WHAT IMPACT DOES SOCIAL SECURITY HAVE ON THE USE OF PUBLIC ASSISTANCE PROGRAMS AMONG THE ELDERLY?

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Abstract

Low take-up by the elderly in most federal programs targeted to low-income Americans is a persistent and puzzling phenomenon. This paper seeks to measure how much the benefit levels provided by public assistance programs affect elderly enrollment in two-means tested programs: the Supplemental Nutrition Assistance Program (SNAP) and the Supplement Security Income (SSI) program. Social Security retirement income, while lifting millions of elderly Americans out of poverty, also impacts their eligibility and expected public assistance benefit levels in SSI and SNAP. We use variations in SSI and SNAP benefits introduced by Social Security retirement benefits to estimate the causal relationship between benefit levels and public program take-up decision. First, we find very little evidence that the low take-up among the elderly is driven by changes in the composition of the eligible pool: there is no differential take up among those who become eligible versus those who become ineligible as they become old enough to claim Social Security benefits. However, Social Security has a significant impact on the use of public assistance programs among the elderly because of the increase in income decreases the potential benefits available from public programs. But the behavioral response to the Social Security program differs between SNAP and SSI programs: the elderly are insensitive to the benefit change of the SNAP, while a $100 increase in SSI benefits leads to a four percentage point increase in the probability of participating in the SSI. Additionally, we find that individuals newly eligible for SSI are two times more sensitive to the benefit level than the overall SSI-eligible population. Together with the fact that eligible individuals continue to participate in SSI more often after receiving Social Security benefits than they maintain SNAP enrollment, we find evidence that individuals prefer cash over in-kind transfers.

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1. Introduction

Low take-up by the elderly in most means-tested transfer programs is a persistent and puzzling phenomenon: estimated elderly take-up rates for Supplement Security Income (SSI) range from 38 to 73 percent (for example, Coe 1983; Shields et al. 1990; McGarry 1996; Strand, Rupp, and Davies 2009) and less than 35 percent for the Supplementary Nutrition Assistance Program (SNAP) (Haider, Jacknowitz, and Schoeni 2003; Wolkwitz and Leftin 2008; Wu 2009). This low take-up is especially surprising since the elderly have fewer opportunities to work their way out of poverty, and thus might be expected to be more reliant on the safety net than their younger counterparts. To the extent that low participation of the elderly in means-tested programs reflects serious unmet need, this is an issue of general public concern.

Despite this well-documented counter-intuitive phenomenon, not much is known about the reasons behind the low take-up rate in means-tested programs. While an extensive literature has explored program participation broadly, only a few have focused on the elderly specifically.[1] Further, most of these studies are limited to measuring correlations between potential benefit levels and program participation. SNAP and SSI are national programs with uniform eligibility criteria and benefit levels, leaving little policy variation to explain the participation decision.[2] State SSI Supplement programs introduce state-level benefit variation, but this variation is likely correlated with the cost of living within the state and therefor using only cross-state variation is not an ideal identification strategy.[3] As a result, the inherent selection issue that must be addressed before causal estimates can be measured – individuals who are in the program may be different from non-participating eligible individuals – is difficult to address. Thus, relatively little is known about what factors matter most in the participation decision of the elderly, how these factors and their relative importance differ by age, or how enrollment in transfer programs might be increased.

Using the *Health and Retirement Study* (HRS) linked to administrative earnings record and geographic identifiers, this paper examines the participation decision of the elderly in SNAP

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[1] Some examples include McGarry 1996; Choi 1998; Davies 2002; Haider, Jacknowitz, and Schoeni 2003; Levy 2008; and Wu 2009.

[2] There are some very recent variations in eligibility rules across states for the SNAP. In 2009, 13 states had exempted all or almost all households from the asset test, and all states exclude some or all vehicles from countable assets.

[3] Some work uses within-state over-time variation (for example, Neumark and Powers 2005), but then the local average treatment effect that is measured is restricted to states that have changed their state SSI supplemental program over time.

and SSI programs by exploring the interaction between Social Security Old-Age and Survivor Insurance (OASI) benefits and public assistance programs. Social Security interacts with means-tested transfer programs in two ways. First, by providing a considerable source of income, Social Security changes who is eligible for means-tested transfer programs; in 2011, 14.5 million people were lifted out of poverty by Social Security benefits (Van de Water and Sherman, 2012). If the take-up elasticity varies among individuals, Social Security benefits could have a large impact on the take-up rate by changing the composition of the eligible pool. Second, among those still eligible, receiving retirement income from Social Security changes the expected public assistance benefit amount individuals are eligible to receive from means-tested transfer programs. Since the take-up decision is likely impacted by the expected benefit of participating, this factor could be another explanation for the different take-up rates between the young and the elderly.

The program interactions with Social Security provide a set of discontinuities in eligibility and benefit levels of means-tested public transfer programs. This paper differs from previous studies in that it makes use of these discontinuities and uses instrument variable (IV) techniques to measure the elasticity of means-tested program participation with respect to the expected public assistance benefit level. The instrument variable is based on Social Security benefits: we construct the "potential benefit level," the difference between the maximum benefit from the SNAP/SSI program available to individuals and their Social Security retirement benefits assuming they claimed Social Security at age 62. The motivation for this instrument lies in the fact that Social Security Benefits are the major source of income for the low-income elderly population and reduce SNAP/SSI payment on nearly a dollar for-dollar basis.

In addition, recent literature suggests that behavioral responses are state-dependent in the sense that individuals who are currently making active choices are more responsive to policy changes. To that end, we proxy for active response by focusing on individuals who are newly eligible for SNAP/SSI programs and test for the heterogeneity of responses across individuals.

Measurement error is always an issue when estimating public program participation rates from survey data. Taking advantage of Social Security administrative earnings records matched to survey data, this project improves the estimation of program eligibility. More specifically, we use administrative data rather than self-reported earnings to improve the measurement of one component of income used in computing SNAP/SSI eligibility. Moreover, to examine how

robust our results are to different definitions of the eligible population, we conduct a series of sensitivity tests, including 1) use Social Security retirement benefits estimated based on administrative records rather than self-reported Social Security benefits to re-determine eligibility and estimate the take-up equation; 2) relax the asset eligibility requirement; 3) estimate the take-up equations among those with income less than 130 percent of the poverty line for SNAP program; 4) estimate the take-up equations on the financially eligible population age 65 and older for whom the disability test is removed for SSI program. The IV approach also helps address the measurement error in the potential means-tested benefit level.

