Do SNAP work requirements work?

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The American Recovery and Reinvestment Act waived work requirements nationally in 2010 and broadened waiver eligibility in subsequent years for Able-Bodied Adults without Dependents (ABAWDs) receiving Supplemental Nutrition Assistance Program (SNAP) benefits. From 2011 to 2017, many states voluntarily imposed work requirements, while other areas became ineligible for waivers because of improved economic conditions. Using data from the American Community Survey from 2010 to 2017, I analyze the influence of work requirements on employment and SNAP participation for ABAWDs. I find that work requirements increased employment for ABAWDs and also significantly decreased SNAP participation.

Keywords: Work Requirements; SNAP; Employment

JEL classification: J21; J68; H42; H75

I. Introduction

The Supplemental Nutrition Assistance Program (SNAP)—previously known as Food Stamps—requires individuals deemed Able-Bodied Adults without Dependents (ABAWDs) to work at least 20 hours per week to receive benefits.[1] In response to high unemployment rates during the Great Recession, the U.S. Department of Agriculture (USDA) implemented a nationwide waiver of the work requirement for fiscal

[1]ABAWDs are defined as adults aged 18 to 49 who are neither pregnant nor living in a home with minor children. Married or cohabitating individuals may be considered ABAWDs. The 2008 Farm Bill officially changed the name of the Food Stamps Program to SNAP. For consistency, I will refer to the food assistance program as SNAP throughout.

year 2010 and expanded waiver eligibility in subsequent years. From 2011 to 2017, several states—despite qualifying for waivers either entirely or partially—did not apply for waivers from the federal government, while some other localities that were receiving waivers became ineligible as economic conditions improved. In this study, I use the time and geographical variation created by a staggered reimplementation of work requirements, in addition to variation from an age cutoff, to analyze the effect of work requirements on both employment and SNAP participation.

The analysis is motivated by recent proposals to implement or expand work requirements for welfare programs. The controversial House version of the 2018 Farm Bill proposed expanding the upper age cutoff for SNAP work requirements and led to gridlock in Congress. Related to this proposed expansion, the Welfare Reform and Upward Mobility Act currently under consideration would extend SNAP work requirements to households with dependents.[2] In addition to these work requirements for SNAP, the Centers for Medicare and Medicaid Services provided new guidance in January 2018 that allowed states to impose work requirements for Medicaid recipients.[3] Work requirements are further being considered for housing aid (public housing) from the Department of Housing and Urban Development (HUD).[4]

This study primarily analyzes the effectiveness of SNAP work requirements at increasing the employment rate of ABAWDs. I use data from the American Community Survey (ACS) in conjunction with time and geographic variation from the implementation of work requirements. The Difference-in-Differences (DD) estimation shows that the reimposition of work requirements increased the number of employed ABAWDs by 1.4 percentage points while decreasing SNAP participation by 1.9 percentage points.[5] These results imply that for every 100 individuals that exited

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[2]See https://www.congress.gov/bill/115th-congress/house-bill/2832 for more information on the Welfare Reform and Upward Mobility Act.

[3]Arizona, Arkansas, Indiana, Kentucky, Michigan, New Hampshire, Ohio, Utah, and Wisconsin have approved waivers, and seven other states have submitted applications to have work requirements for Medicaid. See https://www.kff.org/medicaid/issue-brief/medicaid-waiver-tracker-approved-and-pending-section-1115-waivers-by-state/.

[4]See https://www.whitehouse.gov/wp-content/uploads/2018/02/budget-fy2019.pdf for more information.

[5]For comparison, Schochet, Burghardt and McConnell (2008) found that Job Corps increased the employment rate by 2.4 percentage points (3.5 percent). Estimated impacts of expansions in the Earned Income Tax Credit (EITC) ranges from no effect to a 7.2 percentage point increase in the employment rate (Eissa

SNAP due to the work requirement, almost 75 individuals became employed. The results indicate that to a certain extent, the work requirements "worked." Nonetheless, individuals could have become employed—due to the work requirements—and continued to receive SNAP benefits. Consequently, there were likely a non-trivial number of individuals that were disqualified from receiving SNAP benefits who remained unemployed.

In addition to time and geographic variation, I also use variation created by the age cutoff for work requirements. Specifically, I compare the response of individuals aged 45-49 who are impacted by work requirements to that of individuals aged 50-54 who are not affected by work requirements in a Difference-in-Difference-in-Differences (DDD) framework. This framework provides a local average treatment effect for individuals at the upper end of the age range for work requirements, which is particularly informative for policy proposals that expand work requirements to older individuals. The baseline DDD specification shows that the imposition of work requirements caused a statistically significant 1.1 percentage point increase in the employment rate for ABAWDs while decreasing SNAP participation by 1.6 percentage points. Nonetheless, this result is less robust to changes in the sample period and sample selection criteria relative to the findings from the DD.

This study contributes to the literature on the consequences of transfer programs. In general, the influence of transfer programs on labor supply has been well studied (Danziger, Haveman and Plotnick, 1981; Moffitt, 1992; Hoynes, 1997; Moffitt, 2002). Several studies have analyzed the overall impact of food assistance programs on labor force participation (Fraker and Moffitt, 1988; Hagstrom, 1996; Keane and Moffitt, 1998; Hoynes and Schanzenbach, 2012; Rosenbaum, 2013). In addition, there is well-established theoretical literature exploring the complications and conditions under which work requirements may be optimal for means-tested programs (Barth and Greenberg, 1971; Browning, 1975; Lurie, 1975; Fortin, Truchon and Beausejour, 1993; Besley and Coate, 1995; Parsons, 1996; Brett, 1998; Cuff, 2000; Moffitt, 2003,

and Liebman, 1996; Meyer and Rosenbaum, 2001; Hotz and Scholz, 2006; Cancian and Levinson, 2006).

2006; Kaplow, 2007; Beaudry, Blackorby and Szalay, 2009; Grogger and Karoly, 2009).

The empirical literature on the influence of SNAP work requirements focuses primarily on the SNAP participation effect. Using state-level data, Ziliak, Gundersen and Figlio (2003) and Ganong and Liebman (2018) found that waivers for work requirements increase enrollment for SNAP.[6] There is, however, little empirical analysis on the influence of SNAP work requirements on employment due to minimal cross-state or over-time variation (Hoynes and Schanzenbach, 2012).[7] The most closely related study is Ribar, Edelhoch and Liu (2010), which analyzes administrative Food Stamps data from a single state, South Carolina, linked to unemployment insurance earnings from 1996 to 2005. They find that the *duration* of Food Stamp enrollment significantly decreases due to work requirements and that individuals who faced worked requirements were more likely to exit SNAP and have earnings.[8] This study contributes to the empirical literature by analyzing the impact of work requirements across the country—rather than a single state—in the postrecession period using quasi-experimental techniques and county-level variation.[9] Furthermore, the study's results on the influence of work requirements on SNAP enrollment and employment are particularly informative for policy proposals to expand work requirements to older individuals.[10]

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[6]Ziliak, Gundersen and Figlio (2003) find that SNAP caseloads vary with changes in work requirements but call for substate analysis that takes into account local economic conditions. Ganong and Liebman (2018) found that the American Recovery and Reinvestment Act (ARRA), which waived work requirements nationally, increased enrollment by 1.9 million participants.

[7]See Fang and Keane (2004) and Herbst (2017) for studies on the influence of Temporary Assistance for Needy Families (TANF) work requirements. Grogger and Karoly (2009) review literature on the impact of welfare-to-work policies in several randomized experiments. While the results generally show increased employment, the programs studied incorporate job training/education, analyze a different population (typically parents), and do not evaluate work requirements for Food Stamps (Fein et al., 1998; Freedman et al., 2000b,a).

[8]Given that Ribar, Edelhoch and Liu (2010) use administrative data on recipients, the analysis captures the policy's influence on SNAP participants but not the impact on ABAWDs on the margin of participation in SNAP.

[9]An unpublished working paper, Stacy, Scherpf and Jo (2018), also analyzes the impact of work requirements using similar variation. The study's underlying sample of nine states, empirical estimation, and results differ from those used in this analysis.

[10]A majority of states with approved or pending waivers to apply work requirements for Medicaid have work requirements that apply to individuals older than 50. See https://www.kff.org/medicaid/issue-brief/medicaid-waiver-tracker-approved-and-pending-section-1115-waivers-by-state/.

II.   Policy Backdrop and Changes

Work requirements for ABAWD SNAP recipients were instituted under the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA).[11] In particular, the act required ABAWDs to work 80 hours a month, participate in a work program for 80 hours a month, or comply with a workfare program to be eligible for SNAP. Active job search does not satisfy the work requirement.[12] Under the law, state governments may request waivers for local areas (typically counties) or the entire state based on the locality's economic conditions. States may also combine geographical areas when submitting waiver applications, which has led to gerrymandering to increase waiver coverage.[13] For example, a state may group a high-unemployment county with a low-unemployment county to receive a waiver for the combined geographical area. For the analysis, I use the waiver status defined at the county level.[14]

There are many different ways to qualify for a waiver including: "(1) an unemployment rate over 10 percent for the latest 12-month (or 3-month) period; (2) a historical seasonal unemployment rate over 10 percent; (3) a Labor Surplus Area designation from DOL (Department of Labor); (4) a 24-month average unemployment rate 20 percent above national average; (5) a low and declining employment-population ratio; (6) a lack of jobs in declining occupations or industries; (7) described in an academic study or publication as an area with a lack of jobs; or (8) qualifies for extended unemployment benefits" (BLS, 2017).

In 2008, Congress passed the Temporary Emergency Unemployment Compensation (EUC) program, which extended through December 28, 2013.[15] The Bush

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[11]Non-ABAWDs have minimal work requirements, including not voluntarily quitting or reducing hours and accepting a position if offered.

[12]Recipients are eligible to receive a total of three months of SNAP benefits in a 36-month period without meeting the work requirement.

[13]See Wall Street Journal (2018) for further discussion.

[14]Waivers that the USDA granted for a smaller geographic level, such as city, are counted in the analysis if the population of a city (or group of cities) constitutes a majority of a county's population based on the 2010 Decennial Census. Waivers granted to Native American Reservations were not included in the analysis. I classify a county as having a work requirement if the county had work requirements for at least three quarters of the year.

[15]See https://ows.doleta.gov/unemploy/supp_act.asp.

administration clarified that states that qualified for EUC would also be eligible for statewide work requirement waivers for SNAP. Eligibility for EUC satisfied the criteria regardless of actual take-up of the EUC. States qualified for a 12-month waiver up to 12-months from the "trigger date."[16] Consequently, a majority of states qualified for statewide waivers up to January 2016 based on a trigger notice from December 2013. For a majority of the states, the ending of the EUC program in 2014 translates directly into the reimposition of work requirements in 2016. Although states used some of the other qualifications for receiving a waiver mentioned above, waivers based on EUC constituted a vast majority of all the justifications for waivers over the sample period.

In response to high unemployment rates, the American Recovery and Reinvestment Act (ARRA) of 2009 suspended the time limit for waivers in all states from April 2009 through September 2010 (the entirety of fiscal year 2010). This policy change provides the starting point for the analysis, as all states had the same waiver status in 2010.

I construct data on work requirement waiver status from official approval letters sent from the USDA to individual states in response to state applications for waivers from 2010 to 2016. Figure 1 illustrates the year in which work requirements were imposed following the nationwide waiver in 2010 from the ARRA.[17] There is significant variation originating primarily at the state level and less—while still considerable—variation at the county level.[18]

The availability of work requirement waivers to state governments is endogenous to labor market conditions. Application for waivers, however, is determined by both a state's political environment in addition to labor market conditions. Figure 2 plots county unemployment rates in the year prior to the reimplementation of work requirements by the year of work requirement implementation. The figure shows

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[16]The six percent requirement to be tier 2 started in June 2012. See https://www.cbpp.org/research/food-assistance/waivers-add-key-state-flexibility-to-snaps-three-month-time-limit. When all states were eligible for both the first and second tiers of EUC, USDA required states to be eligible for at least the third tier to qualify for a waiver. Trigger Notice reports (weekly): https://oui.doleta.gov/unemploy/claims_arch.asp.

[17]The maps use shapefiles from the Census Bureau. See https://www.census.gov/geo/maps-data/data/cbf/cbf_counties.html.

