Supplemental Nutrition Assistance Program (SNAP) Benefit Expansions and Participation among Older Adults

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Abstract

The Supplemental Nutrition Assistance Program (SNAP) provides support for eligible households at risk of food insecurity. Recognizing that the income and asset holdings of households with older adults may differ from younger households, federal policies for SNAP eligibility for households whose oldest member is age 60 or older allow higher assets levels and remove gross income restrictions while maintaining a net income limit. Despite this, SNAP participation is much lower for older households than younger households. Using the American Community Survey (ACS), we examine participation by single year of age around the age 60 threshold and document no change in SNAP participation on either side of the threshold. To explicitly consider whether expanded eligibility might be effective for increasing participation among at-risk seniors, we use quasi-experimental methods to explore how participation responds to state-based SNAP eligibility expansions, called Broad Based Categorical Eligibility (BBCE). We show these state expansions increase SNAP participation by approximately 19 percent among older households and that effects are similar across households of different ages. Grouping states by which parameters they implement, we show that participation increases only in states that eliminate the asset and net income limit and *impose* a gross income limit. Together, these two sets of results show that these state eligibility expansions effectively increase participation for households with older adults and that the treatment of gross income is likely not an important factor, while asset and net income limits are important. These state expansions may also increase participation through promoting awareness and reducing the administrative burden of applying.

Supplemental Nutrition Assistance Program (SNAP) Benefit Expansions and Participation among Older Adults

1 Introduction

Prior research has raised concerns that households with older adults (i.e., an adult over the age of 60) participate in the Supplemental Nutrition Assistance Program (SNAP) at lower rates than younger households. In a 2015 report, the United States Department of Agriculture (USDA) states that SNAP participation rates among eligible older adults are significantly lower than those of the general population, with only 42 percent of eligible older adults participating in SNAP, compared with 82 percent of eligible individuals of all ages (USDA 2015). These households may have lower participation rates because they are more likely to experience cognitive decline (e.g., Zuo and Heflin 2023) or find the administrative burden of applying for these benefits to be too high (e.g., Herd 2015). In response, policymakers have expanded eligibility and attempted to simplify application processes (e.g., Levin et al. 2020), yet participation remains lower for older households.

Meanwhile, existing studies document that food insecurity among older adults is growing at an alarming rate (e.g., Ziliak and Gundersen 2017; Ziliak and Gundersen 2019; Coleman-Jensen et al. 2019) and rose steadily after 2008.[1] In 2001, one in 19 older adults were food insecure. By 2022, one in 11 older adults were food insecure. Prior work has shown that food insecurity is correlated with poor health outcomes among older adults. That is, food insecurity is correlated with lower nutrient intake, a higher likelihood of being in fair or poor health, a higher likelihood of having limitations in activities of daily living (ADLs), and increased dementia prevalence (e.g., Qian et al. 2023; Gundersen and Ziliak 2015; Ziliak 2015).

It is likely that increased SNAP participation reduces food insecurity for older adults. Causal evidence shows that SNAP reduces food insecurity in households with children (Gundersen and

[1] Food insecurity is defined as, "a household-level economic and social condition of limited or uncertain access to adequate food."

Pepper 2017) and that SNAP (together with cash assistance and public health insurance) reduces food insecurity among households of all ages (McKernan 2021). And, descriptive evidence shows that SNAP participation is correlated with greater food security for older adults (Balistreri 2022).

SNAP is a federal program and sets minimum eligibility criteria that all states must adhere to. These criteria are more generous for households whose oldest member is at least 60 years old and in households where at least one member has a disability. The parameters include limits on assets and net income, and for younger households with no disability, work requirements and gross income limits. States can adopt policies to bolster participation and increase food security, including the eligibility expansions examined in this paper, called Broad-Based Categorical Eligibility (BBCE). Currently, 42 states (including DC) have expanded SNAP eligibility by adopting this eligibility expansion. Under these state eligibility expansions, states have two levers to expand eligibility for households with older adults (or persons with a disability): (1) raise or eliminate the asset limit and (2) eliminate the net income limit. These households do not face a federal gross income limit, but states can also choose whether to *impose* a gross income limit of between 130-200% FPL. Most (two-thirds) expansion states choose to eliminate both the net income and asset limits and impose a gross income limit.

This paper leverages quasi-experimental methods to provide new causal evidence on how these state eligibility expansions impact SNAP participation among households with older adults. We also provide new evidence on how state choices concerning the eligibility parameters of gross and net income limits impact SNAP participation.[2] Finally, we present descriptive evidence of household responses to loosened federal eligibility criteria when the oldest person in the household reaches age 60. To do this, we use the nation's largest household survey, the American Community Survey (ACS), which is new to SNAP research (e.g., Li, Zuo, and Heflin 2023; Schmidt, Shore-Sheppard, and Watson 2024). This permits the study of groupings of states by policy choice and allows for exploration by individual age.

Prior work unambiguously shows that SNAP participation among younger households in-

[2]Ideally, we would also test the importance of eliminating versus raising asset limits; however, all of the states in our main analysis sample eliminate the asset limit, so we are unable to isolate the effect of different treatment of assets.

creases in response to expanded eligibility in general (Ganong and Liebman 2018; Stacy, Tiehen, and Marquardt 2018; Dickert-Conlin et al. 2021) and these state expansions in particular (Han 2016a) and is suggestive that these state expansions increase SNAP participation among households with older adults. It is possible that the impact of state eligibility expansions varies across households with adults of different age groups. Current literature on the take-up of social benefits has highlighted several key barriers to SNAP participation, including transaction costs, limited information, and stigma (Currie 2004). Among older adults, stigma – both internal and external – along with the burdensome application process, is particularly pronounced, likely contributing to their low participation rates (McGovern 2016).

Though not statistically significant, Jones et al. (2022) (Table 2) estimates a positive relationship between these state eligibility expansions and SNAP participation among older households. When estimated as part of a simulated eligibility variable that either includes other policies (e.g., Jones et al. 2022) or households with younger adults who have a disability (e.g., Han 2016a), prior work finds a positive and statistically significant relationship between more generous eligibility criteria and SNAP participation of older households. We provide new evidence that these state eligibility expansions alone increase SNAP participation among households with older adults; the sample of households with older adults in the ACS is over 40 times as large as the number of observations in the Current Population Survey Food Security Supplement used in Jones et al. (2022), allowing us to more precisely estimate this relationship. We then further take advantage of the large size of the ACS and show that the response to these expansions is similar no matter the age of the oldest member.

States have different choices about which parameters to loosen under these state eligibility expansions. We also provide new evidence on how state choices about these parameters impact SNAP participation for households. We characterize a large set of these policies and provide a grouping for policy analysis. In most states, these expansions eliminate the asset and net income limit, and impose a gross income limit. We provide new evidence that eliminating the net income limit yields large gains in SNAP participation and that treatment of gross income does not mat-

ter. This can inform policymakers of which parameters to adopt if they wish to increase SNAP participation for older adults.

We also examine whether there are heterogeneous effects by household characteristics. We first consider differences by household gross income and examine whether only households that are economically vulnerable are induced to participate, or if it is relatively more advantaged households who now take up benefits (e.g., Finkelstein and Notowidigdo 2019). Relatively advantaged households may be induced to participate as they gain eligibility. Our results suggest that the expansions primarily affect those who are economically vulnerable, but there is also some increased participation among those who are relatively more advantaged and may be newly eligible. Along other dimensions, such as household structure, state expansion-induced increases are experienced broadly across household types.

Utilizing the large sample size of the ACS, we then provide descriptive evidence of how federal policies that ease eligibility rules at age 60 affect SNAP participation. Federal rules regarding income and asset limits (as well as deductions) for SNAP eligibility loosen when the oldest household member reaches age 60, although the benefit formula and net income limit do not change. We first show how the share of households that are likely to be eligible changes by single year of age of the oldest householder: there is a discrete jump in likely eligibility at age 60, and then it remains roughly constant through age 65. We next examine SNAP participation among all households by single year of age and show there is no corresponding increase in SNAP participation at this expanded eligibility threshold; in fact, participation overall declines slightly.

This study shows that older adults are more likely to participate in SNAP following state expansions despite being unresponsive to eligibility expansions under federal rules at age 60. Together, these two sets of results show that treatment of gross income does not matter for older households because participation increases when state expansions *impose* a gross income limit but does not respond when federal criteria eliminate the gross income limit. We find that the largest estimated increase in SNAP participation arises in states that impose a gross income limit and eliminate the asset and net income limits. This might be due to relaxed restrictions on assets and net income

in the state expansions compared to the loosened federal criteria. These state expansions may also increase participation through promoting awareness and reducing the administrative burden of applying

2 Background on the Supplemental Nutrition Assistance Program (SNAP) and the State Eligibility Expansions

2.1 SNAP

SNAP is a federal, means-tested entitlement program that is one of the biggest safety net programs in the U.S. One in eight Americans (and one in six households) receive SNAP benefits, and program spending (119 billion in FY22) is higher than spending for the Supplemental Security Income (SSI) program (57.1 billion) or the Unemployment Insurance (UI) program (36.2 billion). The program provides benefits that families with low income use to purchase food with an Electronic Benefits Transfer (EBT) card. The average benefit is 187 dollars/person/month and the maximum benefit is 292 dollars/month (for a single adult/household of one).[3]

For households where every individual is under the age of 60 and no household member has a disability, the federal SNAP eligibility criteria require adults to work 30 hours per week (or engage in work-related activity) and household gross income to be below 130 percent FPL (1,580 dollars/month for a single adult; 18,960/year for a single adult). The SNAP program also considers "net income," which is income net of: a standard deduction, 20 percent of earned income, costs for dependent care (if working), and shelter costs that exceed half of the household's net income (up to 712 dollars). A household's net income must be below 100 percent FPL (1,215 dollars/month for a single adult; 14,580/year). And, assets must be below 2,750 (one's residence and tax-preferred retirement accounts are excluded; in some states and some cases, vehicles are excluded, as well). These parameters are presented in Table 1, column 1.

[3] https://www.cbpp.org/research/food-assistance/a-quick-guide-to-snap-eligibility-and-benefits

For households with at least one adult age 60 or over (or one individual with a disability), the eligibility criteria are more generous, as shown in Table 1, column 3. There is no work requirement and no gross income test. In addition to the deductions to construct net income described above, households with an older adult or person with a disability may also deduct medical expenses in excess of 35 dollars/month, and they face no cap on the shelter cost deduction. Net income (with these more generous deductions) must fall below the federal poverty level, and the asset test is also more generous–they may have assets up to 4,250.

For SNAP, the state and federal governments share administrative costs, but the federal government pays all benefits and states determine eligibility and distribute benefits. The federal government pays all benefits even in states that adopt the eligibility expansions described below.