Finally, traditional economic theory suggests that cash transfers are superior to in-kind transfers in terms of the recipient's utility: in-kind transfers may constrain the behavior of the recipients, while cash transfers do not. This paper tests if the interactions with Social Security have different behavioral responses between cash (SSI) and in-kind (SNAP) transfer programs.

The paper proceeds as follows. Section 2 briefly outlines the SNAP/SSI and reviews the existing literature. Section 3 describes the data, sample construction, measurement error, and presents the descriptive patterns of eligibility and participation. Section 4 discusses interactions between Social Security retirement program and means-tested transfer programs. Section 5 discusses empirical methods and summarizes the main results. Section 6 explores heterogeneity across individuals due to state-dependency, and Section 7 summarizes sensitivity tests, followed by concluding remarks in Section 8.

First, we do not find evidence that the low take-up among the elderly is driven by changes in the pool of eligible individuals that have differential take-up patterns. However, Social Security has a significant impact on the use of public assistance programs among the elderly because of the increase in income decreases the potential benefits available from public programs. Further, the behavioral response to the Social Security program differs between SNAP and SSI programs: the elderly are insensitive to the benefit change of the SNAP,[4] while a $100 increase in SSI benefits leads to a four percentage point increase in the probability of participating in the SSI, a smaller effect than found in much of the literature.[5] Additionally, we

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[4] Haider, Jacknowitz, and Schoeni (2003) find that SNAP benefits are negatively correlated to participation decision among the elderly, while Wu (2009) find a positive correlation but the magnitude is fairly small.
[5] The literature fails to reach a consensus on the impact of SSI benefits on program participation. For instance, McGarry (1996) using the 1984 SIPP find that a 25 percent increase in benefits induces a 6.1 percentage point increase in the probability of participating. Using HRS Ahead 1993-1994 waves, Davies (2002) find $100 increase in the benefits lead to 6 to 15 percentage point increase in participation. On the other hand, using SIPP 1984-1997,

find that individuals newly eligible for SSI are three times more sensitive to the benefit level than the overall SSI-eligible population. These findings are robust across different model specifications and different definitions of the eligible population. Together with the fact that eligible individuals continue to participate in SSI more often after receiving Social Security benefits than they maintain SNAP enrollment, we find suggestive evidence that individuals prefer cash over in-kind transfers.

2. Background

The Supplementary Nutrition Assistance Program (SNAP). The SNAP is the largest nutrition program for low-income Americans and a mainstay of the federal safety net. In fiscal year 2011, the program served an average of 44.7 million people per month and paid out over $71.8 billion in benefits (USDA 2012). To receive SNAP, households must meet three financial criteria: a gross-income test, a net-income test, and an asset test.[6] *Gross income* is defined as the total income for all household members, including that gained from working, investment, and transfers, but excludes most noncash income and in-kind benefits. The gross income limit is set at 130 percent of the poverty line ($1,640 per month for fiscal year 2012 for a two-person household). *Net income* is then computed by allowing for various deductions from the household's gross income, with the net income limit set at 100 percent of the poverty line ($1,261). The asset limit in 2012 was $2,000. A household automatically or "categorically" eligible for SNAP through the receipt of SSI, the Temporary Assistance for Needy Families (TANF), or General Assistance programs.[7]

Eligibility rules for households with an elderly (age 60 and over) or a disabled member are more liberal than for the rest of the population. First, these households are exempt from the gross income test, and the net income test is more generous by removing the shelter deduction

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Elder and Powers (2004) report that the influence of the expected SSI benefits has declined over time. They find insignificant results of benefits on participation using different sample specification, alternative approaches to imputing the expected SSI benefit, and more detailed information on application and receipt culled from administrative files.

[6] Under SNAP rules, a household is defined as individuals who share a residential unit and purchase and prepare food together.

[7] Generally able-bodied adults between 18 and 50 who do not have any dependent children can get SNAP benefits only for 3 months in a 36-month period if they do not work or participate in a workfare or employment and training program other than job search. We did not take employment requirement into consideration because our sample from the HRS is the population over the age of 50. Appendix A-1 and A-2 describes the eligibility requirements of the SNAP and SSI programs in detail.

cap and by allowing out-of-pocket medical expenses in excess of $35 per month per household to be deducted. Second, the asset limit increases from $2,000 to $3,250.

The amount of SNAP benefit that a household receives is equal to the maximum benefit level less 30 percent of the household's net income (reflecting that an average household will spend approximately 30 percent of its net income on food). In 2012, an eligible two-person household could receive SNAP benefits between $16 and $367 each month.

The Supplementary Security Income Program (SSI). Designed to provide financial support to low-income blind, disabled, and elderly individuals, the Supplemental Security Income (SSI) program is currently the largest federal means-tested cash assistance program in the U.S.[8] Enacted in 1972, the SSI program has seen tremendous growth over time, with the number of recipients growing from 4 million in 1974 to over 8 million in 2012. Combined with the SNAP, SSI is intended to raise an elderly household's resources to approximately the poverty line.

The federal SSI program provides a guaranteed income to all eligible individuals. In 2012 the income guarantees were $674 ($1,011) per month for a single individual (couple) living in his own home. These amounts are reduced by one-third if the recipient lives in someone else's home and are adjusted yearly for inflation. The SSI benefit is the difference between the income guarantee and their countable income. Countable income disregards the first $20 of unearned income (most likely Social Security benefits among the elderly), the first $65 of earned income, and one-half of additional earned income per month.[9]

An asset test is also required for participation in SSI. To be eligible for SSI benefits, individuals must have countable assets of less than $2,000, and couples must have less than $3,000. With respect to the determination of countable assets, the disregards are substantial. Most importantly, owner-occupied housing regardless of value and a car worth less than $4,500 are excluded.

