period of this study, due to exempting far more than 15 percent of their ABAWDs in 2009.

Individuals with disabilities that prevent them from working are not subject to work requirements for SNAP and may be able to obtain SNAP and additional benefits through SSI and SSDI. SSI is limited to individuals with assets of less than $2,000 or couples with assets of less than $3,000, while SSDI applies only to individuals with sufficient work history (worked roughly 25 percent of their adult life and 5 of the last 10 years before disability onset). In both cases, individuals between the ages of 18 and 49 must meet the SSA's disability criteria. Disability is defined as an inability to participate in any "substantial gainful activity," which effectively meant

earning more than $1,260 per month in 2020.[7] The disabling condition must be terminal or have existed/be expected to exist for 12 months or more.

Applying for SSI and SSDI can be done in person or online and an extensive appeals process exists. The appeals process is so extensive that at times individuals no longer meet the recency of work requirement for SSDI by the time they are finally determined to be disabled. Approximately half of SSI and SSDI applicants initially denied appeal, and only about 40 percent of all applicants eventually qualify (CBPP, 2019b).

In 2019, the maximum SSI payout was $771 per month for individuals and $1,157 for couples with 7.97 million individuals receiving federal SSI benefits of, on average, $549 per month (SSA, 2019a). SSI recipients also qualify for Medicaid immediately in most states and almost all SSI recipients qualify for SNAP. SSI benefits begin the later of when an individual is found eligible for SSI and one-month post-application.

For individuals claiming at full retirement age, SSDI benefits were capped at $2,861 per month in 2019.[8] That same year, 8.5 million disabled worker beneficiaries (not including survivor and dependent beneficiaries) received an average monthly payment of $1,236 (CBPP, 2019). SSDI beneficiaries qualify for Medicare after a 24-month waiting period, but only sufficiently poor SSDI recipients qualify for SNAP. SSDI benefits begin the sixth full month of disability as determined by the SSA. Individuals can qualify for both SSI and SSDI, but typically this only applies to individuals with very limited work history; for many, SSDI benefits already exceed the income limit for SSI eligibility.[9]

3. Conceptual Framework

This framework focuses on the demand for SNAP and SSI/SSDI disability benefits as the margin expected to change in response to the implementation of work requirements. In line with longstanding approaches in the literature (e.g., Blundell, Fry and Walker, 1988; Moffitt, 1983; 1992), I conceptualize participation in SNAP and SSI/SSDI as a utility-maximizing decision made by individuals, who rationally compare the expected probability-weighted benefits of SNAP, SSI

[7] Individuals with blindness as their qualifying disability are allowed to earn up to $2,110 per month in 2020 (SSA, 2020).
[8] Social Security 2020 Changes. https://www.ssa.gov/news/press/factsheets/colafacts2020.pdf. Accessed 07/09/2020.
[9] Social Security Disability Benefits. https://www.ssa.gov/benefits/disability/. Accessed 07/09/20.

and SSDI with the expected costs, which prior to the work requirement were mostly related to search and application costs for initial enrollment and reenrollment. Individuals apply for or maintain eligibility in SNAP if the utility or net benefit from participating in SNAP exceeds that from participating in SSI or SSDI with the costs of obtaining employment not a major factor in the absence of work requirements. Throughout this framework, I assume that the probability of eligibility, benefits, and costs are essentially constant over time for an individual, apart from the changes in utility from enrolling in SNAP alone induced by the work requirement.[10]

Absent work requirements, SNAP eligibility is a function of income, SSI eligibility is a function of income and having a disability, and SSDI eligibility is a function of having a disability and sufficient work history.[11] The benefit of SNAP is food assistance; SSI benefits include food assistance, Medicaid, and income support; and SSDI benefits include Medicare (after a 24-month waiting period) and income. The costs for SNAP involve some search costs and the ability to show sufficiently low income; the costs for SSI require search costs, proof of low income, and proof of disability; and the costs for SSDI include search costs, proof of work history, and proof of disability. For both SSI and SSDI, there may also exist costs from not working. Search costs in terms of determining where and how to apply can vary substantially across geographic areas and can be a significant barrier to application (Currie, 2004; Deshpande and Li, 2019), at least for SSI and SSDI. SNAP, SSI, and SSDI all have online applications, in addition to applications through local offices, but not all prospective beneficiaries are likely to have internet access.

Benefits are clearly higher for both SSI and SSDI than for SNAP. These benefits are reduced proportionally with the probability of eligibility, which differs primarily between SNAP and SSI/SSDI due to the disability requirement for SSI and SSDI. Differences in costs for SSI and SSDI versus SNAP include documenting a disability through a healthcare provider and having it deemed sufficiently severe for eligibility by the SSA. The probability of eligibility also affects costs. Individuals with a low probability of eligibility may have low application costs because they are immediately rejected. Those with a high probability of eligibility may also have low application

[10] This is a simplification. Scenarios exist in which eligibility and benefits could change over time, for example, in the case of disabilities induced by diseases that worsen over time. As the person's disability worsens, eligibility increases, and the healthcare benefits of SSI and SSDI likely become more attractive, increasing the benefits of participation. Costs of applying could also change over time with, for example, office closures.

[11] This is with caveat. Benitez-Silva, Buchinsky, and Rust (2003) find around 20 percent of successful SSI/SSDI applicants did not self-report a disability in data from the Health and Retirement Survey, while around 60 percent of denied applicants self-report a disability.

costs because they are easily approved. However, individuals with moderate disabilities, who are on the margin between qualifying and not, are likely to face the highest application costs, including the longest appeals process.

To summarize, most ABAWDs on SNAP alone will be ineligible for SSI and SSDI because of the disability requirement. However, for those on the margin who choose to stay on SNAP rather than switch over to SSI or SSDI, the utility of SSI and SSDI must be less than the SNAP benefit, which averages approximately $127 per month (CBPP, 2019a), not accounting for costs associated with enrollment and reenrollment.

Work requirements unambiguously reduce the utility of SNAP alone by reducing the likelihood of eligibility through the uncertainty associated with finding a job and by increasing the costs required to continue enrollment in SNAP. If an individual does find a job, but earns too much, benefits could also decrease. For each dollar of earned income, household SNAP benefits decline by about 24 to 36 cents (CBPP, 2019d). Work requirements have no effect on the utility from enrolling in SSI or SSDI.

For most ABAWDs the utility from SNAP participation will exceed that from SSI and SSDI even after the implementation of work requirements because of a low probability of eligibility and the high cost of proving eligibility. For a small group of ABAWDs on SNAP, the reduction in utility from the work requirements will mean that utility from SSI or SSDI now exceeds what can be gained from remaining on SNAP, leading an optimizing individual to attempt to switch programs. These individuals on the margin will have difficulty finding work, evidence of some disability, costs of proving their disability that are not too high, and for SSDI, enough work history. Because difficulties finding work and disabilities tend to be correlated with poverty and a lack of work history, a larger number of individuals likely live on the margin between SNAP alone and SSI than between SNAP alone and SSDI. This leads to greater predicted effects for SSI than for SSDI or concurrent SSI and SSDI claims.

If enough individuals switch from obtaining SNAP alone as an ABAWD to obtaining SNAP due to a disability through SSI or SSDI, then that should be empirically evident in the administrative claims applications data. Long and variable processing delays will make this effect more difficult to pick up in the disability assistance receipt data. In addition, some individuals may overestimate their eligibility or underestimate their costs from obtaining SSI and SSDI. Only 40 percent of all SSI and SSDI applicants eventually receive SSI and SSDI (CBPP, 2019b), with the

rate presumably lower among the marginal "ABAWD" disability claimant affected by work requirements.

The conceptual framework is supported by findings from the literature. SNAP enrollment likely decreases with work requirements (Harris, 2020; Wasif and Stith, 2020), which could result in increased pressure to apply for SSI and SSDI, particularly among individuals for whom finding work is difficult and who have a non-zero probability of qualifying for SSI or SSDI. Focusing on relatively recent studies that may have faced a similar institutional context, substitution effects between SSI/SSDI and other public assistance programs besides SNAP predict an increase in applications for SSI and SSDI (e.g., Burns and Dague, 2019; Garrett and Glied, 2000; Schmidt and Sevak, 2004). SSI and SSDI receipt should correspondingly increase to some extent, but the effects may be delayed due to the information acquisition time for the applicant and a potentially long administrative processing time, especially for marginal applicants. To summarize, I predict an increase in SSI and SSDI applications and a decrease in SNAP receipt. I also predict a possible increase in SSI and SSDI receipt, although process delays and a likely relatively small affected population may make it difficult to empirically detect an effect on SSI and SSDI receipt related to work requirements. Because SSI targets a more vulnerable population less connected to the work force, effects are predicted to be larger for SSI than for SSDI.