[18]See Appendix Figure A1 for waiver status by year throughout the sample period.

considerable heterogeneity in labor market conditions for localities facing reimplemented work requirements in the same year. For example, work requirements were reimplemented in 2016 for both Orangeburg County, South Carolina, and Douglas County, Colorado, which had respective unemployment rates of 10.9 and 3.1 percent in the previous year. For comparison, I also plot the previous year's unemployment rate for counties that did not yet impose work requirements for each year of work requirement reimplementation. As shown, localities with lower unemployment rates are more likely to reimplement work requirements earlier in the sample period. Nonetheless, the figure also highlights areas with comparable unemployment rates that differ in work requirement waiver status.[19]

One explanation for the difference in work requirement status for localities with similar unemployment rates is that many states decided to apply (or not apply) for waivers at the state level (presumably based on statewide statistics) rather than at a local level.[20] States that qualified for waivers but chose not to apply or states that gerrymandered areas to maximize waiver coverage also contributed to the waiver status differences across comparable labor markets. For example, 14 states voluntarily imposed work requirements despite qualifying for statewide waivers under EUC.[21]

A. State Incentives

To understand the decision of states to apply for waivers, it is imperative to recognize the incentives faced by state governments. The federal government pays for the benefits of SNAP recipients, while the administrative costs are split between the federal and state governments. If states do not apply for waivers, then the dollar amount of benefits from the federal government likely decreases as fewer individuals qualify for the program. All else equal, administrative costs decrease with a

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[19]For reference, the largest quantity (number of counties) of work requirement reimpositions occurred in 2016 (47.0 percent) followed by 2014 (21.4 percent) and 2011 (13.4 percent).

[20]Appendix Figure A2 plots county unemployment rates and shows considerable unemployment heterogeneity within states.

[21]Appendix Table A1 lists the states that voluntarily imposed work requirements despite qualifying for statewide wavers based on EUC.

decline in the number of recipients. Nonetheless, administrative costs could also increase with work requirements, given the administrative burden associated with verifying employment (eligibility determination), confirming compliance with the work requirement, determining the use of 15 percent exemptions for ABAWDs, and administering job training programs.[22] Overall, it is unclear whether administrative costs increase or decrease with work requirements.

If the influence of work requirements on state administrative costs is uncertain and benefits funded by the federal government decrease, why would some states voluntarily implement SNAP work requirements? Statements by state officials suggest that the decision is determined by political ideology rather than finances. Kansas and Maine are examples of states that voluntarily enforced work requirements despite qualifying for statewide waivers. The Kansas Department for Children and Families Secretary, Phyllis Gilmore, justified the work requirement by saying, "We know that employment is the most effective way to escape poverty. . . . As long as federal work requirements are met, no one will lose food assistance; the law only affects those individuals who are capable of working and have no dependent children."[23] Maine's governor, Paul LePage, in a press release announcing the decision to not apply for a waiver, said, "People who are in need deserve a hand up, but we should not be giving able-bodied individuals a handout. . . . We must continue to do all that we can to eliminate generational poverty and get people back to work. We must protect our limited resources for those who are truly in need and who are doing all they can to be self-sufficient" (Chokshi, 2014).

B. Individual Incentives

The work requirements are designed to encourage ABAWDs receiving SNAP benefits to find employment with earnings that would allow for self-sufficiency (i.e., no

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[22]States are allotted discretionary exemptions to the waiver requirement equal to 15 percent of the state's projected caseload of ABAWDs. For each exemption, the state may extend eligibility for one month for an ABAWD that would otherwise be ineligible. See https://www.fns.usda.gov/snap/abawd-15-percent-exemptions. These exemptions are rolled over from year to year if not used. The use of these exemptions potentially lessens the employment effects from the reimposition of work requirements.

[23]http://www.dcf.ks.gov/Newsroom/Pages/09-04-2013.aspx.

longer qualify for SNAP) (Besley and Coate, 1992). For a household of one, these "positive exits" would occur if the recipient worked the required 80 hours per month at an hourly rate of $16.34 (gross monthly income limit is $1,307).[24]

As ABAWDs find work and earn income, the SNAP allotments taper off. The maximum benefit for a household of one is $192, and the minimum amount is $16. Someone making roughly the federal minimum wage ($7.25 per hour) for 80 hours a month would receive approximately $100 a month in SNAP benefits.[25] Throughout the entire earnings profile, as ABAWDs work more, total income (wage earnings plus SNAP allotments) unambiguously increases. Nonetheless, in the absence of a work requirement, for some individuals, the disutility associated with working may be sufficiently high to overcome the additional compensation.[26] The implementation of a work requirement could theoretically induce those individuals at the margin to seek gainful employment.

Given that this study focuses on ABAWDs, many confounding factors from multiple program participation are irrelevant. For example, ABAWDs would not qualify for Temporary Assistance for Needy Families (TANF) and Women and Infants and Children (WIC). The Earned Income Tax Credit (EITC) would only serve to encourage ABAWDs to find employment rather than discourage earnings.[27] Nonetheless, housing vouchers issued through the Department of Housing and Urban Development (HUD)—which adjust based on income—could decrease the monetary gains from working. Although multiple program participation might provide disincentives for employment, these programs will bias the results only inasmuch as there are changes that are correlated with the reimposition of work requirements.

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[24]Households qualify for SNAP benefits based on income and asset tests. Assets with a value of over $2,250 disqualify individuals from receiving SNAP. Federal guidelines specifically exclude home value from asset calculations used in the test. See https://www.fns.usda.gov/snap/eligibility. Furthermore, the test excludes most retirement and pension plans and counts the market value of cars over $4,650 toward assets. States may use Broad-based Categorical Eligibility to remove asset tests and increase the gross income limit for households.

[25]The average monthly benefit for ABAWDs in 2016 was $163. See https://fns-prod.azureedge.net/sites/default/files/snap/nondisabled-adults.pdf.

[26]In 2017, 27.4 percent of ABAWDs reported being employed based on SNAP Quality Control data (sample described below).

[27]Variation of the EITC at the state level is minimal for ABAWDs. Any underlying differences in EITC by a state would be picked up by the locality fixed effects inasmuch as there were no changes to the state-level EITC programs during the sample period.

Overall, the imposition of work requirements should unsurprisingly incentivize work for ABAWDs. Nonetheless, for the policy to be effective, it necessitates employability by ABAWDs receiving SNAP benefits. Criminal backgrounds (felony charges, probation/parole, Driving Under the Influence convictions), history of drug use, terminations from previous employment, lack of education, and lack of work history are all complications that could prevent ABAWDs from being hired despite effort on their part. Furthermore, incorrect assignment of ABAWD status or perceived misassignment could inhibit employment.[28]

Another consideration is that some ABAWDs might be employed, but their employment is not properly reported. If individuals report their income on tax forms, the potential lost income due to taxes might be greater than the SNAP benefits they would receive if they accurately reported being employed.[29] Nonetheless, there is not evidence of under-reporting of employment in the ACS.

III. Data

To analyze both the employment responses and program participation of ABAWDs, I use the ACS Public Use Microdata Sample (PUMS) from 2010 to 2017. The ACS is a nationwide survey administered by the Census Bureau that asks detailed questions about population, employment, SNAP receipt, and individual characteristics. The ACS samples approximately one percent of the U.S. population. Like the Decennial Census, participation in the ACS is mandatory, and participants can complete the survey online or by mailing in a paper questionnaire. The ACS identifies all 50 states and the District of Columbia and additionally identifies localities known as Public Use Microdata Areas (PUMAs) that I map into counties.[30] The primary

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[28]One in three ABAWDs in Franklin County, Ohio, reported a physical or mental limitation but were not classified as disabled and were consequently subject to work requirements according to a survey conducted by the Ohio Association of Foodbanks. See http://admin.ohiofoodbanks.org/uploads/news/ABAWD_Report_2014-2015-v3.pdf .

[29]For EITC, the maximum credit available for individuals without a qualifying child is $510. Federal Insurance Contributions Act (FICA) taxes, currently at 12.4 percent, might serve as an adequate incentive not to report income to the FDA to qualify for SNAP benefits. Individuals faced with under the table employment must weigh the benefits of reporting employment (SNAP allotments plus EITC) in comparison to the additional costs (payroll taxes).

[30]There are approximately 2,300 PUMAs that are areas with at least 100,000 people nested entirely within a state. I use a crosswalk from the Missouri Data Center to assign observations from PUMAS into counties.

reasons for using the ACS include the availability of fine geographic information and large sample sizes, which are essential for analyzing the impact of a policy on a relatively small population (1.7 percent of the working-age population in 2016). While a panel dataset would be ideal for this analysis, sample sizes are prohibitively small in commonly used panel surveys.

To study a sample of ABAWDs, I exclude individuals with disabilities and individuals with a minor living in the household. I restrict the sample to prime working-age individuals aged 25 to 54 to abstract from periods generally associated with human capital investments or retirement (Blundell et al., 2018).[31] I also exclude students from the sample, as they are generally ineligible for SNAP benefits.[32] In addition, I limit the sample to U.S. citizens in the continental United States, who are not institutionalized, active duty military, or in foster care. In the robustness section, I analyze the sensitivity of the main results to additional sample restrictions.

To determine the characteristics of ABAWDs receiving SNAP and to analyze how work requirements influence participation in SNAP by ABAWDs, I use SNAP Quality Control (QC) data. States are required to select a random sample of households that participate in SNAP using methodology approved by the Food and Nutrition Service (FNS) for quality control purposes.[33] The required number of observations collected at the state level is a function of the statewide caseload, with sample requirements ranging from 300 to 1,200 cases per year. The data are assigned weights to create a representative sample of SNAP participants at the state level.[34] The original sample consists of 391,397 households surveyed in the years 2010 to 2017. There are 42,699 prime-working age respondents that were classified as ABAWDs that I use in the analysis.[35]

For PUMAs that map into multiple counties, I assign the observations to the county that has the largest population based on the 2010 Decennial Census. See http://mcdc.missouri.edu/websas/geocorr14.html.

[31] The main findings from the prime-working age sample are very similar to the findings from a sample of ABAWDs aged 18 to 49. See Appendix Table A2 for the main DD results using individuals aged 18 to 49.

[32] See https://www.fns.usda.gov/snap/facts-about-snap.

[33] See Klerman and Danielson (2011) for an example of SNAP QC data use in a DD framework.

[34] These data are further used to assign 15 percent exemptions based on the estimated number of ABAWDs.

[35] Technically, the group is classified as "nondisabled adults aged 18 through 49 who live in childless households." I exclude observations with missing race or missing education in the table. Nonetheless, I use these observations when aggregating to the state level (N=55,303). Appendix Table A3 shows the weighted

Table 1 compares the ACS sample with the QC sample.[36] The table shows that the composition of the ACS sample is considerably different than that of QC sample. In particular, the ACS has a larger share of whites, a smaller percentage of blacks, individuals with more education, and a significantly higher employment rate. The ACS also has a larger weighted sample size than the QC data, which implies that any employment effect found will likely be understated, as many unaffected individuals are included in the ACS sample (Bertrand, Duflo and Mullainathan, 2004). Nonetheless, the policy will affect not only those receiving SNAP but also those individuals that are on the margin of receiving SNAP as an ABAWD.[37]

One approach, to address these differences, is to further restrict the sample based on income or educational obtainment. Nonetheless, further restrictions would make the sample unrepresentative of the affected population. An alternative approach, which I use in this analysis, is to reweight the ACS sample to align with the QC sample more closely. I use entropy weighting to reweight the ACS sample (Hainmueller, 2012). Entropy weighting selects individual weights such that the moments of the weighted sample match those of a desired sample or population (in this case ABAWDs from the QC sample). See Marcus (2013), Stanton and Thomas (2015), Freier, Schumann and Siedler (2015), Marcus and Siedler (2015), Bansak, Hainmueller and Hangartner (2016), Neuenkirch and Tillmann (2016), and Allcott and Knittel (2019) for recent studies that use the technique. I reweight the ACS data based on age, gender, race/ethnicity, educational obtainment, state, and year while taking into account the original survey weights.[38] As shown in the third column of Table 1, the reweighting precisely matches the first moment for the covariates of the ACS and QC datasets. Even though this preprocessing step causes the sample to

count of ABAWDs by state from 2010 to 2017.

[36]The summary statistics in the ACS sample are presented for individuals aged 25 to 49 to align with the QC sample even though the later analysis will use individuals up to age 54.

[37]The weighted count of prime-working age individuals receiving SNAP benefits from the ACS sample is 20.7 million in comparison to 21.5 million in the QC data (includes those with missing race or education). The difference in the number of SNAP recipients between the QC and ACS samples is consistent with underreporting of SNAP receipt in survey data (Meyer and Sullivan, 2012; Meyer, Mok and Sullivan, 2015).

[38]For the DDD analysis, I reweight based on the QC sample of ABAWDs from age 40 to 49 for the ACS sample of individuals aged 45 to 54 and do not use age as a reweighting covariate. For all reweighting, I balance the sample based on the first moment as all of the matching covariates are binary except age. The reweighting is done using the Stata command *ebalance* (Hainmueller and Xu, 2013).

more closely align with the population of individuals impacted by the work require-
ments, the ACS sample still likely includes many individuals that are unaffected by
the legislation. Consequently, the treatment effect will be diluted (biased toward
zero) in the empirical estimation for both the analysis of employment and SNAP
participation (Bertrand, Duflo and Mullainathan, 2004).