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[8] In 2008, federal payments under SSI totaled $43.0 billion, compared to just $4.1 billion in federal assistance payments made under the Temporary Assistance for Needy Families program.
[9] If there is less than $20 unearned income, additional earned income can be disregarded. Other disregards are irregularly or infrequently received income of less than $20 per month, home energy assistance payments, tuition benefits, disaster relief, and the value of SNAP benefits.

Individuals younger than 65 must meet the income, asset, and be determined to be unable to work for at least 1 year due to a medical impairment.[10] For the aged (65 and over), individuals are eligible if they meet the income and asset tests. In addition to the federal program, states have the option of offering supplemental SSI benefits. In 2012, 30 states offered supplements to elderly individuals (or couples) living independently, and a total of 45 states offered at least some form of supplemental benefits, which can be substantial. For example, the income guarantee for a couple living in California in 2012 is $ 1,407 ($396 above the federal level), while in New York the income guarantee is $1,115. If a state is willing to administer its own program, it is free to alter the eligibility requirements as it wishes, including imposing more (or less) stringent income and asset tests. While federal benefits are indexed for inflation, state benefits are not.

Literature Review. Numerous studies have examined why people eligible for government transfer programs do not participate in these programs. The cost/benefit framework has been the basis for investigations of nonparticipation in social programs: individuals choose to enroll only if the benefits of participation exceed the costs. The findings of Blank and Ruggles (1996) support this claim. Using data from the *Survey of Income and Program Participation* (SIPP), they show that low participation of women in the Aid to Families with Dependent Children (AFDC) and the SNAP stems from would-be participants' expectations of low benefits. In her study of SSI participation among the elderly, McGarry (1996) reports that larger expected SSI benefits significantly increase the probability that an individual will participate in the program. Davies (2002) also suggests that the calculated benefits are positively correlated to the participation decision. Wu (2009) finds that the participation decision in the SNAP by the elderly is strongly related to economic incentives. The lower expected SNAP benefit level and relatively better financial situation of the elderly account for about one-third of the difference in the SNAP take-up between the elderly and the non-elderly.

While there is an extensive literature on nonparticipation, only a few studies have focused specifically on older adults despite the fact that low means-tested program take-up by the elderly has been perceived as a serious problem for over a quarter of a century (McGarry 1996, Davies

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[10] The disability definition and determination process is identical to that of the Social Security Disability Insurance (DI) program.

2002, Elder and Powers 2004 on SSI; Haider, Jacknowitz, and Schoeni 2003, Levy 2008, and Wu 2009 on SNAP).[11,12] While the existing research attributes the low take-up among eligible elderly largely to the fact that many elderly poor expect to receive only a very modest cash payment, SNAP and SSI are national programs with uniform eligibility criteria and benefit levels, leaving little policy variation to explain the participation decision.[13] The benefits from State SSI Supplement programs vary by state, but this variation is likely correlated with the cost of living and thus using only cross-state variation is not an ideal identification strategy.[14] Most of the existing studies are limited to measuring correlations between potential public assistance benefit levels and program participation.

McGarry (1996) proposes a two-stage procedure, in which the computed expected SSI benefit is first regressed on household characteristics and the (federal + state) maximum benefit. This predicted value then enters into a probit for the take-up decision. The two-stage procedure will yield consistent estimates only if a) the variance of the measurement error in benefits is correctly estimated, and b) a researcher finds valid exclusion restrictions, in this case variables which affect the expected benefit amount but have no influence on take-up decisions apart from their indirect effects through benefit levels. Elder and Powers (2004) argue that this assumption is invalid for four variables McGarry uses: average household income in the previous year; household head status; marital status; and state of residence SSI generosity. As a result, the inherent selection issue that must be addressed before causal estimates can be measured – individuals who are in the program may be different from non-participating eligible individuals – is difficult to address. A recent study by Schmidt, Shore-Sheppard, and Watson (2013) use simulated eligibility and benefits to instrument for imputed eligibility and potential benefits and find that an increased generosity in major cash, food, and medical safety net programs reduces low food security. But their study focuses on families with children. Since proposals for raising

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[11] Gundersen and Ziliak (2008) also include the elderly (60+) as one group in its analysis. Relying on longitudinal methods, they found that participation in the SNAP is U-shaped across the life course, and on average food stamp participation is higher among those who have high levels of "permanent" income volatility.

[12] Cunnyngham (2010) uses a rich source of data to document state information on the characteristics of elderly SNAP participants, eligibles, and elderly participation rates. Cunnyngham finds wide variation in participation rates across states.

[13] There are some very recent variations in eligibility rules across states for the SNAP. In 2009, 13 states had exempted all or almost all households from the asset test, and all states exclude some or all vehicles from countable assets.

[14] Some work uses within-state over-time variation (for example, Neumark and Powers 2005), but then the local average treatment effect that is measured is restricted to states that have changed their state SSI supplemental program over time, which may not be representative of all states.

SNAP/SSI benefit levels have been put forward to increase elderly participation, it is crucial to estimate the effects of public assistance benefits to the elderly participation decision.

3. Data, Sample, and Determining Program Eligibility

Data and Sample. For the primary analysis, we use data from the 1992 through 2010 waves of the *Health and Retirement Study* (HRS) linked to administrative earnings record and geographic identifiers. The HRS is a longitudinal data collection effort begun in 1992 with a cohort of about 10,000 individuals between the ages 51 to 61 (i.e., born between 1931 and 1941). Additional cohorts have been enrolled over time so that the survey includes 30,500 individuals in 2010 and can be weighted to be nationally representative of the population over the age of 50. Respondents are interviewed every two years.

Approximately 70 percent of respondents have given consent to have their Social Security earnings histories back to 1951 linked to the survey. For those who have not given permission, we estimate earnings histories based on survey data on previous jobs and wages (Gustman and Steinmeier 2001), using the estimated returns to tenure from Anderson, Gustman, and Steinmeier (1999).[15]

Because eligibility rules and benefits guarantees vary widely across states, ignoring such state-level differences will cause substantial error in estimated benefits and eligibility. We match the public use data with the restricted-access geographic identifier file. The match rate is 99.7 percent.