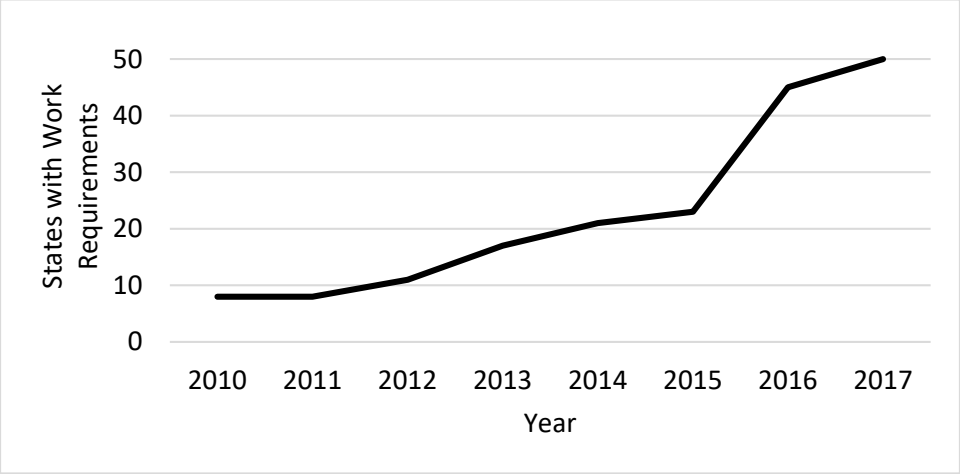
4. Data and Variables

In order to measure the effect of work requirements on disability claiming, I use multiple data sources. The treatment variables are based on USDA correspondence, obtained in portable document format (pdf), while the outcome variables come from two primary sources, the SSA State Agency Monthly Workload Data (SAMWD) and the Current Population Survey (CPS). The USDA correspondences were graciously shared with me by Timothy Harris at Illinois State University, the SAMWD were downloaded from Social Security Administration website,[12] and the CPS were obtained from the IPUM-CPS database.[13] My primary control variables are derived from the CPS or come from the University of Kentucky Center for Poverty Research.[14] Data on

[12] SSA State Agency Monthly Workload Data, https://www.ssa.gov/disability/data/ssa-sa-mowl.htm
[13] IPUMS-CPS, University of Minnesota, www.ipums.org
[14] University of Kentucky Center for Poverty Research Data, http://ukcpr.org/resources/national-welfare-data

Medicaid expansions came from the Kaiser Foundation,[15] Prescription Drug Monitoring Program data come from the Prescription Drug Abuse Policy System,[16] the dates for medical dispensary entry and recreational cannabis dispensary entry came from Powell et al. (2018), the Prescription Drug Abuse Policy System, local news sources, and Procon.org.

The implementation or waiver of work requirements occurs at multiple levels. It can happen at the county level, multiple counties may be grouped together to form a unit, or the entire state can act as a single unit. The SNAP work requirement information was assembled from correspondence between the United States Department of Agriculture's (USDA) Food and Nutrition Service (FNS) and individual states pertaining to the application and granting of ABAWD time limit waivers between 2010 and 2017. Of the 50 states, eight states already had work requirements implemented by the beginning of the sample period, with the other 43 states implementing work requirements during the period 2010-2017, providing substantial variation within most states over time. (Only two states, Virginia and West Virginia, reverse their work requirements during this period.) The largest work requirement implementation happened in the year 2016, when ABAWD time limit waivers for 22 states expired and were not renewed. Figure 1 shows the number of states with work requirements by year. (Appendix Table A1 further details the specific years in which states implemented work requirements.)



[15] Status of State Action on the Medicaid Expansion Decision. https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D. Accessed 08/03/2020.

16 Prescription Drug Abuse Policy System. Pdaps.org. Accessed 08/03/2020.

Figure 1: States with Work Requirements by Year

Notes: Data are from USDA correspondence to states regarding their work requirement waivers.

The SAMWD is the only source for data on applications. Given administrative processing lags in SSI and SSDI receipt, applications is the outcome where I expect to see the most immediate effect from the implementation of work requirements. The SAMWD has information on SSI applications, SSDI applications, applications for both SSI and SSDI, and SSI applications for children with disabilities. I also use information on the number of recipients, although the administrative processing lag time may make it difficult to pick up an effect for this outcome. I do not expect SSI for children with disabilities to be affected, but include the additional outcome as a robustness check, given that ABAWDs do not have children. However, this outcome could still be affected by institutional changes affecting all individuals considering SSI and SSDI.

Because the SAMWD data is only available at the state level, I collapse the treatment variable at the state unit for the regression analysis using these data. For the state-level treatment variable, states are regarded as treated if any county within the state has an ABAWD work requirement. In the robustness checks, I further weight the state-level treatment variable with the proportion of the state population that likely is affected by the work requirement. I do so in two ways – first, using the CPS, I calculate the number of ABAWDs living in counties with work requirements and divide that by the total number of ABAWDs with county information reported. Because county information is not reported for many households in the CPS, I also use the percent of counties affected by the work requirement as another measure of the intensity of the treatment at the state level.

Despite the availability of monthly data for both the treatment variable and SAMWD data, I conduct the analysis at the annual-level because dates in the SAMWD do not match actual calendar dates precisely.[17] I convert all the SAMWD outcome variables to the rate per 10,000 non-elderly adults using Census population data, in order to adjust for population size. (I also include a robustness check using the natural log of the outcome variables.) The final sample includes 408

[17] SSA months include either four or five weeks that typically end on the last Friday of the month. Therefore, SSA months do not match standard calendar months exactly. Collapsing the data at the year level largely addresses the issue. The date-time translation table link is broken and emailed attempts to obtain it did not receive a response. https://www.ssa.gov/disability/data/ssa-dates1.htm. Accessed 07/14/20.

state-years between 2010 and 2017.[18] The data on the number of exemptions taken by states under the 15 percent exemption rule also come from USDA correspondence with the states, but are only available from 2012 through 2017, reducing the total sample from 408 to 306 state-years for any analyses accounting for the 15 percent exemptions. Of the 50 states that have work requirements during the sample period, 32 use exemptions at some point. Exemptions are used in 16 percent of state-year observations. On average, states exempt four percent of ABAWDs rather than the full 15 percent. Eleven states in 27 state-years exceeded the 15 percent maximum. The maximum number of ABAWDs ever exempted during the sample period was in Washington with 38 percent of ABAWDs exempted in 2017.

The SAMWD data are useful primarily because they include the universe of applications and recipiency for SSI and SSDI. However, the SAMWD lacks demographic information and is only available at the state level. Ideally, I would like to use county-level treatment variation, focus on the population most likely to be on the margin between SNAP and disability claiming (low-income individuals with some level of disability), and use applications as an outcome to avoid administrative processing delays associated with receipt of SSI or SSDI. In order to best approximate this scenario, I use CPS county-level data and restrict the sample to individuals earning less than 150 percent of the FPL. For all the analyses, I also distinguish between those reporting a disability and those who do not. Unfortunately, the CPS data do not include information on disability applications, only receipt. I further limit the outcomes to SSI receipt, which is likely to be most relevant in this sample, because SSDI requires a sufficient work history and thus includes individuals for whom working may be less of a hurdle than among those on SSI. SSDI also does not include medical benefits until two years post-enrollment. In other words, if anyone switches from SNAP to disability claiming, that person is likely to be a low-income individual with limited work prospects and some evidence of a disability who switches to SSI.

Further limiting the CPS are well-known under-reporting issues. Under-reporting of public assistance receipt in general is well-documented (Klerman, Ringel and Roth, 2005; Pascale, Roemer and Resnick, 2009; Meyer, Mittage, and Goerge, 2018; Parker, 2011). With respect to SNAP specifically, as many as 50 percent of recipients do not report receipt in the CPS (Meyer, Mittage, and Goerge, 2018; Parker, 2011). Only about 80 percent of SSI benefits are captured by

[18] The District of Columbia is included in the study sample.

the CPS (Parolin, 2019). However, the CPS does offer the most comprehensive measure of disability available and the county and demographic information missing from the SAMWD.

The CPS data are based on a monthly survey of U.S. households conducted by the U.S. Census Bureau for the Bureau of Labor Statistics (BLS), which includes a six-question sequence regarding any "serious difficulty" with hearing, vision, memory, physical difficulty, mobility limitations and personal care limitations. At the annual level, the CPS also include the Annual Economic and Social Supplement (ASEC), which is colloquially referred to as the "March Supplement" for the month it is administered and contains respondent information for the previous calendar year. The March Supplement queries respondents whether they have a health condition or disability that prevents them from working. Neither the monthly question nor the annual question is sufficient on its own, as well documented in the literature. Using the 2010 CPS and focusing on SSI and SSDI recipients, who presumably have a disability so severe that they cannot engage in "substantial gainful activity," Burkhauser et al. (2012) found that only 84.1 percent of the population reporting SSI or SSDI receipt report a work limitation while a mere 63.3 percent of the population reporting SSI or SSDI receipt answered yes to any one of the six-question sequence. Combining the measures improves identification of those with a disability – 92 percent of the population reporting SSI or SSDI receipt answered affirmatively to either the work limitation or one of the six-question sequence. I list the six-question sequence and work limitation question in Appendix B.