Benefits are constructed as a function of net income. Benefit amounts are constructed as the maximum allowable benefit for a household (based on size) minus 30 percent of calculated net income. Currently the maximum monthly benefit is 292/month for a single householder and 536/month for a two-person household. For most household sizes, the computed benefit reaches zero when net income is around 100 percent of the federal poverty level.[4]

2.2 State Eligibility Expansions

The state eligibility expansions examined in this paper are called Broad-Based Categorical Eligibility (BBCE). This state option was established in 1999 and permits states to expand SNAP eligibility beyond the federal criteria. Though these expansions were introduced in 1999, the first states adopted them in 2000 (see Table 2). As of 2024, these expansions are in place in 42 states (including the District of Columbia).

The state expansions allow states to create a new pathway to SNAP eligibility beyond the federal eligibility criteria. In order to implement this expansion, states must use Maintenance

[4]For households of 1 and 2 persons, computed benefits reach zero at 78 and 105 FPL, respectively. For households of 3 and 4 persons, computed benefits reach zero at 119 and 125 FPL, respectively. A guaranteed minimum benefit of 23 dollars per month is available to small households of one or two persons with a negative or zero computed benefit. In contrast, there is no guaranteed minimum benefit for households of three or more persons, so larger households with negative or zero computed benefits do not receive SNAP.

of Effort (MOE) funds from the Temporary Assistance for Needy Families (TANF) program to promote program awareness. Many states do this with a brochure that lists SNAP as one of several benefits available to families with low income.[5]

Under these expansions, states may choose to raise or eliminate the asset limit and eliminate or keep the net income test. For households with older adults, who face no gross income test under the federal criteria, states can choose to *impose* a gross income limit of between 130 and 200 percent of federal poverty level. It is an empirical question whether eliminating the net income limit but imposing a gross income test expands or contracts eligibility. (For younger households, states can choose to keep the gross income limit at 130 percent of poverty or raise it up to 200 percent of the federal poverty level).

Most states (two thirds) eliminate the asset and net income tests. Most states impose a gross income limit on older households and raise the gross income limit for younger households.[6] The parameters selected by all states are presented in Table 2.[7]

These state expansions might increase SNAP participation both among those who are newly eligible because of the expanded eligibility criteria and among those who were already eligible because of increased awareness and/or reduced administrative burden associated with eliminating the asset limit (e.g., McInerney, Mellor, and Sabik 2021; Hudson and Moriya 2017; Frean, Gruber, and Sommers 2017) or reduced administrative burden through no longer needing to document asset holdings in states that eliminate asset limits.

[5]Appendix Figure A1 provides an example of the type of brochure used for these purposes.

[6]Since states can make different choices for households with/without a senior, a state might have the most generous features for older households but be less generous in the expansion for younger households (or vice versa).

[7]Data on state adoption of BBCE and treatment of assets and gross income are from two sources: (1) the SNAP Policy Database and (2) Quality Control Technical Documentation. The SNAP Policy Database is compiled by the US Department of Agriculture and tracks monthly status of state BBCE adoption, treatment of assets, and treatment of gross income. The Quality Control Technical Documentation describe how eligibility and net income are computed in the Quality Control database, "... a raw data file of monthly case reviews that are conducted by State SNAP agencies to assess the accuracy of eligibility determinations and benefit calculations for their SNAP caseloads."

3 Data

3.1 American Community Survey (ACS)

One of the contributions of this paper is to conduct the analysis using data that, while widely used to study other policy areas, are new to studying SNAP participation: the American Community Survey (ACS).[8] The ACS is administered by the U.S. Census Bureau and is an annual mandatory survey that is sampled from the same inventory of known living quarters as the Decennial Census. The ACS is representative at the state level, so that analysis of policies in small groups of states are more likely to have statistical power. We can also use the ACS to study the effect of the policy by fine age groups or even single year of householder age.

The ACS captures household receipt of SNAP benefits and detailed information on household composition. Since the SNAP program considers eligibility for a household, the analysis is at the household level.[9] Because SNAP eligibility criteria differ based on the age of the oldest household member (or disability status of persons under age 60), we group households by the age of the oldest member. We exclude households that include anyone who is not a U.S. citizen because only U.S. citizens and some lawfully present noncitizens are eligible to receive SNAP (approximately 5% of older households in the ACS).

This study examines the time period 2006 through 2019 because the ACS data began in 2006 and we end in 2019 in order to explicitly consider the pre-pandemic period. Beginning in 2020, several emergency measures were implemented that temporarily changed the SNAP program.

In our main analysis, we focus on 17 states that expanded eligibility between 2008 and 2011, did not change generosity within six years of expansion, and had consistent information in the two sources used to verify eligibility parameters. We begin with the 2008 expansions so that we can

[8] Two recent papers, Li, Zuo, and Heflin (2023) and Schmidt, Shore-Sheppard, and Watson (2024), use the ACS to study SNAP participation.

[9] A SNAP household is "Everyone who lives together and purchases and prepares meals together is grouped together as one SNAP household." (`https://www.fns.usda.gov/snap/recipient/eligibility`, accessed January 2025).

examine SNAP participation for two years before the first state expansion. In our main analysis, we include nine states as controls that did not adopt these expansions by the end of 2019.

We exclude eight states that expanded eligibility during this time period (between 2008 and now including 2012) from the main analysis but include them in robustness checks. These states either tightened the eligibility criteria during the study period, had policy parameters that were inconsistent across the two sources, or were the only state that expanded during this period to raise–but not eliminate–the asset limit.

We exclude 17 states from all analyses; 14 states expanded SNAP either before 2008 (13 states) or after 2012 (one expanded in 2018). The remaining three states adopted the expansion between 2008 and 2011, but two expanded only to households with children (California, in the first few years, and New Hampshire), and one ended the expansion in 2014 (Louisiana).

4 Effect of State Eligibility Expansions

4.1 Methods

To estimate the impact of the state eligibility expansions, this study implements a stacked difference-in-differences regression design to account for staggered implementation of the state expansions.[10] Each expansion year between 2008 and 20110 is considered to be its own "treatment timing group." To execute stacked difference-in-differences, we first create a separate sample of treatment and control households for each treatment timing group. The treatment group includes older households in the treatment states in the two years prior to expansion and the six periods post expansion. We also construct a control group for each treatment timing group which is comprised of older households in each of the same calendar years. The process of constructing our final stacked sample of 2,416,905 households is illustrated in Appendix Tables A2 and A3.

[10]For a summary of the methods used, see Wing, Freedman, and Hollingsworth (2024). We provide additional details in the Data Appendix.

The main estimating equation takes the form:

$$(1) \quad Pr(SNAP_{hst} = 1) = \beta_0 + \beta_1 EverExpand_s * POST_t + \Gamma X_h + \alpha_s + \alpha_t + \varepsilon_{hst}$$

SNAP is an indicator of household SNAP participation in that year. *EverExpand*=1 in the 17 states that adopt the state eligibility expansions between 2008-2011 and *EverExpand*=0 in the 9 control states that did not adopt BBCE as of 2019 (i.e., AK, AR, KS, MO, SD, TN, UT, VA, WY). *POST*=1 in years following treatment (and =1 in the corresponding calendar years for each treatment timing group). *X* controls for household characteristics: highest level of education of any household member, whether any household member is non-white, household composition, and a linear control for the age of the oldest household member. All regressions include sub-experiment-specific state and year fixed effects and are weighted using ACS household weights and robust standard errors are clustered at the state level.

We first estimate this equation for all households whose oldest member is between the ages 60-79 and also present results by single year of the age of the oldest householder. In the appendix, we include results for younger households whose oldest member is between age 40 and 59.

We then explore whether state policy choices about the parameters of the expansion matter. We first classify states in two groups–(1) the 15 states that eliminate the net income limit and impose a gross income limit and (2) the two states that keep the net income limit and estimate the following equation:

(2)

$$Pr(SNAP_{hst} = 1) = \alpha_0 + \alpha_1 EliminateNetImposeGross_s * Post_t + \alpha_2 KeepNet_s * Post_t + \Gamma X_h + \alpha_s + \alpha_t + \varepsilon_{hst}$$

Since the two states that keep the net income limit treat gross income differently, we also estimate equation 2 where we estimate separate effects for those two states.

We include several robustness checks. First, we examine whether results are sensitive to includ-

ing Nebraska, the only state that expanded during the same period in which the initial expansion raised, but did not eliminate, the asset limit, and the other seven states that implemented the state expansions between 2008 and 2012 but either tightened eligibility during the analysis period or had inconsistent information between the two sources used to document the parameters of the expansion. We also examine whether results are robust to including additional years in the post period and all available pre period observations. Though stacked difference-in-differences is our preferred approach to address staggered implementation, we also test whether conclusions are similar using an alternative approach–the regression adjusted TWFE model, as described in Callaway and Sant'Anna (2021). Finally, we examine whether results are robust to controlling for other state SNAP policy choices and state economic environment conditions.

Finally, we examine whether these newly participating households are economically vulnerable or relatively more advantaged. We first attempt to show this by splitting the sample by household gross income. Recognizing that households might change income in response to the expansions to gain eligibility, we test for endogenous changes in income in Appendix Table A7. Recognizing that survey reports of gross income may be subject to error, we also split the sample by proxies for economic vulnerability: having low levels of educational attainment in the household and being a renter.

4.2 Results

4.2.1 Descriptive Evidence

Figure 1 presents mean SNAP participation in the 17 treatment and 9 control states from 2006 to 2019. The vertical lines mark the window of years these treatment states expanded eligibility (2008-2011). The figure shows that SNAP participation was very similar in the two groups of states in the pre period years of 2006 and 2007. Between 2008 and 2011, SNAP participation rose rapidly in both groups of states in the wake of the Great Recession. Beginning in 2010, SNAP participation rose more in treatment states and remained elevated throughout the post period. Notably, from

2012 through 2019, mean participation was steady in the treatment states, whereas participation fell by roughly 20 percent (two percentage points) for households in the control states.

Table 3 presents means for the treatment and control groups in the pre period (2006-2007) and the last two years of the post period (2018-2019) for the 17 treatment and 9 control states. Panel A presents results for the full sample of all older households. Row 1 shows that SNAP participation increased by 4.8 percentage points in treatment states and by 1.6 percentage points in control states. This led to a statistically significant 3.2 percentage point unadjusted difference in differences (column 5). Though the share of households below 130 and 200 FPL fell over time in both groups of states, it fell slightly less in treatment states. This is a change in the opposite direction of what we would expect if households were reducing their income to gain eligibility. The bottom three rows show no differential changes in home ownership, likelihood of having earned income, or the likelihood of having income from Social Security.

Table 3, Panel B presents results for older households participating in SNAP. We would expect that household income and wealth among SNAP households would be higher post-expansion in states that expanded, relative to states that did not expand. However, we observe no difference in mean gross income as a percent of FPL across the two groups of states. We also observe no difference in the likelihood gross income is below 130 or 200 FPL. This would be consistent with newly participating households being very economically similar to those who participated in the absence of the expansion. The probability of having earned income does not change among SNAP-participating senior households.[11] However, we do see a relative increase both in home ownership and in the receipt of Social Security Income. This is consistent with the findings in Han (2016b), which showed these state expansions reduced material hardships.