In each wave, respondents are asked whether they have received SNAP/SSI at any time in previous two years, and if so, the amount of the last SNAP/SSI benefit.[16] In addition to the self-reported recipiency status and benefits information, the HRS includes detailed data allowing us to accurately determine eligibility and benefit level for the SNAP and SSI programs: income;

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[15] To project earnings beyond the year at which the individual last gave permission to match to the administrative data, we again follow Gustman and Steinmeier (2001). For individuals with self-reported earnings, the assumption is that the average of their real earnings observed in the last three reported periods persist until their expected claiming date. The actual claiming age is used if respondents have already claimed Social Security benefits. For those yet to claim, we assume that respondents claim Social Security benefits at their self-reported expected retirement age. If the expected retirement age was greater than 70, or if the individual indicated that he never expected to retire, a retirement age of 70 is used unless the individual had already worked beyond that age. If the respondent did not provide an expected retirement age, we assign them a claiming age so that the age distribution of claiming matches the Social Security reported claiming ages (U.S. Social Security Administration 2010, Table 6.B5.1). Combining the actual earnings with the simulated earnings yields a complete earnings profile for each individual in the HRS sample from 1951 to retirement age.

[16] In 1992 respondents were asked about SNAP receipt in 1991 only.

assets; living arrangements; state of residence; dependent, shelter, and medical expenditures; and other programs' participation status for the categorically eligible. These attributes of the HRS provide some important advantages over other nationally representative data sets that have been used to study take-up.[17] One draw-back, however, is that income from certain sources is available only on the annual basis. Therefore our analyses of SNAP/SSI take-up among eligible households use annual measures of eligibility and take-up.[18]

Our primary sample consists of survey respondents age 50 to 80, whose household provided a family and financial respondent interview, who were not institutionalized at the time of the survey, who answered the food stamp/SSI receipt questions, and who we have administrative earnings record or imputed earnings record. These restrictions result in a sample of 24,039 individuals and 130,518 person-year observations for the SNAP analysis, and 24,445 individual and 134,919 person-year observations for the SSI analysis.

The HRS provides imputations for many of the income and wealth questions, and we use these imputations whenever they are available. Imputations are not provided for the earnings and income of non-respondent co-residents for every wave, which is necessary to determine eligibility for the SNAP, so we impute these values using hot-deck methodology (See Appendix A-3). The unit of observation for all of our analysis is the individual. For household-level variables like income or wealth, the values represent the total income or wealth for the household in which an individual resides.

Determining Program Eligibility. We begin our analysis by calculating program eligibility and take-up rates. Since the determination of a unit's eligibility hinges on a number of assumptions and depends on the availability and accuracy of income and asset information, the classification is prone to error. As pointed out in previous studies, incorrectly classifying some individuals as eligible who are actually ineligible will result in a downwardly biased computed take-up rate (Blank and Ruggles 1996, McGarry 1996, Daponte, Sanders, and Taylor 1999, Haider, Jacknowitz, and Schoeni 2003, Strand, Rupp, and Davies 2009). The rich financial

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[17] The *March Current Population Survey* (CPS) does not ask any questions about wealth, housing expenditures, or medical expenditures, nor does it rely on unfolding brackets for any of its income questions. The Survey of Income and Program Participation (SIPP) is fairly complete in its coverage of the factors determining eligibility. However, the quality of the wealth data in the SIPP is questionable (Gustman and Juster 1996), and it does not use unfolding brackets for its income questions.

[18] This inevitably introduces measurement problems. For example, a respondent in the HRS may be SNAP/SSI eligible for part of the previous year, yet correctly classified as "ineligible" on the basis of annual income.

information from the HRS and the administrative earnings records allow us to assess eligibility more accurately by accounting for various deductions and the asset limit.[19,20] Further, we calculate eligibility of SNAP and SSI under a variety of definitions, and then compute the take-up rate among eligibles.

SNAP Eligibility. We calculate SNAP eligibility under three different definitions. Definition 1 estimates eligibility based solely on the gross income test. Definition 2 applies the age/disability-specific income tests are used for the population aged 60 and older and the disabled and include the dependent, shelter, and medical expenditure deductions in the income eligibility calculation. In Definition 3, the age/disability-appropriate asset limits are also applied. In the third definition, we also classify as eligible all individuals who would be categorically eligible based on participation in SSI or TANF programs.

Figure 1A summarizes the patterns of eligibility under these three definitions by age, while Figure 1B reports the patterns of participation among the eligible. When richer and more complete information is used – moving from definition 1 to definition 3 – the share of individuals eligible drops and the take-up rate rises. It is also clear that eligibility increases with age: while about 8 percent of individuals under age 60 are eligible for the SNAP, the rate increases to over 10 percent for individuals over age 60. This is due to both differences in the eligibility rules that are based on age and the income/asset decline over the lifecycle. Overall, about 10 percent of our sample is estimated to be eligible for the SNAP, which is comparable to the literature (Haider, Jacknowitz, and Schoeni 2003; Wu 2009).

Not surprising, we also find that the take-up rate among eligible elderly is low. Overall, only 28 percent of eligible elderly receive benefits. Consistent with the existing literature, we find a negative age gradient in take-up: while about 34 percent of eligible individuals age 60 and younger collects benefits, the proportion declines to 23 for those 70 and older.

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[19] Appendix Tables A-1 and A-2 provide a detailed discussion of the information that is available in the HRS for assessing eligibility, as well as the assumptions made given its limitations.

[20] Typically, measurement error in self-reported earnings is negatively correlated with true earnings. However, we find that for while people tend to underreport their earnings in general, those with low levels of earnings (those who are potentially eligible for SSI and SNAP) tend to over-report their earnings in the HRS. The average self-reported earnings is $35,235 annual, which is $1,143 lower than the average administrative earnings. But about 20 percent over report earnings, and the over-reporting is concentrated on the bottom of the income distribution. This finding is consistent with Strand, Rupp, and Davies (2009) using the SIPP linked to administrative earnings records.

SSI Eligibility. We determine SSI eligibility also under three different definitions. Definition 1 estimates eligibility only including federal income test and applying health tests to the population under age 65.[21] Definition 2 adds the asset test. In Definition 3, the state-specific income and asset tests are also applied. Figure 2A summarizes patterns of eligibility under these three definitions by age, while Figure 2B report patterns of participation among the eligible. Like SNAP, when richer and more complete information is used, the share of eligible individuals drop and the take-up rate rises.