In generating the analysis sample, I begin by restricting the data to the 1,581,887 respondents surveyed between 2010 through 2017. Restricting the sample to adults between 18 and 49 without children reduces the sample to 297,424. Focusing only on individuals earning less than 150 percent of the FPL leaves a sample of 64,418 observations. Missing counties reduce the number of observations to 29,539. (Six states have no county identifiers in the study sample and are not included.[19]) I use the ASECWT sample weight provided by the CPS in the regression analyses, which adjusts for the probability of selection into the sample, including a range of factors from failing to respond to interview requests to known distributions of characteristics in the general population and oversampling of Hispanics.[20]

[19] These states are Alaska, Mississippi, Rhode Island, South Dakota, Vermont, and Wyoming.
[20] https://cps.ipums.org/cps/sample_weights.shtml. Accessed 08/03/20.

Among adults without dependents who earn 150 percent or less of the federal poverty line, 20 percent are Black, 34 percent are Hispanic, 47 percent are women, and the average age is 28 years old. The majority of this population is unmarried, not in school, with at least a high school diploma, and not living in a major city. Approximately 10 percent report a difficulty that significantly interferes with daily activity and 11 percent report a difficulty that interferes with work. When the disability measures are combined in line with Burkhauser et al. (2012), 15.3 percent of the sample reports a disability. (See Table A2 for additional demographic details and comparisons between state-years with and without work requirements.)

5. Empirical Strategy

5.1 SAMWD

The following equation shows the linear model estimated by Ordinary Least Squares for the main difference-in-differences analysis.

$$Outcome_{st} = \alpha + \gamma * WorkReqt_{st} + \tau_s + \lambda_s + \eta_t + \varepsilon_{st} \quad (2)$$

$Outcome_{st}$ represents the SAMWD outcome measures in state s in year t, adjusted by population. $WorkReqt_{st}$ is an indicator variable for whether state s has SNAP-related ABAWD work requirements in time t. The term τ_s is a vector of state-level covariates. These include caseloads for AFDC/TANF per thousand population, which proxies for the institutional environment with respect to public assistance; whether a state expanded Medicaid; the unemployment rate; the poverty ratio (proportion of the population below the FPL/total population); the state minimum wage; and the fraction of the population by race/ethnicity (White, Black, Hispanic), by prime working age (ages 25-54), by gender (female or male), and with a high school diploma. These variables should control for potentially time-varying factors that could affect SSI, SSDI, and SNAP applications and receipt. Controlling for unemployment is particularly important, given its role in determining the reinstatement of work requirements. The unemployment rate, the state minimum wage, and the poverty ratio are intended to control for general economic conditions. (Appendix Table A3 shows descriptive statistics for the control variables and the results from tests for differences in the control variables between state-year observations with and without work

requirements). State fixed effects and year fixed effects are given by λ_s and η_t, respectively. I supplement the difference-in-differences strategy with an event study to evaluate treatment leads and lags. To implement the event study, I include four year-level treatment leads and lags with periods less than four years or greater than four years included in the end periods. Work requirement implementation occurs in period zero.

I assume that the supply side is not changing meaningfully within states during this time period beyond what can be captured by state and year fixed effects and the control variables. (Partly, this reflects an absence of data available on the supply side with a corresponding gap in the literature.) Time-varying differences affecting all states and counties will be subsumed in the year fixed effects in the empirical analysis, and time-invariant state- and county-level characteristics will be controlled for with state or county fixed effects. I control for a variety of institution-related factors at the state level and individual demographics at the individual level. The institutional controls include TANF caseloads, the unemployment rate, the state minimum wage, and the poverty ratio (percent of state population living below the Federal Poverty Line). I also conduct analyses controlling for a variety of policies, which have been shown to affect disability claiming; Medicaid expansions decrease SSI receipt (Burns and Dague, 2017), medical cannabis laws increase applications and receipt of SSI and SSDI (Maclean, Ghimire, and Nicholas, 2019), and recreational cannabis laws increase disability applications (Maclean, Ghimire, and Nicholas, 2020). In addition, I control for Prescription Drug Monitoring Programs, which have been shown to affect opioid use (Buchmueller and Carey, 2018), which in turn affects labor market outcomes (Harris et al., 2020).

Recent work shows difference-in-differences estimates are biased due to positive weighting of early treatment effects and negative weighting of later treatment effects (Borusyak and Jaravel, 2017; Athey and Imbens, 2018; Goodman-Bacon, 2018; de Chaisemartin and d'Haultfoeulle, 2019). A check on the estimated difference-in-differences effect, which somewhat accounts for the uneven weighting issue, is to take the average of the post-treatment effects (Borusyak and Jaravel, 2017). In order to do so, I re-estimate the event studies omitting the pre-period and then averaging the period-specific coefficients in two ways: a simple average and an average effect weighted by the share of observations in each period. In addition, Borusyak and Jaravel (2017) find that controlling for pre-trends is often excessively conservative and

recommend running regressions including only policy lags rather than leads and lags in order to better identify the true policy effect.

Along with analyzing applications and receipt of SSI by children with disabilities in conjunction with the main results, I test for the influence of state-level changes in institutional factors over time by splitting the sample in half and comparing the earlier with the later period (2010 – 2013 and 2014 – 2017). I also conduct additional robustness checks on the control, treatment, and outcome variables. With respect to policy controls, I further control for Prescription Drug Monitoring Programs (PDMPs), and access to medical and recreational cannabis dispensaries. In particular, I control for "Must Access" PDMPs that require prescribers to access the system prior to issuing a prescription and cannabis dispensary access rather than legalization alone.[21] Approximately 20 percent of the sample state-years occurred after the implementation of "Must Access" PDMP laws, 28 percent after entry by legal medical cannabis dispensaries, and four percent after entry by legal recreational cannabis dispensaries. With respect to the treatment variable, I run regressions weighting the work requirement variable by size of the likely affected population, using the percent of ABAWDS reported as living in counties with work requirements and using the percent of counties with a work requirement. I also test for any impact from the ability of states to exempt up to 15 percent of the ABAWD population, including whether any exemptions were taken as an additional independent variable and weighting the treatment variable by the percent of ABAWDs affected, accounting for any exemptions taken. A final robustness check substitutes the natural log of the number of applications and recipients for the population-adjusted outcome variable, including the natural log of population on the right-hand side.

5.2 CPS

The CPS analysis follows a similar empirical strategy, but at the county level rather than state level, using the following regression equation:

[21] I use "Must Access" PDMP laws, which the literature has shown drive the effect of PDMPs on opioid prescribing (Buchmueller and Carey, 2018), and cannabis dispensary access, which Powell et al. (2018) showed is necessary for medical cannabis laws to affect opioid use. I assume that recreational cannabis dispensaries similarly have a much larger effect than legalization alone and use recreational cannabis dispensary access rather than just legalization.

$$Outcome_{hct} = \alpha + \gamma * WorkReqt_{ct} + X_h + \tau_s + \lambda_c + \eta_t + \varepsilon_{hct} \quad (1)$$

I test the impact of ABAWD work requirements on household-level SNAP participation and SSI receipt, both {0,1} variables. $Outcome_{hct}$ represents the dependent variable of interest as reported by household *h* in county *c* in year *t*. $WorkReqt_{ct}$ is an indicator variable for whether county *c* has ABAWD work requirements implemented in time *t*. The term X_h is a vector of covariates for individual and household characteristics. I account for demographics (age, age-squared, race/ethnicity, citizenship status, and gender) and education (high school completion and current school attendance). With respect to the household, I control for family size and marriage status. I also include an indicator variable for urban/rural status. Controlling for these factors controls for basic differences between treated and untreated individuals and is line with the literature. The term τ_s is a vector of state-level covariates, which include AFDC/TANF caseloads per thousand people, whether a state expanded Medicaid under the Patient Protection and Affordable Care Act, and state-level controls for unemployment, the poverty ratio, and state minimum wage. County fixed effects accounting for unobserved time-invariant county characteristics are given by λ_c. Year fixed effects are given by η_t, which control for unobserved time-variant characteristics common to all counties. Regressions are weighted using the CPS-ASEC sample weights and standard errors are clustered at the county level. I conduct the analyses for the overall sample of ABAWDs earning less than 150 percent of the FPL and separately for those reporting a disability or not.

Extending the analysis, I disaggregate the sample by gender, race/ethnicity, high school completion, and whether the self-reported disability was blindness to determine whether the impact of the work requirements varies by subgroup. I also separately analyze the periods between 2010 and 2013 and between 2014 and 2017. Lastly, I conduct a series of sample placebo tests on those with incomes above 150 percent of the FPL and for ages 51-75 with incomes below 150 percent of the FPL.

6. Results

6.1 Descriptive Statistics and Analyses

Figure 2 shows applications per 10,000 population for SSI and SSDI over time and Figure 3 shows recipients per 10,000 population over time.

