SNAP Benefit Expansions and SNAP Participation among Older Adults

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Abstract

Prior research has shown that households with working-age adults are quite responsive to SNAP benefit expansions yet much less is known about the determinants of SNAP participation among households with an adult over the age of 60. This is important because SNAP participation rates in older households are low and the prevalence of food insecurity in these households is rising. This study uses the 2006-2019 American Community Survey (ACS) to provide new evidence on three questions related to SNAP participation and older adults. First, the study provides descriptive evidence showing how the characteristics of SNAP households differ by age. The typical working-age household receiving SNAP has children, rents their home, and has earned income, but the typical older SNAP household is a single woman living alone who owns her home and receives Social Security. Second, the study examines whether SNAP participation rates are low because fewer households enroll (i.e., smaller numerator) or because more households become eligible with age (i.e., the denominator rises). We show that declining SNAP participation with age is driven by increases in eligibility (i.e., the denominator rising). This occurs both because the federal eligibility parameters loosen when someone in a household reaches age 60 and because income tends to fall as households age. Third, this paper leverages quasi-experimental methods to provide new causal evidence on how state eligibility expansions impact households with older adults. Although SNAP is a federal program, states can adopt eligibility expansions, called Broad-Based Categorical Eligibility (BBCE), which permit them to expand generosity of the federal asset, gross income, and net income limits. Although SNAP participation for older adults does not seem to increase in response to more generous federal eligibility criteria, older households may respond to BBCE expansions because of increased awareness, eligibility, or ease of applying. We provide new evidence that BBCE responsiveness is similar among households of different ages, and that eliminating the net income limit yields large gains in SNAP participation but treatment of gross income does not seem to matter. Finally, we examine whether there are heterogeneous effects by household characteristics. We first consider differences by gross income and find that BBCE expansions affect both those who are likely already eligible and newly eligible. Along other dimensions, such as household structure, BBCE-induced expansions are experienced broadly.

SNAP Benefit Expansions and SNAP Participation among Older Adults

1 Introduction

Prior research has shown that households with working-age adults are quite responsive to SNAP benefit expansions and has characterized which types of households with working-age adults receive SNAP. Yet much less is known about the determinants and benefits of SNAP participation among households with an older adult (i.e., an adult over the age of 60). It is important to learn more because SNAP participation rates among older adults remain significantly lower than those of the general population, with only 42 percent of eligible older adults participating in SNAP, compared with 82 percent of individuals of all ages (USDA 2015). This low participation persists despite efforts to broaden eligibility criteria and simplify application processes for older adults. 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.

This study provides new evidence on three questions related to SNAP participation and older adults. First, the study provides descriptive evidence showing that characteristics of SNAP households with older adults differ quite a bit from the typical working-age SNAP household. For example, whereas most working-age SNAP households have children, the most common household structure among older SNAP households is a single female living alone. Younger SNAP households are much more likely to have a non-white household member or someone in the household who graduated college than older SNAP households and are much less likely to own a home than older SNAP households. These differences mirror patterns by age observed in the general population. However, income follows a different trend. Though income declines with age, older SNAP households have higher income than working-age SNAP households.

Second, the study examines the stylized fact that SNAP participation rates among eligible households with an older adult are only half as large as they are for households with working age

adults. Participation among eligibles could decline if fewer individuals overall choose to participate (i.e., the numerator falls) or if more individuals are eligible (i.e., the denominator increases). Policy solutions will differ depending upon which effect dominates–if the numerator is falling rapidly, then it is likely that there is a lot of churn or exit from the program and a potential policy solution could be to increase retention among existing older participants. If the denominator is rising rapidly, then enrollment among those who are newly eligible as they age is likely not keeping apace with the increased eligibility and further outreach to households who have never been enrolled in SNAP may be warranted. We show that this lower SNAP take-up rate among older households is driven by increases in eligibility (i.e., the denominator rising). There are no large declines in SNAP participation as a share of the whole population; however, eligibility increases by nearly 20 percentage points from when the age of the oldest household member is 59 to when they are 79. First, there is a discrete jump in eligibility when the oldest household member turns 60 years old at which point the federal eligibility criteria are loosened. Eligibility climbs by even more as income falls with the age of the oldest household member, particularly when they are in their 70s. Importantly, overall participation is quite smooth but participation among eligibles falls with these increases in eligibility. Together, this suggests a possible first order response of increasing program awareness and enrollment for older households with low income as they gain eligibility.

Finally, this paper leverages quasi-experimental methods to provide new causal evidence on how state eligibility expansions impact households with older adults. Although SNAP is a federal program, states can adopt policies to bolster participation and increase food security, including Broad-Based Categorical Eligibility (BBCE), which expands eligibility. Currently, 44 states have expanded SNAP eligibility by adopting BBCE. Under BBCE, states have three levers to expand eligibility: (1) raise or eliminate the asset limit; (2) eliminate the net income limit; and (3) raise the gross income limit up to 200 percent of the federal poverty level. Most states eliminate the asset limit and states make different decisions about the net and gross income limits. States generally treat asset limits and net income the same for households with and without older adults, but many states adopt more generous gross income limits for households with older adults. Given these more

generous BBCE parameters and lower SNAP participation rates among older adults, it is important to understand whether BBCE expansions affect SNAP participation differently for households with younger versus older adults.

This paper leverages quasi-experimental methods to provide new evidence on whether older adults are responsive to these SNAP eligibility expansions using data from the 2006-2019 American Community Survey (ACS), a large representative national survey well-powered to detect enrollment changes. For our analysis, we leverage the BBCE adoptions that occurred between 2008 and 2011. The treatment-timing groups consist of 20 states that adopted BBCE during this period, while the control group includes 9 states that did not implement BBCE policies as of 2019. To estimate treatment effects, we employ the stacked difference-in-differences (DiD) method, analyzing a time window spanning two years before treatment and five years post-treatment. Specifically, datasets are stacked across treatment-timing and control groups, and treatment effects are estimated using a two-way fixed effects (TWFE) regression, which accounts for time-varying treatment effect heterogeneity. Results are robust across alternative specifications.

Prior work unambiguously shows that SNAP participation among younger households increases in response to expanded eligibility (e.g., Ganong and Liebman 2018; Stacy, Tiehen, and Marquardt 2018; Dickert-Conlin et al. 2021; Jones et al. 2022; Han 2016). This study first confirms that SNAP participation increases among households with older adults in response to SNAP and then provides new evidence on whether this effect differs from younger households. Prior work suggests that participation increases among households with an older adult, but has either not examined the BBCE policy alone (Jones et al. 2022) or isolated households with older adults (Han 2016). Jones et al. (2022) finds that BBCE, together with other policies that increase generosity (i.e., exclude vehicles from asset calculations and apply a standard medical deduction), increases SNAP participation among households with older adults. Han (2016) finds that BBCE alone increases SNAP participation among a sample that includes both households with older adults and households with an adult who has a disability. In this paper, we first confirm that BBCE alone increases participation among households with older adults.

We then provide new evidence about how the response to BBCE differs by age of the oldest household member. We find that the effect is similar among younger households whose oldest member is in their 50s versus households whose oldest member is in their 60s or 70s. Given that households with older adults do not appear to be responsive to the more expansive federal SNAP eligibility criteria, their low SNAP participation rates, and high rates of food insecurity, the finding that households with older adults are similarly responsive to BBCE expansions has important policy implications.

States have different choices about which parameters to loosen under BBCE. We also contribute to the existing literature by providing new evidence on how state choices about BBCE parameters impact SNAP participation for households. With BBCE, states have discretion over the asset limit as well as the net and gross income limit used to determine eligibility. Like the federal program, these parameters may differ for households with or without someone over the age of 60 (or with a disability). We characterize a large set of these policies and provide a grouping for policy analysis. In most states, BBCE eliminates the asset limit, while there is greater variation in treatment of net and gross income limits. We provide suggestive evidence that eliminating the net income limit yields large gains in SNAP participation and that treatment of gross income does not matter. This can inform policymakers of which parameters to adopt if they wish to increase SNAP participation through BBCE for older adults.

Finally, we examine whether there are heterogeneous effects by household characteristics. We first consider differences by household gross income and examine whether only the newly eligible are induced to participate, or if there are some who were previously eligible now taking up SNAP? This could arise if there are woodwork/welcome mat effects (e.g., increased outreach, reduced stigma) (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. Our results suggest that the BBCE expansions affect both those who are already eligible and those who are newly eligible, while there is no impact for those with high income who are unlikely to ever be eligible. Along other dimensions, such as

household structure, BBCE-induced increases are experienced broadly.

This paper contributes to prior research by first using the nation's largest household survey, the American Community Survey (ACS), to estimate the effect of BBCE on SNAP participation among households with older adults. Using the ACS to identify households whose oldest member is between the ages of 50 and 79 and quasi-experimental methods, we find sizable increases in SNAP participation for households with older adults, even among households with someone over age 60.