We find that the income limits are much more likely to be binding than the asset limits, which is consistent with the findings of other studies. Of the sample 14 percent have countable assets below the SSI limits, while only 8 percent have income that is sufficiently low. Combining the two criteria, 4.2 percent of our sample is eligible for benefits from the federal SSI program. The state supplemental programs play an important role in increasing eligibility relative to the federal guidelines. When state income/asset tests are applied, the eligible population increases from 4.2 to 4.6 percent (about 10 percent increase from the baseline). When examining participation, we find that the same low participation rates observed in other studies: around 47 percent.

Analysis of SSI is also complicated by the fact that two distinct groups may enter the program, the aged and the disabled. As the disability standards are removed at age 65, we observe an eligibility surge. While an age gradient in take-up is apparent for the SNAP, the take-up rate of the SSI is relatively higher for the older group compared to those under age 60.

Benchmarking the HRS Reports of SNAP and SSI Participation. Even though the HRS collects much of the information necessary to determine eligibility and the use of administrative earnings improves eligibility determination, the estimated eligibility and take-up rates will still be biased if respondents' reports participation contains errors. To assess the extent of this problem, we calculate the participation rate of those individuals who we classify as ineligible.

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[21]We determine if someone is disabled if they answer they have a work-limiting condition. While there is concern about the reliability of self-reported health and disability in survey datasets (e.g., Institute of Medicine, 2002), it remains a widely used proxy for disability. Benítez-Silva et al. (1999) isolate the problem of inferring disability status. Using an innovative approach that focuses on a subsample of applicants for federal disability benefits, they compare self-reports of work incapacity to the Social Security Administration's (SSA) award decision. Under the identifying assumption that the SSA's definition of disability forms the social standard for what constitutes work incapacity, they find that disability self-reports are unbiased. Since we are trying to identify disability as determined by SSA, we also use the disability self-reports as a proxy.

To the extent that we can determine eligibility from reported income, asset, and expenditure questions without error, we would expect the participation rate among this sample to be very low.

We find that about 1.5 percent of people classified as not eligible for SNAP/SSI report that they received SNAP/SSI, which is consistent with the literature.[22] One source of the measurement error in this paper could be due to the annual income information used, while SNAP and SSI eligibility is determined on a monthly basis.[23] Another reason for these false positives could be due to the incorrect reporting of SSI benefits as Social Security benefits, since they both come from the Social Security Administration. For example, we find that 25 percent of our false positives for SSI would be eligible by deducting the self-report of SSI from Social Security income. Further, while the administrative earnings are an important improvement over self-reported measures, they are limited to one (albeit important) source of income, and the improvement is mainly concentrated among the non-retired, younger population. We also face the question of whether our eligibility algorithm accurately captures the nuances of the actual administration of the complex SNAP/SSI eligibility rules. Additionally, while the bulk of the literature discusses the work-limitation measure as a good proxy for disability, it is not a perfect representation of the SSA disability criteria (Burkhauser et al. 2003). Thus the disability eligibility for individuals under 65 may be noisy, with 299 false positive respondents failing to indicate blindness or disability in our sample. To address these concerns, in Section 6, we conduct a series of sensitivity tests to examine how robust our results are to different definitions of the eligible population.

Another problem in measuring program participation is the under-reporting of program receipt. Meyer, Mok, and Sullivan (2009) found high rates of understatement of program receipts in major household surveys. Strand, Rupp, and Davies (2009) report that the use of matched SSA administrative data on SSI payment receipt instead of self-reported recipiency increases the estimated participation rate. However, according to Haider, Jacknowitz, and Schoeni (2003), the HRS has relatively little under-reporting when compared to other surveys, although such comparisons should be tempered by the fact that the surveys cover different

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[22] For instance, using the AHEAD cohort of the HRS, Haider, Jacknowitz, and Schoeni (2003) find that less than 1.5 percent of people classified as ineligible for SNAP report that they receive benefits.

[23] Using the *Panel Study of Income Dynamics* (PSID), Wu (2009) find that 50 to 70 percent of those false positive cases reported taking up SNAP for less than 12 months.

populations. To assess potential biases that might arise when using the HRS to study means-tested program participation, we compare the characteristics of elderly SNAP/SSI recipients in the HRS with those reported in administrative data, and find that the demographic characteristics of recipients in the HRS track the administrative data fairly well.[24]

Finally, we can compare estimates of other quantities based on the HRS versus administrative records. The average calculated SNAP benefit is $146 which is similar to the average SNAP benefits of $144 reported per month for households with an elderly member (Eslami, Filion, and Strayer 2011). For the 3,499 individuals reporting SSI and calculated as eligible, we find a correlation of 0.60 between the reported and estimated benefit. For persons 65 and older, the correlation is 0.64. Overall, these results suggest that the HRS does fairly well, and can be used to analyze determinants of SNAP/SSI eligibility and take-up among the elderly.

4. Social Security and Public Program Eligibility/Take-up

Social Security can impact means-tested program eligibility by providing an important income stream among claimants. Social Security lifted over 14.5 million elderly Americans above the poverty line, which directly makes some individuals ineligible for the means-tested programs, and compresses the bottom of the income distribution (Van de Water and Sherman 2012). Since around 40 percent of Americans claim Social Security within one year of attaining the Early Eligibility Age (EEA) of 62 (Bosworth and Burtless 2010) and in our sample about 62 percent claimed between 62 and 63, it is not surprising to see the eligibility rate drop at this age for both the SNAP (Figure 1A) and SSI (Figure 2A) programs.

In addition, Social Security income can impact take-up among the eligible population by increasing income relative to the poverty line, and thus decreasing the potential public assistance benefit level.[25] Figure 3A shows that at the 25th percentile of the income distribution of SNAP eligible population, total family income is around 58 percent of the poverty threshold at ages 61-

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[24] For selected waves, we compare characteristics of SNAP recipients in our sample with those reported in the SNAP Quality Control (QC) data and find that there are no statistically significant differences in race, gender, marital status, and education. We also compare characteristics of SSI in our sample with the SIPP matched to SSI administrative files (Table A-2 of Elder and Powers 2004), and find that our sample matches fairly well with the administrative record in terms of age, race, gender, marital status, and health status.