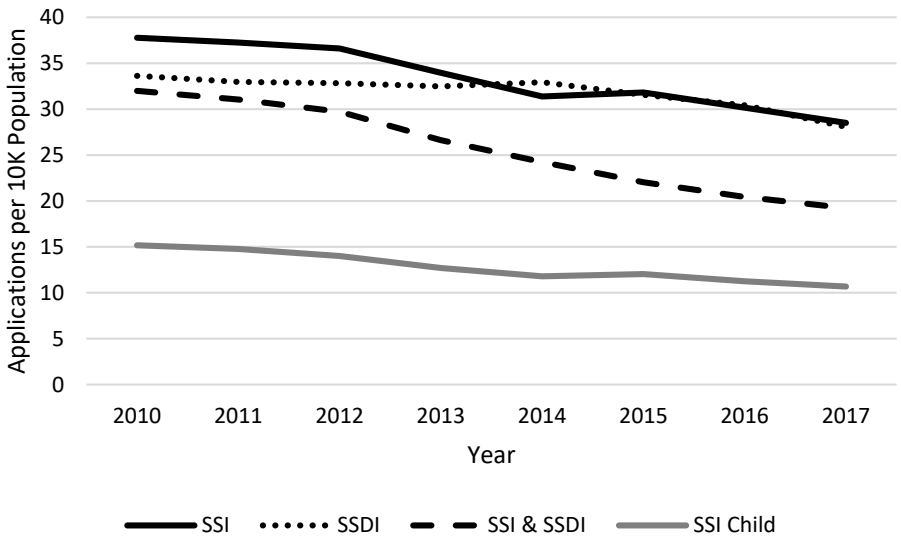


Figure 2: SSA Applications by Year

Notes: Data are from the SAMWD.

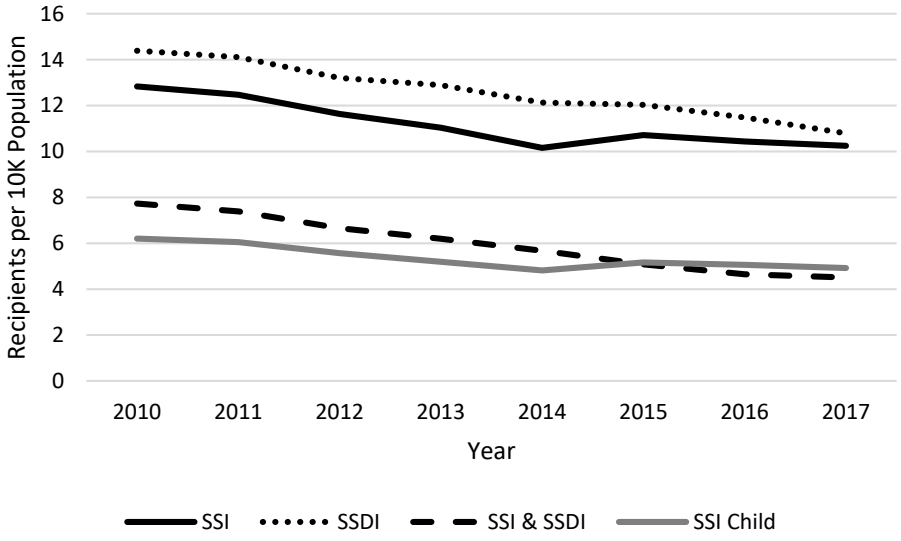


Figure 3: SSA Recipients by Year

Notes: Data are from the SAMWD.

The figures indicate general decreases in all measures over time, although the decline in applications is steepest for joint SSI and SSDI applications. These trends run contrary to trends prior to 2010, with the causes of those earlier increases extensively studied (Autor and Duggan, 2003). This general decrease in disability claiming since 2010 was documented in SSA Briefing

Paper No. 2019-01 (2019b). SSI applications and receipt, both for adults and children, appear to moderately increase in 2014 before returning to a downward trend.

Interestingly enough, the CPS sample does not show the same downward trends. As shown in Figure 4, reported SSI recipiency is essentially flat for the overall sample and the sample of individuals without disabilities. For individuals with disabilities, the rate fluctuates over time, with increases in all years except 2012, 2015, and 2017. This shift around 2014 is similar to the slope reversal seen in Figure 3, suggesting that the SSI administrative claims documentation of SSI receipt is correlated with SSI recipiency measured in the CPS for those earning less than 150 percent of the FPL with self-reported disabilities. It is likely the differences between the two figures come from differences in the samples with the CPS restricted to ABAWDs earning less than 150 percent of the FPL rather than whole population of SSI recipients, which is captured by the SAMWD.

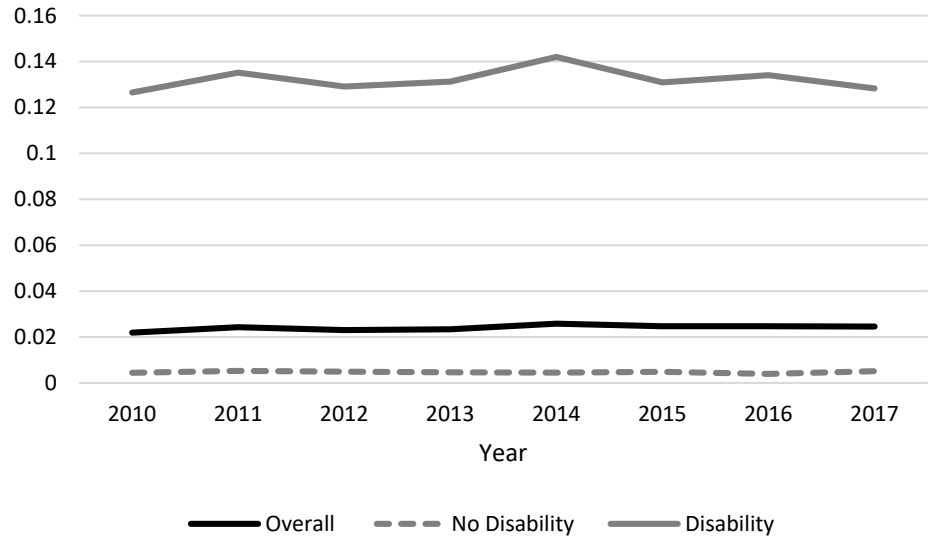


Figure 4: SSI Recipiency over Time in the CPS Data.

Notes: Data include all individuals reporting earning less than 150 percent of the federal poverty line. Disability is a measure constructed from the six-part monthly difficulty question and the annual work limitation question.

Although work requirements were reinstated over this time period in all states but Rhode Island, they do not appear to be causing any increase in SSI or SSDI evident in the raw data. Table 1 further compares the outcome and control variables for state-years with and without work requirements across the two data sets using means comparisons. Because all but nine states

implemented work requirements during the sample period, state-years with work requirements are compared with those without rather than further differentiating between the eight states that began the period with work requirements and Rhode Island, which did not implement a work requirement until 2018. In the SAMWD, states without work requirements consistently have higher applications and recipiency for all categories. The CPS show no difference in SNAP recipiency, which could be indicative of individuals in the low-income sample gaining access to SNAP benefits through other public assistance programs rather than through SNAP alone following the implementation of work requirements. However, unlike the SAMWD, the CPS shows a higher SSI recipiency rate in states with work requirements, which again could be due to the more restricted sample. Splitting out the SSI Recipiency into those with self-reported difficulties and those without shows that self-reported disability and SSI receipt are highly correlated, but that about 70 percent of those with self-reported disabilities do not receive SSI. Rates among those reporting a disability are higher in states with work requirements, which could be indicative of an increase in disability claiming in response to the reinstatement of work requirements. Among those without disabilities, SSI receipt approaches zero.

Table 1: Comparing Outcomes for State-Years with and without Work Requirements

	FULL SAMPLE		**NO WR**		**WR**		**NO WR V. WR**
	Mean	Std.	Mean	Std.	Mean	Std.	P-Value
SSI Applications per 10,000	33.43	13.97	38.10	14.66	27.69	10.58	<0.001
SSDI Applications per 10,000	31.86	7.90	33.67	8.12	29.63	7.02	<0.001
Concurrent Applications per 10,000	25.67	9.85	29.63	10.25	20.79	6.65	<0.001
SSI Child Applications per 10,000	12.80	6.88	14.77	7.46	10.39	5.16	<0.001
SSI Recipients per 10,000	11.19	3.84	12.20	4.28	9.95	2.75	<0.001
SSDI Recipients per 10,000	12.63	3.48	13.29	3.62	11.81	3.12	<0.001
Concurrent Recipients per 10,000	5.99	2.34	6.75	2.55	5.04	1.63	<0.001
SSI Child Recipients per 10,000	5.37	2.04	5.85	2.20	4.78	1.64	<0.001
SNAP Recipiency	0.29	0.45	0.29	0.45	0.29	0.45	0.757
SSI Recipiency	0.05	0.22	0.05	0.21	0.06	0.23	0.002

SSI Recipiency | Disability	0.29	0.45	0.28	0.45	0.31	0.46	0.095
SSI Recipiency | No Disability	0.01	0.08	0.01	0.07	0.01	0.08	0.129

Notes: Data cover the period from 1/1/2010 through 12/31/2017. All outcomes listed except for SNAP and SSI Recipiency are from the SAMWD. SNAP and SSI Recipiency are from the CPS sample restricted to ABAWDs earning less than 150 percent of the FPL. P-values are from two-sided t-tests, except for those associated with SNAP recipiency and SSI Recipiency, which are from chi-squared tests.