2 Background on SNAP and BBCE

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 receive SNAP benefits, and program spending (119 billion in FY22) is higher than spending for the Supplemental Security Income (SSI) program (58.8 billion) or the Unemployment Insurance (UI) program (33.1 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 182 dollars/month and the maximum benefit is 291 dollars/month (for a single adult/household of one).

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. 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.

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 a senior or person with a disability may also deduct medical expenses in excess of 35 dollars/month. Net income (with this additional deduction) 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 minimum benefit approximately corresponds to net income at the federal poverty level. Households of one or two persons with a negative or zero computed benefit receive the minimum benefit (currently 23 dollars per month).

2.2 Broad-Based Categorical Eligibility (BBCE)

The Broad-Based Categorical Eligibility (BBCE) option was established in 1999 and permits states to expand SNAP eligibility beyond the federal criteria. Though BBCE was introduced in 1999, the first states adopted it in 2000 (see Appendix Table A1). Today it is in place in 44 states.

BBCE allows states to create a new pathway to eligibility for SNAP beyond the federal eligibility criteria. The federal government pays for the SNAP benefits, and states and the federal government share the administrative costs (as they do for SNAP more generally). States must use Maintenance 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.

Under BBCE, states may choose to raise or eliminate the asset limit; eliminate or keep the net income test; and raise the gross income limit up to 200 percent of the federal poverty level. Most states eliminate the asset and net income tests. Choices regarding gross income differ by whether a household has a senior (or person with a disability). In households without a senior (or person with a disability), states may choose to raise the gross income limit up to 200 percent of the federal poverty level or preserve the federal standard of 130 percent of the federal poverty level. For households with a senior (or person with a disability), there is no gross income test under the federal criteria. States may choose to introduce a gross income test. This is illustrated in Table 1, columns 2 and 4. When states preserve the net income limit and impose a gross income test, this tightens income eligibility criteria. It is an empirical question whether eligibility expands or contracts when states eliminate the net income limit and impose a gross income test.

Data on state adoption of BBCE and treatment of assets and gross income are from the SNAP Policy Database. These data are compiled by the US Department of Agriculture and track monthly status of state BBCE adoption, treatment of assets, and treatment of gross income.

The parameters selected by the 20 treatment states examined in our analysis are presented in Table 2. We selected states that expanded between 2008 and 2011 so that we could examine SNAP participation for two years before the first BBCE adoption and five years after the last adoption.

We excluded 7 states that expanded BBCE during this time period for the following reasons. California did not permit SSI recipients to receive SNAP benefits (until 2019), and New Hampshire only expanded BBCE to households with children. We also excluded states that eliminated BBCE during the study period (Louisiana) or tightened BBCE generosity (Idaho, Montana, Pennsylvania, and West Virginia). As a result of these restrictions, all but one of the 2008-2011 BBCE states eliminated the asset limit. Therefore, we also excluded Nebraska which raised, but did not eliminate, the asset limit.

All but four of the states in our analysis eliminated the net income limit (i.e., AL, CO, MS, and OK preserved the net income limit). States are roughly evenly split in treatment of the gross

income limit for younger households, with 9 preserving the limit of 130 percent of FPL and 11 raising it. For households with an older adult age 60 or older, all but two states in our treatment group introduced a gross income limit. There are nine control group states that did not adopt BBCE at any point between 2006 and 2019 (Alaska, Arkansas, Kansas, Missouri, South Dakota, Tennessee, Utah, Virginia, and Wyoming).

BBCE 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.

BBCE provides an interesting policy setting to study for two additional reasons. First, since states have choices over whether to expand/eliminate asset limits, eliminate the net income test, and whether to preserve/raise the gross income limit for non-senior households (and whether to introduce a gross income limit on senior households), there are different groupings of BBCE expansion features in each state. And, since states 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). Table 2 shows that many states elect different levels of generosity for the two types of households.

For example, Georgia did not adopt the most generous criteria for non-senior households: though they eliminated the net income limit (and asset limit), they did not raise the gross income limit facing these households. In contrast, they adopted the most generous criteria for households with an older adult because they adopted the most generous gross income limit of 200 percent of the federal poverty level (and eliminated the asset and net income limits). We will estimate the overall BBCE effect and also examine whether the boost in participation is greater when states eliminate the net income test or have higher gross income limits (for households without seniors).

3 Data

3.1 American Community Survey (ACS)

One of the contributions of this paper is to conduct the analysis using data that, to our knowledge, are new to studying SNAP participation, the American Community Survey (ACS). 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 states are more likely to have statistical power. In addition to being powered to study policy changes at the state level, the ACS is so large that we can also study the effect of the policy by single year of householder age or fine age groups.

The ACS captures household receipt of SNAP benefits and detailed information on household composition. This study examines the time period 2006 through 2019 because the ACS data begin in 2006 and a large number of BBCE expansions took place between 2008 and 2011. This paper explicitly considers the pre-pandemic period to provide evidence on patterns before the implementation of emergency measures that changed the SNAP program.

Since the SNAP program considers eligibility for a household, the analysis is at the household level. Households are grouped by the age of the oldest household member, since SNAP eligibility criteria differ based on the age of the oldest household member (or disability status of persons under age 60). We exclude any household that includes someone who is not a U.S. citizen because only U.S. citizens and some lawfully present noncitizens are eligible to receive SNAP. Our final sample has 4,156,536 households with the oldest member between the ages of 50 and 79.

3.2 Characteristics of SNAP Households

Table 3 shows how household composition differs by age of the oldest household member. The lower panel presents mean characteristics for SNAP households. Whereas 63 percent of younger SNAP households have kids, very few older households have kids present (15.6 percent) and the

most common household type is a single female who lives alone (32.4 percent). Though the magnitudes are different than for all households in the ACS, these trends in household composition mirror changes happening as householders age.

Figure 1 illustrates these changes in household composition for households overall (top figure), and for SNAP households (bottom figure) by single year of age of the oldest household member. In both figures compare the two middle bars – green represents households with kids and red represents a single female living alone. The share of households with kids is declining with householder age, but the share of households that are a single woman living alone is rising.

Table 3 also presents other household characteristics. Among SNAP households, most characteristics follow similar patterns for all older versus younger households. For example, older SNAP households are much less likely to have a member who is not white or who has earned a college degree, and are much more likely to own a home, and the same differences are observed for all households.

Patterns in income, however, follow a different pattern. First examine Figure 2 which presents the share of households in the ACS in different income bins, by single year of age of the oldest household member. These categories are roughly constant for younger households. When the oldest member turns 60, income starts to fall and the categories reflecting lower levels of income begin to increase (specifically, income below 200 percent of the federal poverty level). Whereas roughly 25 percent of households with a 60 year old have income below 200 percent of the federal policy level, 30 percent of those with a 79 year old do. This is matched by a decline in the share of households with income above 400 percent of the federal poverty level (represented by the top shaded area in orange).

However, Figure 2 shows that older SNAP households have higher income than the younger SNAP households. The share of households with income below 130, 200, and 400 percent of poverty fall as the oldest household member ages. Examining sources of income reveals similar patterns for SNAP households as for all households; older SNAP households are less likely to have earned income and are more likely to have income from SSI or OASI/SSDI than younger

households (Figure 3).

4 Changes in Federal SNAP Criteria at Age 60 and SNAP Participation

Prior estimates document that SNAP participation rates among eligible households with older adults are half as large as they are for eligible households with working-age adults. A lower participation rate among eligibles could arise if the number of participants drops or if the number of eligibles rises. We know that there are more generous federal eligibility criteria at age 60 and that income is lower for older households than it is for younger households. In Figure 4, we examine each of these components in turn.

In Figure 4a we present mean SNAP participation by single year of age of the oldest household member. We show that SNAP participation as a share of the overall population changes little by age of the oldest household member. This suggests there is little change in the numerator of the participation rate, or little change in the number of individuals receiving SNAP.

In Figure 4b, we present the share of households that are likely income-eligible for SNAP by the age of the oldest household member, and there is a discrete jump in likely income-eligibility at age 60 when the federal eligiblity criteria loosen. And eligibility continues to rise with the age of the oldest household member as income falls and more households become eligible.

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 4c 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.

5 Methods

This study implements a Stacked Difference-in-Differences regression design to account for time-varying treatment effect heterogeneity.

(1)

$$Pr(SNAP_{hst} = 1) = \beta_0 + \beta_1 EverBBCE_s + \beta_2 POST_t + \beta_3 EverBBCE_s * POST_t + \Gamma X_h + \alpha_s + \alpha_t + \varepsilon_{hst}$$

SNAP is an indicator of household SNAP participation in that year. EverBBCE=1 in the 20 states that adopt BBCE between 2008-2011 and EverBBCE=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. X controls for household characteristics of household composition, level of education of oldest household member, and race and ethnicity of oldest household member.