IV. Work Requirements and Employment

To estimate the impact of SNAP work requirements on employment I use the
following DD specification:

$$(1) \qquad Employ_{ijt} = \beta_0 + \beta_1 WorkReq_{jt} + \beta_2 Z_i + \beta_3 X_{jt} + \alpha_j + \gamma_t + \varepsilon_{ijt}$$

where $Employ_{ijt}$ is an indicator for employment for individual i in locality j in year
t and $WorkReq_{jt}$ is one if the locality has a work requirement in place (i.e., does
not have an active waiver).[39],[40] X_{jt} is a vector containing locality labor market
and political variables, including the county unemployment rate from the Bureau
of Labor Statistics (BLS) (current and previous year), the number of stable jobs
per 1,000 individuals (from Quarterly Workforce Indicators), political affiliation of
state legislature/governor, an indicator for Medicaid expansion under the Affordable
Care Act (ACA), and the ratio of 15 percent exemptions granted per state popula-
tion. The vector also includes gross income limits and an indicator for asset tests
determined by state-level broad-based categorical eligibility (BBCE). Z_i is a vector
of individual characteristics, including gender, race, age bin, education, household
composition, homeownership status, and wage income of family members. Locality
and time fixed effects are given, respectively, by α_j and γ_t.

If states imposed work requirements due to improving economic conditions not

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[39]I use "civilian employed, at work" from the employment status recode variable for my indicator of
employment. Analysis using a dependent variable of being employed for 20 hours a week yield very similar
results for the main specifications as over 95 percent of individuals who are classified as employed report
working over 20 hours per week in the ACS sample.

[40]I designate a locality as having a work requirement if there is an active waiver for three months or less
for the calendar year.

captured by the control variables, then the coefficient on the treatment variable would be biased upward, indicating a larger employment effect. Alternatively, if states impose work requirements in response to increasing dependence on welfare programs (worsening economic conditions), then the results could be biased toward zero.[41]

Table 2 presents the results of the regression given in equation 1. The first column of the table shows that employment increased by a statistically significant 1.4 percentage points with the reimposition of work requirements. The latter columns of the table present results from the stratified analysis. The point estimates indicate that the work requirements had a more substantial effect on blacks (2.3 percentage points) relative to whites (0.9 percentage points). The smallest impact for educational obtainment is observed for individuals with postsecondary education. The table shows that the largest difference is between urban and rural areas.[42] ABAWDs in urban areas experience a 1.5 percentage point increase in employment, whereas the employment effect for ABAWDs in rural areas is statistically insignificant. The difference is arguably attributed to fewer available jobs or the different composition of jobs in rural relative to urban areas.

To evaluate the parallel trends assumption, I estimate the following event study model.

$$(2) \quad Employ_{jt} = \sum_{a=-m}^{q} \eta_a WorkReq_{jt}(t = k + a) + \theta_1 Z_i + \theta_2 X_{jt} + \alpha_j + \gamma_t + \varepsilon_{jt}$$

where m is the number of "leads" and q is the number of "lags" of the treatment effect. Failure to reject the hypothesis that $\eta_a = 0 \ \forall a < 0$ provides support for the parallel trends assumption.[43] I omit the dummy variable for the year before the work requirement was imposed, making all estimated effects relative to the year before the reimposition of work requirements (Dolls et al., 2018).

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[41]Ziliak et al. (2000) find that Aid to Families with Dependent Children (AFDC) waivers are not endogenous to the caseload.

[42]I define an urban area as large metro, medium metro, and small metro areas. Rural areas include micropolitan and noncore areas. See https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf.

[43]For further discussion, see http://econ.lse.ac.uk/staff/spischke/ec524/evaluation3.pdf.

Figure 3 presents the results from estimating equation 2. The figure shows that the null hypothesis of no influence before the reimposition of the work requirement cannot be rejected in support of the parallel trends assumption. The point estimates are consistently positive and statistically significant at the 90 percent level in all but the third year following reimplementation. There is an increase in the point estimates in the third and fourth years after initial application. Nonetheless, localities that imposed the wavier in the later years (e.g., 2016) are not represented in all the lag years as the available data end in 2017.[44] Consequently, the increase in the point estimates could be attributed to a compositional change rather than an increase in the treatment effect.

Given recent policy proposals to expand work requirements to older individuals, I also explicitly analyze the influence of work requirements on the oldest impacted age group. I use a DDD specification that leverages the age cutoff for work requirements to mitigate concerns of legislative endogeneity and control for contemporaneous events affecting ABAWDs in the same locality.

The regression equation is as follows:

$$
\begin{aligned}
Employ_{ijt} = \delta_0 &+ \delta_1 WorkReq_{jt} \times 1(Age \leq 49_i) + \delta_2 WorkReq_{jt} \\
&+ \delta_3 EverWorkReq_j \times 1(Age \leq 49_i) + \delta_4 1(Age \leq 49_i) \\
&+ \delta_5 X_{jt} + \delta_6 Z_i + \alpha_j + \gamma_t + \varepsilon_{ijt}
\end{aligned}
$$
(3)

where $WorkReq_{jt}$ is one if locality j has a work requirement in year t and $1(Age \leq 49_i)$ equals one if the individual is less than or equal to age 49. I restrict the sample to individuals aged 45 to 54, with the control group being individuals aged 50 to 54 who were not subject to the work requirement regardless of the waiver status. The main coefficient of interest is δ_1. This analysis is informative for individuals around age 49 but is not necessarily representative of the entire sample. Nonetheless, the results for this age group are especially relevant for the discussion around increasing the age limit for work requirements from age 49 to age 59.

[44]The same caveat is applicable for lead years, given that the first year of waiver data is 2010.

Table 3 presents the results from the DDD specification using the upper age cutoff. The point estimate for the DDD coefficient indicates that the work requirement caused a 1.1 percentage point increase in employment. The subsample analysis does not show a meaningful difference between genders consistent with the DD analysis. There is not the pronounced difference between whites and blacks for the DDD with both having statistically insignificant treatment effects. For this oldest group of affected ABAWDs, the treatment effect is similar for different education levels, but the statistical significance varies (perhaps reflecting differences in sample sizes). Like the DD analysis, the treatment effect in urban areas is statistically significant, while the treatment effect in rural areas is statistically insignificant.

V.   SNAP Participation and Relative Employment Effects

The above analysis provides evidence that the work requirements caused an increase in employment for ABAWDs. However, to analyze the policy's effectiveness, an understanding of the SNAP participation effect is required. If the employment effect is small relative to the decrease in SNAP participation, then this implies that individuals were denied SNAP benefits and also did not find employment potentially increasing food insecurity. Alternatively, if the employment effect is larger than the participation effect, then this would imply that individuals experienced "positive exits" or met the work requirements while remaining on SNAP.

Figure 4 provides graphical evidence for an effect of work requirements on program participation using SNAP QC data. The figure plots the mean number of prime-working age ABAWDs per 1,000 (based on the 2010 Decennial Census) in states that imposed work requirements in 2013 through 2017.[45] Overall, there was a distinct decrease in the number of ABAWDs receiving SNAP following the implementation of work requirements for states that reimposed the work requirements in 2013, 2014, 2015, and 2016. For states that reimposed work requirements in 2017 (Figure 4e),

[45]States that first reimposed work requirements in 2013: New Hampshire, Utah, Vermont, and Wyoming; 2014: Iowa, Kansas, Minnesota, Ohio, Oklahoma, and Virginia; 2015: Maine, Montana, and Wisconsin; 2016: Alabama, Arkansas, Colorado, Florida, Indiana, Mississippi, Missouri; and 2017: Arizona, Idaho, Maryland, Massachusetts, New Jersey, North Carolina, South Carolina.

SNAP participation is decreasing and continues to decline in 2017 but at roughly the same rate as before. In Figure 4f, I plot the trend of states that did not reimpose the work requirement in the sample period. The number of ABAWDs per 1,000 increases, remains relatively flat and then starts decreasing in 2016 (but not as large of a decrease as in states that imposed work requirements in 2016). Overall these figures suggest that work requirements had a meaningful effect on program participation.[46]

To estimate the impact of work requirements on SNAP participation, I once again use ACS data. The ACS sample allows for the use of county-level variation, stratified analysis, and identification using the age-49 cutoff. Nonetheless, the ACS contains limited information on SNAP participation. The survey asks if anybody in the household received SNAP in the last 12 months. Given that the question is asked at the household level, the estimated effect of work requirements would be biased toward zero as an individual ABAWD may lose SNAP, but another member of the household continues to receive the benefit. Furthermore, given that the question inquires about the receipt of SNAP over the last 12 months, respondents could have lost SNAP benefits, due to the reimposition of work requirements in the year of the survey, but still accurately report receiving the benefit in the last year. Once again, this imprecision in measurement could bias the influence of work requirements toward zero. Lastly, given that the truly "treated" population composes a fraction of the ACS sample, the treatment effect will be biased toward zero (Bertrand, Duflo and Mullainathan, 2004).

Inasmuch as there is legislative endogeneity (impose work requirements because of a better labor market) after controlling for labor market conditions, the negative exits will be mitigated, and the positive exits will be exacerbated. Consequently, it is unclear the direction of any bias originating from legislative endogeneity on the treatment effect for SNAP participation. Notwithstanding these biases, I analyze the ACS sample as it allows for estimation that can be compared to the employment

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[46]See Appendix Figure A3 for the results of an event study analysis using the QC data.

analysis conducted on the same data.

I analyze SNAP participation using analogous specifications to those presented above in the employment section. I report the findings alongside the employment results discussed above in Figure 5 for ease of comparison.[47] Figure 5a presents the results from the DD analysis. The main specification shows that work requirements caused a 1.9 percentage point decrease in SNAP participation in comparison to the 1.4 percentage point increase in employment presented above. Taken literally, these point estimates imply that for every 100 individuals who lost SNAP benefits due to the work requirement, almost 75 individuals became employed due to the work requirement. It is important to note that individuals could have satisfied the work requirements and continued to receive SNAP benefits. Consequently, it would be inaccurate to say that 75 percent of those who exited SNAP found employment based on this analysis.[48]

In addition to showing the main results, the figure further presents results from a subsample analysis. Overall, the point estimate for the decrease in SNAP participation is relatively stable. The exception is the response of high school dropouts who experienced a 2.7 percentage point decrease in SNAP participation in comparison to the 1.7 percentage point gain in employment. The ratio of the treatment effects implies that for every 100 high school dropouts that exited SNAP, 63 high school dropouts became employed. This more modest finding is in line with lower employer demand for individuals that did not graduate from high school. The smallest relative employment effect based on educational obtainment, however, is observed for individuals without postsecondary education. A possible explanation for this finding is that individuals with postsecondary education have higher reservation wages and consequently did not find employment as quickly as individuals with less education. Nonetheless, the share of SNAP recipients with a postsecondary education constitutes only a small share of the influenced population. The largest relative employment effect is observed for black individuals with the ratio of point estimates

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[47]Appendix Tables A4 and A5 report the regression results for SNAP participation shown in Figure 5.
[48]The optimal situation would be if the gains in employment exceeded the losses in SNAP enrollment.

implying that for every 100 that lost benefits, 115 individuals became employed.[49]

Figure 5b presents the results of the DDD analysis. The main specification shows a statistically significant decrease in SNAP participation (1.6 percentage points) for individuals around the age-49 cutoff for work requirements. In conjunction with the employment response for the same age group (1.1 percentage point increase), this result implies a similar, but slightly smaller, relative employment effect for this age group in comparison to the impact on ABAWDs age 25 to 49.

I find robust, statistically significant decreases in SNAP participation across each of the subsample analyses. The lack of statistically significant employment effects for some of the subpopulations along with substantial participation effects could be due to the increased difficulty of reentering the workforce for older individuals (Chan and Huff Stevens, 2001). In particular, black individuals and individuals without a high school diploma experience substantial decreases in SNAP participation (3.4 and 3.7 percentage point decreases respectively) without accompanying statistically significant increases in employment.

Figure 6 presents the results of the event study that analyzes the influence of work requirements on SNAP participation. Similar to the event study for the employment effect, I am unable to reject the null hypothesis of no pretreatment effects in support of the parallel trends assumption. The figure shows negative and statistically significant SNAP participation responses following reimplementation of work requirements.

VI. Robustness

Figure 7 presents an analysis of the sensitivity of the results to the exclusion of localities that implemented the work requirement in a given year. As shown, the DD estimates appear to be relatively stable as areas that impose work requirements in a given year are excluded from the analysis. There is an increase in the treatment effect for employment when areas that reimplemented the work requirement in 2014 are

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[49]For blacks, there was a 2.3 percentage point increase in employment relative to a 2.0 percentage point decrease in SNAP participation.

excluded. This indicates that the reimplementation of waivers in 2014 was relatively less effective at increasing employment. Nonetheless, the overall stability helps to alleviate concerns that the positive employment effects are driven by a single locality or group of localities. Figure 7b, similarly shows the results for the DDD analysis that systematically excludes areas based on reimplementation year. The results for the oldest ABAWDs seem to be driven primarily by areas that reimplemented work requirements in 2016.[50]

Figure 8 explores the robustness of the results to restrictions on household income. The DD employment results are relatively stable to further sample restrictions with a slight increase in the point estimates as the sample is restricted to households below 150 percent of the federal poverty level (FPL). Similarly, the participation effect increases as the sample is restricted to lower-income households. The increase in the treatment effects as the sample is restricted to individuals that are more likely to be influenced by the policy changes is consistent with the treatment effect being biased toward zero due to the inclusion of unaffected individuals (Bertrand, Duflo and Mullainathan, 2004). Nonetheless, as more sample restrictions are applied, the sample becomes unrepresentative of the population. For example, individuals that were unemployed and then found successful full-time employment due to the work requirement could be included while receiving SNAP then omitted while employed under a more restrictive sample. Similarly, individuals that were employed and then subsequently lost their jobs might only be included in a restricted sample while unemployed. Consequently, the preferred specification uses weights to make the sample more representative of the affected population, while not limiting the sample based on observed outcomes.