[11] In Appendix Table A7, we confirm that these state SNAP expansions do not impact the probability of having a household member participate in the labor force.

4.3 Effect of State Eligibility Expansions

The main results are reported in Table 4. We first present results for all households whose oldest member is between ages 60 and 79 for the baseline set of 17 states.

We find that state adoption of these eligibility expansions increased SNAP participation by 1.4 percentage points. From a mean of 7.3 percent of households receiving SNAP benefits in the pre expansion period, this is about a 19 percent increase in participation. This is a meaningful increase in participation given that the rate is so low for these older households and prior estimates did not conclusively show that these expansions alone increased participation for these older households.

We test the robustness of this result to the composition of the treatment group. We show that the effect is similar when we include Nebraska, the only state that expanded at a similar time and raised, but did not eliminate the asset limit when implementing the expansion (column 2). Further, results are robust to including the other seven seven states that expanded during this time period (column 3) but either tightened generosity or had inconsistent information about the policy parameters.

In an effort to confirm that findings from the ACS are comparable to sources and methods used in prior work studying these expansions, in Appendix Table A6 we present results for households whose oldest member is between age 40 and 59. The estimated 1.1 percentage point increase is similar in magnitude to that estimated in Jones et al. (2022) (0.0105, $p>0.10$), though with the ACS data is statistically significant ($p<0.01$).

4.3.1 State Policy Choices

In Table 4 columns 4 and 5 we examine how the response differs by state choices about the expansion. In column 4, we split our 17 treatment states into two groups. There are 15 states that eliminate the asset test, eliminate the net income test, and impose a gross income limit. There are two states that eliminate the asset test and keep the net income limit (and make different choices about the gross income limit). Column 4 shows that the expansions only increase participation

in those 15 states that eliminate the asset and net income limit and impose a gross income limit. These estimates are statistically significantly different than one another. Since the two states that preserved the net income limit made different choices about gross income–Colorado imposed a gross income limit of 200 percent of poverty whereas Oklahoma did not impose a gross income limit–in column 5 we separately estimate the effect in these two states.

Together, this evidence suggests that the treatment of gross income is not likely an important factor, while asset and net income limits are important. To further explore this question, in Appendix Table A6 we examine how SNAP participation among younger households responds to different state choices about net and gross income limits. For these younger households, the federal criteria do include a gross income limit of 130 FPL, and states are not allowed to remove the gross limit under these expansions. Instead, states may keep the gross income limit at 130 FPL or raise it up to 200 FPL. In column 2, we show that the increased SNAP participation is driven by the 15 states that eliminate the net income limit, and that conditional on eliminating the net income limit, there is no statistically significant difference in the participation response between the states that raise the gross income limit or keep it at 130 FPL (p-0.406). This provides further suggestive evidence that the gross income limit is not binding for households.

4.3.2 Robustness Checks

In Table 5, we show that the estimate of the impact of the state eligibility expansions is not sensitive to specification choice or to including controls for other state SNAP policies that may impact participation for older adults nor controls for state economic conditions.

Table 5, column 1 repeats the baseline specification which includes sub-experiment specific state and year fixed effects. We relax this in column 2, which includes only a single treatment state dummy and post-period dummy. Column 3 presents the naive TWFE specification with state and year fixed effects and no corrections for heterogeneous or dynamic treatment timing.[12], and column 4 presents the regression-adjusted TWFE as in Callaway and Sant'Anna (2021). In

[12]This sample differs from our baseline sample because it includes all 17 treatment states and 9 control states in all years 2006 through 2019. See Appendix Table A2.

all cases, the qualitative conclusions are the same. In Appendix Table A4 we show that there is no statistically significant difference in SNAP participation in treatment states in the period right before implementation (e.g., 2007 for the 2008 expanders; 2008 for the 2009 expanders, etc.). Appendix Figure A2 presents aggregated treatment timing effects using methods described in Callaway and Sant'Anna (2021). Together, the Callaway Sant'Anna results provide support for the pre period trends being parallel for the treatment states in each of the treatment timing groups. The effect grows over time, as seen in Appendix Figure A2 and Appendix Tables A4 and A5.

Next, we demonstrate robustness to including additional controls in the baseline model.[13] Another policy choice that states can make is to increase the length of time that households can continue to receive benefits between eligibility recertification. The variables "Cert Eld 1-3" and "Cert Eld 4-6" reflect the share of older households that must recertify their SNAP eligibility every 1-3 or 4-6 months (relative to 7+ months). Including these measures (column 5) also does not change the estimated effect of the state SNAP expansions. In column 6 we include a control for the state unemployment rate in that year. The main effect is unchanged with all of these controls.

4.3.3 Heterogeneous Effects

We explore whether newly participating households were relatively more advantaged or more economically vulnerable. We first consider how the effects differ by household self-reported gross income. In Table 6, we split household's by their combined gross income, as indicated by the column headings.

The bottom row indicates the SNAP participation rate for the treatment states in 2006-2007. We note that there is evidence of slight measurement error in these self reports because 3.9 percent of households with gross income between 200-400 FPL (column 3) and 1.1 percent of households with gross income above 400 FPL (column 4) reported receiving SNAP benefits before expansion

[13] Prior work has considered the impact of the Supplemental Security Income-Combined Application Project (SSI-CAP), which permits SSI beneficiaries to complete a shortened SNAP application at the Social Security Administration (SSA) office and complete the initial interview at SSA. There are currently 17 states with SSI-CAP programs, but only three states adopted these programs during our study period. In results not shown, the estimated effect of BBCE is not sensitive to including a control for having the CAP program in place.

under the federal criteria. Still, we observe that the highest SNAP participation rates are among households with the lowest gross income levels. Correspondingly, the magnitude of the effect of the state SNAP expansions is largest for the households with the lowest gross income.

Table 6, column 1 presents the estimated impact of the state expansions for the subset of households that have very low gross income (130 percent of federal poverty is the gross income limit for younger households); state SNAP expansions increase participation for this group by 3.7 percentage points, or 15 percent. Similarly, Table 6, column 2 presents estimates for the subset of households with gross income income between 130-200 FPL, a group that is slightly less economically vulnerable. For this group, the state expansions increase participation by 2.4 percentage points, which represents about a 25 percent increase. The results when split by gross income are consistent with more economically vulnerable households beginning to participate in SNAP in response to the expansions.[14]

In Table 7 we examine heterogeneity by other measures of likely economic vulnerability. In columns 1 through 4 we show that the biggest increases are among households with lower levels of education. The effects are over twice as large among households with no member with a high school degree (0.029, column 1) as they are for those with a member that has a high school degree or more (0.013, column 2). And they are nearly twice as large for those with no college degree (0.021, column 3) as they are for those with a college degree or more (0.011, column 4). We can also examine differences by home ownership and the effect for renters is over three times as large as the effect for homeowners; renters experience a 2.9 percentage point increase in SNAP participation compared to 0.9 percentage points for homeowners. Together, these results suggest that state SNAP expansions significantly increased participation rates among the most economically vulnerable households. Again, we note that there may be significant measurement error in the

[14]Some households might change their income to gain eligibility. To understand the role this type of income shifting might play, in Appendix Table A7, we examine whether the likelihood a household has gross income in different categories changes post expansion. We do observe modest 0.2-0.3 percentage point increases in the likelihood household income is between below 100 FPL or between 100-130 FPL and a 0.3 percentage point reduction in the likelihood household income is between 200-400 FPL. We note that these coefficient estimates are an order of magnitude smaller than the increases in participation shown in Table 6. This suggests that even if there is income shifting to gain eligibility, many of the new participants were likely previously economically vulnerable.

ACS in self reported gross income, so these categories only approximate economic vulnerability.

In Table 8, we consider the effects by different household structure. First note that over three quarters of households are 1-2 person households: single householders or married couples living alone. Across these three types of households, the magnitudes of the coefficient estimates differ but the relative boost in participation is similarly large relative to each group's mean SNAP participation prior to the state expansion. The effect sizes range from a 24 percent increase for single householders to a 33 percent increase for married couples. For households with children or larger adult-only households, two types of households with higher baseline SNAP participation, the effect sizes are slightly lower, at 7 and 14 percent, respectively.

5 Changes in Federal SNAP Criteria at Age 60 and SNAP Participation: Descriptive Evidence

In this section, we take advantage of the large sample size of the ACS and provide descriptive evidence of likely eligibility and SNAP participation by single year of age. The large size of the ACS permits us to examine how eligibility and participation change by single year of age, providing new descriptive evidence of the response to the change in federal criteria and insights into the low take-up rate of older households.

5.1 SNAP Participation and Loosened Federal Criteria at Age 60

At age 60, the federal criteria eliminate the gross income limit and raise the asset limit from 2,750 to 4,250. The federal criteria also eliminate any work requirements and increase deductions, as shown in Table 1. To ensure that the loosened federal criteria are the only change to eligibility, we only use data from the 9 control states for years 2017-2019.

For households under age 60, we consider a household to be likely eligible if gross income is below 130 FPL. For older households, we follow Li, Zuo, and Heflin (2023) and consider households to be likely eligible if gross income is below 200 FPL. We first examine how sources and

levels of income change with age to understand how much changes in likely eligibility can be attributed to the loosened federal criteria and how much can be attributed to general changes in income at this age. Figure 3a shows that in the years right after a household experiences these loosened criteria (ages 60-65), there are large changes in sources of income. The red line depicts the share of households with earned income; this share declines by more than ten percentage points in the five years right after age 60. The green line depicts the share of households receiving Social Security income, which increases by over 40 percentage points between ages 60 and 65. Interestingly, these changes in sources of income are not matched by similarly large changes in levels of income. Figure 3b depicts the share of households with gross income below 130, 200, and 400 FPL. Between ages 60 and 65, the share with income below 200 FPL (what we consider to be "likely eligible") is roughly constant, at about 25 percent of households. Thus, even though sources of income change during this period, likely eligibility does not change much in the five years after a household faces the loosened federal eligibility criteria.

In Figure 4a we present the share of households by single year of age who are likely eligible for SNAP based on their gross income. There is a discrete 6 percentage point jump in likely eligibility at age 60 when the federal criteria loosen, and it remains constant through age 65. In Figure 4b, we show the share participating among all households by single year of age of oldest householder, and note that there is no commensurate increase in participation at age 60. In fact, between ages 60 and 65, the share of all households receiving SNAP *falls*.

This suggests that households are not responsive to the loosened federal criteria, yet we showed in this paper that they are responsive to the state eligibility expansions. Together, these two sets of results suggest that treatment of gross income does not matter for older households because participation increases when state expansions *impose* a gross income limit but does not respond when federal criteria *eliminate* the gross income limit. The different response to the federal versus state expansions might also be due to most states eliminating the asset and net income limits whereas the federal criteria preserve the net income limit and raise the asset limit.