6.2 SAMWD Administrative Claims Data Analyses

Table 2 shows the regression results for applications and receipt of SSI, SSDI, concurrent (SSI and SSDI) claims, and SSI for children with disabilities. No statistically significant effect from work requirements on applications or receipt exists across outcomes.

Table 2: Regression Results – Applications and Recipients per 10,000 Population (SAMWD)

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
	Applications per 10K Population			
Work Requirement	0.036	0.110	-0.646	-0.250
	(0.501)	(0.455)	(0.496)	(0.210)
R-squared	0.972	0.944	0.949	0.972
R-squared - Fixed Effects Only	0.963	0.936	0.940	0.965
	Recipients per 10K Population			
Work Requirement	0.270	0.179	-0.043	0.017
	(0.220)	(0.210)	(0.162)	(0.108)
R-squared	0.934	0.918	0.909	0.944
R-squared - Fixed Effects Only	0.910	0.910	0.891	0.935

Notes: Underlying data come from the SAMWD (2010 -- 2017). Each cell represents a separate regression based on 408 state-year observations. Outcomes are measured per 10,000 population. All regressions include TANF caseload, unemployment rate, state minimum wage, poverty ratio, high school completion rates, Medicaid expansions, fractions of the population that are White, Black, Hispanic, of prime age, and female, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Throughout the SAMWD analyses, the R-squareds always exceed 0.90. This is a result of the inclusion of fixed effects. In Table 2, the R-squareds generated by just the state and year fixed effects are reported below the R-squared for the regression including the complete set of variables. The state fixed effects alone generate R-squareds exceeding 0.90 in some cases and in all the SAMWD analyses account for the majority of the explained variation in disability applications and receipt.

I further test for an effect using an event study framework with the coefficients for the time periods graphed in Figures 5 and 6. The event studies show no statistically significant effects relative to the period of work requirement implementation. In Figure 5, there is some evidence of a declining pre-trend in applications for SSI, concurrent SSI and SSDI, and SSI for children with disabilities. After work requirements are implemented, all four panels in Figure 5 suggest the possibility of a slight increase. The U-shape could be indicative of declines due to improvements in economic conditions not captured in the state-level controls, whose effects are somewhat reversed by the implementation of work requirements. Figure 6 shows no pre-trend in receipt of disability with a possible increase post-work requirement implementation, but again all coefficients are statistically insignificant.

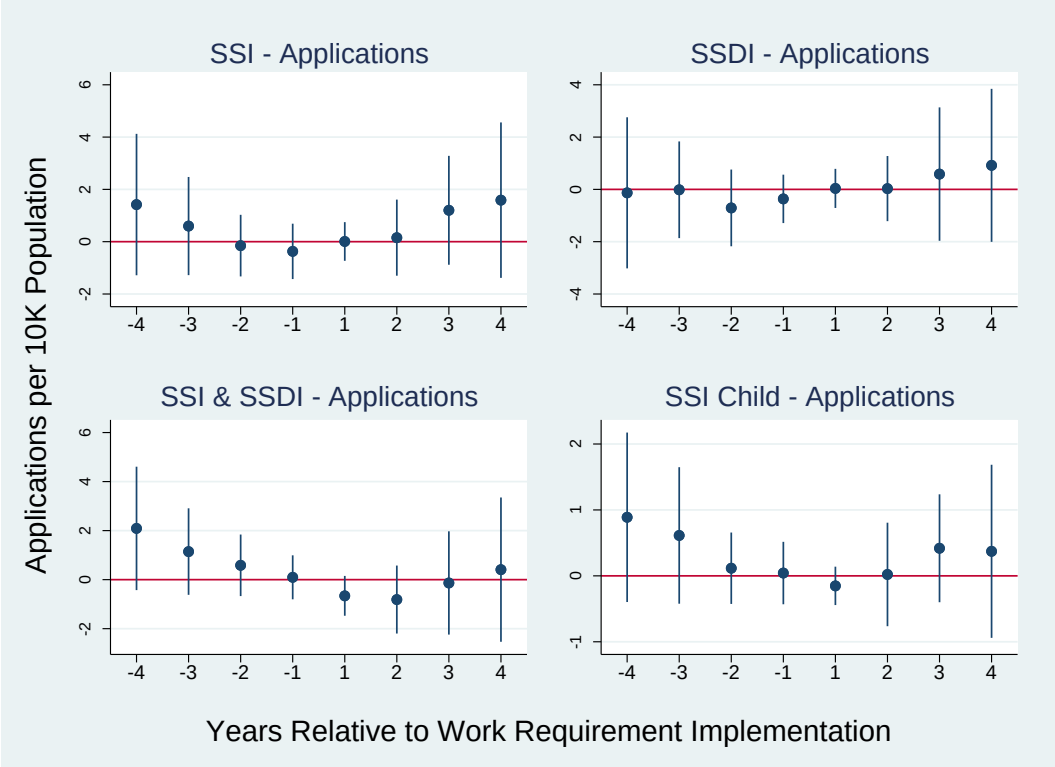


Figure 5: Event Studies for SSA Applications

Notes: The event studies are based on SAMWD data. The omitted period is the period of work requirement implementation. Always work requirement and never work requirement states are coded as being in period zero for all periods. Periods beyond 4 years pre- or post-work requirement reinstatement are coded as being in period -4 and 4 respectively. Virginia and West Virginia gained and reversed work requirements during the sample period and are omitted from the event study analysis. Outcomes are measured per 10,000 population. All underlying regressions include TANF caseload, unemployment rate, state minimum wage, poverty ratio, Medicaid expansions, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level.

Figure 6: Event Studies for SSA Recipients

Notes: The event studies are based on SAMWD data. The omitted period is the period of work requirement implementation. States that had work requirements more than four years prior to the start of the sample are considered always work requirement states are coded as being in period zero for all periods. Periods beyond 4 years pre- or post-work requirement reinstatement are coded as being in period -4 and 4 respectively. Virginia and West Virginia gained and reversed work requirements during the sample period and are omitted from the event study analysis. All underlying regressions include TANF caseload, unemployment rate, state minimum wage, poverty ratio, Medicaid expansions, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level.

In order to further evaluate lags in the effect of the work requirements and as a robustness check on the main difference-in-differences results, I follow Borusjak and Jaravel (2017) and run regressions including only treatment lags with results reported in Table 3. The original difference-in-differences estimates from Table 2 and the average and share-weighted average of the post-period treatment effects are reported below each set of regression results.

Table 3: Lagged Treatment Effects (SAMWD)

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
	Panel A: Applications per 10K Population			
t=0	0.599	0.516	0.058	0.058
	(0.484)	(0.458)	(0.441)	(0.228)
t=1	0.942	0.628	-0.252	0.066
	(0.651)	(0.609)	(0.707)	(0.293)
t=2	1.465	0.711	-0.005	0.424
	(1.066)	(0.802)	(1.058)	(0.488)
t=3	2.878**	1.297	1.077	0.983
	(1.370)	(1.074)	(1.316)	(0.625)
t=4	4.022**	1.844	2.404	1.316
	(1.869)	(1.107)	(1.719)	(0.917)
R-squared	0.973	0.938	0.951	0.973
Diff-in-Diff Coefficient	0.036	0.110	-0.646	-0.250
	(0.501)	(0.455)	(0.496)	(0.210)
Average Coefficient	1.981*	0.999	0.656	0.569
	(1.005)	(0.704)	(0.981)	(0.468)
Weighted Average Coefficient	0.166*	0.087	0.057	0.045
	(0.084)	(0.059)	(0.082)	(0.040)
	Panel B: Recipients per 10K Population			
t=0	0.490*	0.304	0.088	0.147
	(0.257)	(0.249)	(0.189)	(0.124)
t=1	0.869**	0.430	0.181	0.230
	(0.404)	(0.363)	(0.306)	(0.139)
t=2	0.956*	0.241	0.123	0.255
	(0.537)	(0.477)	(0.407)	(0.174)
t=3	1.499*	0.770	0.339	0.470**
	(0.756)	(0.629)	(0.544)	(0.232)
t=4	1.758*	0.748	0.502	0.603*
	(0.960)	(0.784)	(0.726)	(0.318)
R-squared	0.937	0.917	0.911	0.946

Diff-in-Diff Coefficient	0.270	0.179	-0.043	0.017
	(0.220)	(0.210)	(0.162)	(0.108)
Average Coefficient	1.114**	0.499	0.250	0.341*
	(0.553)	(0.467)	(0.416)	(0.176)
Weighted Average Coefficient	0.094**	0.043	0.022	0.029*
	(0.046)	(0.039)	(0.035)	(0.015)

Notes: Underlying data come from the SAMWD (2010 – 2017). Each column within each panel represents a separate regression based on 392 state-year observations. (West Virginia and Virginia are omitted from the analysis because they regained time limit waivers after implementing work requirements.) Outcomes are measured per 10,000 population. "t" refers to the time since work requirements were implemented with work requirements implemented in at t=0. Treated periods more than four years after treatment are collapsed into the fourth period. All regressions include the TANF caseload, unemployment rate, state minimum wage, poverty ratio, Medicaid expansions, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. Below the main regression results, the "Diff-in-Diff Coefficient" comes from Table 2, the Average Coefficient is the average of the treatment effects from t=0 through t=4, and the Weighted Coefficient weights the coefficients by the share of observations that fall into that category, e.g., t=1. *** p<0.01, ** p<0.05, * p<0.1

Although the single post-treatment effect was insignificant in the main difference-in-difference regressions in Table 2, the coefficients for the treatment lags in Table 3 indicate a possible dynamic effect for SSI applications and receipt. The averaged coefficient estimates are also generally supportive of this conclusion, indicating that weighting issues inherent in difference-in-difference estimates may have been concealing the actual effect. Because the effects for the third and fourth treatment lags are driven by states that adopted work requirements before 2016, I re-run the difference-in-differences analyses by period to attempt to reconcile the results across specifications. The marginally significant evidence that work requirements affect SSI receipt among children with disabilities, who should not be affected by the work requirement, suggests within-state time-varying institutional factors may be at play. In Table 4, I test for differences between states that adopted work requirements between 2010 and 2013 and between 2014 and 2017.