The main results reported in Table 4 utilize states that adopted BBCE between 2008-2011 and an event time window of two prior time periods through five years following implementation. We first present results for all households with the oldest member between ages 50 and 79, and then separately by age of the oldest household member.

Table 2 shows which states are included in the analysis. Although many states adopted BBCE policies outside of this window, only these four treatment timing groups pass the pre-trend test relative to the common control group of never-treated states, as shown in Appendix Figure A1.

5.1 Heterogeneity by Type of BBCE Policy

Next, we examine whether the effects of BBCE differ by whether the state adopts the most generous BBCE criteria or not. Recall that a single state may elect the most generous criteria for one age group and a less generous set of criteria for the other age group. Therefore, we estimate different equations for younger versus older households. For younger households, the least generous states eliminate the asset limit and preserve both the net income and federal gross income limit

(AL, CO, MS, OK); five states eliminate the asset and net income limit and preserve the federal gross income limit (GA, IL, KY, NY, and OH); and the remaining 11 states choose the most generous options of eliminating the asset and net income limits and raising the gross income limit (CT, DC, FL, HI, IA, NV, NJ, NM, NC, RI, and VT).

(2)

$$Pr(SNAP_{hst} = 1) = \alpha_0 + \alpha_1 LowBBCE_{st} + \alpha_2 MediumBBCE_{st} + \alpha_3 HighBBCE_{st} + \Gamma X_h + \alpha_s + \alpha_t + \varepsilon_{hst}$$

Among older households, we construct categories based on treatment of net income. The least generous states eliminate the asset test but keep the net income limit. Some of these states add a gross income limit (AL, CO) and others do not impose a gross income limit (MS, OK); we group these states together. The most generous 16 states eliminate the net income and asset limits and introduce gross income limits between 160 and 200 percent of the federal poverty level (CT, DC, FL, GA, HI, IL, IA, KY, NV, NJ, NM, NY, NC, OH, RI, and VT). We classify two levels of BBCE generosity and estimate equation (2) with two separate BBCE variables corresponding to low and high generosity BBCE parameters.

5.2 Heterogeneity by Household Characteristics

Next, we examine whether BBCE likely increased SNAP participation among different groups by level of income that correspond to being likely newly- or likely already-eligible for SNAP. As a falsification test, we also estimate equation (1) among households we would not ever expect to be eligible for BBCE–those with very high income (>400 FPL). We also consider household composition. Future work will examine other subgroups for whom relaxing net income or gross income limits would be particularly beneficial.

6 Results

Figure 5 presents mean SNAP participation over time for households whose oldest member is age 50-79 for the period 2006 through 2019 separately for our control and treatment states. During the years 2006 and 2007, before any state in our study implemented BBCE, trends in SNAP participation were parallel in the two groups of states, though SNAP participation was slightly higher in BBCE states. Between 2008 and 2011, SNAP participation was rising in both groups of states because of economic conditions. Though states in our treatment group implemented BBCE during this period and the increase in SNAP participation is steeper in BBCE states during these years. Beginning in 2012, all of the treatment group states have implemented BBCE and there is a persistent gap between the BBCE and control states.

Table 4, column 1 first shows that state adoption of BBCE leads to a 1.5 percentage point increase in SNAP participation. From mean SNAP participation in the pre period in BBCE states of 7.5 percent of households receiving SNAP, this is an increase of 20 percent. The coefficient estimate on BBCE shows that there are no underlying differences in SNAP participation in BBCE versus non-BBCE states. The post period corresponds to the years following the Great Recession, which impacted all states, and there was a sizable increase in SNAP participation in all states in the post period.

Columns 2 through 4 present results from estimating equation 1 separately by age of the oldest household member. The coefficient estimates on the BBCE policy variable are similar in magnitude for each of these age groups and not statistically significantly different than one another, and the relative increase in SNAP participation is approximately 20 percent for all age groups. We note that the effect of post period is greater for the younger households. In fact, the coefficient estimates are statistically significantly different between column 2 (50-59 year old) and columns 3 and 4 (60-79 year old). In Appendix Table A2, we show that the effect of BBCE is similar for households whose older member is in their 40s. And Appendix Table A3 presents the detailed stacked difference in differences coefficient estimates which shows that the effect of BBCE on SNAP participation grows

over time.

In Table 5, we show that this finding is robust to including potentially endogenous household-level covariates and controls for the state economic environment or other SNAP policies. Column (1) reproduces our baseline result from Table 4. In column (2), we add a control for household employment and the state unemployment rate that year. In column (3), we include a control for household income as a percent of the federal poverty level, and in column (4) we include indicators for whether the state participates in the Certified Application Project (CAP) which permits SSI recipients to automatically receive SNAP and a control for the share of SNAP households in the state with older adults that need to recertify in six months or fewer. We note the main coefficient estimates on BBCE are very similar across the different specifications.

Figure 6 exploits the large sample size of the ACS and presents coefficient estimates where equation (1) is estimated separately by single year of age of oldest household member. It is remarkable how stable the increase in SNAP participation is when estimated separately by single year of age. Most coefficient estimates are statistically significant at the 95 percent level and are similar to our baseline coefficient estimate of a 1.6 percentage point increase in SNAP participation.

6.1 Heterogeneity by Type of Policy

The analysis next groups states by generosity of BBCE. We note that states might choose the most generous BBCE features for one age group (e.g., 50-59) but not the most generous for the other (e.g., 60+), so we estimate equation 2 separately for the three age groups. The division of states is presented in Table 2.

Column (1) of Table 6 presents results for households whose oldest member is age 50-59. The least generous states eliminate the asset limit but preserve the federal net income and gross income limits. There is no statistically significant increase in SNAP participation in these states, though it is noisily estimated. The next most generous group of states eliminates the asset and net income limits, but preserve the federal gross income limit of 130 percent of the federal poverty level. This

group of states experiences a 1.6 percentage point increase in SNAP participation. The most generous states eliminate the asset and net income limits and raise the gross income limit (up to a maximum of 200 percent of the federal poverty level). The increase in SNAP participation is the same- a 1.6 percentage point increase. These results suggest that state treatment of net income limits matters for increasing SNAP participation among younger households because solely removing the asset limit does not boost participation and there is no difference by whether the state raised the gross income limit or not.

Households with older adults do not face a gross income test under the federal criteria, so we examine two types of BBCE policies–those that eliminate the asset limit but keep the net income limit and those that eliminate both the asset and net income limits. The four states that preserve the net income limit are small in population (AL, CO, MS, OK) so do not permit estimating separate effects by treatment of gross income. As with the 50-59 year olds, we find no statistically significant difference in SNAP participation in states that preserve the net income limit, though it is noisily estimated for the oldest households. We do find an increase in SNAP participation of 1.6 to 1.7 percentage points in states that eliminate both the asset and net income limit. This is also suggestive that eliminating the net income limit is important to increasing SNAP participation in BBCE.

This result is consistent with the descriptive evidence presented earlier that the federal eligibility changes at age 60 do not seem to induce more SNAP participation. The federal age-related eligibility expansions remove the gross income limit, raise the asset limit, but preserve the net income limit. A household's SNAP benefit is constructed by subtracting 30 percent of their net income from the maximum benefit for their household size. In 2024, the computed benefit equals 0 at 72 percent of FPL for single households and at 101 percent FPL in two person households. If a one or two-person household is eligible for SNAP but the constructed benefit is 0 or negative, the household receives the minimum benefit which is currently 23 dollars per month. Together these results suggest that treatment of net income seems to impact the likelihood of SNAP participation.

6.2 Heterogeneity by Household Characteristics

We next explore whether the new participants were households likely to be newly eligible (according to gross income, since the ACS does not capture assets) or who were always eligible. We group households into categories of those likely to have always been eligible (i.e., have gross household income below 130% FPL), newly eligible (i.e., have gross household income between 130-200 FPL or have gross household income between 200-400 FPL), or, as a falsification test, those who we expect are never eligible (i.e., have gross household income above 400% FPL). The results are presented in Table 7. Those newly eligible are expected to increase participation as they gain eligibility. And those who were likely already eligible may also increase participation both because of increased awareness that they are eligible and because so many states eliminated the asset limit, which correspondingly reduced administrative burden.

We find the largest percentage point increase in SNAP participation among those who were likely always income-eligible (column 1), though it may not be statistically significantly different than the increase for the lowest marginal group (columm 2, gross income between 130-200 percent of FPL). Nevertheless, we generate an estimate of how many new SNAP participants are in each group by multiplying the coefficient estimate by the sample N and it is remarkable that about half of the new SNAP participants were previously likely to be income-eligible.