5.2 Understanding Low SNAP Take-Up of Older Households

We can use this approach to provide new insights into older households' lower SNAP take up (i.e., participation among eligibles). The share of eligible older households that receive SNAP is about half that of eligible younger households, and the puzzle of why these households are less likely to participate in SNAP has received attention from policymakers and researchers. For example, policymakers loosened federal criteria for households with older adults and allow states to adopt the SSI-CAP programs described earlier, and there are demonstration programs to simplify applications for older adults (e.g., the Elderly Simplified Application Project (ESAP)). Researchers also note this puzzle, and in a special issue of the journal *Applied Economic Perspectives and Policy* dedicated to senior hunger, the editors described this puzzle in the introduction: "In terms of program participation, increasing SNAP participation rates among older Americans has remained a stubborn hurdle and is the first open question in this research area." (Ziliak, Gundersen, and Ismail 2022)

We now consider changes in likely eligibility and participation for all households age 60 and older. Figure 3b shows that, when we consider older households through age 79, there are substantial changes in levels of income. The share of households with income below 200 FPL grows 9 percentage points between ages 70 and 79. Examining changes in likely eligibility through age 79 in Figure 4a, we see that whereas there was a discrete 6 percentage point increase when the loosened federal criteria are in place at age 60, there is an even larger nine percentage point increase from age 70 to 79 when income falls and more households become income-eligible.

Figure 4b shows that SNAP participation declines from age 62 through age 79. Comparing the magnitude of the trends in participation and eligibility after the oldest household member turns 60, it is clear that eligibility is rising much faster than participation is falling. Putting these two trends together, Figure 5 shows that participation among eligibles is roughly flat before the oldest household member turns 60. There is a discrete decline at age 60 and it continues to fall as the age of the oldest household member approaches 79.

This is consistent with the lower take up rate for older households largely being driven by changes in eligibility–both the loosened federal criteria and also changes to income as households age. Declining participation overall only plays a small role. With the cross-sectional ACS data we cannot examine this, but this pattern is consistent with older households that gain eligibility, either due to the loosened federal criteria or their declining income, not participating. To address this, a possible policy response would be to have the loosened federal criteria include more of the features shown to be effective in the state expansions: eliminate the net income and asset limits. It is also possible that the state expansions were better publicized, so additional outreach and awareness may also help increase participation.

6 Discussion and Conclusions

We provide new evidence that state SNAP eligibility expansions (under BBCE) increase SNAP participation among older households by about 19 percent. In contrast, we find no increase in SNAP participation in response to the loosened federal eligibility criteria when a household member reaches age 60.

The parameters of the state expansions studied in this paper differ from the loosened federal criteria, and together, these findings provide important information to policymakers seeking to increase SNAP participation among eligible older households. The states in this study eliminated the asset and net income limits and *imposed* a gross income limit whereas the loosened federal criteria preserve the net income limit, raise the asset limit, and eliminate the gross income limit. We interpret these different findings to suggest that treatment of gross income is likely not an important factor, while asset and net income limits are important. We note that these state expansions might also increase participation through promoting awareness and reducing the administrative burdens of applying.

These findings offer important lessons for SNAP policy. Eliminating asset limits may boost participation because eliminating these limits expands eligibility, or it could be because house-

holds were discouraged from applying because they did not realize they were eligible or found the administrative burden of proving they satisfied the asset criteria too burdensome. When considering eligibility for SNAP, one's residence and retirement accounts are not considered to be assets, though this may not be widely known. Our results also show that net income limits bind for both older and younger households. While there is an implicit net income limit because benefits are a function of net income, for larger households of 3 or 4 persons, computed benefits do not fall to zero until 119 or 125 FPL, respectively. For smaller households, of 1 or 2 persons, there is a guaranteed minimum benefit of 23 per month. Eliminating the net income limit allows households with net income above 100 FPL (who meet other eligibility criteria) to receive those small benefits.

Utilizing the large ACS, which permits us to examine likely eligibility and participation by single year of age of the oldest household member, we also provide new insights into how SNAP take-up evolves for older households after age 60. Low SNAP participation among eligible older households is a concern to policymakers and researchers (Ziliak, Gundersen, and Ismail 2022), and we show that this low take-up is largely due to expanded eligibility without a corresponding increase in participation, rather than participating households churning out of the program. This is consistent with descriptive work by Giordono (2022), who use longitudinal administrative data from Oregon to examine participation among older households in that state. Two other safety net programs have low participation rates among eligible older adults, asset limits, and eligibility criteria that expand at older ages–SSI and Medicaid at age 65. These findings from SNAP may inform efforts to increase take up in those programs.[15]

This paper explicitly considers the pre-pandemic period to provide evidence on patterns before the implementation of emergency measures that changed the SNAP program. Future work should consider post-pandemic responses and estimate whether there are symmetric participation effects

[15]For SSI, the income and asset eligibility criteria are no different for a 64- versus 65-year old, but SSI eligibility also requires documented disability. At age 65, one's age satisfies this criteria (i.e., individuals who meet the means test do not have to provide additional medical proof of disability). For Medicaid, every state has a pathway for older adults with low income and assets to receive Medicaid–often called the Aged, Blind, Disabled (ABD) or poverty pathway to "full Medicaid." In contrast, not every state has a pathway for all 64-year olds with low income and assets. In particular, many 64-year-olds are not Medicaid eligible in states that did not expand Medicaid under the Affordable Care Act (ACA) unless they have a disability or are a parent of a dependent child.

when states eliminate the expansions, as in Louisiana and Mississippi, or tighten eligibility criteria.[16] Moreover, a key limitation of the ACS data is the lack of information on household asset holdings and net income, and food security. Future work should consider whether the SNAP program is meeting the needs of households with older adults, as they have lower earned income but higher receipt of Social Security and pension income.

[16]For example, over the time period of our analysis, Pennsylvania initially eliminated the asset limit and then imposed an asset limit of 5,500 in 2012. In results not shown, we find evidence that participation increased in Pennsylvania irrespective of that asset limit, but estimates are noisy and sensitive to specification choices.

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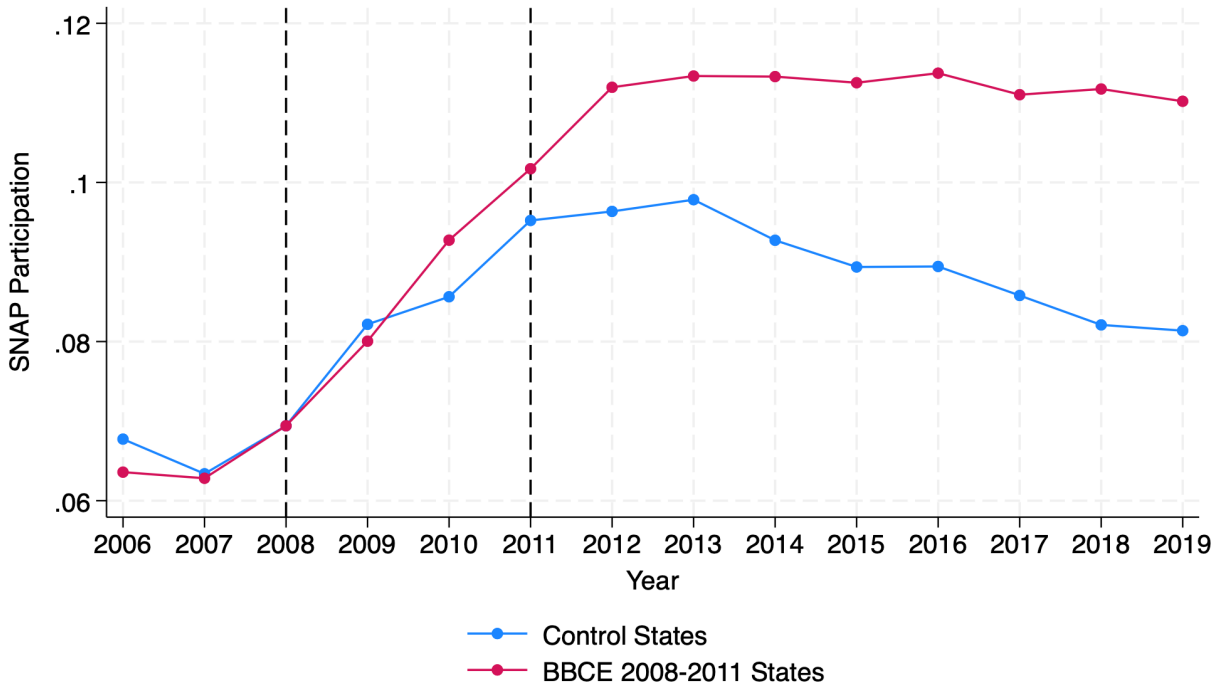
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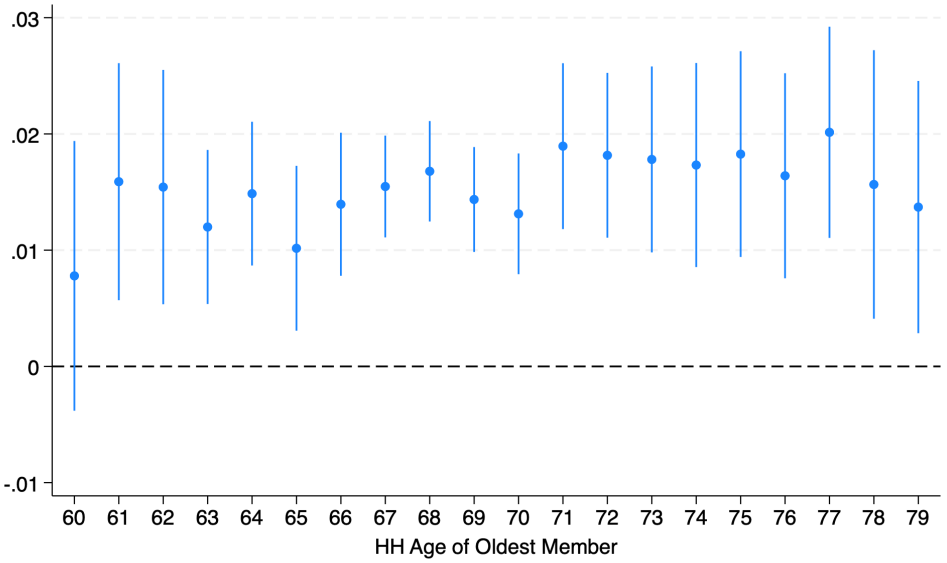
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Figure 1: Raw Means over Time