Figure 8 also presents results for the DDD specification limited by household income. The program participation effect increases with a more restrictive sample similar to the DD specification. The point estimate for the treatment effect

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[50]Appendix Figure A4 presents results based on the years included in the sample. The DD treatment effect on employment is statistically insignificant when the sample period's main policy variation comes from localities that reimplemented the work requirement in 2014 (sample using 2011 to 2015). Also, the DDD treatment effect is only statistically significant when the sample period includes 2016.

on employment is relatively stable, but the results generally become statistically insignificant with sample restrictions based on household income.

Overall, the DD results are relatively stable and consistently point to a meaningful employment effect. A decrease in SNAP participation is also robust to the different sample periods and sample selection. The DDD results, however, are more sensitive to the sample selection and sample period used, and frequently have statistically insignificant employment effects. The sensitivity of the DDD employment results suggests caution for policies that seek to expand work requirements to older individuals.

VII. Conclusion

Following the Great Recession, states and localities reinstated work requirements for ABAWDs receiving SNAP benefits. The reimplementation of work requirements provided unique variation necessary to estimate the impacts of work requirements on both SNAP participation and employment rates. I find that work requirements increased employment for ABAWDs while decreasing SNAP participation. The preferred DD specification shows that for every 100 ABAWDs that lost SNAP benefits, almost 75 individuals became employed. These results highlight that the work requirements "worked" to a certain extent. Nonetheless, the results also indicate that there were nontrivial exits from the SNAP program from individuals who failed to meet the work requirements.

The analysis finds considerable heterogeneity in the effectiveness of work requirements. There were meaningful increases in employment in urban areas with no statistically significant employment effect in rural areas (despite decreases in SNAP participation). Based on the DD results, work requirements were the most effective for black ABAWDs, for whom the employment effect exceeded the SNAP participation effect. The largest decrease in SNAP participation occurred for ABAWDs without a high school diploma.

How applicable are these results to other proposed or implemented work requirements? Arguably, ABAWDs should be the most responsive to work requirements

as they do not have dependents at home, have no disabilities, and are of a working age. Policies that seek to expand work requirements to other households—such as those with dependents—likely will have smaller employment effects than those found in this study. Nonetheless, the monetary value of SNAP benefits is modest in comparison to other means-tested programs, including Medicaid and housing vouchers. All else equal, the incentive to find employment increases as the value of the potential lost benefit increases. Lastly, in comparison, SNAP work requirements for ABAWDs are more stringent than work requirements proposed for Medicaid work requirements. For example, in Arkansas, recipients may meet the requirement through volunteer activities or job search, neither of which satisfy SNAP work requirements. This increased flexibility should mitigate negative exits from the program but potentially lessen positive exits. Overall, this study is informative for other proposed work requirements, but it is crucial to take into account and study the influence of these differences.

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Figure 1. Year Work Requirements Were Reimposed
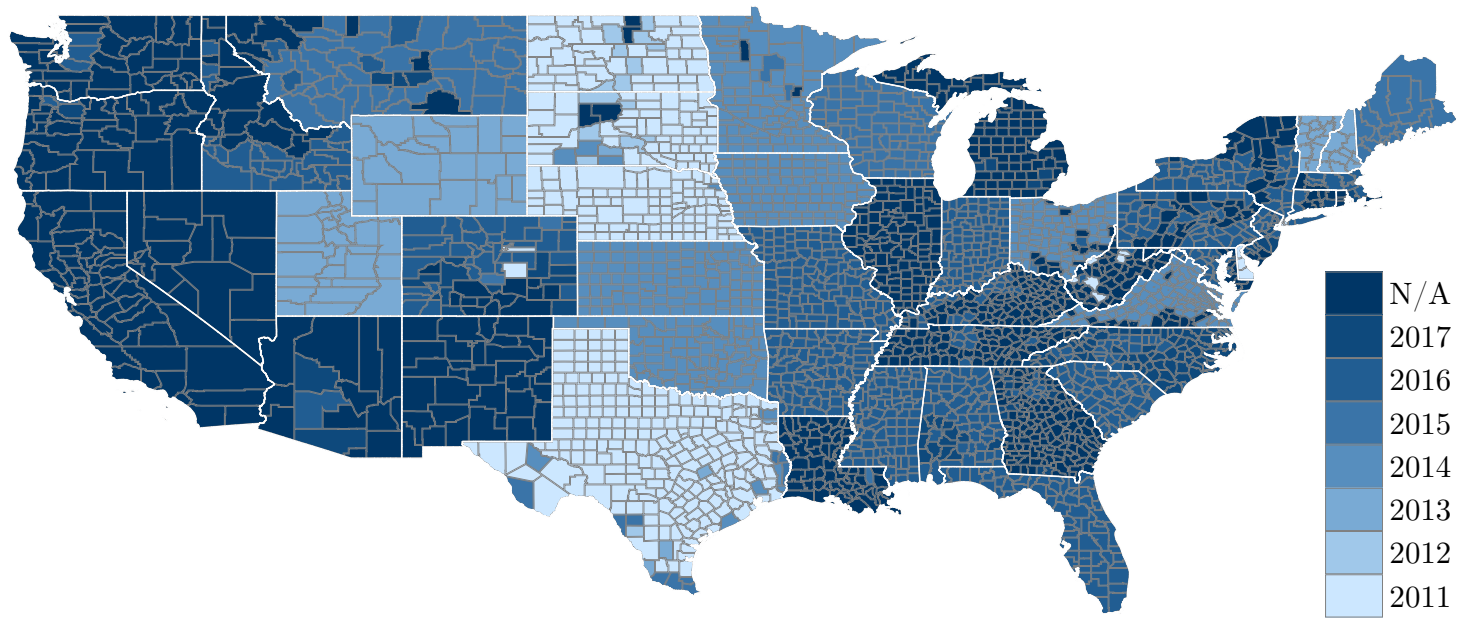
Note: Work requirement waiver status is derived from official approval letters sent from the USDA to individual states in response to state applications for waivers from 2010 to 2017. N/A signifies that the work requirements were still waived in 2017.

Figure 2. County Unemployment Rate in the Year before Work Requirement Reimplementation
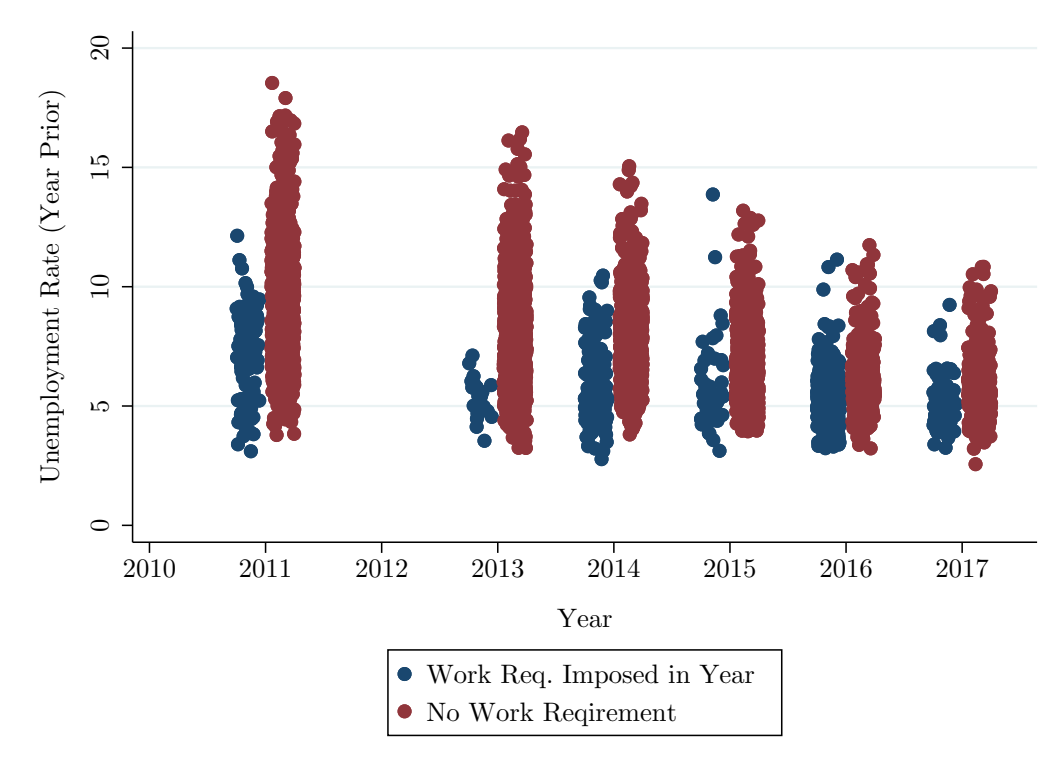
Note: The figure plots the unemployment rate in the previous year for both localities that imposed a work requirement and localities that did not have a work requirement imposed in a given year. I omit two outliers, Imperial County, CA and Yuma County, AZ, for presentation purposes.

Figure 3. Event Study: The Impact of Work Requirements on Employment
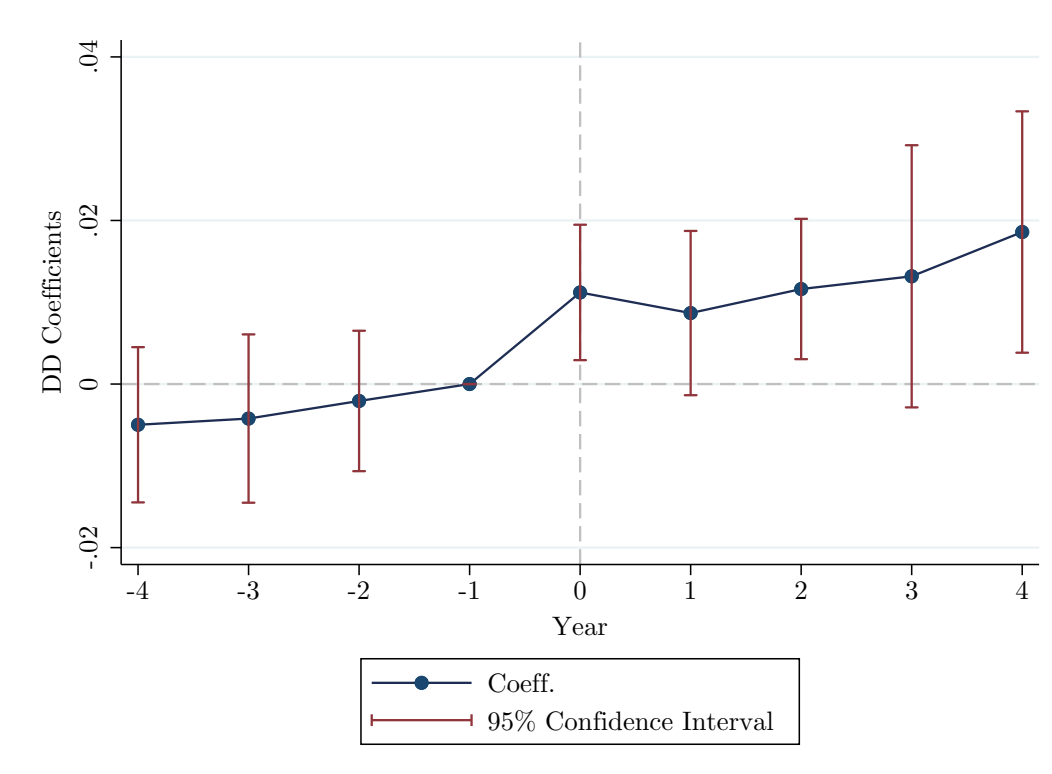
Note: The figure reports the point estimates and 95% confidence intervals for the event study of the impact on work requirements on employment. Individual and county-level controls along with county and year fixed effects were included. Entropy weights were used and standard errors were clustered at the state level. The sample is limited to observations within four years of initial work requirement reimplementation or observations from localities that did not reimpose work requirements from 2010 to 2017.