Table 4: Regressions by Period – Applications and Recipients (SAMWD)

	(1)	(2)	(3)	(4)
	Applications per 10K Population		Recipients per 10K Population	
	2010-2013	2014-2017	2010-2013	2014-2017
		SSI		
Work Requirement	1.390**	-0.573	0.598	0.118
	(0.579)	(0.549)	(0.385)	(0.236)
R-squared	0.989	0.986	0.970	0.967
		SSDI		
Work Requirement	0.794	0.291	0.653	0.084
	(0.820)	(0.668)	(0.527)	(0.360)
R-squared	0.961	0.957	0.923	0.951
		SSI & SSDI		
Work Requirement	0.864*	-0.496	0.212	-0.004
	(0.449)	(0.567)	(0.299)	(0.212)
R-squared	0.973	0.967	0.943	0.938
		SSI Child		
Work Requirement	0.221	-0.542**	0.019	0.039
	(0.284)	(0.228)	(0.171)	(0.150)
R-squared	0.993	0.989	0.973	0.966

Notes: The underlying data come from the SAMWD. Each cell represents a separate regression based on 204 state-year observations. All regressions include TANF caseload, Medicaid expansions, unemployment rate, state minimum wage, poverty ratio, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4 shows that a difference exists over time in the effect of work requirements on SSI applications, matching the results in Table 3. Work requirements increase SSI applications in the period between 2010 and 2013, but not between 2014 and 2017. The coefficient for SSI receipt is positive, but insignificant. The negative coefficient for applications by children with disabilities also supports the possibility of institutional factors leading to higher applications in state-years with work requirements between 2010 and 2013 than between 2014 and 2017.

The first robustness check controls for "Must Access" PDMPs and cannabis dispensary access with results reported in Appendix Table A4. The second robustness check, reported in

Appendix Table A5, shows results using the weighted work requirement variables. The results in both tables show no effect on applications or receipt. In Appendix Tables A6 and A7, I test for the possibility that the 15 percent exemptions are affecting the results and still do not find any impact from work requirements on SSI and SSDI applications or receipt among adults. Unexpectedly, I do find some effects on children with disabilities. In particular, the implementation of a work requirement for able-bodied adults *without* children decreases applications for SSI among children with disabilities, when I control for whether any exemptions were taken, and state-years in which exemptions were taken are associated with an increase in SSI receipt among children with disabilities. Lastly, I use a natural log transformation of the applications and receipt data and control for the natural log of population as an additional independent variable. As shown in Appendix Table A8, I find no increase in disability applications or receipt in response to work requirements, except possibly a decrease in applications among children with disabilities. No obvious direct relationship between work requirements and SSI claiming by children with disabilities exists, implying that work requirements and exemptions must be correlated with other factors affecting children with disabilities, such as better employment opportunities for parents beyond what is captured by the unemployment rate.

6.3 CPS Data Analyses

I turn now to the CPS analyses through which I am able to study a sample that approximates the marginal population I anticipate to be most likely to switch from SNAP to disability claiming, those earning less than 150 percent of the FPL, further distinguishing between those with self-reported disabilities and those without in all the regression analyses. Table 5 shows that work requirements do not have a statistically significant negative effect on SNAP receipt in this population, although all the coefficients are negative. For SSI receipt, there is no increase in self-reported SSI receipt in the full sample, but a statistically significant 6.7 percentage point increase among those with self-reported disabilities.

Table 5: SNAP and SSI Receipt – Regression Analysis

	SNAP Receipt		
	Full Sample	Disability	No Disability
Work Requirement	-0.016	-0.051	-0.009

	(0.017)	(0.038)	(0.019)
Observations	29,539	4,517	25,022
R-squared	0.163	0.213	0.167
	SSI Receipt		
	Full Sample	Disability	No Disability
Work Requirement	0.009	0.067**	-0.001
	(0.006)	(0.030)	(0.003)
Observations	29,539	4,517	25,022
R-squared	0.090	0.181	0.021

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include race, gender, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, household income, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Given documented differences in the accessing of public assistance by gender and ethnicity (Irving and Loveless, 2015; Brantley, Pillau, and Ku, 2020), I continue exploring the SSI results by gender in Table 6 and by race/ethnicity in Table 7.

Table 6: SSI Receipt by Male/Female

	Male		Female	
	Disability	No Disability	Disability	No Disability
Work Requirement	0.032	0.002	0.091**	-0.004
	(0.044)	(0.003)	(0.042)	(0.004)
Observations	2,474	13,213	2,043	11,809
R-squared	0.248	0.038	0.280	0.040

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include race, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: SSI Receipt by Race/Ethnicity

	White		Black		Hispanic	
	Disability	No Disability	Disability	No Disability	Disability	No Disability
Work Requirement	0.131**	-0.000	0.032	0.005	0.027	0.002
	(0.056)	(0.004)	(0.098)	(0.007)	(0.053)	(0.005)

Observations	1,789	8,148	1,229	4,706	1,131	8,969
R-squared	0.257	0.062	0.285	0.073	0.322	0.032

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include gender, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In line with the literature, I find evidence that low-income women with disabilities and low-income Whites with disabilities may be more likely to receive SSI after work requirements are reinstated by as much as 32 percent (mean = 0.30) and 50 percent (mean = 0.27), respectively. Sample sizes are small for many of these subgroup analyses, so the results should be interpreted with caution.

The results in Tables 8 and 9 test the predictions that differences will exist by education level, due to differing job opportunities, and by type of disability (blindness versus non-blindness) due to the relatively higher benefits for individuals with blindness as their qualifying disability.

Table 8: SSI Receipt by Education Level

	High School or Less		More Than High School	
	Disability	No Disability	Disability	No Disability
Work Requirement	0.091**	-0.004	0.032	0.002
	(0.042)	(0.004)	(0.044)	(0.003)
Observations	2,043	11,809	2,474	13,213
R-squared	0.280	0.040	0.248	0.038

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include race, gender, citizenship, age, age-squared, central city, married, family size, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9: SSI Receipt by Disability = Blindness

	Blind	Other Disability
Work Requirement	0.155	0.069**
	(0.147)	(0.032)
Observations	412	4,104

R-squared	0.573	0.186

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include race, gender, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

As hypothesized, less education is associated with an increased likelihood of SSI receipt following the implementation of work requirements as shown in Table 8. In Table 9, although the sample is small, it appears that the relatively larger benefits for individuals with blindness as a qualifying disability leaves fewer of these individuals on the margin between SNAP alone and SSI. The lack of an effect in this population could also be related to fundamental differences in disease progression, available resources, and the ease of establishing eligibility across different types of disabilities.

I also run the CPS analyses by time in Appendix Table A9. Unlike in the administrative claims data, no statistically significant differences exist by time period. As placebo tests, I test for changes in SSI receipt among ABAWDs earning more than 150 percent of the FPL and ABAWDS between 51 and 75, again distinguishing between those with and without self-reported disabilities. Results reported in Appendix Table A10 show no effect from work requirements in these populations.

7. Discussion

Using administrative claims data, this study found no overall increase or decrease in disability applications or recipiency in association with the implementation of SNAP-related work requirements. However, I did find an increase in SSI applications in response to work requirements early in the sample period (2010 to 2013). From the event studies, it appears a delayed increase in both SSI applications and SSI receipt may exist, although this effect cannot be verified for more recently implemented work requirements. Subgroup analyses using the CPS data suggest that some vulnerable individuals did switch into SSI. In particular, among those with incomes 150 percent or less of the FPL with self-reported disabilities, SSI receipt increased following the implementation of work requirements with the effect driven by women, Whites, those with a high

school education or less, and those with disabilities other than blindness. The results for Whites parallel a smaller decrease in SNAP participation among non-Hispanic Whites relative to non-Hispanic Blacks and Hispanics following the implementation of work requirements (Brantley, Pillai and Ku, 2020).