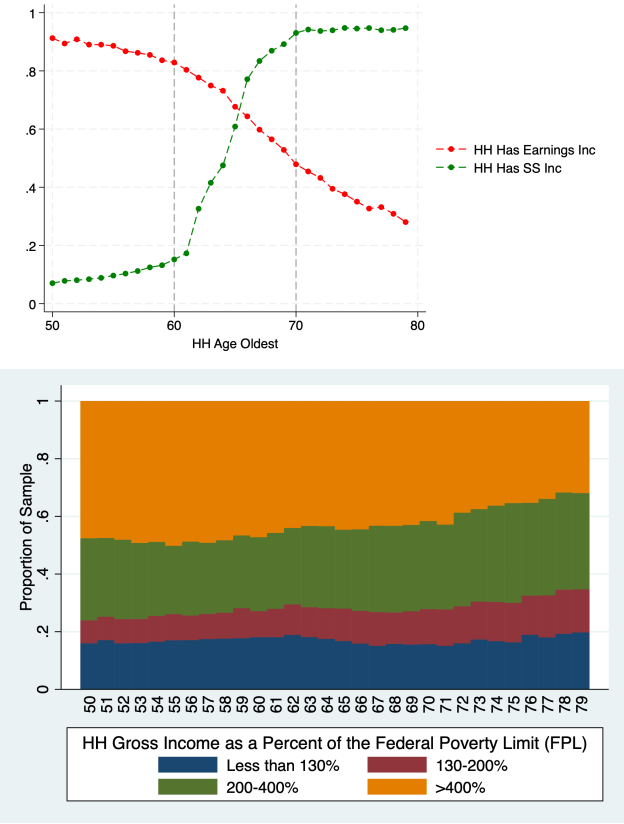
Notes: The sample is the 2006-2019 ACS for all households whose oldest member is ages 60-79, with no non-citizen members.

Figure 2: State SNAP BBCE Eligibility Expansions and SNAP Participation by Age of Oldest HH Member



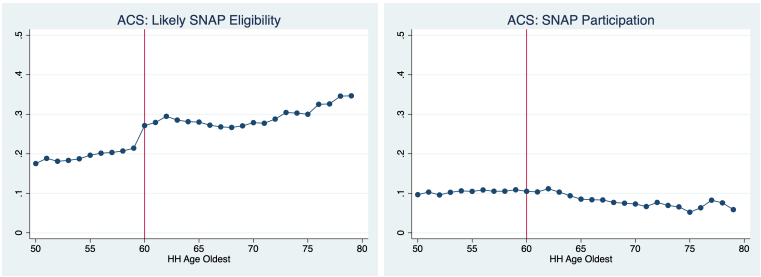
Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. Coefficients are estimated from Stacked DiD estimation.

Figure 3: Household Income Sources by Age of Oldest Household Member



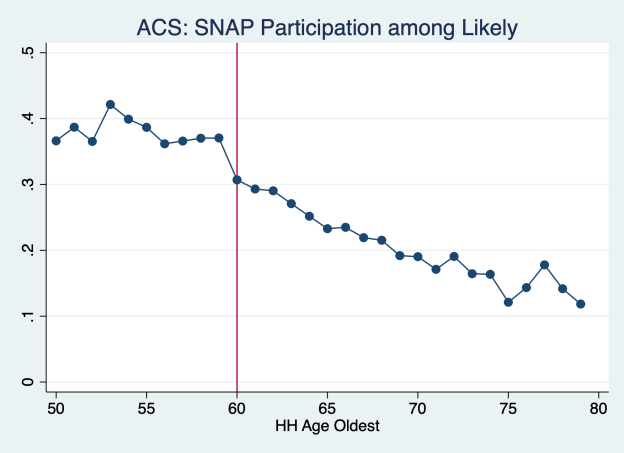
Notes: Data are from 2017-2019 ACS control group states with the sample restricted to households with no non-citizen members.

Figure 4: SNAP Participation and Eligibility by Age of Oldest Household Member



Notes: Data are from the 2017-2019 ACS control group states with the sample restricted to households with no non-citizen members. For households whose oldest member is under 60, "likely eligible" is defined as having a household gross income below 130% FPL or having a household gross income below 200% FPL if there is at least one household member with a disability. For households where the oldest member is aged 60 or older "likely eligible" is defined as having a household gross income below 200% FPL.

Figure 5: Take-Up of SNAP Among Likely Eligible Households



Notes: Data are from the 2017-2019 ACS control group states with the sample restricted to households with no non-citizen members. For households whose oldest member is under 60, "likely eligible" is defined as having a household gross income below 130% FPL or having a household gross income below 200% FPL if there is at least one household member with a disability. For households where the oldest member is aged 60 or older "likely eligible" is defined as having a household gross income below 200% FPL.

Table 1: Supplemental Nutrition Assistance Program (SNAP) Eligibility for Households

	Younger Households (all age <60, no person with a disability)		Older Households (1+ person age 60+ or with a disability)	
	Federal	**State BBCE Expansions**	**Federal**	**State BBCE Expansions**
Work Requirement	30 hours/week	30 hours/week	n/a	n/a
Asset limit	$2,750	Raise or most eliminate	$4,250	Raise or most eliminate
Gross income limit	130% FPL	130-200% FPL	n/a	Most impose 130-200% FPL
Allowed deductions from gross income	20% earned income Excess shelter costs up to $712 Dependent care deduction	20% earned income Excess shelter costs up to $712 Dependent care deduction	20% earned income Excess shelter costs (no limit) Dependent care deduction Medical costs over $35	20% earned income Excess shelter costs (no limit) Dependent care deduction Medical costs over $35
Net income limit	100% FPL	Most eliminate	100% FPL	Most eliminate

BBCE: Broad Based Categorical Eligibility

Table 2: State BBCE Expansion Parameters at Adoption, Households with an Older Adult (60+) or Person with a Disability

State name	Date of expansion	Treatment Timing Group	Asset limit (at adoption)	Gross income limit (at adoption)	Net income limit (at adoption)	Notes
Alabama	02/2010	*2010**	Eliminate	200	Eliminate	Gross income limit of 200% FPL only applies to households comprised of solely elderly or disabled individuals; October 2011 imposed net income limit of 100% FPL (QC TD)
Arizona	06/2007	--	Eliminate	185	Eliminate	
California	07/2009	^	Eliminate	200	100	SPD says applies to households with children only until April 2011. SPD suggests initial gross income limit was 130% FPL and increased to 200% in May 2013, but QC TD suggests initial gross income limit was 200% FPL. Gross income limit eliminated for FY10 (10/09-9/10); then October 2011 imposed a 130% FPL gross income limit and removed net income limit; May 2013 imposed a 200% FPL gross income limit
Colorado	03/2011	2011	Eliminate	200	100	
Connecticut	07/2009	2010	Eliminate	185	Eliminate	
DC	04/2010	2010	Eliminate	200	Eliminate	
Delaware	02/2000	--	Eliminate	200	Eliminate	
Florida	07/2010	2011	Eliminate	200	Eliminate	
Georgia	03/2008	2008	Eliminate	200	Eliminate	
Hawaii	10/2010	2011	Eliminate	200	Eliminate	
Idaho	06/2009	*2009**	Eliminate	200	100	SPD suggests no gross income limit; QC TD suggests 200% FPL gross income limit at implementation; June 2011: imposed asset limit of $5,000; October 2011 eliminated gross income limit
Illinois	03/2010	2010	Eliminate	200	Eliminate	
Indiana	01/2018	^^	$5,000	None	100	QC TD does not note net income limit; only in SPD
Iowa	01/2011	2011	Eliminate	160	Eliminate	
Kentucky	06/2010	2010	Eliminate	200	Eliminate	
Louisiana	06/2010	^^^	Eliminate	None	100	August 2014: eliminated expansion; April 2020 reinstated with no asset limit, no net income limit, gross income limit 130% FPL
Maine	09/2000	--	Eliminate	200	Eliminate	Until August 2010: only expanded to households with children (QC TD only); December 2006: lowered gross income limit to 185% FPL (SPD); November 2015: imposed $5,000 asset limit (QC TD only); December 2019: eliminated asset limit (QC TD only)
Maryland	03/2001	--	Eliminate	200	Eliminate	Until October 2010: only expanded to households with children (QC TD only)
Massachusetts	11/2001	--	Eliminate	200	100	Until June 2008: only expanded to households with children (QC TD only); October 2010: eliminate net income test (QC TD only); December 2016: re-imposed net income test (QC TD only)
Michigan	10/2000	--	Eliminate	200	Eliminate	October 2011: imposed $5,000 asset limit; December 2019: increased asset limit to $15,000

Table 2 (cont'd.): State BBCE Expansion Parameters at Adoption, Households with an Older Adult (60+) or Person with a Disability

State name	Date of expansion	Treatment Timing Group	Asset limit (at adoption)	Gross income limit (at adoption)	Net income limit (at adoption)	Notes
Minnesota	12/2006	--	$7,000	165	Eliminate	November 2010: Eliminate asset limit
Mississippi	06/2010	*2010**	Eliminate	None	100	July 2019: Eliminate state expansion; some discrepancy between SPD and QC TD (do not match until 2011)
Montana	03/2009	*2009**	Eliminate	None	100	September 2010: Imposed gross income limit of 200% FPL
Nebraska	10/2011	*2012**	$25,000	None	100	
Nevada	04/2009	2009	Eliminate	200	Eliminate	
New Hampshire	05/2009	^				Expansion only applied to households with children (no asset limit, 185% gross income limit, no net income limit)
New Jersey	04/2010	2010	Eliminate	185	Eliminate	
New Mexico	04/2010	2010	Eliminate	165	Eliminate	
New York	01/2008	2008	Eliminate	200	Eliminate	
North Carolina	07/2010	2011	Eliminate	200	Eliminate	
North Dakota	10/2000	--	Eliminate	None	100	Since October 2002: QC TD notes eliminate gross income limit (SPD notes is 200% FPL); October 2007-Sept 2008: QC TPD again mentions 200% gross income limit: Oct 2008-September 2010: no mention of gross income limit in QC TD
Ohio	10/2008	2009	Eliminate	200	Eliminate	
Oklahoma	06/2009	2009	Eliminate	None	100	
Oregon	12/2000	--	Eliminate	185	Eliminate	
Pennsylvania	10/2008	*2009**	Eliminate	200	Eliminate	June 2012: Imposed asset limit of $9,000 if elderly; May 2015: eliminated asset limit
Rhode Island	04/2009	2009	Eliminate	200	Eliminate	
South Carolina	04/2001	--	Eliminate	200	Eliminate	
Texas	09/2001	--	$5,000	165	Eliminate	
Vermont	01/2009	*2009**	Eliminate	185	100	October 2011: eliminate net income limit (QC TPD)
Washington	05/2004	--	Eliminate	130	Eliminate	October 2008: increased gross income limit to 200
West Virginia	10/2008	*2009**	Eliminate	200	Eliminate	SPD notes initial gross income limit 130 but QC TD notes 200; May 2013-June 2018: higher gross income limit only applied to senior only households; July 2018: 200% gross income limit
Wisconsin	07/2004	--	Eliminate	200	Eliminate	