[25] While it is well known that Social Security's replacement rate is less than one (80 to 90 percent for low-wage earners on average), the replacement rate is computed based on annualized lifetime income, not as a fraction of income in the years right before claiming benefits. As such, many low-income households – especially individuals who are widowed or not working – experience an increase in income due to claiming retirement benefits.

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62; it jumps to 70 percent for ages 63-64. Figure 3B shows sharp discontinuities in SNAP benefits level around the early eligibility age (62), particularly for those at the bottom of the benefit distribution. The similar patterns are observed for SSI program as well (Figures 4A and 4B).

We examine how eligibility changes as individuals claim their Social Security benefits by exploiting the longitudinal nature of the HRS. Figures 5A and 5B summarize the transition of eligibility of SNAP and SSI programs by age. When following the same individual over time, we find that the likelihood of being eligible drops at the EEA. By lifting elderly individuals above the poverty line, Social Security changes the pool of eligible individuals. If the take-up elasticity varies among individuals, Social Security could impact the take-up rate simply by changing the composition of the eligible pool.   These potentially important changes in the composition of the eligible population are largely overlooked in the take-up literature. Table 1 explores the take-up and benefit amount by age, based on eligibility before and after age 62. Surprisingly, we find little evidence of differential take-up elasticity among these groups. There is little difference between the take-up rates of individuals eligible before 62 and then ineligible, and individuals ineligible before 62 and then become eligible. For SNAP program, the take-up rate among individuals eligible before 62 and then ineligible is only 8 percent, which stays the same for individuals ineligible before 62 and then become eligible. For the SSI program, the average SSI benefit is lower for those newly-eligible after 62, which likely explains the slight difference that we do find (13 percent vs. 9 percent, but the difference is statistically insignificant). Not surprising, the take-up rate is higher among individuals who have longer eligibility spells; for instance, among those who are eligible for the SSI both before and after the early eligibility age, about 58 percent took up the benefits before age 62, and 62 percent took up after age 62. Interestingly, we also find that among SNAP/SSI recipients who remain eligible for SNAP/SSI after receiving Social Security are more likely to exit from in-kind transfer programs compared to the cash transfer (32 percent vs. 16 percent).

5. Empirical Strategy

Conceptual Framework. We start with McGarry's (1996) framework, which relates the net cost of enrolling in means-tested programs to the expected monthly benefits and other variables thought to influence expected public assistance benefits and costs of enrolling. In

particular, an eligible individual participates in SNAP/SSI if the utility gain from participating, P_{it}^*, is positive. One only observes the final participation decision, P_{it}, where $P_{it} = 1$ if $P_{it}^* > 0$, and $P_{it} = 0$ otherwise. In the estimation, P_{it} will be modeled as a linear function of the potential benefits of participating, as well as individual social-economic characteristics. That is,

$$P_{it}^* = \propto B_{it} + X_{it}\beta + \varepsilon_{it} \tag{1}$$

where ε_{it} is distributed normally with mean 0 and variance σ_e^2, B_{it} is the monetary public assistance benefit associated with participating, and X_{it} are individual characteristics thought to affect (unobserved) preferences for participation, such as age, race, gender, marital status, education, household size, health status, and asset ownership.

Tables 2A and 2B present descriptive information for our analytic sample, eligible elderly individuals, for the SNAP and SSI programs respectively, by participation status and age.[26] At any age, participants are more likely to be female or minorities, less likely to be married, and have somewhat less schooling. On average, the participants are poorer and are less likely to own a home or a car; they also have higher level of expected public assistance benefits—for instance, the mean calculated SSI benefit for participants is $366 compared to $279 for nonparticipants; and they are much more likely to receive benefits from other welfare programs. Additionally, participants are in worse health. When comparing the younger (below age 62) and older (age 62+) groups, it is worth noting that the calculated benefit level is much lower for the older group.

TSLS: Using "Potential Benefit" as an Instrument. To estimate the elasticity of take-up with respect to public assistance benefit level, we estimate a two-stage model among the program-eligible population. We exploit the exogenous variation in potential public assistance benefits caused by Social Security receipt in order to estimate the causal relationship between public assistance benefit levels and the take-up decision in means-tested programs. We develop an instrument variable, the Potential Benefit, intended to capture the individual-level discontinuity in the expected public assistance benefit level upon receiving Social Security retirement benefits.   This instrument will thus vary not just as someone ages (reaching the EEA), but also will contain variation between individuals, depending on their work histories.

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[26] For the regression analysis, we exclude individuals who receive SSDI, because they are converted to retirement benefits at their FRA automatically, and thus will not be impacted by the Social Security EEA.

Before age 62, the Potential Benefit is set at the maximum benefit level of SNAP/SSI program by household size and state. At age 62 and above, Potential Benefit equals the maximum SNAP/SSI benefits level subtracting the Social Security retirement benefit the individual would have assuming he claimed at age 62, where Social Security benefits at age 62 are calculated using administrative earnings record, accounting for marital histories.

The reasonableness of this instrument relies on the fact that Social Security Benefits are the major source of income for the low-income elderly population, and reduce SNAP/SSI payment on nearly a dollar for-dollar basis. Examination of the income data of individuals further supports this approach. For instance, 27 percent of self-report SNAP recipients and 37 percent of SSI recipients age 62 and older in the sample list Social Security as their sole income source, and for over 50 percent of SNAP/SSI recipients Social Security retirement income account for 90 percent or more of their total income. Thus there should be a high correlation between actual SNAP/SSI benefits one would receive and the Potential Benefits measure. Further, after claiming, the Social Security benefits are largely fixed from the individual's perspective.[27] By construction, this variable reveals the exogenous decline in SNAP/SSI benefits level upon claiming Social Security, and has more individual-level variation to better capture the actual drop in SNAP/SSI benefits that comes with claiming Social Security benefits.

One potential limitation to this, and all, instrumental variables is if there are unobserved characteristics that are correlated with Social Security benefits and their likelihood of take-up in means-tested programs. One such potential problem could be "taste for work," which is essentially unmeasurable, but likely correlated with both earnings history (and thus Social Security benefits) and one's likelihood of participating in a means-tested program. We try to address this problem by controlling for the number of covered quarters one has within the Social Security system, which will capture one's attachment to the labor force. Thus we are assuming that Social Security benefits are not correlated with program participation independent of their labor force attachment. Further, we test the robustness of this instrument by employing another which does not rely on individual earnings, to be discussed in section 6.