Figure 7 presents the BBCE coefficient estimates by single year of age. At every age, there is little or no increase in SNAP participation among the highest income households (depicted in yellow, income>400 percent FPL) and the coefficient estimates for the high income marginal group are also very close to zero and rarely statistically significant (depicted in green, income 200-400 percent FPL). The effects for those likely to be already-eligible (blue, <130 FPL) and newly-eligible (red, 130-200 FPL) are rather similar, suggesting that BBCE did increase participation among both the newly- and already-eligible.

Since households are asked simultaneously about their income and their SNAP participation, it is possible that households endogenously change their income in order to become eligible for

SNAP. For this reason, we present these as suggestive that BBCE expansions increased SNAP participation both among those likely to have been eligible for SNAP and those who are newly eligible.

In Table 8, we examine heterogeneity by household structure. We consider four types of households: single male (column 1), single female (column 2), households with children (column 3), and adult-only households of two or more persons (column 4). Each group experiences between a 1.2 to 2.2 percentage point increase in SNAP participation, which corresponds to a 14 to 27 percent increase from the pre treatment mean. This suggests that the expansions are experienced broadly across different types of households. Future work will attempt to isolate household structures that would benefit the most from eliminating the net income limit.

7 Discussion and Conclusions

Our research investigates the impact of BBCE on SNAP participation among older adults aged 50-79. We find robust evidence that BBCE increases SNAP participation for households with seniors by over 20%, with consistent effects observed across various age groups. This is remarkable given low SNAP take-up rates among older households and the fact that older households do not appear to respond to expanded federal eligibility criteria. With rising rates of food insecurity for older households, understanding what can boost SNAP participation for these households is important.

Our paper reveals that the increase in SNAP participation is primarily driven by BBCE's elimination of net income limits. Our analysis, which compares participation rates under federal rules (control group) to those under BBCE (treated group), underscores the critical role of net income limits in increasing participation rates for seniors. In this study, the BBCE treatment states all removed the asset limit (and the ACS is not well-equipped to measure assets), so future work should examine the importance of eliminating the asset limit.

We also find that BBCE increases participation among households who are already likely to be

income-eligible under federal rules (gross income below 130% of the poverty line). This suggests a potential "welcome mat" effect, where BBCE not only broadens eligibility but also encourages previously eligible households to enroll in the program. This may arise if BBCE simplified application processes or increased awareness. Future work should examine the mechanisms underlying this welcome mat effect because they could be informative to boost participation among older adult households more generally.

Another notable observation is that older adults do not appear to respond to federal eligibility rule changes associated with turning age 60, particularly those involving adjustments to asset and income limits. Once a household member reaches age 60, the federal gross income test no longer applies but households still face the net income test. This descriptive finding of no response to an expansion that eliminates the gross income limit but preserves the net income limit is consistent with the finding for BBCE.

This paper also shows how older SNAP households differ from younger SNAP households– their household structure is different, older SNAP households are more likely to own their own home, and they have higher income than younger SNAP households. Understanding what the typical SNAP household looks like for working-age versus older households is important.

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 when states eliminate BBCE, as in Louisiana and Mississippi.

A key limitation of the ACS data is the lack of information on household asset holdings, net income, and food security. Nevertheless, the large sample size permits evaluation of whether the effect of BBCE differ by age and whether there are heterogeneous effects by policy type.

Next steps on this project include examining whether there are heterogeneous effects in the ACS by groups we would expect to be more or less sensitive to eliminating the net income test of 100 percent of FPL. For example, whereas smaller households of one or two persons receive the minimum benefit of 23 dollars per month when net income exceeds the poverty level, it may be the

case that larger households can receive monthly benefits of over 100 dollars even when net income is higher than poverty. It may be that eliminating the net income test yields greater participation increases among these larger older households than in households of one or two persons.

There are likely to be bigger gaps between gross and net income in states that adopt the standard medical deduction and in parts of the country where housing costs are higher (and shelter costs are a higher share of income). We also will consider whether the effects are larger when there is a smaller gap between gross and net income (i.e., net income is higher). We would expect that eliminating the net income limit will have a bigger impact on households with higher net income.

We will also explore the USDA Quality Control database, which are used by the USDA to assess state agency SNAP benefit determinations. These data contain information on gross and net income, asset levels, and household composition. We will use these data to confirm the findings in the ACS.

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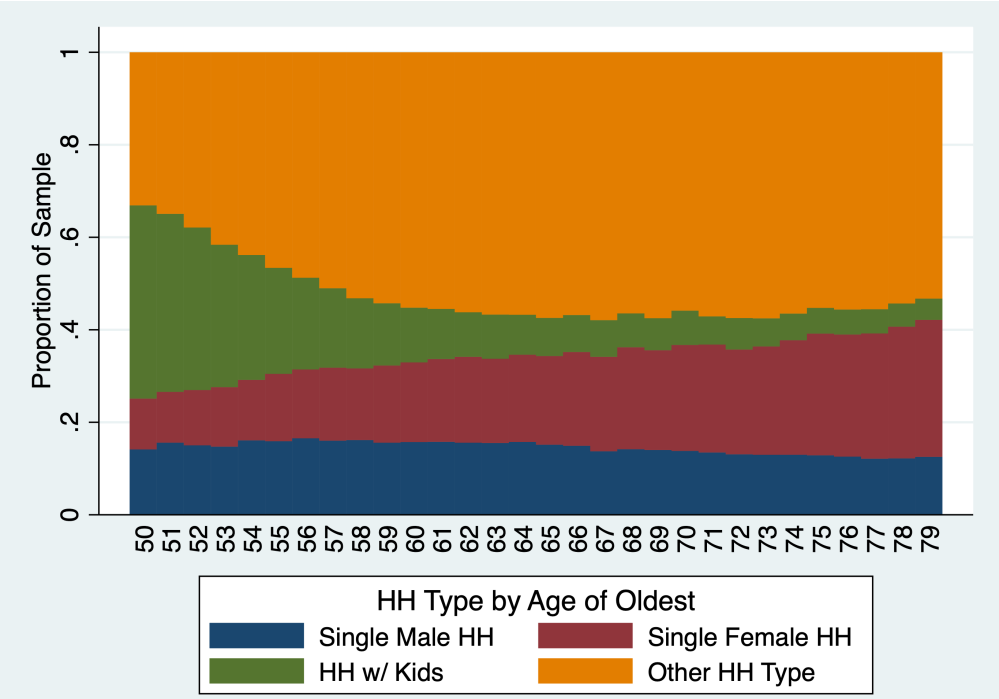
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Figure 1: HH Type by Age of Oldest - 2019, All States