*: state excluded from main analysis (made changes to parameters; sources inconsistent; or only state to initially raise, not eliminate, asset limit)
--: expansion occurred before 2008, state excluded from analysis
^: California's (in first two years) and New Hampshire's expansions only applied to households with children, excluded from analysis
^^: Indiana's expansion was implemented in 2018, excluded from analysis
^^^: Louisiana ended the expansion in 2014, excluded from analysis
QC TD: Quality Control Technical Documentation
SPD: State Policy Database

Table 3: Basic Comparison of Means, Difference-in-Differences

	Treat-Pre (1)	Treat-Post (2)	Cntrl-Pre (3)	Cntrl-Post (4)	DD [(2-1) - (4-3)]
Panel A: All Households with a Senior					
SNAP Participant	0.063	0.111	0.066	0.082	0.032
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
HH Pov Lvl	312.004	324.620	304.308	320.770	-3.847
	(0.387)	(0.348)	(0.760)	(0.682)	(1.146)
HH Inc <130% FPL	0.182	0.174	0.189	0.172	0.009
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
HH Inc <200% FPL	0.308	0.285	0.324	0.289	0.012
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Home Owner	0.784	0.759	0.812	0.790	-0.004
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Has Earned Income	0.541	0.566	0.550	0.570	0.004
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Has SS Income	0.730	0.686	0.745	0.696	0.004
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Panel B: Senior households receiving SNAP					
HH Pov Lvl	141.211	161.109	136.870	155.725	1.044
	(1.053)	(0.823)	(2.004)	(1.811)	(3.014)
HH Inc <130% FPL	0.650	0.552	0.669	0.574	-0.003
	(0.005)	(0.003)	(0.009)	(0.008)	(0.013)
HH Inc <200% FPL	0.800	0.731	0.824	0.745	0.010
	(0.004)	(0.003)	(0.007)	(0.007)	(0.011)
Home Owner	0.394	0.390	0.492	0.440	0.049
	(0.005)	(0.003)	(0.010)	(0.008)	(0.013)
Has Earned Income	0.358	0.397	0.372	0.410	0.001
	(0.005)	(0.003)	(0.009)	(0.008)	(0.013)
Has SS Income	0.727	0.722	0.775	0.727	0.043
	(0.004)	(0.003)	(0.008)	(0.007)	(0.012)

Notes: Data are from the 2006-2007 and 2018-2019 ACS. The means are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

Table 4: The Impact of BBCE Policies on Seniors' Households SNAP Participation

	(1) Baseline	(2) + NE	(3) All 25 States	(4) Baseline States	(5) Baseline States
BBCE State x Post	0.014***	0.013***	0.012***		
	(0.003)	(0.002)	(0.003)		
BBCE Elim Net x Post (15)				0.015***	0.015***
				(0.002)	(0.002)
BBCE Keep Net x Post (2)				-0.001	
				(0.003)	
CO x Post					0.001
					(0.002)
OK x Post					-0.004
					(0.003)
Observations	2,416,905	2,769,304	3,043,108	2,416,905	2,416,905
Pre-Treat Mean	0.073	0.073	0.072	0.073	0.073
P-Diff (15)=(2)				0.000	
P-Diff (15)=CO					0.000
P-Diff (15)=OK					0.000

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

Table 5: Robustness Checks

	(1) Baseline	(2) StackedDD	(3) TWFE	(4) RA-TWFE	(5) Cert.	(6) Urate
BBCExpost	0.014***	0.012***	0.011**		0.014***	0.014***
	(0.003)	(0.003)	(0.003)		(0.003)	(0.003)
Treatment State		-0.004				
		(0.009)				
Post Period Dummy		0.024***				
		(0.002)				
ATET Aggregate				0.018***		
				(0.002)		
Cert Eld 1-3					-0.058	
					(0.048)	
Cert Eld 4-6					0.007	
					(0.013)	
Unemployment Rate						0.000
						(0.001)
Observations	2,416,905	2,416,905	2,722,507	2,722,507	2,416,905	2,416,905

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: All specifications control for household race/ethnicity, education, family structure, and age of oldest member. Columns 1, 5, and 6 include sub-experiment specific state and year fixed effects. Columns 3 and 4 include state and year fixed effects. The sample used in columns 1, 2, 5, and 6 is the stacked DiD sample illustrated in Appendix Table A3. The sample used in columns 3 and 4 is illustrated in Appendix Table A2. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses. Information on the share of older households that must recertify every 1-3 or 4-6 months are from the SNAP Policy Database.

Table 6: Household-Level Heterogeneity by Gross Income Categories

	(1) <130%FPL	(2) 130-200%FPL	(3) 200-400%FPL	(4) >400%FPL
BBCE State x Post	0.037***	0.024***	0.010***	0.003***
	(0.006)	(0.006)	(0.002)	(0.001)
Observations	438,691	312,750	743,242	922,222
Pre-Treat Mean	0.255	0.095	0.039	0.011

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

Table 7: Heterogeneity by Alternative Proxies for Economic Vulnerability

	(1) No HSD	(2) Any HSD	(3) No Coll	(4) Any Coll	(5) No Own Home	(6) Own Home
BBCE State x Post	0.029***	0.013***	0.021***	0.011***	0.029***	0.009***
	(0.008)	(0.002)	(0.004)	(0.001)	(0.005)	(0.002)
Observations	231,302	2,185,603	1,088,168	1,328,737	466,464	1,950,441
Pre-Treat Mean	0.205	0.057	0.109	0.043	0.195	0.039

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

Table 8: Heterogeneity by Household Structure

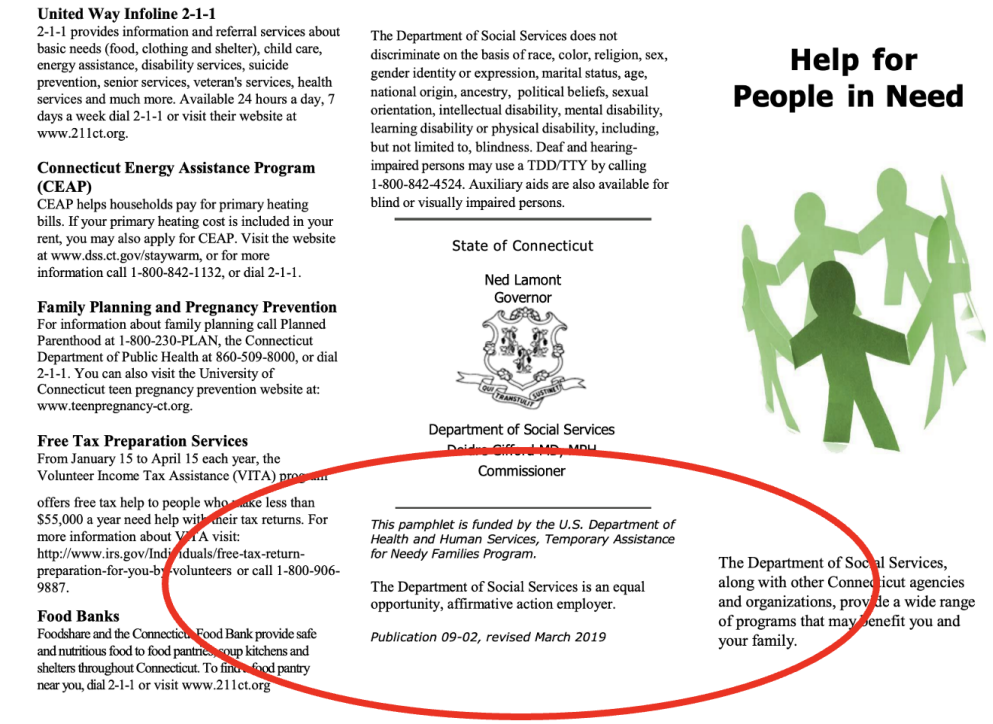
	(1) Single Male HH	(2) Single Female HH	(3) Married Couple	(4) HH w/ Kids	(5) Other HH Type
BBCE State x Post	0.019***	0.024***	0.005***	0.015**	0.016**
	(0.003)	(0.003)	(0.001)	(0.005)	(0.007)
Observations	300,924	550,240	1,001,133	164,328	400,280
Pre-Treat Mean	0.076	0.097	0.015	0.204	0.116

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

ONLINE APPENDIX
SNAP Benefit Expansions and SNAP Participation among Older Adults

A BBCE Policies



United Way Infoline 2-1-1
2-1-1 provides information and referral services about basic needs (food, clothing and shelter), child care, energy assistance, disability services, suicide prevention, senior services, veteran's services, health services and much more. Available 24 hours a day, 7 days a week dial 2-1-1 or visit their website at www.211ct.org.

Connecticut Energy Assistance Program (CEAP)
CEAP helps households pay for primary heating bills. If your primary heating cost is included in your rent, you may also apply for CEAP. Visit the website at www.dss.ct.gov/staywarm, or for more information call 1-800-842-1132, or dial 2-1-1.

Family Planning and Pregnancy Prevention
For information about family planning call Planned Parenthood at 1-800-230-PLAN, the Connecticut Department of Public Health at 860-509-8000, or dial 2-1-1. You can also visit the University of Connecticut teen pregnancy prevention website at: www.teenpregnancy-ct.org.

Free Tax Preparation Services
From January 15 to April 15 each year, the Volunteer Income Tax Assistance (VITA) program offers free tax help to people who make less than $55,000 a year need help with their tax returns. For more information about VITA visit: http://www.irs.gov/Individuals/free-tax-return-preparation-for-you-by-volunteers or call 1-800-906-9887.

Food Banks
Foodshare and the Connecticut Food Bank provide safe and nutritious food to food pantries, soup kitchens and shelters throughout Connecticut. To find a food pantry near you, dial 2-1-1 or visit www.211ct.org

The Department of Social Services does not discriminate on the basis of race, color, religion, sex, gender identity or expression, marital status, age, national origin, ancestry, political beliefs, sexual orientation, intellectual disability, mental disability, learning disability or physical disability, including, but not limited to, blindness. Deaf and hearing-impaired persons may use a TDD/TTY by calling 1-800-842-4524. Auxiliary aids are also available for blind or visually impaired persons.

State of Connecticut

Ned Lamont
Governor

Department of Social Services
[redacted]
Commissioner

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The Department of Social Services is an equal opportunity, affirmative action employer.

Publication 09-02, revised March 2019

Help for People in Need

The Department of Social Services, along with other Connecticut agencies and organizations, provide a wide range of programs that may benefit you and your family.

Access Health CT (AHCT) and HUSKY Programs
Connecticut residents who need medical insurance should apply online at www.accesshealthct.com or by calling 1-855-805-4325. Residents may apply in person at AHCT Enrollment Centers or DSS offices. Benefits include preventive care, physician visits, prescriptions, vision care, dental care, physicals, mental health and substance abuse services, durable medical equipment, emergency and hospital care. Those who have pre-existing conditions cannot be denied. If you have questions call 1-855-805-4325.