Figure 4. Mean ABAWDs per 1,000 by Work Requirement Reinstatement Year

(a) 2013

(b) 2014

(c) 2015

(d) 2016

(e) 2017

(f) Not Imposed in Sample
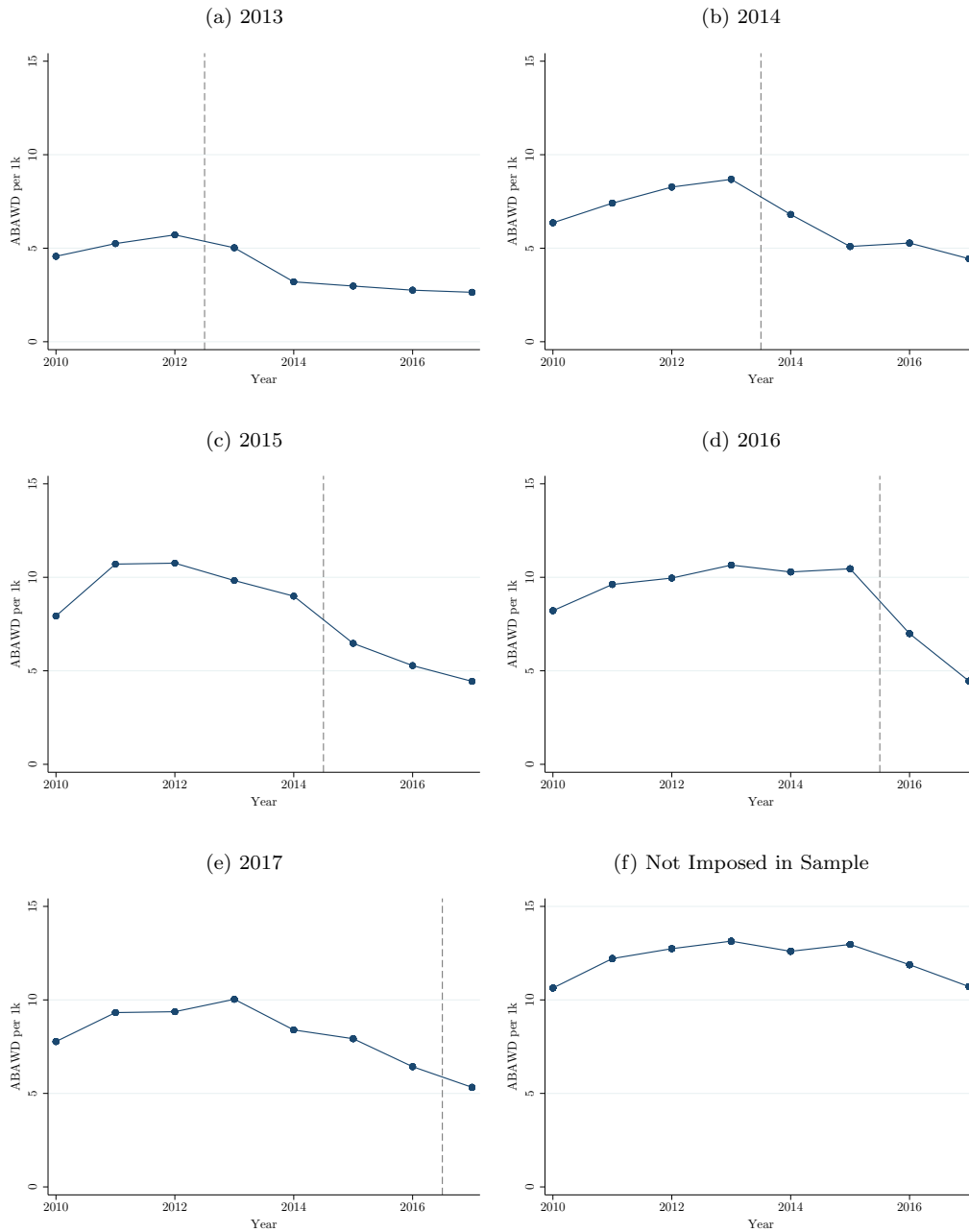
Note: The figures include the average number of ABAWDs per 1,000 for states that reinstated the work requirements in a given year. New Hampshire, Utah, Vermont, and Wyoming started imposing work requirements in 2013; Iowa, Kansas, Minnesota, Ohio, Oklahoma, and Virginia started imposing work requirements in 2014; Maine, Montana, and Wisconsin started imposing work requirements in 2015; Alabama, Arkansas, Colorado, Florida, Indiana, Mississippi, Missouri started imposing work requirements in 2016; Arizona, Idaho, Maryland, Massachusetts, New Jersey, North Carolina, South Carolina started imposing work requirements in 2017.

Figure 5. Subsample Analysis

(a) Diff-in-Diff

(b) Diff-in-Diff-in-Diff

Note: The figure reports the point estimates and 95% confidence intervals for the impact on work requirements on employment and SNAP participation. See Tables 2 and 3 for more information on the employment results and Appendix Tables A4 and A5 for more information on the SNAP participation results.
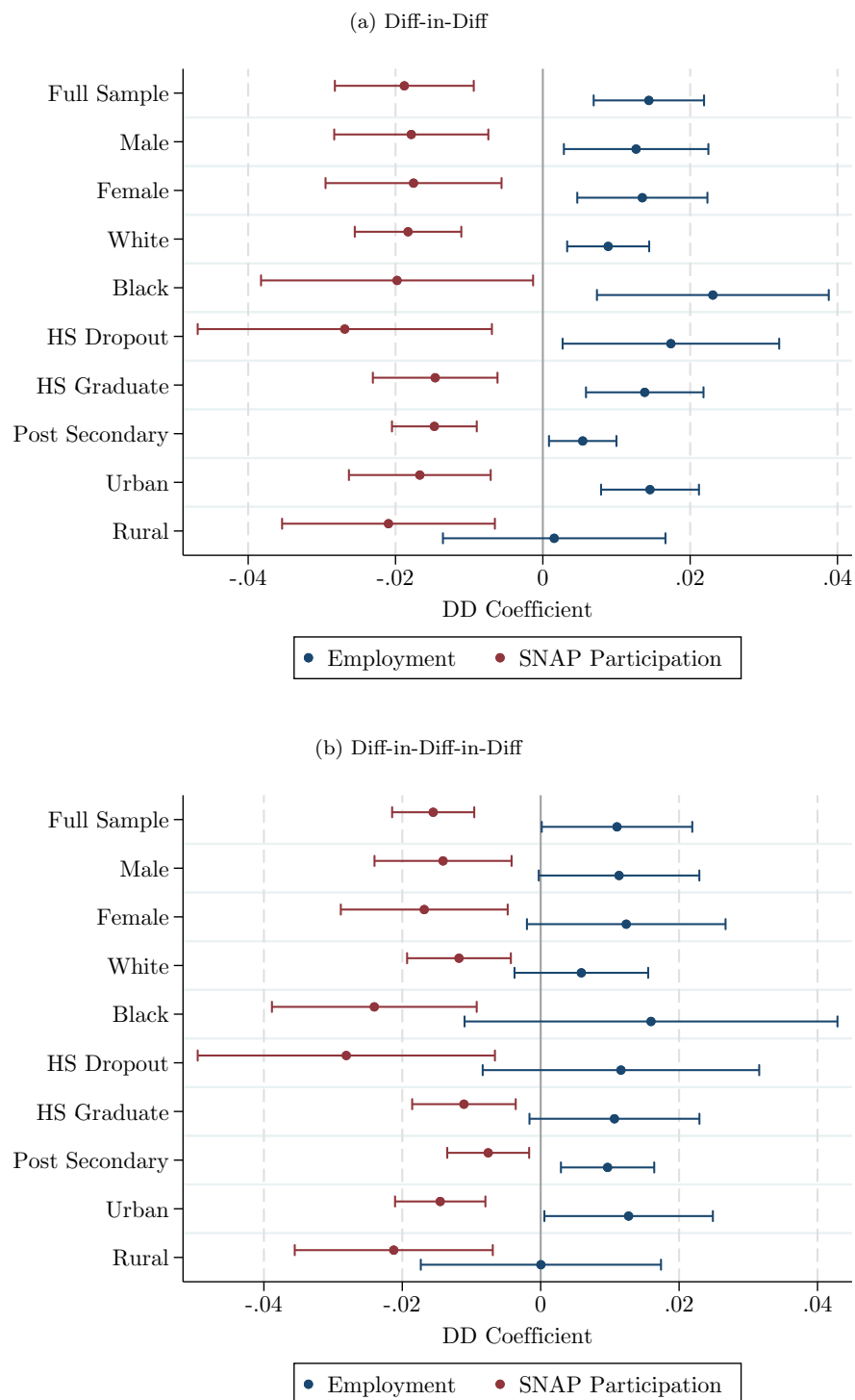
34

Figure 6. Event Study: Impact on SNAP Participation
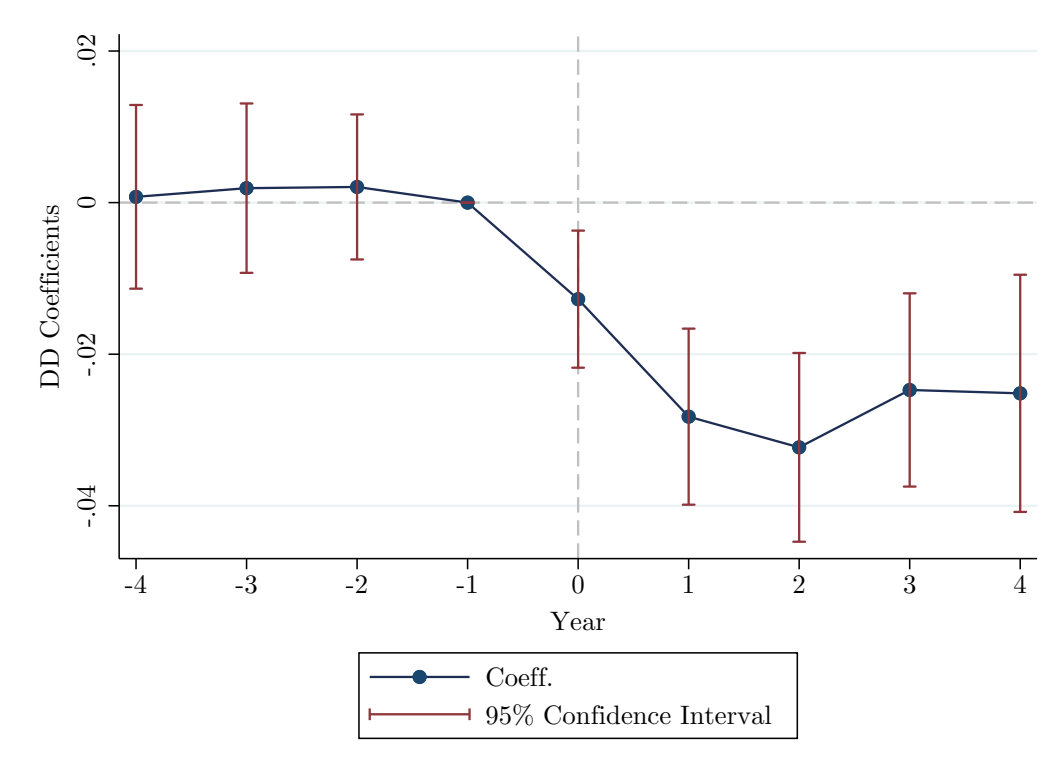
Note: The figure reports the point estimates and 95% confidence intervals for the event study of the impact on work requirements on SNAP participation for the ACS sample. Individual and county-level controls along with county and year fixed effects were included. Entropy weights were used and standard errors were clustered at the state level. The sample is limited to observations within four years of initial work requirement reimplementation or observations from localities that did not reimpose work requirements from 2010 to 2017.