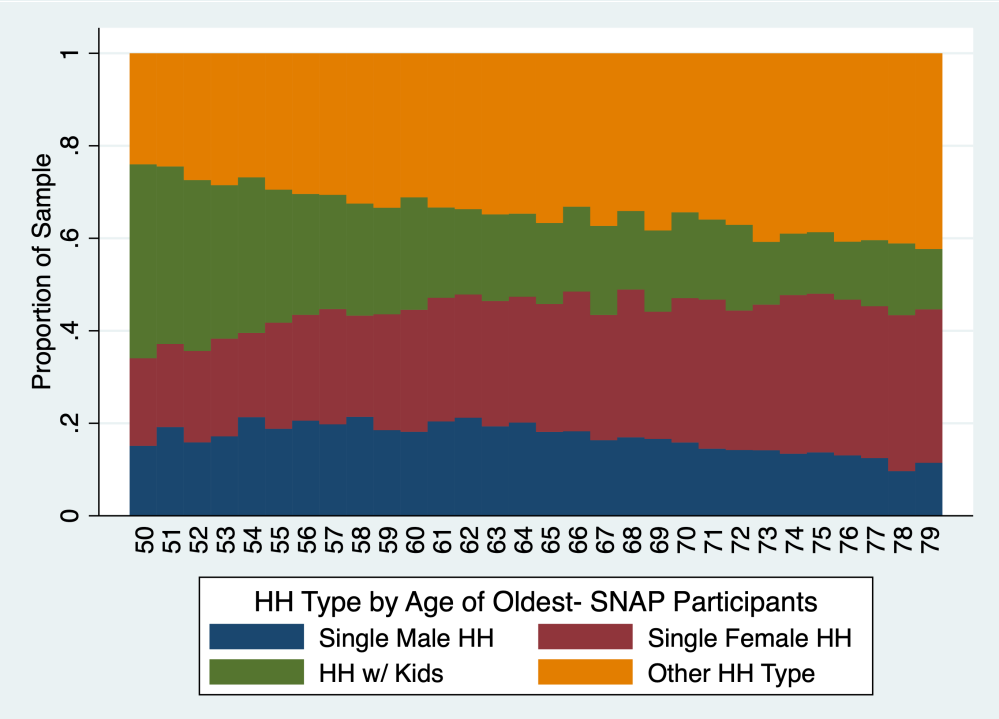


Figure 2: HH Gross Income by Age of Oldest - 2019, All States

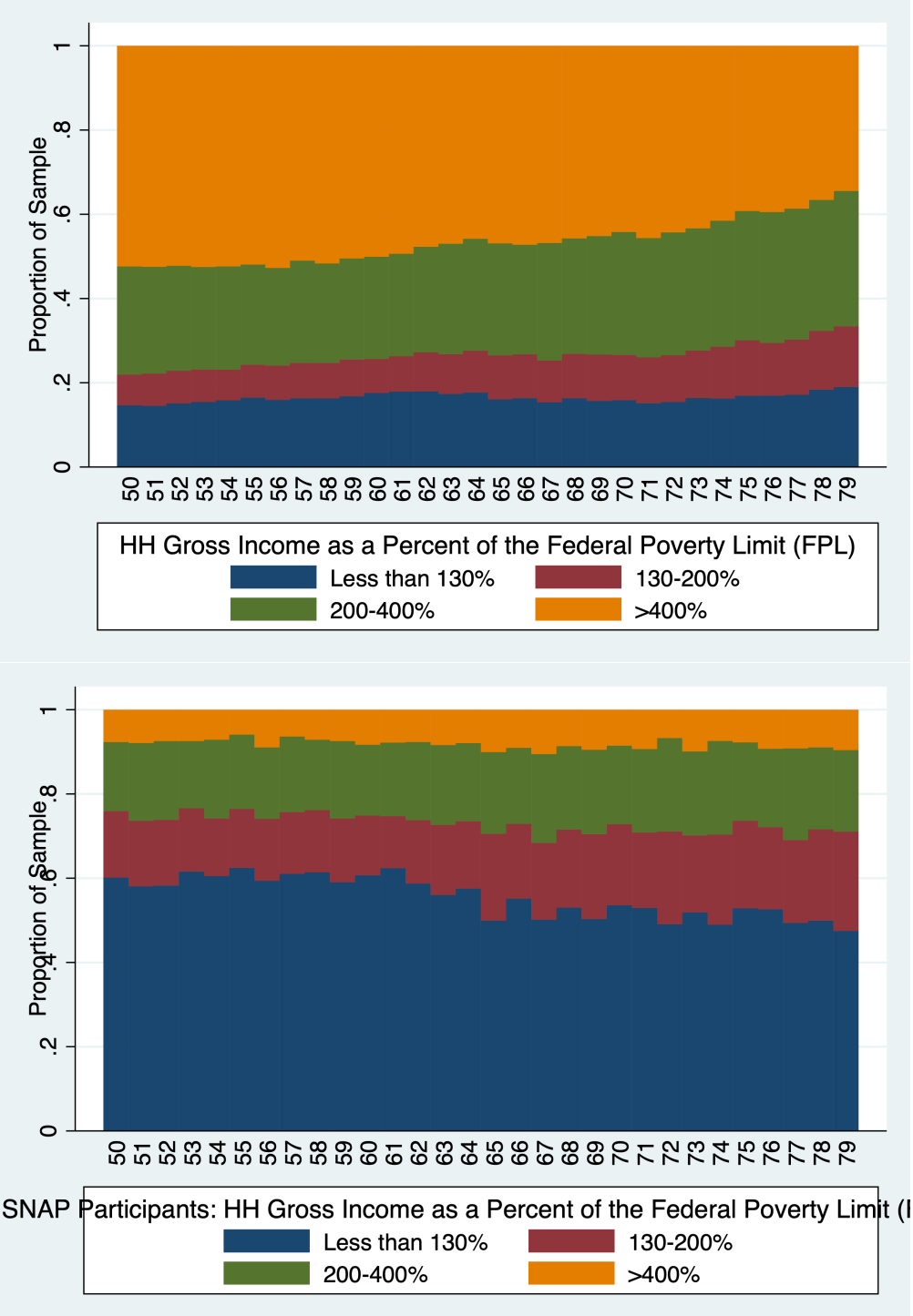


Figure 3: HH Income Sources by Age of Oldest HH Member, All States, 2019

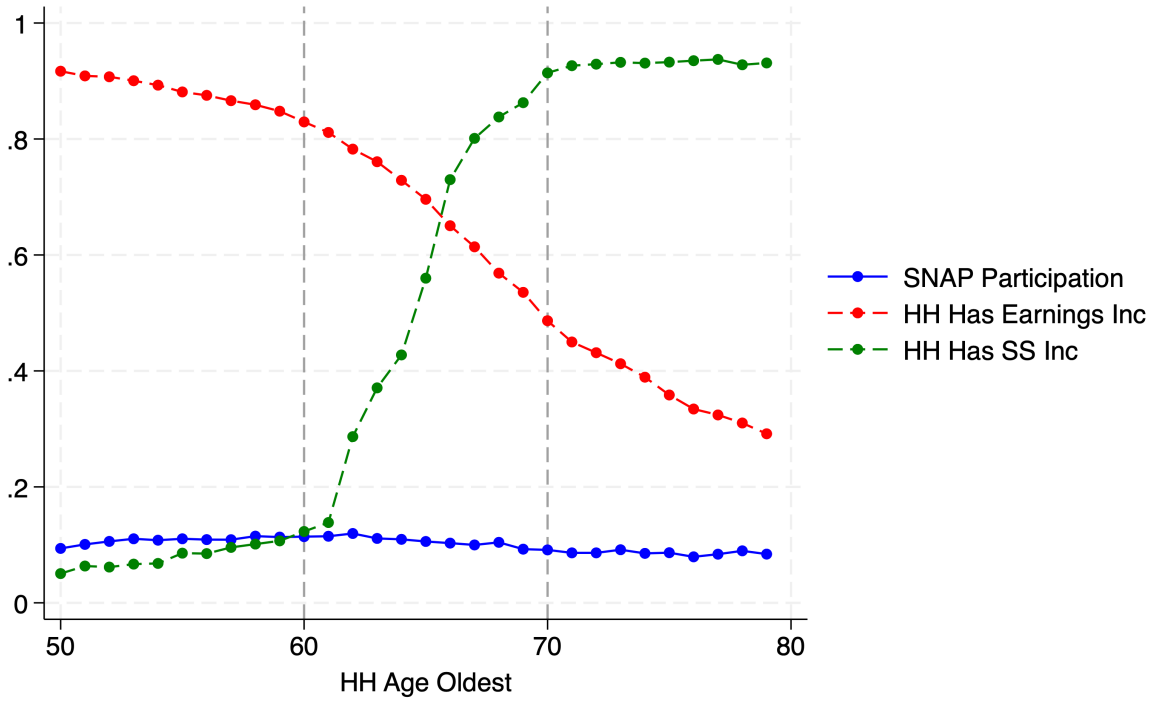
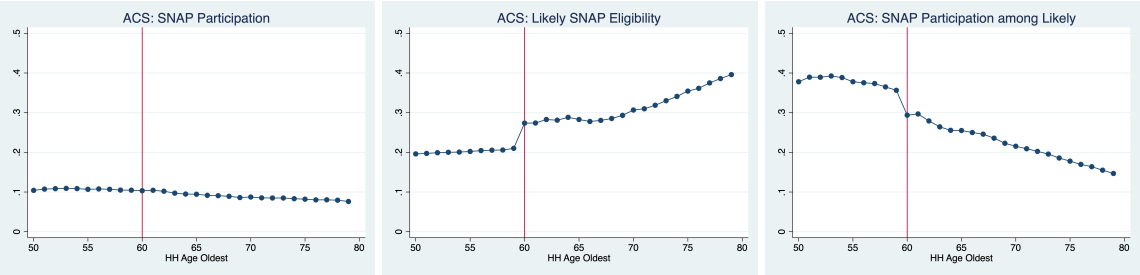


Figure 4: SNAP Participation and Eligibility by Age of Oldest Household Member



Notes: Data are from the 2006-2019 ACS 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: Raw Means over Time