Housing
For information about the Housing Choice Voucher program visit the Department of Housing website at www.ct.gov/doh. There you may register your email address to be notified when a Housing Choice Voucher waiting list opens. You can also dial 2-1-1 or visit www.211ct.org for information about low-cost housing options, as well as other housing services such as eviction and foreclosure prevention, security deposits and shelters for the homeless or victims of domestic violence.

Care 4 Kids Child Care
Care 4 Kids helps low-to-moderate income families in Connecticut pay for child care costs. To learn more about Care 4 Kids, visit the website at: www.ctcare4kids.com or call 1-888-214-KIDS (5437) Monday, Tuesday, Wednesday, Friday 8 am- 5 pm, Thursdays 8am - 6pm.

Women Infants & Children (WIC)
WIC is a special supplemental food program that provides nutritious foods, milk, juice, formula and other items to low-income pregnant or breastfeeding women, infants and children up to age 5. To get more information visit www.ct.gov/dph or call 1-800-741-2142.

Supplemental Nutrition Assistance Program (SNAP)
SNAP is a nutrition program that helps low-income individuals and families buy food. SNAP is funded by the U.S. Department of Agriculture and administered in Connecticut by DSS. Benefits are provided through an Electronic Benefits Transfer (EBT) card that works just like a regular debit card. You can use your EBT card at most grocery stores and at some farmer's markets. All SNAP recipients are eligible to receive free nutrition education.

For more information and to find out where to apply, visit www.ct.gov/SNAP or dial 2-1-1.

SNAP Employment & Training (E&T)
In addition to direct food benefits, SNAP recipients, not receiving Temporary Family Assistance, may be eligible for free vocational training. DSS partners with all community colleges and several community based organizations to provide training opportunities to SNAP recipients. E&T is a voluntary work program designed to help participants gain skills needed to find employment. SNAP recipients may self-enroll with an approved provider.

For more information visit www.ct.gov/SNAP

School Breakfast and School Lunch Programs
These programs provide nutritionally balanced meals to school children for free or at a small cost. Families may apply for the programs by submitting a Household Income Application which is provided by the school. The school is then responsible for certifying the student for free, reduced-price, or paid meals. If you are currently receiving Temporary Family Assistance (TFA), SNAP or Medicaid from DSS, your children are automatically eligible for free meals. Contact your child's school for more information or visit www.fns.usda.gov/school-meals/child-nutrition-programs.

Fatherhood Initiative
The Connecticut Fatherhood Initiative is a broad-based, statewide program led by the Department of Social Services that is focused on changing the systems that can improve fathers' ability to be fully and positively involved in the lives of their children. The goal of the initiative is to promote the positive involvement and interaction of fathers with their children by providing dads with the skills and support they need to get involved and stay connected to their children.

For more information about the Connecticut Fatherhood Initiative and programs in your area, please visit our website: www.ct.gov/fatherhood or call 1-866-6CTDADS / (1-866-628-3237).

Domestic Violence
The Connecticut Coalition Against Domestic Violence (CTCADV) is a statewide network of community-based programs that provide a full array of services to victims of domestic violence. Those services include a 24-hour toll free hotline, safety planning, emergency shelter, crisis intervention, individual counseling, support and/or educational groups, children's programs, court advocacy, information and referrals, and community education.

To get help or for more information call CTCADV at 1-888-774-2900 or visit: www.ctcadv.org.

Legal Assistance
For legal assistance call 1-800-453-3320 or go online at www.slsct.org.

Figure A1: Example BBCE Brochure

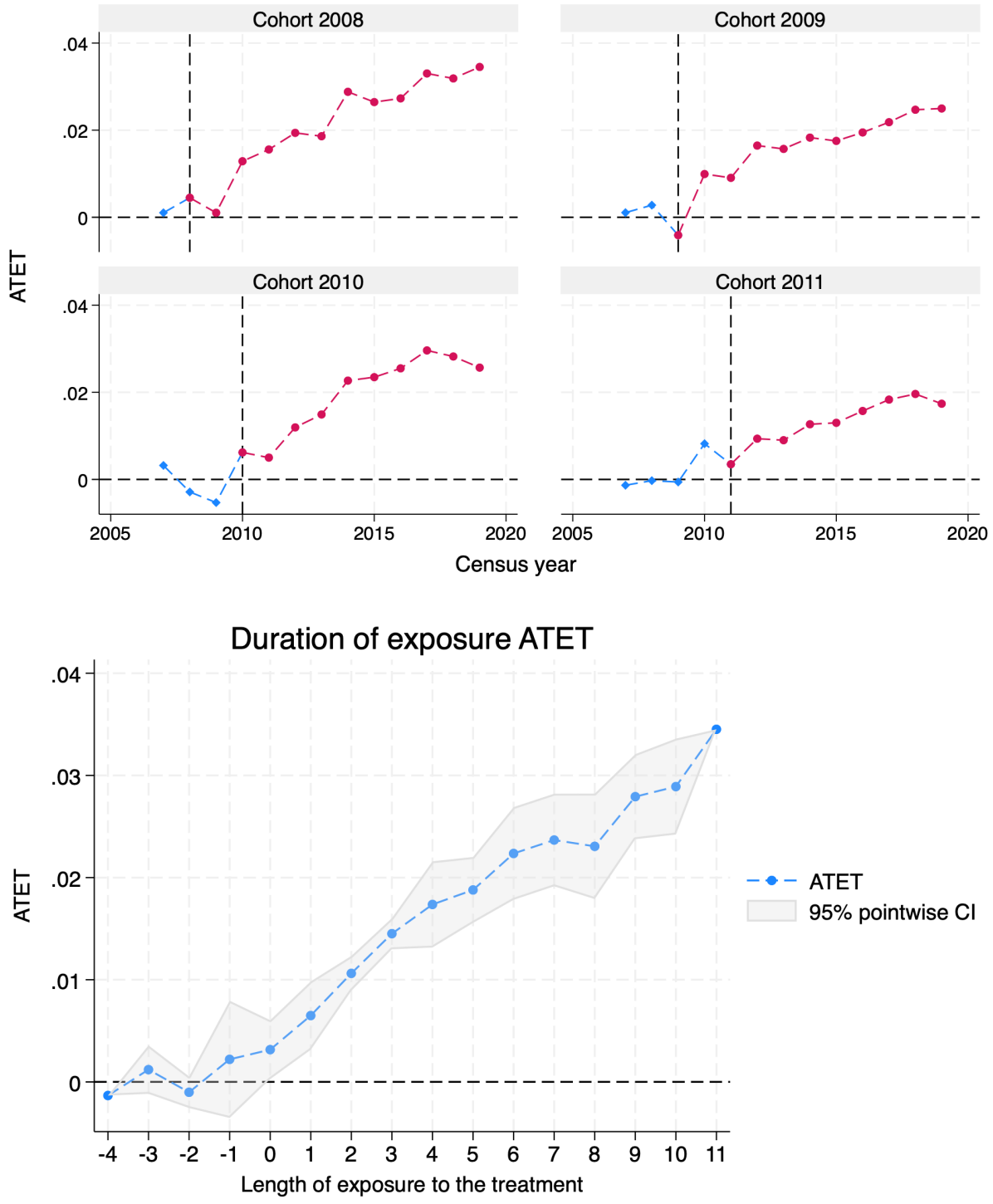


Figure A2: TWFE Treatment Timing Group - Event Studies

Table A1: State BBCE Expansion Parameters at Adoption, Households with all Persons Under Age 60 and no Persons with a Disability

State name	Date of expansion	Treatment Timing Group	Asset limit (at adoption)	Gross income limit (at adoption)	Net income limit (at adoption)	Notes
Alabama	02/2010	*2010**	Eliminate	130	Eliminate	October 2015: impose net income limit
Arizona	06/2007	--	Eliminate	185	Eliminate	
California	07/2009	^	Eliminate	130	100	SPD says applies to households with children only through April 2011; October 2011: eliminated net income limit; July 2014: increased gross income limit to 200
Colorado	03/2011	2011	Eliminate	130	100	June 2018: increased gross income limit to 200% FPL
Connecticut	07/2009	2010	Eliminate	185	Eliminate	
DC	04/2010	2010	Eliminate	200	Eliminate	
Delaware	02/2000	--	Eliminate	200	Eliminate	
Florida	07/2010	2011	Eliminate	200	Eliminate	
Georgia	03/2008	2008	Eliminate	130	Eliminate	
Hawaii	10/2010	2011	Eliminate	200	Eliminate	
Idaho	06/2009	*2009**	Eliminate	130	100	June 2011: imposed asset limit of $5,000
Illinois	03/2010	2010	Eliminate	130	Eliminate	January 2016: Increased gross income limit to 165% FPL
Indiana	01/2018	^^	$5,000	130	Eliminate	
Iowa	01/2011	2011	Eliminate	160	Eliminate	
Kentucky	06/2010	2010	Eliminate	130	Eliminate	May 2020: Increased gross income limit to 200% FPL
Louisiana	06/2010	^^^	Eliminate	130	100	August 2014: eliminated expansion; April 2020 reinstated with no asset limit, no net income limit, gross income limit 130% FPL
Maine	09/2000	--	Eliminate	200	Eliminate	Early years: may have had gross income limit of 100% FPL (QC TD); October 2003: increased gross income limit to 200% FPL; December 2006: lowered gross income limit to 185% FPL (SPD); Until August 2010: only expanded to households with children (QC TD only); November 2015: imposed $5,000 asset limit (QC TD only); December 2019: eliminated asset limit (QC TD only)
Maryland	03/2001	--	Eliminate	200	Eliminate	Until October 2010: only expanded to households with children (QC TD only)
Massachusetts	11/2001	--	Eliminate	200	100	Until June 2008: only expanded to households with children (QC TD; SPD says until January 2016); June 2008: if no children gross income limit 130% FPL; October 2016: raised gross income limit to 200% FPL
Michigan	10/2000	--	Eliminate	200	Eliminate	October 2011: imposed $5,000 asset limit; December 2019: increased asset limit to $15,000
Minnesota	12/2006	--	$7,000	130	Eliminate	November 2010: Eliminate asset limit, raise gross income limit to 165% FPL
Mississippi	06/2010	*2010**	Eliminate	130	Eliminate	October 2011: impose net income limit of 100% FPL; July 2019: Eliminate state expansion
Montana	03/2009	*2009**	Eliminate	185	100	September 2010: Increased gross income limit to 200% FPL
Nebraska	10/2011	*2012**	$25,000	130	100	
Nevada	04/2009	2009	Eliminate	200	Eliminate	
New Hampshire	05/2009	^				Expansion only applied to households with children (no asset limit, 185% gross income limit, no net income limit)