Figure 7. Robustness to Exclusion of Areas (Based on Work Requirement Reimplementation Year)

(a) Exclude Counties by Work Requirement Year, DD
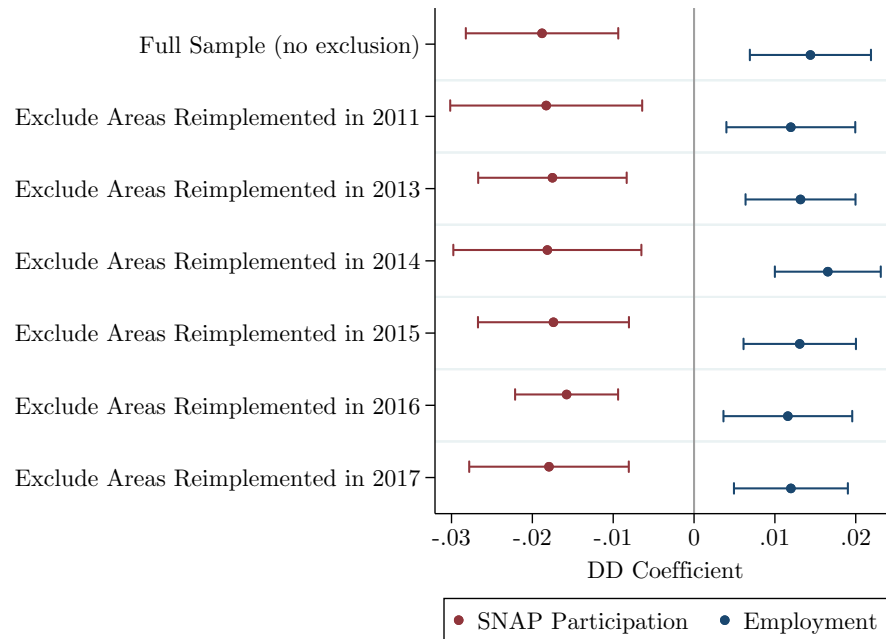
(b) Exclude Counties by Work Requirement Year, DDD
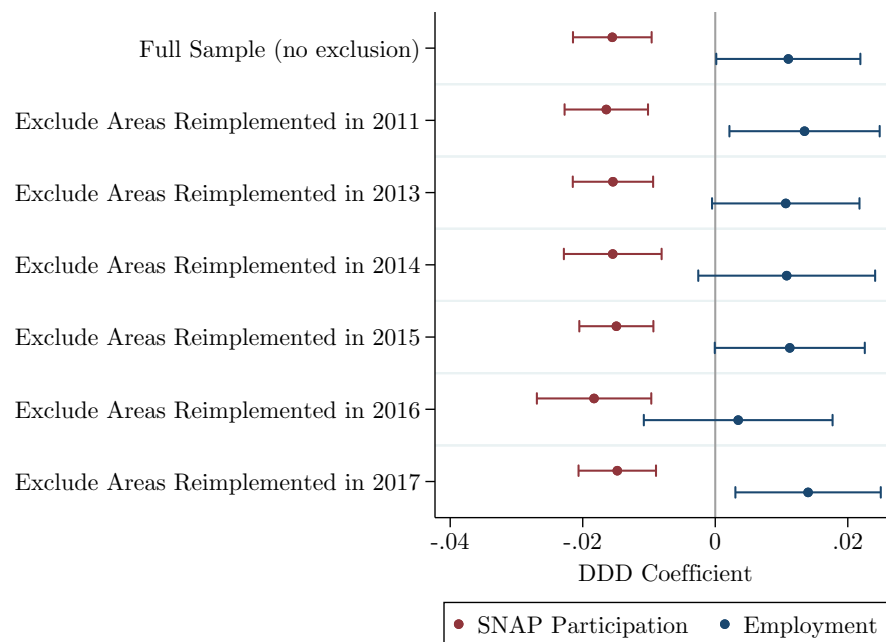
Note: The figure reports the point estimates and 95% confidence intervals for the DD and DDD specifications. Individual and county-level controls along with county and year fixed effects were included. Entropy weights were used and standard errors were clustered at the state level.

Figure 8. Main Regression Results by Sample Selection Criteria

(a) Difference-in-Differences

(b) Difference-in-Differences-in-Differences
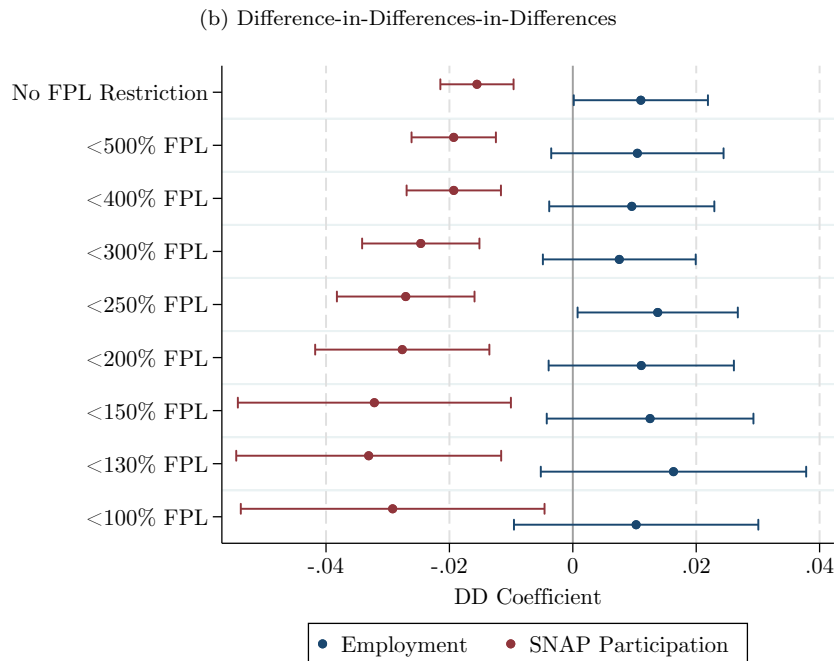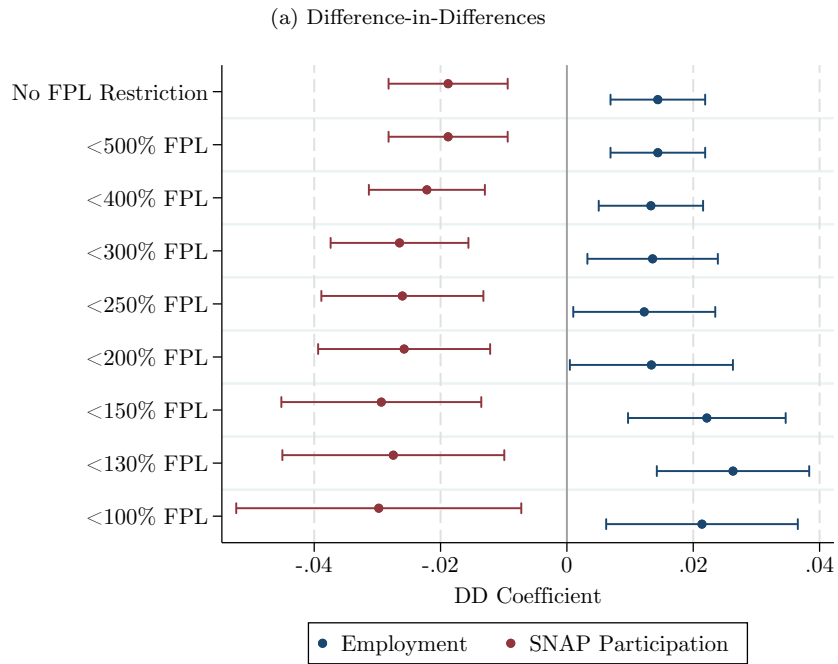
Note: The figure reports the point estimates and 95% confidence intervals for the main regression specifications using different sample restrictions based on the Federal Poverty Level (FPL). Individual and county-level controls along with county and year fixed effects were included. Entropy weights were used and standard errors were clustered at the state level.

Table 1—Summary Statistics, ABAWD Sample 2010-2017

	SNAP QC	ACS	
Weights:	Survey	Survey	Entropy
Gender			
Male	0.59	0.56	0.59
Female	0.41	0.44	0.41
Age			
Age 25-29	0.23	0.27	0.24
Age 30-34	0.18	0.19	0.17
Age 35-39	0.15	0.14	0.14
Age 40-44	0.19	0.16	0.18
Age 44-49	0.25	0.24	0.27
Race/Ethnicity			
White (non-hispanic)	0.49	0.68	0.49
Black (non-hispanic)	0.35	0.13	0.35
Hispanic	0.11	0.11	0.11
Other race/ethnicity	0.05	0.07	0.05
Education			
Less than High School Grad	0.27	0.07	0.27
High School Graduate	0.58	0.26	0.58
Postsecondary Education	0.11	0.21	0.11
College Graduate	0.05	0.46	0.05
Employment and Earnings			
Job Training Program	0.20	.	.
Working Poor Household	0.24	.	.
Employed	.	0.84	0.71
Employed for 20 hrs. per week	.	0.82	0.69
Hours worked per week	.	37.35	31.55
Annual Wage ($1k)	.	41.64	25.24
Obs.	42,699	2,240,688	2,240,688
Weighted Obs. (millions)	16.8	257.0	

Note: The QC sample includes individuals that received SNAP benefits and were classified as an ABAWD. The ACS sample includes individuals that are U.S. citizens in the continental states, that do not have minor children in the household, who are not students, institutionalized or in foster care. Both samples include prime-working age individuals aged 25 to 49 from 2010 to 2017. For comparison, observations from the QC sample with missing education or racial information were excluded in this table. Entropy weights were derived based on age, gender, race/ethnicity, educational obtainment, state, and year while taking into account the original survey weights.

Table 2—Diff-in-Diff, Influence of Work Requirements on Employment

	Full	Gender		Race/Ethnicity		Education			Area Type	
		Male	Female	White	Black	HS Dropout	HS Grad	Postsecondary	Urban	Rural
Work Requirement$_{j,t}$	0.014***	0.013**	0.014***	0.009***	0.023***	0.017**	0.014***	0.005**	0.015***	0.002
	(0.004)	(0.005)	(0.004)	(0.003)	(0.008)	(0.007)	(0.004)	(0.002)	(0.003)	(0.007)
Observations	1,262,801	1,213,900	1,026,089	1,630,340	234,463	138,069	567,749	1,534,171	1,910,042	329,947
Mean Dependent Var.	68.1	72.6	69.8	75.7	64.4	56.5	74.7	85.0	71.8	69.1
Implied Percent Δ	2.1%	1.7%	1.9%	1.2%	3.6%	3.1%	1.9%	0.6%	2.0%	0.2%

Note: The sample includes U.S. citizens aged 25 to 49 in the continental states that do not have minor children in the household, who are not students, and who are not institutionalized or in foster care. Individual and county-level controls along with county and year fixed effects were included but not reported here. Each specification uses entropy weights. Standard errors are clustered at the state level and are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 3—Diff-in-Diff-in-Diff, Influence of Work Requirements on Employment

	Full	Gender		Race/Ethnicity		Education			Area Type	
		Male	Female	White	Black	HS Dropout	HS Grad	Postsecondary	Urban	Rural
Work Requirement$_{j,t}$	0.011**	0.011*	0.012*	0.006	0.016	0.012	0.011*	0.010***	0.013**	0.000
$\times$ Age 45-49$_i$	(0.005)	(0.006)	(0.007)	(0.005)	(0.013)	(0.010)	(0.006)	(0.003)	(0.006)	(0.009)
Work Requirement$_{j,t}$	0.001	0.002	-0.001	0.004	0.003	0.004	0.002	-0.001	0.005	-0.018
	(0.005)	(0.006)	(0.006)	(0.004)	(0.012)	(0.011)	(0.005)	(0.003)	(0.004)	(0.011)
Observations	1,593,005	748,283	844,722	1,237,181	155,335	118,626	512,435	961,944	1,285,373	307,632
Mean Dependent Var.	72.5	74.8	69.6	76.0	66.7	60.1	75.9	82.8	72.6	71.6
Implied Percent Δ	1.5%	1.5%	1.8%	0.8%	2.4%	1.9%	1.4%	1.2%	1.7%	0.0%

Note: The sample includes U.S. citizens aged 45 to 54 in the continental states that do not have minor children in the household, who are not students, and who are not institutionalized or in foster care. Individual and county-level controls along with county and year fixed effects were included but not reported here. Each specification uses entropy weights. Standard errors are clustered at the state level and are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX: FOR ONLINE PUBLICATION