The administrative claims results suggest that work requirements sometimes do increase SSI applications and receipt. However, this evidence is based on states that adopted SNAP work requirements earlier in the sample period with lagged effects not yet measurable for later adopters of work requirements. The CPS analysis further clarifies which characteristics are associated with being on the margin between remaining on SNAP alone or switching into SSI: work requirements burden low-income individuals with self-reported disabilities, especially women, Whites, those with a high school education or less, and those with a disability other than blindness. The burden exacted by the work requirements is apparently so great among this subgroup that it becomes worth incurring the costs of applying for SSI rather than attempting to remain eligible for SNAP alone.

The dynamic implications of a switch from SNAP alone to SSI claiming are concerning. Among young adults receiving SSI, future employment probabilities are substantially reduced (Deshpande, 2016). The effects of SSI in deterring employment are likely greater than for SSDI, given that individuals on SSDI have at least some prior work experience. Even among those on SSDI rather than SSI, future employment likelihood is significantly reduced (Bound, 1989; Maestas, Mullen, and Strand, 2013; French and Song, 2014; Von Wachter, Song, and Manchester, 2011). An older paper documents the total expected time on SSI pre-retirement to be 10.5 years, including multiple spells, with the average spell for adults only eligible for SSI estimated to be 6.4 years, and for those receiving SSI and SSDI, 1.3 years (Rupp and Scott, 1995). Receiving SSI may also increase eligibility for housing assistance, raising the cost of ever leaving SSI once enrolled (Hembre, Urban, and Schmidt, 2019).

The fact that lagged effects could not be measured for the majority (28) states that implemented work requirements in 2016 and 2017 limits the conclusions of this paper. It may be that the sample period was too short to detect an effect or it also could be that, although I control for several economic indicators, including the unemployment rate, I may not be fully capturing the relative attractiveness of staying in SNAP and working versus switching to SSI and SSDI in the context of the growing economy that existed during the sample period, with likely heterogeneous growth rates across states. In addition, Deshpande and Li (2019) document changes during this

time period in supply-side constraints with likely increased search costs due to office closings, particularly for those with moderately severe conditions. The office closings they report, based on confidential data, were common during the sample period and are found to be associated with reduced SSI and SSDI claiming. Such an effect could be negating the effect of the work requirements if office closings are correlated with the implementation of work requirements.

Also related to possible differences across states, it is almost impossible to verify how work requirements are operationalized. Some states administer the work requirements themselves, while an unknown number outsource the enforcement of work requirements to private vendors. The market in which these private vendors operate is opaque and the popular press reports that exist suggest that applicants and participants do not benefit from private outsourcing (Brown, 2019; McMillan, 2019).

The results in this paper add to the literature on substitution across public assistance programs. Although aggregate effects may vary with the timing of work requirement implementation and only exist for SSI, I find that a vulnerable population, poor individuals with self-reported disabilities, may be particularly affected. The results match declines in SSI in response to Medicaid expansions, which differentially benefited the poor (Burns and Dague, 2017), and the fact that the results are stronger among women supports the findings of Schmidt and Sevak (2002), who found increased SSI in response to AFDC reforms only among female-headed households.

8. Conclusion

In conclusion, this study finds that SNAP-associated work requirements do not have an effect on applications or receipt for SSDI or combined SSI and SSDI applications and receipt. Possible dynamic effects for applications and receipt of SSI alone do exist that may be affected by institutional factors that have changed over time. The strongest response to work requirements with respect to SSI receipt is among a particularly vulnerable population, individuals with self-reported disabilities with incomes below 150 percent of the FPL, with the effects concentrated among women, Whites, the less educated and those with disabilities other than blindness.

This study contributes to the literature seeking to understand the effects of welfare reform, particularly the effects of policies designed to incentivize employment through work requirements. I also add to the literature regarding substitution across public assistance programs by documenting

that a vulnerable population exists on the margin, even with respect to disability. This vulnerable population is induced to switch programs when the costs of only one program increase, even when the benefits from doing so average less than $127 (CBPP, 2019b).

These results have implications for existing work requirement programs in TANF, housing assistance, and particularly Medicaid, where work requirements have been heavily litigated. They also suggest the state and federal governments might consider using caution moving forward with the increased work requirements that they currently have placed on hold. Those negatively impacted by work requirements are likely to be among the most vulnerable members of society. Policymakers might consider weighing the costs to this population against the limited documented benefits of work requirements, which at best appear to only marginally increase employment (Brantley, Pillai, and Ku, 2020; Harris, 2020; Wasif and Stith, 2020). In addition, while some cost savings may be realized through individuals dropping out of SNAP (Harris, 2020; Brantley, Pillai and Ku, 2020), the substitution across programs indicates potential cost increases to public spending – SNAP benefits alone cost much less than SSI or SSDI benefits and application costs are lower for both recipients and the government. Costs associated with the implementation and administration of work requirements also may not be negligible. Estimates of state-level costs of implementing Medicaid-related work requirements range from $10 million in New Hampshire to $250 million in Kentucky (GAO, 2019.)

The findings in this study document what appear to be primarily demand-side responses to work requirements among a population on the margin between participating in SNAP alone or opting into a disability program, as predicted by the conceptual framework. However, the results also suggest that supply-side factors may be more important than predicted by the conceptual framework or than could be tested with the data available. How important supply-side factors are overall and relative to demand-side responses remains an ongoing question with respect to public assistance more generally and one that must be answered before the causal mechanisms behind the effects of work requirements on disability claiming can be fully understood.

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Appendix A: Tables and Figures

Table A1: State and Year Information on Work Requirements

Work Requirements Added by Year	
Pre-2010	Colorado, Delaware, Nebraska, New York, North Dakota, South Dakota, Texas, West Virginia
2011	None
2012	New Hampshire, Utah, Vermont, Wyoming
2013	Iowa, Kansas, Minnesota, Ohio, Oklahoma, Virginia
2014	Hawaii, Maine, Montana, Wisconsin
2015	Indiana, Louisiana, Washington
2016	Alabama, Alaska, Arkansas, Arizona, Connecticut, Florida, Georgia, Idaho, Kentucky, Maryland, Mississippi, Massachusetts, Missouri, New Jersey, New Mexico, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Virginia, West Virginia
2017	California, District of Columbia, Illinois, Michigan
Work Requirements Reversed by Year	
2012	West Virginia
2014	Virginia

Source: USDA correspondence to states

Table A2: Descriptive Statistics for the CPS Disability, Control, and Subgroup Variables

	FULL SAMPLE (N = 29,539)		NO WR (N = 21,141)		WR (N=8,398)		No WR v. WR
	Mean	Std.	Mean	Std.	Mean	Std.	P-Value
Work Limitation	0.11	0.32	0.11	0.32	0.12	0.33	0.065
Any Disability Including Work Limitation	0.15	0.36	0.15	0.36	0.16	0.37	0.011
White	0.34	0.47	0.33	0.47	0.34	0.47	0.415
Black	0.20	0.40	0.20	0.40	0.20	0.40	0.739
Native American	0.01	0.10	0.01	0.10	0.01	0.09	0.359
Asian	0.08	0.28	0.08	0.27	0.10	0.29	<0.001
Hispanic	0.34	0.47	0.35	0.48	0.33	0.47	0.005
Naturalized Citizen	0.05	0.22	0.05	0.22	0.06	0.23	0.001
Non-Citizen	0.18	0.38	0.18	0.38	0.18	0.39	0.444
Female	0.47	0.50	0.46	0.50	0.49	0.50	<0.001
Age	28.13	9.29	28.12	9.33	28.18	9.20	0.718
Central City	0.48	0.50	0.48	0.50	0.49	0.50	0.054
Married	0.09	0.29	0.09	0.29	0.09	0.29	0.639
High School or Less	0.57	0.50	0.55	0.50	0.53	0.02	<0.001
Attending College Full-Time	0.21	0.41	0.20	0.40	0.23	0.42	<0.001
Attending College Part-Time	0.03	0.18	0.04	0.19	0.03	0.17	0.001
Family Size	2.59	1.99	2.63	2.01	2.49	1.91	<0.001
TANF Caseload Rate	7.19	5.02	8.11	5.25	4.86	3.42	<0.001
Medicaid Expansion State	0.32	0.47	0.28	0.45	0.43	0.50	<0.001
Unemployment Rate	7.46	2.35	8.19	2.19	5.64	1.62	<0.001
State Minimum Wage ($)	7.98	0.96	7.98	0.90	7.97	1.10	0.450
Poverty Ratio	0.15	0.03	0.15	0.03	0.14	0.03	<0.001
Disability = Blindness (N=21,074)	0.02	0.13	0.01	0.11	0.02	0.13	0.022

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All p-values are from chi-squared tests except for the p-values associated with age, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and poverty ratio, which are from two-sided t-tests.