Table A1 (cont'd.): State BBCE Expansion Parameters at Adoption, Households with all Persons Under Age 60 and no Persons with a Disability

State name	Date of expansion	Treatment Timing Group	Asset limit (at adoption)	Gross income limit (at adoption)	Net income limit (at adoption)	Notes
New Jersey	04/2010	2010	Eliminate	185	Eliminate	
New Mexico	04/2010	2010	Eliminate	165	Eliminate	
New York	01/2008	2008	Eliminate	130	Eliminate	July 2016: if have earned income introduced higher gross income limit of 150% FPL
North Carolina	07/2010	2011	Eliminate	200	Eliminate	
North Dakota	10/2000	--	Eliminate	200	100	Since October 2002: QC TD notes eliminate gross income limit (SPD notes is 200% FPL); October 2007-Sept 2008: QC TPD again mentions 200% gross income limit: Oct 2008-September 2010: no mention of gross income limit in QC TD
Ohio	10/2008	2009	Eliminate	130	Eliminate	
Oklahoma	06/2009	2009	Eliminate	130	100	October 2009: QC TD notes a net income limit of 100
Oregon	12/2000	--	Eliminate	185	Eliminate	
Pennsylvania	10/2008	*2009**	Eliminate	130	Eliminate	August 2009: increased gross income limit to 160; June 2012: Imposed asset limit of $5,500; May 2015: eliminated asset limit
Rhode Island	04/2009	2009	Eliminate	185	Eliminate	
South Carolina	04/2001	--	Eliminate	200	Eliminate	April 2009: tightened gross income limit to 130% FPL
Texas	09/2001	--	$5,000	165	Eliminate	
Vermont	01/2009	*2009**	Eliminate	185	100	October 2011: eliminate net income limit (QC TPD)
Washington	05/2004	--	Eliminate	130	Eliminate	October 2008: increased gross income limit to 200
West Virginia	10/2008	*2009**	Eliminate	130	Eliminate	July 2018: raise gross income limit to 200%; SPD suggests July 2018 QC TD says June 2018
Wisconsin	07/2004	--	Eliminate	200	Eliminate	

*: state excluded from main analysis (made changes to parameters; sources inconsistent; or only state to initially raise, not eliminate, asset limit)
--: expansion occurred before 2008, state excluded from analysis
^: California's (in first two years) and New Hampshire's expansions only applied to households with children, excluded from analysis
^^: Indiana's expansion was implemented in 2018, excluded from analysis
^^^: Louisiana ended the expansion in 2014, excluded from analysis
QC TD: Quality Control Technical Documentation
SPD: State Policy Database

B Data Appendix

The main empirical strategy used in this paper is Stacked Difference-in-Differences and follows the treatment in Wing, Freedman, and Hollingsworth (2024) and Deshpande and Li (2019). We include four distinct treatment timing groups, 2008 - 2011, and the set of common control states that do not implement BBCE during the 2006 - 2019 window (see Table 2). The treatment states are included for two time periods prior to policy adoption and for six time periods following. So, for example, the treatment timing group for 2008 includes data for the pre-period 2006 and 2007 and for the post-periods 2008-2013. The control group is "copied" for the corresponding years for each treatment timing group. Appendix Figure A3 illustrates how the sample is constructed with each cell presenting the number of unique observations included in the analysis dataset. The data are stored relative to event time and then stacked. The total sample size is 2,416,905 observations.

Table A2: ACS Treatment and Control Group Data

	(1) Treat2008	(2) Treat2009	(3) Treat2010	(4) Treat2011	(5) Control	(6) Total
2006	28,034	20,979	32,307	42,168	31,896	155,384
2007	29,758	21,747	33,693	43,971	33,524	162,693
2008	30,588	22,423	34,845	45,469	34,767	168,092
2009	31,473	23,164	35,658	47,407	36,000	173,702
2010	32,060	23,616	36,197	48,020	36,783	176,676
2011	34,320	25,093	38,695	50,499	39,459	188,066
2012	34,983	25,316	39,504	52,141	40,138	192,082
2013	35,497	25,601	39,753	53,068	40,812	194,731
2014	36,592	26,591	41,481	55,773	42,362	202,799
2015	37,662	27,043	42,253	57,337	43,412	207,707
2016	38,809	28,083	43,646	59,547	44,540	214,625
2017	39,924	28,720	44,549	60,834	45,197	219,224
2018	41,205	29,606	46,446	63,442	47,038	227,737
2019	43,275	31,313	48,179	66,976	49,246	238,989
Total	494,180	359,295	557,206	746,652	565,174	2,722,507

Table A3: Stacked DiD Sample Construction

	2008		2009		2010		2011		
	Cntrl	Treat	Cntrl	Treat	Cntrl	Treat	Cntrl	Treat	Total
2006	31,896	28,034							59,930
2007	33,524	29,758	33,524	21,747					118,553
2008	34,767	30,588	34,767	22,423	34,767	34,845			192,157
2009	36,000	31,473	36,000	23,164	36,000	35,658	36,000	47,407	281,702
2010	36,783	32,060	36,783	23,616	36,783	36,197	36,783	48,020	287,025
2011	39,459	34,320	39,459	25,093	39,459	38,695	39,459	50,499	306,443
2012	40,138	34,983	40,138	25,316	40,138	39,504	40,138	52,141	312,496
2013	40,812	35,497	40,812	25,601	40,812	39,753	40,812	53,068	317,167
2014			42,362	26,591	42,362	41,481	42,362	55,773	250,931
2015					43,412	42,253	43,412	57,337	186,414
2016							44,540	59,547	104,087
Total	293,379	256,713	303,845	193,551	313,733	308,386	323,506	423,792	2,416,905

C Additional Results

Table A4: Stacked DiD: Time Since Event Studies

	(1) T2008	(2) T2009	(3) T2010	(4) T2011
BBCEx2006	0.000			
	(.)			
BBCEx2007	0.004	0.000		
	(0.005)	(.)		
BBCEx2008	0.009	0.002	0.000	
	(0.004)	(0.002)	(.)	
BBCEx2009	0.008	0.000	-0.004	0.000
	(0.004)	(0.004)	(0.005)	(.)
BBCEx2010	0.015*	0.015*	0.003	0.008
	(0.005)	(0.005)	(0.004)	(0.004)
BBCEx2011	0.020**	0.012	0.000	0.010*
	(0.005)	(0.006)	(0.006)	(0.004)
BBCEx2012	0.024***	0.020**	0.009*	0.019***
	(0.005)	(0.006)	(0.004)	(0.004)
BBCEx2013	0.026***	0.018**	0.012**	0.017***
	(0.004)	(0.005)	(0.004)	(0.004)
BBCEx2014		0.022**	0.019**	0.022***
		(0.006)	(0.005)	(0.004)
BBCEx2015			0.024**	0.026***
			(0.007)	(0.006)
BBCEx2016				0.026***
				(0.004)
Observations	550,092	497,396	622,119	747,298
Pre-Treat Mean	0.083	0.064	0.067	0.077

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5: All Years, All 25 BBCE States, By Treatment Timing Groups

	(1) T2008	(2) T2009	(3) T2010	(4) T2011	(5) T2012
BBCEx2006	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
BBCEx2007	0.004	0.006*	-0.002	0.001	-0.008**
	(0.005)	(0.002)	(0.005)	(0.004)	(0.002)
BBCEx2008	0.009	0.009*	-0.003	0.001	-0.015**
	(0.004)	(0.004)	(0.006)	(0.004)	(0.003)
BBCEx2009	0.008	0.004	-0.005	-0.000	-0.013***
	(0.004)	(0.003)	(0.006)	(0.003)	(0.002)
BBCEx2010	0.015*	0.016**	0.002	0.008	-0.018***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)
BBCEx2011	0.020**	0.015*	0.001	0.009	-0.025***
	(0.005)	(0.005)	(0.007)	(0.005)	(0.005)
BBCEx2012	0.024***	0.021***	0.010	0.019***	-0.022***
	(0.005)	(0.004)	(0.005)	(0.004)	(0.003)
BBCEx2013	0.026***	0.015**	0.011	0.017**	-0.023***
	(0.004)	(0.005)	(0.006)	(0.005)	(0.004)
BBCEx2014	0.032***	0.025***	0.018**	0.022***	-0.003
	(0.003)	(0.004)	(0.006)	(0.004)	(0.003)
BBCEx2015	0.032***	0.028***	0.022*	0.026**	-0.010*
	(0.005)	(0.007)	(0.008)	(0.006)	(0.004)
BBCEx2016	0.033***	0.034***	0.021*	0.026***	-0.015***
	(0.004)	(0.006)	(0.008)	(0.005)	(0.003)
BBCEx2017	0.033***	0.034***	0.022*	0.027***	-0.007***
	(0.007)	(0.006)	(0.008)	(0.003)	(0.001)
BBCEx2018	0.034**	0.041***	0.024*	0.031***	-0.010***
	(0.008)	(0.008)	(0.009)	(0.006)	(0.002)
BBCEx2019	0.038***	0.046***	0.023*	0.029***	0.011**
	(0.006)	(0.010)	(0.009)	(0.004)	(0.003)
Observations	1,059,354	1,272,753	1,278,122	1,311,826	598,895
Pre-Treat Mean	0.083	0.062	0.067	0.065	0.046

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6: Younger Households, Policy Heterogeneity

	(1) Baseline 40-59	(2) Policy Het.	(3) Exclude HH w/ Dis.
BBCE State x Post	0.011***		0.010***
	(0.003)		(0.003)
No Net, Raise Gross x Post (10)		0.014***	
		(0.004)	
No Net, Keep Gross 130 x Post (5)		0.010**	
		(0.004)	
Keep Net 100, Keep Gross 130 x Post (2)		0.000	
		(0.002)	
Observations	2,881,372	2,881,372	2,470,127
Pre-Treat Mean	0.088	0.088	0.061
P-diff (10) = (5)		0.406	
P-diff (5) = (2)		0.012	
P-diff (10) = (2)		0.000	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B except for households whose oldest member is 40-59. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.

Table A7: Robustness Check: Endogenous Household Income or Labor Supply

	(1) <100% FPL	(2) 100-130% FPL	(3) 130-200% FPL	(4) 200-400% FPL	(5) >400% FPL	(6) Any HH LFP
BBCE State x Post	0.003*	0.002*	0.002	-0.003*	-0.003	-0.003
	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)
Observations	2,416,905	2,416,905	2,416,905	2,416,905	2,416,905	2,416,905
Pre-Treat Mean	0.125	0.054	0.124	0.302	0.396	0.518

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The sample is the Stacked DiD estimation sample using the 2006-2016 ACS, as described in Appendix B. All specifications include sub-experiment specific state and year fixed effects and controls for household race/ethnicity, education, family structure, and age of oldest member. All specifications are weighted using ACS household weights; robust standard errors clustered by state are in parentheses.