Administrative earnings records are necessary to calculate this instrumental variable because we can include individuals over age 62 but have yet to claim Social Security benefits

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[27] Social Security will recalculate PIA as long as the individual keeps working, but under most circumstances, this recalculation leads to extremely modest increases in benefits. Delaying claiming is the primary way to influence retirement benefits after age 60.

and individuals missing claiming ages or self-reported benefits level in the analysis, thus not introducing selection at the same time of addressing endogeneity. Also, the self-reported benefit level and claiming age may contain measurement error, which potentially bias the calculated "potential benefit level" and in turn the estimates of benefit elasticity in the take-up decision. Further, measurement error in the calculated benefits may bias the estimation (McGarry 1996; Davies 2002; Elder and Powers 2004), the two-stage-least-square procedure help obtain a consistent estimate of the effect of the benefit on participation.

The first stage estimates the effect of the Potential Benefit on the needs-based program benefit level:

$$B_{it} = \alpha_0 + \alpha_1 PotBen_{it} + X_{it}^{'}\psi + \tau_t + \varepsilon_{it} \qquad (2)$$

where B_i is the expected benefit level in each of the means-tested programs examined. Since the amount of expected public assistance benefits is observed only for those who actually participate, we calculate the expected SSI/SNAP benefit level for each individual based on survey information and the rules of each program. *PotBen* is the instrumental variable.

Instead of estimating the effect of actual public assistance benefit level on participation, the predicted public assistance benefit level from the first equation will be used when estimating the participation equation:

$$P_{it}^{*} = \phi(\beta_0 + \beta_1 \hat{B}_{it} + X_{it}^{'}\gamma + \tau_t + \varepsilon_{it}) \qquad (3)$$

where P_i is a binary variable that is equal to 1 if participating and 0 if not. In both stages, variables such as race, education, gender, marital status, family structure, disability indicators to proxy for permanent income, and total covered quarters worked are included in X.[28] τ_t are year of interview dummies, and ε_{it} denotes an idiosyncratic error term. The coefficient of interest is β_1 which measures the elasticity of take-up with respect to expected public assistance benefit level. In some models, we exploit the longitudinal nature of the data set and include individual fixed effects in order to capture time-invariant unobservable characteristics that might be correlated with the participation decision.

While receiving Social Security benefits leads to a discontinuity in the SSI benefit level, the improved information about safety-net programs eligibility upon receiving Social Security

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[28] Using demographic variables to capture permanent income makes this work comparable to the program participation literature.

may negate the effect of benefit change on participation.[29] Lack of information contributes to nonparticipation among the elderly (Coe 1983, Blaylock and Smallwood 1984, Hill 1990, Daponte, Sanders, and Taylor 1999, Wu 2009), and receiving information on program eligibility may lead to a higher taking up rate. Recent literature exploits geographical heterogeneity to proxy for knowledge of Earned Income Tax Credit or disability programs (Furtado and Theodoropoulos 2012, Chetty, Friedman, and Saez 2012). To capture the role of information, we adopt this approach and include the poverty density by zip-code as a control in our model.

We present the participation estimates in Tables 3A and 3B.[30] The results for the simple OLS model (Model 1), the IV model (Model 2), the OLS with individual fixed-effects model (Model 3), and a Two Stage Least Squares (TSLS) individual fixed-effects model (Model 4) are shown. The bottom panel of Tables 3A and 3B reports the coefficient of the instrument from the first stage.

For the SNAP participation, the OLS and IV models fail to yield consistent estimates (Table 3A). In the OLS model, the effects of most of the variables assumed to influence the participation decision operate in directions consistent with the literature. These estimates clearly show that participation decision is strongly associated with economic incentives. A higher expected monetary SNAP benefit increases the probability of participation. Even after controlling for the size of the expected SNAP benefits, elderly individuals who own a home, or own a car are less likely to participate, as are whites, better-educated, without children under 15 in the household, and those in good or fair health condition. Individuals who have higher numbers of covered quarters also are less likely to participate. Further, we find that those receiving SSI are significantly more likely to participation in the SNAP, suggesting possible effects of better information, lower application costs, or/and lower welfare stigma once one means-tested program is utilized. Interestingly, there is no remaining correlation between zip-code poverty density and SNAP participation.

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[29] This might be particularly true for the SSI, as SSI is operated by the Social Security Administration. When an individual claims early retirement benefits they may learn that they are also eligible for SSI benefits (Social Security Administration, 2010). Thus, at the same time as being eligible for fewer benefits, they also learn of their eligibility status.

[30] The sample changed due to the construction of *PotBen*. Observations have negative values of *PotBen* are excluded from the analysis. To test if the sample selection drives any different results, we have also estimated the OLS model using the full sample. The estimates are largely consistent. The full results are available from authors upon request.

The OLS model suggests that for every $100 in SNAP benefits, participation increases by about 2 percentage points. Turning to Model 2 (IV), the first stage results show that the instrument tends to have the expected sign and is statistically significant (F=65) -- that is, the Potential Benefit is positively correlated to the level of SNAP benefits. However, we find in the second stage that there is no significant relationship between SNAP benefits amount and take-up, indicating that individuals whose benefit level is impacted by Social Security income are insensitive to expected public assistance benefits. When comparing the OLS and IV results, the change in the estimated effect of SSI benefits on participation is fairly small, increasing from 0.02 to 0.04, though the IV estimates are insignificant.

In model 3, we add individual fixed-effects to the OLS model to take into account time-invariant individual unobservable heterogeneity that affects the participation decision. The expected SNAP benefits lose significance in the FE model, with the magnitude is only half of that estimated in the OLS model. Some of the coefficients that are significant in a cross-sectional setting are not significant in the fixed-effects model, such as education, home ownership, and health status. The lack of significance could be due to fact that the fixed-effects are soaking up much of the variation at the individual-level, and thus lead to imprecise estimates.