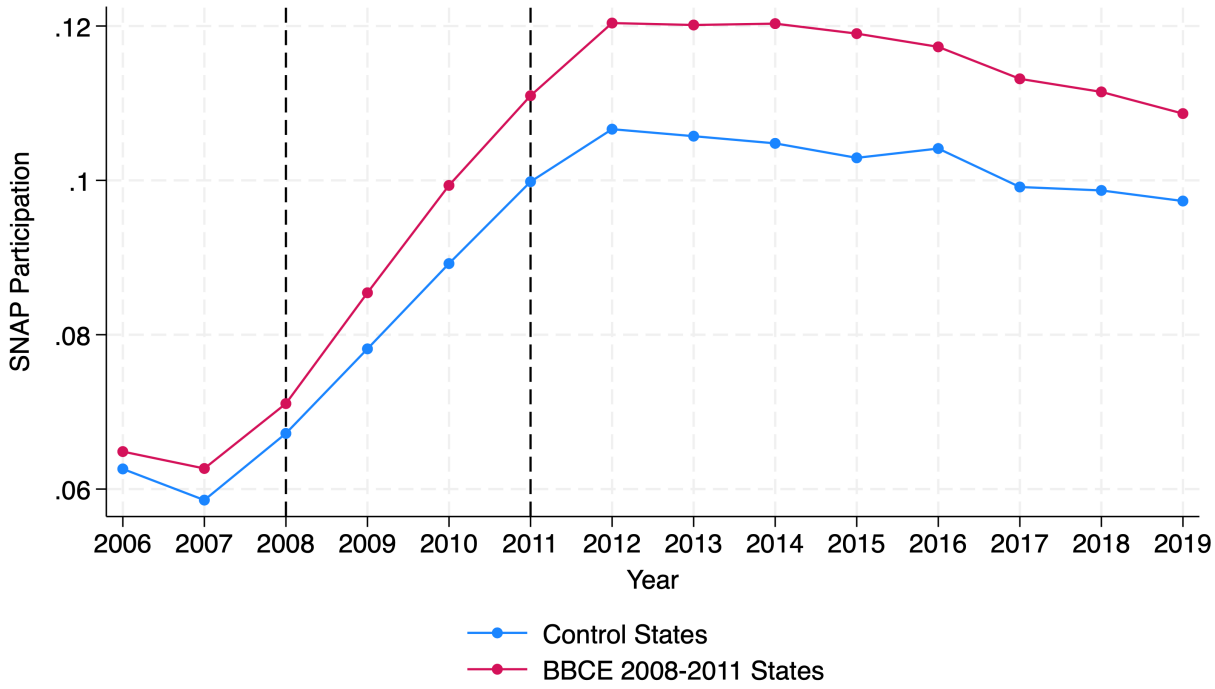
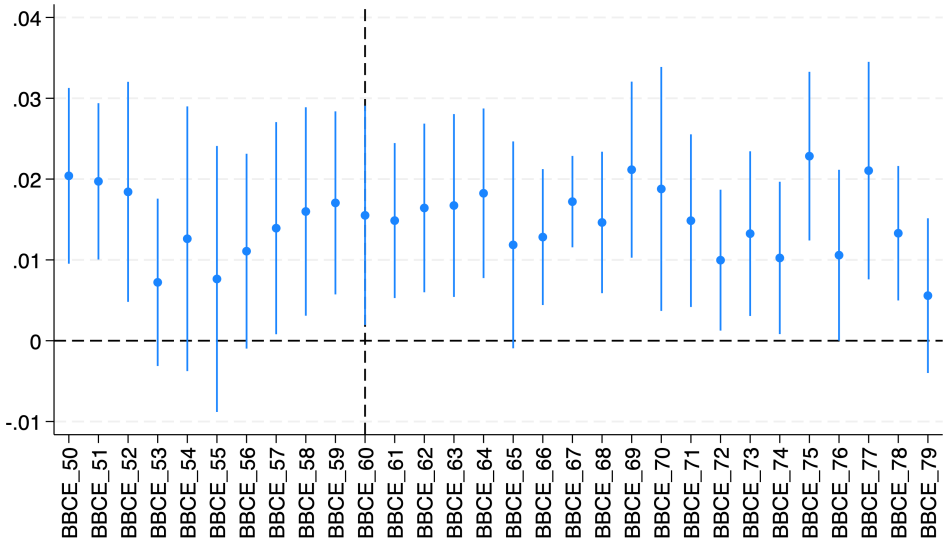


Figure 6: BBCE and SNAP Participation by Age of Oldest HH Member



Notes: Coefficients are estimated from Stacked DiD estimation.

Figure 7: HH-Level Heterogeneity by Gross Income Categories

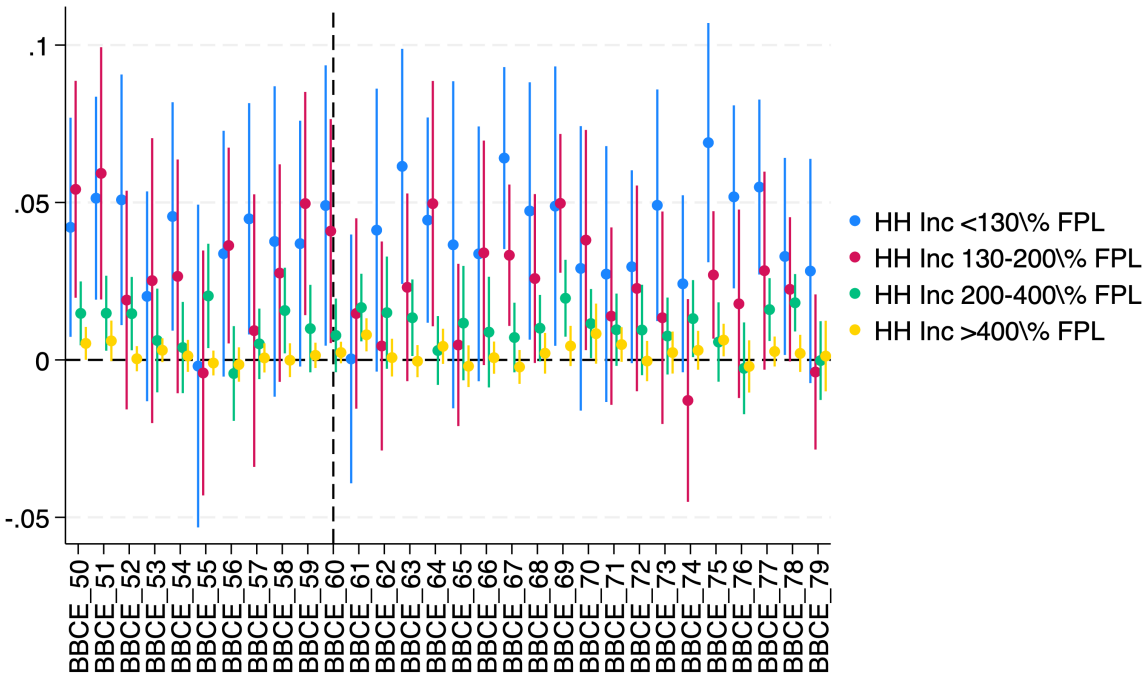


Table 1: SNAP Parameters: Federal and State BBCE Choices

	Non-Seniors Ages 50-59		Seniors Age 60+ (or persons w/ disability)	
	Federal	State BBCE	Federal	State BBCE
Net inc.	100% FPL	Eliminate or keep	100% FPL	Eliminate or keep
Gross inc.	130% FPL	Keep or Raise to 130-200% FPL	N/A	Most impose 130-200% FPL
Asset limit	$2,750	Most eliminate (few raise)	$4,250	Most eliminate (few raise)

Note. SNAP is a federal program but states share administrative costs. Federal BBCE policies apply to households based on the age of the oldest household member. A household is defined as persons who live together and purchase and share meals together, irrespective of family relationships.

Table 2: BBCE Characterization by the States (* indicates state did not eliminate net income limit)

State Name	BBCE Year Implemented	Gross Income Limit Non-Seniors	Gross Income Limit Seniors
Alabama*	2010	Keep 130	Impose 200
Colorado*	2011	Keep 130	Impose 130
Connecticut	2009	Raise 160/185	Impose 160/185
DC	2010	Raise 200	Impose 200
Florida	2010	Raise 200	Impose 200
Georgia	2008	Keep 130	Impose 200
Hawaii	2011	Raise 200	Impose 200
Illinois	2010	Keep 130	Impose 200
Iowa	2011	Raise 160/185	Impose 160/185
Kentucky	2010	Keep 130	Impose 200
Mississippi*	2010	Keep 130	No inc limit
Nevada	2009	Raise 200	Impose 200
New Jersey	2010	Raise 160/185	Impose 160/185
New Mexico	2010	Raise 160/185	Impose 160/185
New York	2008	Keep 130	Impose 200
North Carolina	2010	Raise 200	Impose 200
Ohio	2009	Keep 130	Impose 200
Oklahoma*	2009	Keep 130	No inc limit
Rhode Island	2009	Raise 160/185	Impose 200
Vermont	2009	Raise 160/185	Impose 160/185

Note. The nine common control group states are AK (2), AR (5), KS (20), MO (29), SD (46), TN (47), UT (49), VA (51), WY (56). These data are from the SNAP Policy Database, which is published by the USDA Economic Research Service and tracks many key state policy choices at the month level, such as the detailed BBCE parameters. All the BBCE states in our sample eliminated the asset limit.