Figure A1. ABAWDs Work Requirement State Waiver Status 2010-2016

(a) 2010

(b) 2011

(c) 2012

(d) 2013

Figure A1. ABAWDs Work Requirement State Waiver Status 2010-2017

(e) 2014

Waiver
No Waiver

(f) 2015

Waiver
No Waiver

(g) 2016

Waiver
No Waiver

(h) 2017
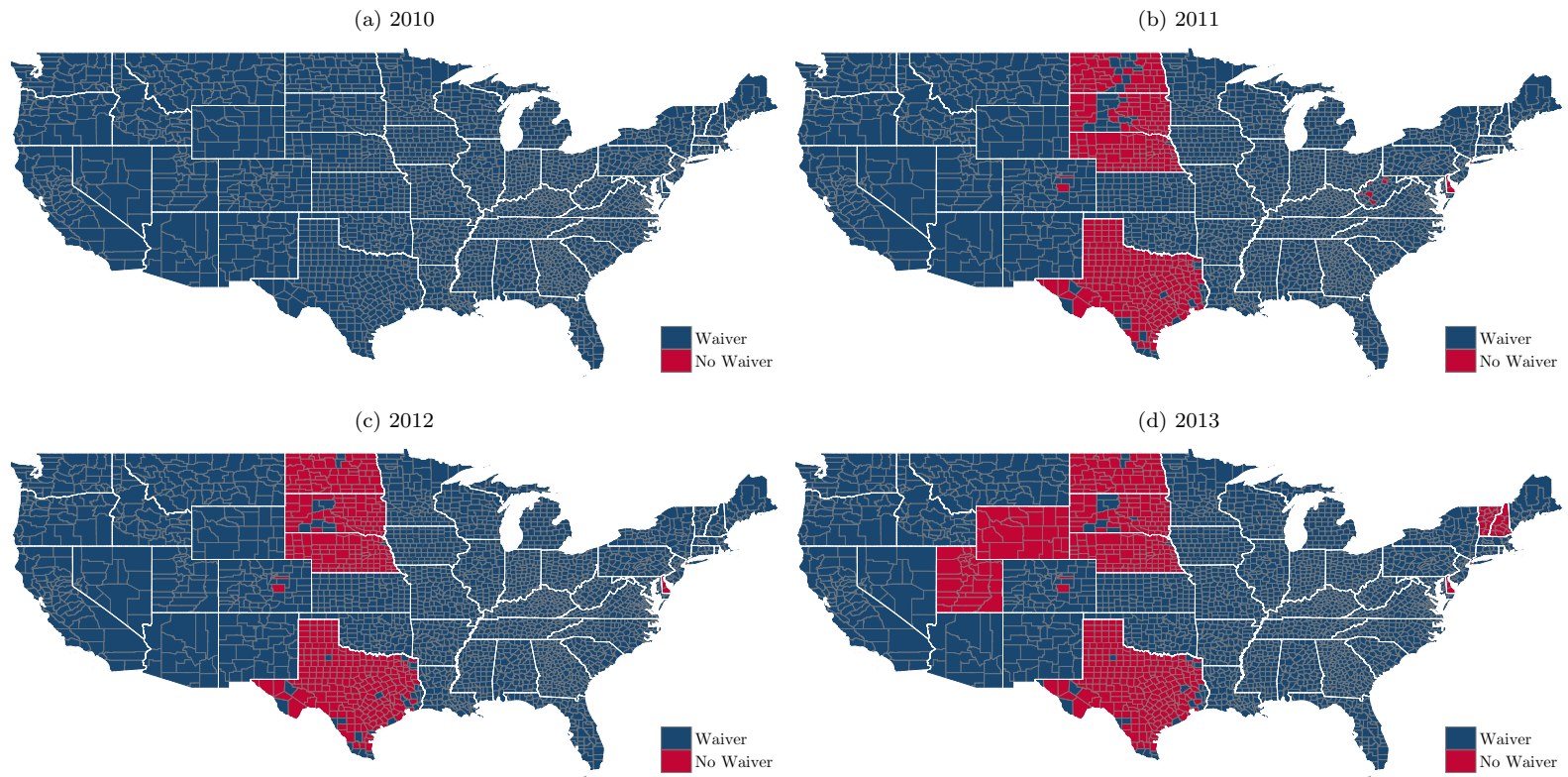
Waiver
No Waiver
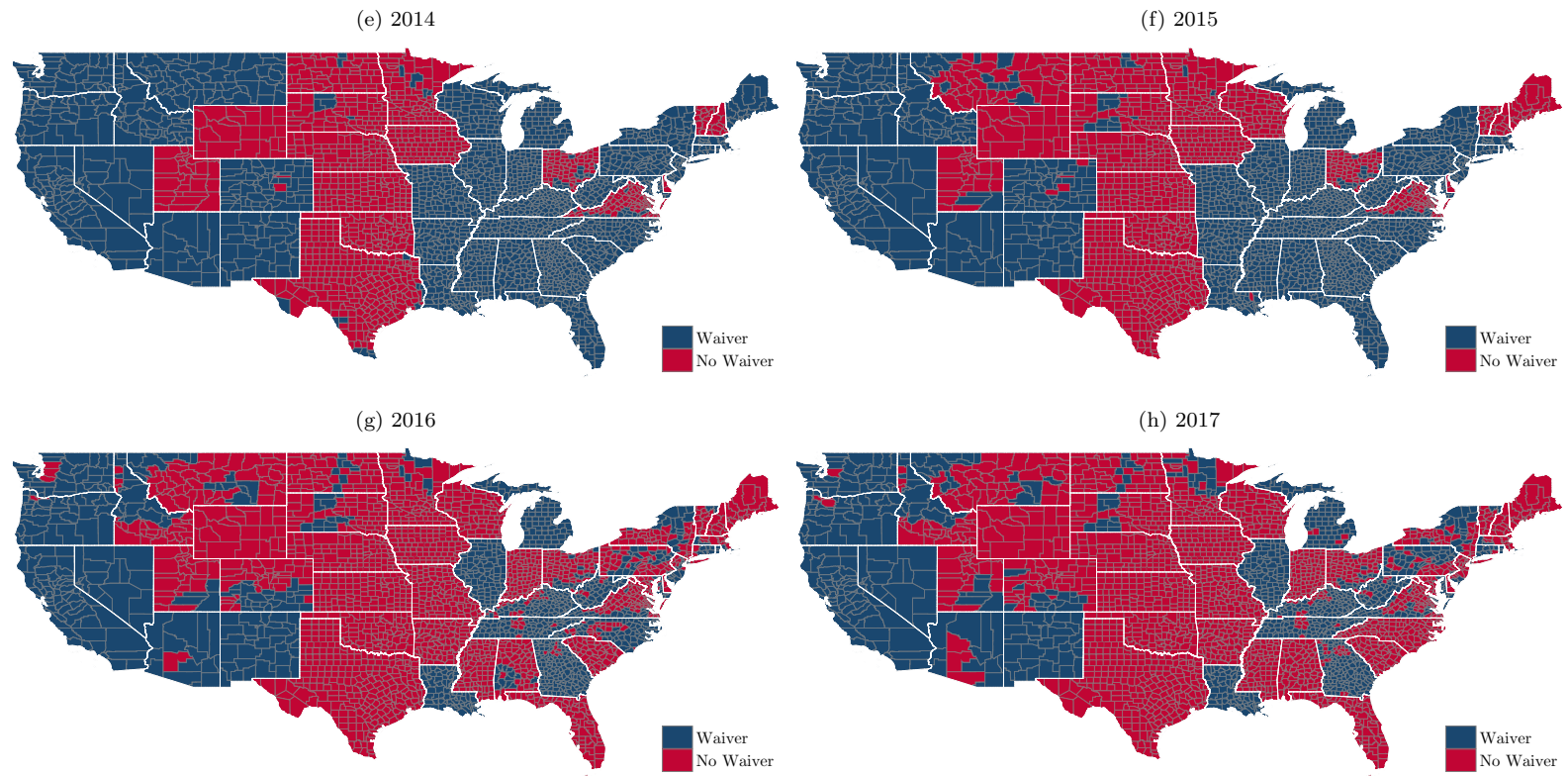
Figure A2. County Unemployment Rate 2010
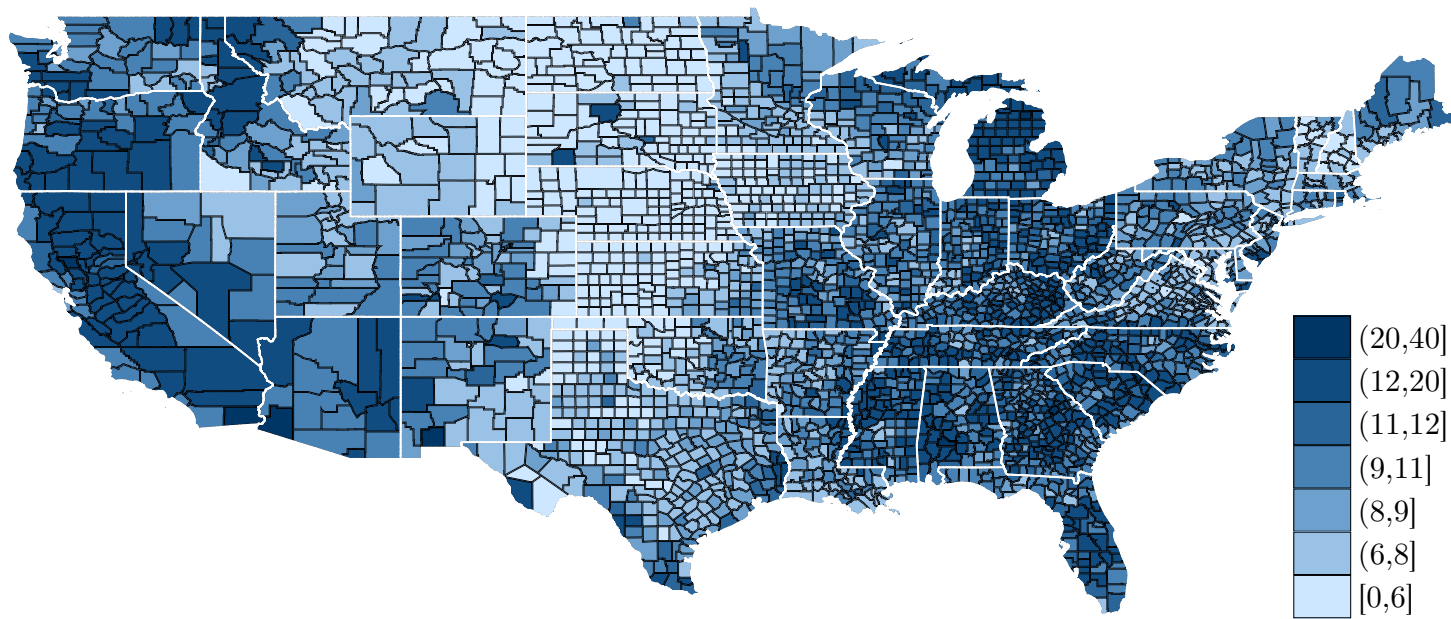
Note: Data is from the Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics.

Figure A3. Quality Control Event Study: Impact on SNAP Participation (ABAWDs per 1,000)
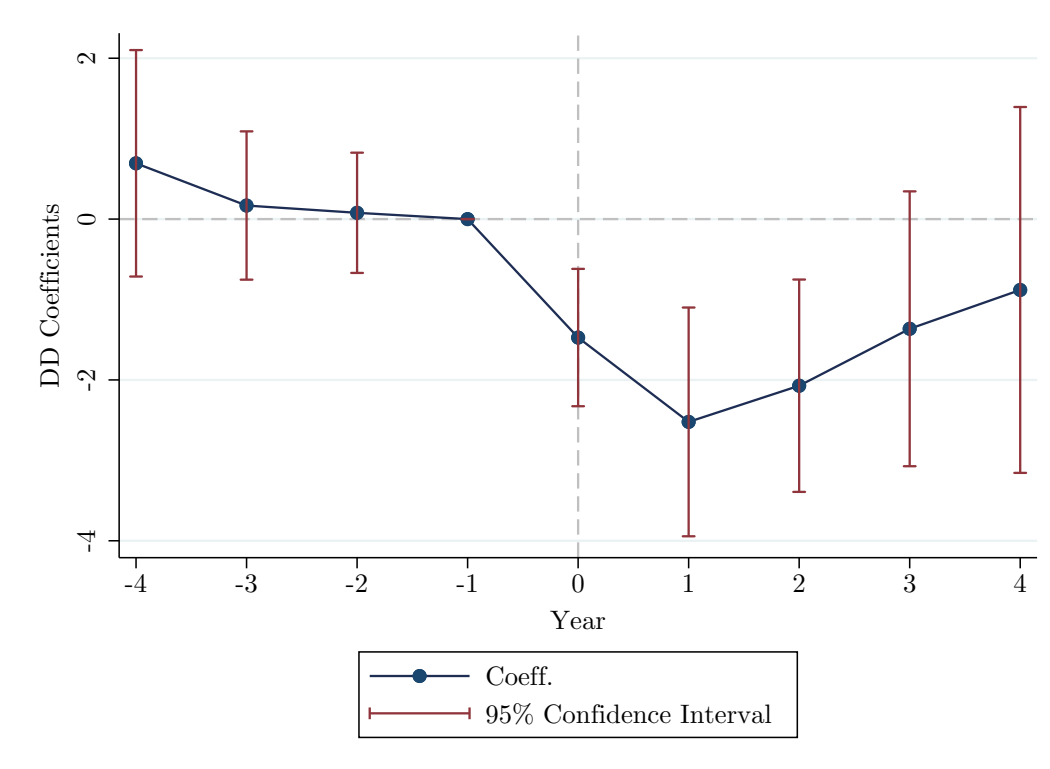
Note: The figure reports the point estimates and 95% confidence intervals for the event study of the impact on work requirements on the number of prime-working age ABAWDs per 1,000 (based on the 2010 census) receiving SNAP benefits using Quality Control Data. The sample is limited to observations within four years of initial work requirement reimplementation or observations from localities that did not reimpose work requirements from 2010 to 2017. State-level controls along with state and year fixed effects were included. Sample weights were used and standard errors were clustered at the state level.