Table A3: Descriptive Statistics for the SAMWD Control Variables

	FULL SAMPLE (N = 408)		NO WR (N = 225)		WR (N = 183)		NO WR v. WR
	Mean	Std.	Mean	Std.	Mean	Std.	P-Value
TANF Cases per 1,000	4.42	3.05	4.99	3.72	2.81	2.90	<0.001
Medicaid Expansion	0.28	0.45	0.19	0.39	0.40	0.49	0.683
Unemployment Rate	6.34	2.16	7.64	1.78	4.74	1.38	<0.001
State Minimum Wage	7.66	0.96	7.58	7.76	1.07	1.06	0.064
Poverty Ratio	0.14	0.03	0.15	0.12	0.03	0.03	<0.001
Fraction White	0.69	0.16	0.67	0.71	0.16	0.15	0.012
Fraction Black	0.11	0.11	0.13	0.09	0.09	0.09	<0.001
Fraction Hispanic	0.11	0.10	0.12	0.11	0.10	0.10	0.598
Fraction Prime Age Adults	0.40	0.02	0.40	0.39	0.02	0.02	<0.001
Fraction with High School Diploma	0.68	0.03	0.68	0.69	0.03	0.03	<0.001
Sex Ratio (Female to Male)	0.51	0.01	0.51	0.51	0.01	0.01	<0.001

Notes: Data cover the period from 1/1/2010 through 12/31/2017. All measures are state-level averages based on county-level CPS data. P-values are from two-sided t-tests.

Table A4: Regressions Controlling for Must Access PDMPs and Medical and Recreational Cannabis Dispensaries

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
	Applications per 10K Population			
Work Requirement	-0.090	0.114	-0.792	-0.317
	(0.528)	(0.458)	(0.500)	(0.212)
Must Access PDMP	-0.472	0.108	-1.044	-0.148
	(0.995)	(0.643)	(0.923)	(0.434)
Medical Cannabis Dispensaries	1.403	0.020	1.251	0.581
	(0.917)	(0.571)	(0.935)	(0.492)
Recreational Cannabis Dispensaries	2.604***	0.200	1.474*	1.587***
	(0.637)	(0.456)	(0.828)	(0.416)
R-squared	0.973	0.944	0.951	0.973
	Recipients per 10K Population			
Work Requirement	0.280	0.190	-0.062	0.027
	(0.215)	(0.211)	(0.167)	(0.100)
Must Access PDMP	0.184	0.124	-0.126	0.145
	(0.380)	(0.282)	(0.276)	(0.143)
Medical Cannabis Dispensaries	-0.208	-0.286	-0.169	-0.025
	(0.489)	(0.354)	(0.335)	(0.218)
Recreational Cannabis Dispensaries	0.154	-0.083	0.020	0.130
	(0.361)	(0.319)	(0.200)	(0.225)
R-squared	0.934	0.918	0.909	0.944

Notes: Underlying data come from the SAMWD (2010 -- 2017). Each column represents a separate regression based on 408 state-year observations. Outcomes are measured per 10,000 population. All regressions include the TANF caseload, unemployment rate, state minimum wage, poverty ratio, Medicaid expansions, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A5: Weighted Treatment – SAMWD Applications and Recipients per 10K Population

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
Panel A: Percent of ABAWD Population Subject to Work Requirements				
	Applications per 10K Population			
Weighted Work Requirement - % of ABAWDs	0.311	-0.212	0.133	0.213
	(1.201)	(0.842)	(1.193)	(0.664)
R-squared	0.972	0.944	0.948	0.972
	Recipients per 10K Population			
Weighted Work Requirement - % of ABAWDs	0.242	0.253	-0.021	0.223
	(0.407)	(0.471)	(0.401)	(0.219)
R-squared	0.934	0.918	0.909	0.944
Panel B: Percent of Counties with Work Requirements				
	Applications per 10K Population			
Weighted Work Requirement - % of Counties	-0.736	0.555	-1.335	-0.781
	(1.178)	(0.911)	(1.160)	(0.552)
R-squared	0.972	0.944	0.949	0.972
	Recipients per 10K Population			
Weighted Work Requirement - % of Counties	-0.001	-0.091	-0.374	-0.108
	(0.501)	(0.518)	(0.396)	(0.269)
R-squared	0.934	0.918	0.909	0.944

Notes: Each cell represents a separate regression based on 408 state-year observations. The treatment variable in Panel A is the percent of ABAWDs living in counties with work requirements in a given state-year based on the CPS data. In Panel B, the treatment variable is the percent of counties in a state-year with work requirements. All regressions include TANF caseload, Medicaid expansions, unemployment rate, state minimum wage, poverty ratio, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A6: Regressions Controlling for Any Exemptions Taken

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
		Applications per 10K Population		
Work Requirement	-0.578	0.175	-0.811	-0.474**
	(0.572)	(0.553)	(0.573)	(0.210)
Exemptions Taken	0.014	0.117	-0.082	0.075
	(0.535)	(0.453)	(0.518)	(0.244)
R-squared	0.978	0.951	0.955	0.978
		Recipients per 10K Population		
Work Requirement	0.188	0.144	0.006	-0.016
	(0.193)	(0.240)	(0.167)	(0.102)
Exemptions Taken	0.227	0.024	-0.026	0.160**
	(0.177)	(0.216)	(0.147)	(0.075)
R-squared	0.947	0.945	0.923	0.952

Notes: Each column represents a separate regression based on 306 state-year observations. All regressions include TANF caseload, whether the state expanded Medicaid under the ACA, unemployment rate, state minimum wage, poverty ratio, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Regressions Weighting the {0,1} Work Requirement by Percent of ABAWDs Not Exempted

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
	Applications per 10K Population			
ABAWDS Not Exempted (%)	-2.336	-2.398	1.202	-1.204
	(3.723)	(3.288)	(3.509)	(1.217)
R-squared	0.978	0.951	0.955	0.978
	Recipients per 10K Population			
ABAWDS Not Exempted (%)	-1.834*	1.728	0.277	-0.787
	(0.952)	(1.857)	(0.683)	(0.498)
R-squared	0.947	0.946	0.923	0.952

Notes: Each column represents a separate regression based on 306 state-year observations. The treatment variable is weighted by the percent of ABAWDs not exempted under 15% exemption rules. All regressions include TANF caseload, whether the state expanded Medicaid under the ACA, unemployment rate, state minimum wage, poverty ratio, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Table A8: Natural Log of Outcomes

	(1) SSI	(2) SSDI	(3) SSI & SSDI	(4) SSI Child
		Ln(Applications)		
Work Requirement	-0.001	0.009	-0.015	-0.030**
	(0.013)	(0.017)	(0.015)	(0.015)
R-squared	0.998	0.996	0.995	0.998
		Ln(Recipients)		
Work Requirement	0.011	0.016	0.003	-0.015
	(0.015)	(0.017)	(0.021)	(0.019)
R-squared	0.997	0.994	0.993	0.996

Notes: Each column represents a separate regression based on 408 state-year observations. The outcomes are logged. All regressions include TANF caseload, whether the state expanded Medicaid under the ACA, unemployment rate, state minimum wage, poverty ratio, fractions of the population that are White, Black, Hispanic, of prime age, female, and with a high school diploma, natural log of population, and state and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A9: CPS Regressions by Time Period

	2010 -- 2013		2014 -- 2017	
	Disability	No Disability	Disability	No Disability
Work Requirement	0.037	-0.002	0.067	-0.004
	(0.098)	(0.003)	(0.047)	(0.004)
Observations	2,408	14,218	2,109	10,804
R-squared	0.238	0.029	0.249	0.032

Notes: Data include ABAWDs (age 18-49, no children) earning less than 150 percent of the FPL. All regressions include race, gender, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A10: CPS Regressions for ABAWDS above 150 FPL and Adults Aged 51-75

	ABAWDS Above 150 FPL		Ages 51-75 Below 150 FPL	
	Disability	No Disability	Disability	No Disability
Work Requirement	-0.016	-0.001	0.005	0.002
	(0.020)	(0.001)	(0.022)	(0.008)
Observations	6,639	103,571	9,616	10,944
R-squared	0.166	0.007	0.130	0.063

Notes: All regressions include race, gender, citizenship, age, age-squared, central city, married, family size, high school completion, school attendance, TANF caseload rate, Medicaid expansions, unemployment rate, state minimum wage, and the poverty ratio, along with county and year fixed effects with standard errors clustered at the state level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix B: CPS Disability-Related Questions

Disability Six-Question Sequence (Monthly):

1. Is anyone deaf or does anyone have serious difficulty hearing?
2. Is anyone blind or does anyone have serious difficulty seeing even when wearing glasses?
3. Because of a physical, mental, or emotional condition, does anyone have serious difficulty concentrating, remembering, or making decisions?
4. Does anyone have serious difficulty walking or climbing stairs?
5. Does anyone have difficulty dressing or bathing?
6. Because of a physical, mental, or emotional condition, does anyone have difficulty doing errands alone such as visiting a doctor's office or shopping?

Work Limitation Question (March Supplement):

1. (Do you/Does anyone in the household) have a health problem or disability which prevents (you/them) from working or which limits the kind or amount of work (you/they) can do?

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