Table 3: ACS Sample Characteristics by Age of Oldest

	40's	50's	60's	70's
Panel A: All Households				
Observations	160215	216899	265843	199185
SNAP HH	0.102	0.106	0.108	0.088
Highest Ed College	0.773	0.713	0.676	0.626
Non-White HH Member	0.397	0.344	0.290	0.240
HH w/ Disab <60	0.097	0.157	0.047	0.034
Single Female HH	0.085	0.136	0.190	0.243
Single Male HH	0.113	0.138	0.139	0.120
HH w/ Kids	0.597	0.262	0.092	0.061
Other HH Type	0.206	0.463	0.579	0.576
HH Poverty Level	347	354	339	326
HH Inc <130% FPL	0.139	0.151	0.166	0.156
HH Inc 130-200% FPL	0.093	0.081	0.097	0.124
HH Inc 200-400% FPL	0.282	0.239	0.258	0.299
HH Inc >400% FPL	0.486	0.529	0.479	0.421
Own Home	0.649	0.722	0.772	0.809
HH Income 1K	111.731	111.409	93.011	78.368
HH Has Earned Inc	0.952	0.903	0.717	0.400
HH Has SS Inc	0.038	0.077	0.500	0.934
Panel B: SNAP Households				
Observations	14275	20872	25607	15522
Highest Ed College	0.500	0.433	0.440	0.406
Non-White HH Member	0.585	0.512	0.499	0.490
HH w/ Disab <60	0.297	0.488	0.125	0.112
Single Female HH	0.114	0.213	0.276	0.324
Single Male HH	0.093	0.163	0.175	0.129
HH w/ Kids	0.630	0.319	0.194	0.156
Other HH Type	0.163	0.305	0.354	0.391
HH Poverty Level	138	143	156	167
HH Inc <130% FPL	0.605	0.622	0.589	0.539
HH Inc 130-200% FPL	0.172	0.142	0.155	0.193
HH Inc 200-400% FPL	0.167	0.163	0.170	0.183
HH Inc >400% FPL	0.056	0.073	0.086	0.084
Own Home	0.271	0.355	0.400	0.459
HH Income 1K	36.043	36.477	37.140	38.106
HH Has Earned Inc	0.751	0.596	0.460	0.341
HH Has SS Inc	0.131	0.245	0.619	0.889

Notes: 2019 ACS, all states, restricts to households with no non-citizens.

Table 4: BBCE Effect on SNAP Participation

	All (50-79)	50-59	60-69	70-79
BBCE State x Post	0.015***	0.014**	0.017***	0.016***
	(0.003)	(0.005)	(0.003)	(0.003)
BBCE State	-0.010	-0.011	-0.010	-0.007
	(0.010)	(0.012)	(0.009)	(0.009)
Post Period Dummy	0.026***	0.031***	0.024***	0.017***
	(0.003)	(0.003)	(0.002)	(0.002)
Observations	4,156,536	1,657,395	1,482,226	1,016,915
Pre-Treat Mean	0.075	0.080	0.072	0.069

Standard errors in parentheses

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

Table 5: Robustness Check: Environment and Other Policies -***UPDATE***

	(1)	(2)	(3)	(4)
	Baseline	Employed and %Unem	HH Inc (FPL)	State CAP & Recert.
treatxpost	0.016***	0.014**	0.013**	0.013**
	(0.004)	(0.004)	(0.004)	(0.004)
Treatment State	-0.005	-0.008	-0.007	-0.006
	(0.009)	(0.007)	(0.006)	(0.006)
Post Period Dummy	0.026***	0.023***	0.021***	0.022***
	(0.003)	(0.002)	(0.002)	(0.002)
Observations	4,152,216	4,152,216	4,152,216	4,152,216
Pre-Treat Mean	0.074	0.074	0.074	0.074

Standard errors in parentheses

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

Table 6: Heterogeneity by BBCE Policy Type

	(1) Age 50-59	(2) Age 60-69	(3) Age 70-79
Non-Seniors 50-59			
BBCE: Eliminate asset limit; Keep net income limit; Keep gross income limit at 130% FPL (AL, CO, MS, OK) x Post	0.007		
	(0.007)		
BBCE: Eliminate asset limit and net income limit; Keep gross income limit at 130% FPL (GA, IL, KY, NY, OH) x Post	0.016**		
	(0.005)		
BBCE: Eliminate asset limit and net income limit; Raise gross income limit to 160-200% FPL (11 states) x Post	0.016*		
	(0.007)		
Seniors 60+			
BBCE: Eliminate asset limit; Keep net income limit BBCE-Net Income Limit (AL, CO, MS, OK) x Post		0.009	0.004
		(0.005)	(0.008)
BBCE: Eliminate asset and net income limit BBCE-No Net Income Limit (15 states) x Post		0.017***	0.016***
		(0.003)	(0.003)
Observations	1657395	1482226	1016915

Standard errors in parentheses

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

Table 7: 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	0.038***	0.027***	0.010***	0.002
	(0.008)	(0.006)	(0.002)	(0.001)
Treatment State	-0.023	-0.014	-0.006	-0.001
	(0.022)	(0.012)	(0.005)	(0.001)
Post Period Dummy	0.054***	0.044***	0.018***	0.004***
	(0.005)	(0.004)	(0.002)	(0.001)
Observations	751,146	469,536	1,205,962	1,729,892
Pre-Treat Mean	0.282	0.102	0.041	0.009

Standard errors in parentheses

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

Table 8: Heterogeneity by Household Structure

	(1) Single Male HH	(2) Single Female HH	(3) HH w/ Kids	(4) Other HH Type
BBCE State x Post	0.015**	0.022***	0.019**	0.012***
	(0.004)	(0.003)	(0.007)	(0.003)
Treatment State	-0.001	-0.012	-0.027	-0.006
	(0.010)	(0.012)	(0.022)	(0.007)
Post Period Dummy	0.030***	0.025***	0.046***	0.021***
	(0.003)	(0.003)	(0.004)	(0.002)
Observations	554,236	809,637	545,785	2,246,878
Pre-Treat Mean	0.080	0.102	0.140	0.044