Figure A4. Robustness to Sample Period
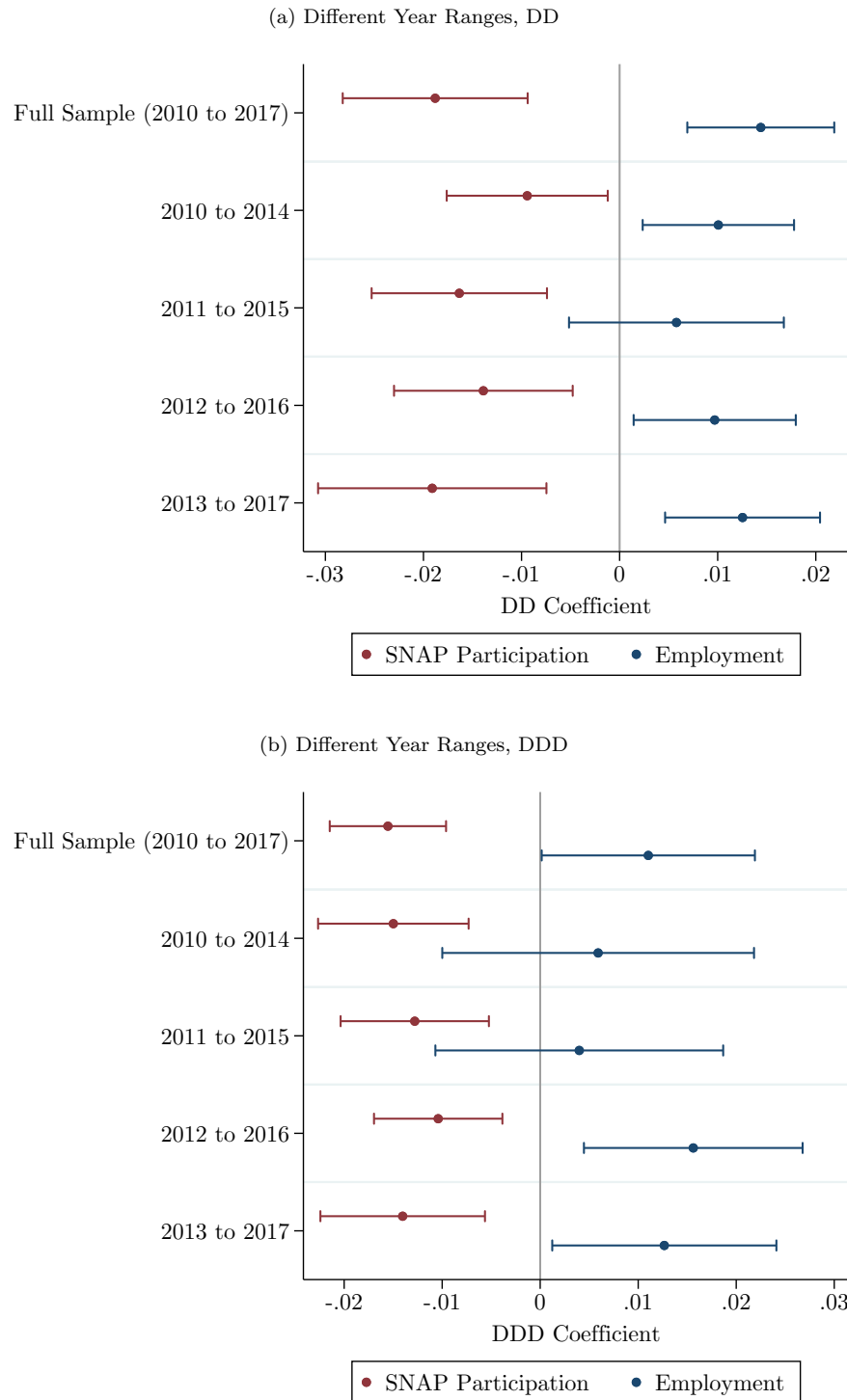
(a) Different Year Ranges, DD

SNAP Participation   Employment

(b) Different Year Ranges, DDD

SNAP Participation   Employment

Note: The figure reports the point estimates and 95% confidence intervals for the DD and DDD specifications. Individual and county-level controls along with county and year fixed effects were included. Entropy weights were used and standard errors were clustered at the state level.

Table A1—States That Voluntarily Imposed Work Requirements

	Work Requirement Imposed	Not Eligible for EUC Waiver
Texas	2011	2016
Delaware	2011	2016
Vermont	2013	2015
Utah	2013	2015
New Hampshire	2013	2015
Wyoming	2013	2015
Virginia	2014	2015
Oklahoma	2014	2015
Ohio	2014	2016
Minnesota	2014	2015
Iowa	2014	2015
Kansas	2014	2015
Wisconsin	2015	2016
Maine	2015	2016

Note: Work requirement waiver status is derived from official approval letters sent from the USDA to individual states in response to state applications for waivers from 2010 to 2016. EUC waiver status is based on trigger notices from the U.S. Department of Labor. See https://ows.doleta.gov/unemploy/euc_trigger/.

Table A2—Influence of Work Requirements on ABAWD: Age 18-49

Dependent Var:	Employment	SNAP Participation
Work Requirement$_{j,t}$	0.010***	−0.018***
	(0.003)	(0.005)
Observations	2,699,089	2,699,089
Mean Dependent Var.	68.8	19.5
Implied Percent Δ	1.5%	-9.3%

Note: The sample includes U.S. citizens aged 18 to 49 in the continental states that do not have minor children in the household, who are not students, and who are not institutionalized or in foster care. Individual and county-level controls along with county and year fixed effects were included but not reported here. Each specification uses entropy weights. Standard errors are clustered at the state level and are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A3—Number of Prime-Working Age ABAWDs by State 2010-2017

	2010	2011	2012	2013	2014	2015	2016	2017
Alabama	34,560	48,417	47,510	54,916	52,285	47,656	47,526	34,944
Alaska	5,472	6,570	6,948	6,397	5,777	4,969	5,266	6,850
Arizona	67,689	68,024	69,970	57,605	63,060	50,715	70,823	47,444
Arkansas	25,569	27,309	29,027	30,394	28,593	29,384	19,826	8,305
California	197,934	225,610	257,339	287,836	329,591	402,655	355,968	307,138
Colorado	18,479	22,954	19,977	23,296	24,456	26,435	22,785	21,104
Connecticut	34,454	34,108	37,699	35,116	38,167	42,000	30,818	31,256
Delaware	6,446	7,823	10,412	10,036	9,727	8,881	7,420	6,366
District of Columbia	16,307	17,047	15,704	16,515	15,114	14,718	12,861	10,018
Florida	231,412	289,519	325,836	345,672	327,153	361,364	191,614	117,840
Georgia	86,928	111,504	132,406	123,049	114,068	115,967	89,618	81,127
Guam	788	880	1,367	1,313	1,228	1,378	1,098	1,432
Hawaii	10,566	11,022	14,011	11,792	14,695	13,171	9,046	9,243
Idaho	7,822	11,326	11,789	12,343	6,572	5,266	5,395	4,839
Illinois	126,501	135,071	137,889	139,753	172,786	168,236	154,364	162,285
Indiana	41,434	42,351	43,575	48,063	52,933	45,090	29,596	18,470
Iowa	23,036	25,452	29,561	28,683	27,838	25,897	23,423	20,615
Kansas	14,910	18,365	21,219	22,615	10,509	6,818	6,805	5,852
Kentucky	44,184	57,461	63,586	62,409	48,145	40,709	33,900	32,433
Louisiana	41,219	41,786	44,624	52,649	51,457	43,592	50,815	52,572
Maine	12,943	17,904	18,129	14,846	12,767	6,221	5,851	3,342
Maryland	45,104	57,775	53,407	67,530	62,341	69,488	48,553	43,488
Massachusetts	40,339	49,759	52,260	63,819	54,705	44,704	31,888	44,972
Michigan	134,075	150,030	132,553	143,513	133,563	147,400	129,951	108,514
Minnesota	27,676	26,361	32,006	38,454	29,362	20,328	23,550	20,843
Mississippi	29,034	35,641	36,740	39,355	40,499	44,767	24,887	13,279
Missouri	55,972	55,839	56,386	53,701	42,989	39,702	27,037	19,260
Montana	6,512	8,359	7,626	8,436	8,235	6,916	5,384	6,430

Table A3—Number of Prime-Working Age ABAWDs by State 2010-2017 (continued)

	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	7,654	7,399	7,272	5,268	6,851	6,423	6,276	6,751
Nevada	15,840	21,195	23,937	24,192	28,938	30,971	34,953	38,015
New Hampshire	4,378	5,721	5,454	3,674	2,804	2,882	2,090	2,147
New Jersey	32,584	45,298	40,961	37,285	32,219	37,732	29,472	19,965
New Mexico	16,245	23,510	25,548	26,321	24,209	22,651	24,543	29,661
New York	133,961	145,143	155,340	185,985	149,343	154,287	127,935	146,028
North Carolina	85,269	110,640	108,445	118,974	106,567	112,358	83,267	64,036
North Dakota	2,271	2,482	2,331	1,942	1,677	1,522	1,735	2,123
Ohio	80,329	108,615	114,716	99,474	82,562	80,471	91,694	63,735
Oklahoma	30,228	32,134	34,972	38,144	27,612	20,822	22,953	18,378
Oregon	66,050	88,271	85,268	85,133	57,005	82,845	77,348	59,558
Pennsylvania	83,055	87,402	93,210	107,936	97,404	91,150	104,486	74,736
Rhode Island	8,111	10,778	11,008	11,346	11,928	10,150	11,125	9,563
South Carolina	56,468	60,258	64,095	70,285	49,552	42,744	23,721	15,660
South Dakota	5,851	5,210	4,425	5,207	4,931	4,299	3,980	3,847
Tennessee	86,889	105,252	103,086	108,876	109,666	101,790	85,148	66,036
Texas	65,063	69,150	91,149	64,349	73,720	73,770	82,228	79,507
Utah	13,076	14,952	15,772	11,942	8,330	6,409	6,976	8,353
Vermont	4,763	5,423	6,534	6,515	3,558	3,555	3,066	2,516
Virginia	41,058	53,674	57,436	69,680	63,600	26,452	24,670	27,665
Washington	84,161	78,091	96,632	88,343	105,702	102,599	84,542	77,325
West Virginia	16,157	16,411	19,895	20,686	20,926	26,372	23,275	16,593
Wisconsin	42,459	57,954	62,072	55,625	51,433	43,954	34,067	24,423
Wyoming	1,465	1,448	1,446	1,450	1,115	967	1,135	1,071

Note: The table is derived from the SNAP Quality Control Data. Weighted counts of prime-working age (25-49) ABAWDs receiving SNAP benefits by state and year are reported.

Table A4—Diff-in-Diff, Influence of Work Requirements on SNAP Participation

	Full	Gender		Race/Ethnicity		Education			Area Type	
		Male	Female	White	Black	HS Dropout	HS Grad	Postsecondary	Urban	Rural
Work Requirement$_{j,t}$	−0.019***	−0.018***	−0.018***	−0.018***	−0.020**	−0.027***	−0.015***	−0.015***	−0.017***	−0.021***
	(0.005)	(0.005)	(0.006)	(0.004)	(0.009)	(0.010)	(0.004)	(0.003)	(0.005)	(0.007)
Observations	1,262,801	1,213,900	1,026,089	1,630,340	234,463	138,069	567,749	1,534,171	1,910,042	329,947
Mean Dependent Var.	21.0	17.5	19.5	12.8	27.5	29.4	15.8	8.6	18.0	20.4
Implied Percent Δ	-9.0%	-10.2%	-9.0%	-14.2%	-7.2%	-9.2%	-9.3%	-17.1%	-9.3%	-10.3%

Note: The sample includes U.S. citizens aged 25 to 49 in the continental states that do not have minor children in the household, who are not students, and who are not institutionalized or in foster care. Individual and county-level controls along with county and year fixed effects were included but not reported here. Each specification uses entropy weights. Standard errors are clustered at the state level and are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1.

	Full	Gender		Race/Ethnicity		Education			Area Type	
		Male	Female	White	Black	HS Dropout	HS Grad	Postsecondary	Urban	Rural
Work Requirement$_{j,t}$	−0.016***	−0.014***	−0.017***	−0.012***	−0.024***	−0.028**	−0.011***	−0.008**	−0.015***	−0.021***
× Age 45-49$_i$	(0.003)	(0.005)	(0.006)	(0.004)	(0.007)	(0.011)	(0.004)	(0.003)	(0.003)	(0.007)
Work Requirement$_{j,t}$	−0.007	−0.007	−0.006	−0.008**	−0.003	−0.005	−0.009***	−0.002	−0.007*	−0.002
	(0.004)	(0.005)	(0.004)	(0.003)	(0.010)	(0.011)	(0.003)	(0.003)	(0.004)	(0.007)
Observations	1,593,005	748,283	844,722	1,237,181	155,335	118,626	512,435	961,944	1,285,373	307,632
Mean Dependent Var.	15.6	15.4	15.9	9.8	25.6	25.5	12.9	7.6	15.7	15.3
Implied Percent Δ	-9.9%	-9.2%	-10.6%	-12.1%	-9.4%	-11.0%	-8.6%	-10.0%	-9.2%	-13.9%

Note: The sample includes U.S. citizens aged 45 to 54 in the continental states that do not have minor children in the household, who are not students, and who are not institutionalized or in foster care. Individual and county-level controls along with county and year fixed effects were included but not reported here. Each specification uses entropy weights. Standard errors are clustered at the state level and are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1.