Standard errors in parentheses

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

ONLINE APPENDIX

SNAP Benefit Expansions and SNAP Participation among Older Adults

Figure A1: Treatment Timing Group - Event Studies

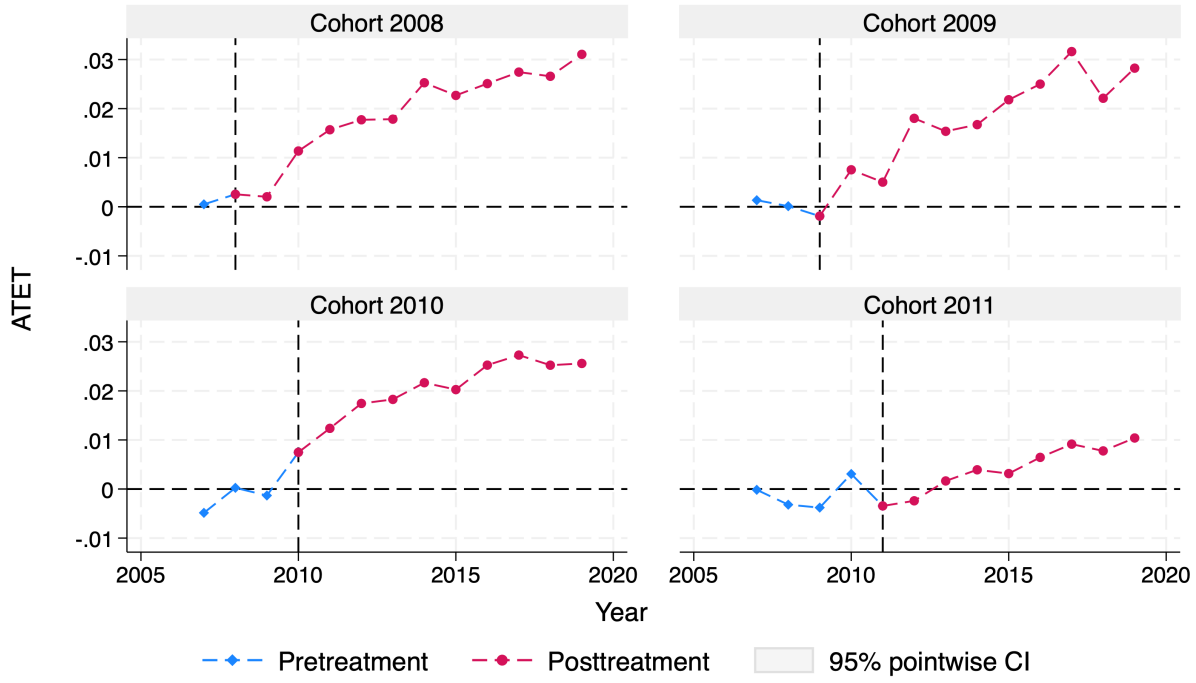


Table A1: BBCE Generosity Characterization - All States

State Name	BBCE Year	Oldest HH Mem Aged 50-59			HH Has Member 60+		
		Category	Gross Income	Asset	Category	Gross Income	Asset
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Alabama	2010	Med	No Change	Elim.	Med	Impose	Elim.
Arizona	2007	High	Raise	Elim.	Med	Impose	Elim.
California	2009	Med	No Change	Elim.	Med	Impose	Elim.
Colorado[1]	2011	Med	No Change	Elim.	Med	Impose	Elim.
Connecticut	2009	High	Raise	Elim.	Med	Impose	Elim.
Delaware	2000	High	Raise	Elim.	Med	Impose	Elim.
District of Columbia	2010	High	Raise	Elim.	Med	Impose	Elim.
Florida	2010	High	Raise	Elim.	Med	Impose	Elim.
Georgia	2008	Med	No Change	Elim.	Med	Impose	Elim.
Hawaii	2010	High	Raise	Elim.	Med	Impose	Elim.
Idaho[2]	2009	High	Raise	Elim.	Med	Impose	Elim.
Illinois[3]	2010	Med	No Change	Elim.	Med	Impose	Elim.
Indiana	2018	Low	No Change	Raise	Med	Do not impose	Raise
Iowa	2011	High	Raise	Elim.	Med	Impose	Elim.
Kentucky[4]	2010	Med	No Change	Elim.	Med	Impose	Elim.
Louisiana[5]	2010	Med	No Change	Elim.	High	Do not impose	Elim.
Maine	2000	High	Raise	Elim.	Med	Impose	Elim.
Maryland	2001	High	Raise	Elim.	Med	Impose	Elim.
Massachusetts	2001	High	Raise	Elim.	Med	Impose	Elim.
Michigan[6]	2000	High	Raise	Elim.	Med	Impose	Elim.
Minnesota[7]	2006	Low	No Change	Raise	Low	Impose	Raise
Mississippi[8]	2010	Med	No Change	Elim.	High	Do not impose	Elim.
Montana[9]	2009	High	Raise	Elim.	High	Do not impose	Elim.
Nebraska	2011	Low	No Change	Raise	Low	Do not impose	Raise
Nevada	2009	High	Raise	Elim.	Med	Impose	Elim.
New Hampshire	2009	n/a	n/a	n/a	n/a	n/a	n/a
New Jersey	2010	High	Raise	Elim.	Med	Impose	Elim.
New Mexico	2010	High	Raise	Elim.	Med	Impose	Elim.
New York	2008	Med	No Change	Elim.	Med	Impose	Elim.
North Carolina	2010	High	Raise	Elim.	Med	Impose	Elim.
North Dakota	2000	High	Raise	Elim.	Med	Impose	Elim.
Ohio	2008	Med	No Change	Elim.	Med	Impose	Elim.
Oklahoma	2009	Med	No Change	Elim.	High	Do not impose	Elim.
Oregon	2000	High	Raise	Elim.	Med	Impose	Elim.
Pennsylvania[10]	2008	Med	No Change	Elim.	Med	Impose	Elim.
Rhode Island	2009	High	Raise	Elim.	Med	Impose	Elim.
South Carolina[11]	2001	High	Raise	Elim.	Med	Impose	Elim.
Texas	2001	Med	Raise	Raise	Low	Impose	Raise
Vermont	2009	High	Raise	Elim.	Med	Impose	Elim.
Washington[12]	2004	Med	No Change	Elim.	Med	Impose	Elim.

Continue on the next page

Table A1: BBCE Generosity Characterization - All States (cont.)

State Name	BBCE Year	Oldest HH Mem Aged 50-59			HH Has Member 60+		
		Category	Gross Income	Asset	Category	Gross Income	Asset
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
West Virginia[13]	2008	Med	No Change	Elim.	Med	Impose	Elim.
Wisconsin	2004	High	Raise	Elim.	Med	Impose	Elim.

Source: U.S. Department of Agriculture, Economic Research Service. (2024). SNAP policy database. And Quality Control Technical Documentation.

Note. This table presents the BBCE generosity characterization of BBCE states examined in the analysis (i.e., states that expanded BBCE between 2009 and 2011). The nine common control group states are AK (2), AR (5), KS (20), MO (29), SD (46), TN (47), UT (49), VA (51), WY (56).

[1] Colorado: 6/2018: expanded BBCE generosity to a high level for nonseniors (increased gross income limit to 200% FPG).

[2] Idaho: 6/2011: tightened BBCE generosity to a medium level for nonseniors and low level for seniors (imposed $5,000 asset limit).

[3] Illinois: 1/2016: expanded BBCE generosity to a high level for nonseniors (income limit for nonelderly increased from 130% to 165%).

[4] Kentucky: 5/2020: expanded BBCE generosity to a high level for nonseniors (increased gross income limit to 200% for nonseniors).

[5] Louisiana: 8/2014: Elim. BBCE; 4/2020: reinstated BBCE (medium level for both groups).

[6] Michigan: 10/2011: tightened BBCE generosity to a medium level for nonseniors and low level for seniors (imposed asset limit of $5,000); 12/2019: remain on a medium level for nonseniors and low level for seniors, but asset limit increased to $15,000.

[7] Minnesota: 11/2010: expanded BBCE generosity to a medium level for both groups (Elim. asset test); 11/2010: expanded BBCE generosity to a high level for nonseniors (increased gross income limit to 165% for nonseniors).

[8] Mississippi: 7/2019: Elim. BBCE.

[9] Montana: 9/2010: tightened BBCE generosity to a medium level for seniors while remain on a medium level for nonseniors (gross income limit 200% for both groups).

[10] Pennsylvania: 8/2009: expanded BBCE generosity to a high level for nonseniors (increased income limit for nonseniors to 160%); 6/2012: tightened BBCE generosity to a medium level for nonseniors and low level for seniors (imposed asset limit of $5,500); 5/2015: expanded BBCE generosity to a high level for nonseniors and medium level for seniors (Elim. asset limit).

[11] South Carolina: 9/2009: tightened BBCE generosity to a medium level for nonseniors (tightened gross income limit for nonseniors to 130%).

[12] Washington: 10/2008: expanded BBCE generosity to a high level for nonseniors (increased gross income limit to 200% for both groups).

[13] West Virginia: 7/2018: expanded BBCE generosity to a high level for nonseniors (increased both gross income limits to 200%).

Table A2: BBCE for Households whose Oldest Member is 40-49

	(1) 40ś
BBCE State x Post	0.013**
	(0.004)
Treatment State	-0.011
	(0.014)
Post Period Dummy	0.033***
	(0.002)
Constant	0.167***
	(0.016)
Observations	1,330,764
Pre-Treat Mean	0.090

Standard errors in parentheses

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

Table A3: Stacked DiD Treatment Timing

	(1) SNAP HH	(2) SNAP HH
PreTrend Period	-0.004	-0.004
	(0.003)	(0.003)
Time Since Event 0	0.003	0.004
	(0.002)	(0.002)
Time Since Event 1	0.008**	0.009**
	(0.003)	(0.003)
Time Since Event 2	0.013***	0.014***
	(0.004)	(0.003)
Time Since Event 3	0.016***	0.016***
	(0.004)	(0.004)
Time Since Event 4	0.017***	0.017***
	(0.004)	(0.005)
Time Since Event 5	0.021***	0.021***
	(0.005)	(0.005)
Treatment State	-0.002	-0.008
	(0.011)	(0.011)
Event Time	-0.006***	-0.007***
	(0.001)	(0.001)
Event Time 0	0.010***	0.010***
	(0.001)	(0.001)
Event Time 1	0.019***	0.019***
	(0.002)	(0.002)
Event Time 2	0.024***	0.025***
	(0.002)	(0.002)
Event Time 3	0.027***	0.028***
	(0.002)	(0.002)
Event Time 4	0.026***	0.027***
	(0.003)	(0.003)
Event Time 5	0.023***	0.025***
	(0.002)	(0.003)
Highest Ed College		-0.098***
		(0.005)
Non-White HH Member		0.107***
		(0.008)
Single Female HH		0.027***
		(0.003)
HH w/ Kids		0.092***
		(0.011)
Other HH Type		-0.016***
		(0.004)
Age Oldest		-0.001***
		(0.000)
Constant	0.082***	0.170***
	(0.010)	(0.017)
Observations	4,156,536	4,156,536
Pre-Treat Mean	0.075	

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