In column 4, we include individual fixed effects into the instrumental variables model, which should account for unobserved heterogeneity, endogeneity, and measurement error in the calculated public assistance benefit. The first stage results suggest the Potential Benefit provides a strong instrument for SNAP benefit levels (F=153). However, the IV-FE results show that the public assistance benefit level again loses statistical significance. This is not totally unexpected, since both FE and IV models do not yield significant results. We performed an endogeneity test and fail to reject exogeneity of the benefit level (Chi-square p-value=0.95), suggesting that FE-IV is not necessary, and IV or OLS with FE are more appropriate models.

Turning to the SSI take-up decision (Table 3B), we add an additional control variable for being age 65 and over to capture the removal of the disability test for eligibility. The results of SSI program are broadly consistent across the model specifications. A higher expected SSI monetary benefit increases the probability of participation. Elderly individuals who own a home, are less likely to participate, as are better-educated, and those with longer work history. Individuals receive other welfare(s) are more likely to participate. Similar to the SNAP analysis, there is no remaining correlation between zip-code poverty density and SSI participation.

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The OLS model suggests that for every $100 increase in SSI benefits, participation increases by 4.4 percentage points. Once we add individual fixed-effects to the OLS model (Model 3), the estimate decreases slightly, to 2.8 percentage points. Either model suggests that individuals are much more sensitive to benefit amounts for the SSI cash benefits than for the SNAP in-kind benefits.

Turning to Model 2 (IV), the first stage results show that the instrument--the Potential Benefit-- is positively correlated to the level of calculated SSI benefits (F=72). In the second stage that there is a significant relationship between SSI benefits amount and take-up. When comparing the OLS and IV results, the magnitude of the estimated effect of SSI benefits on participation is almost identical, 0.044 vs. 0.043. The IV results suggest that for those individuals whose SSI benefit increases by $100, participation increases by 4 percentage points.

In column 4, we include individual fixed effects into the instrumental variables model. The first stage results suggest the Potential Benefit provides a strong instrument for SSI benefit levels (coefficient = 0.21; F statistic=46). However, the IV-FE results are negative and lose statistical significance. We performed endogeneity tests and fail to reject that the estimated benefit level is exogenous (Chi-square P-value=0.03), suggesting that the IV-FE model is more appropriate than the OLS IV model. However, the lack of significance could be due to fact that the fixed-effects are soaking up much of the variation at the individual-level, and thus lead to imprecise estimates.

In a set of model specification tests, we also include eligibility status in previous wave as a control variable, in order to test the hypothesis that individuals who have longer eligibility spells are more likely to participate, possibly due to the information of the program or/and persistent poverty status. The lagged variable is statistically significant and an important predictor of take up (for the SNAP, in the OLS, coefficient=0.378, t statistic = 18.2; for the SSI, coefficient=0.264, t statistic=19.69). However, the estimated effect of the relationship between benefit level and take up remains largely unchanged with those presented in Tables 3A and 3B.

Taken together, these results suggest that the elderly are insensitive to the benefit change of the SNAP, but a $100 increase in SSI benefits leads to a four percentage point increase in the probability of participating in the SSI.

6. State-Dependency Tests

Recent literature suggests that behavioral responses are state-dependent in the sense that individuals who are currently making active choices are more responsive to policy changes. Chetty et al. (2013) find that individuals who are currently making active choices are more responsive to policy changes and they proxy for active choice by focusing on individuals who are starting a new pension account. To test if attention to policies varies within individuals over time, we proxy for active response by focusing on individuals who are newly eligible for SNAP/SSI programs.

Overall, about 3,475 individuals are identified as newly eligible for the SNAP, and 1,417 for the SSI in our sample period.[31] About 12 percent take-up the SNAP when they first become eligible, and the corresponding number for the SSI is 20 percent.

The results of estimating take-up equation among the newly eligible are summarized in Table 4A and 4B. For the SNAP, consistent with previous analysis, we find that individuals are insensitive to changes of the expected benefits level, even among those who are newly eligible for the program at the stage of making active choice. For the SSI, again, the OLS and IV yield consistent results. While the OLS model suggests that for every $100 increase in SSI benefits, participation increases by 2.1 percentage points, the IV estimates suggest that newly eligible individuals are two times more sensitive to the benefit level that the overall eligible population. The first stage is somewhat weaker (F=10), but still above the recommended level (Staiger and Stock 1997). Here we estimate that a $100 increase in the SSI benefit level would lead to a 11 percent increase in take-up.

7. Sensitivity Tests

Instrumental Variable Construction. As previously discussed, one potential limitation to the Potential Benefit instrument, is if there are unobserved characteristics that are correlated with Social Security benefit levels and one's likelihood of participating in means-tested programs. By construction, the Potential Benefits instrument varies not just as someone ages (reaching the EEA), but also contains variation between individuals, depending on their earnings and work histories. Concerns may arise because the preference for work may correlate with the preference for welfare, even after controlling for work histories in the model. To address this concern, we

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[31] These individuals can be eligible before they are sampled by the HRS.

test the robustness of our results by employing another instrument variable which does not rely on individual earnings. We develop the "Average Potential Benefit" by demographic cell as an instrument for estimated SNAP/SSI benefits. This approach is in the spirit of that used by Currie and Gruber (1996) in the context of Medicaid and Schmidt, Shore-Sheppard, and Watson (2013) studying five major safety net programs. As with the Potential Benefit, before age 62, the Average Potential Benefit is set at the maximum benefit level of SNAP/SSI program by household size and state. At age 62 and above, the Average Potential Benefit is set to the maximum SNAP/SSI benefits level less the average Social Security retirement benefit at age 62, calculated using administrative earnings, by 5-year age group, gender, race, education, and marital status.

We do not use earned income to define cells because labor market decisions may respond to safety net parameters.[32] The average Social Security benefit at age 62 by demographic cell is correlated with individual benefit levels but should not be correlated with individual-level unobserved characteristics, such as taste for work and welfare and family shocks, conditional on the other variables.

The results are summarized in Tables 5A and 5B.[33] For the SNAP participation analysis, in the OLS model, the estimates are consistent (Table 5A), and the estimated effect of the SNAP benefit level on the take-up decision is almost identical in magnitude. Again, in the first stage the Average Potential Benefit show expected sign and statistically significant (F=72 for IV, F=88 for IV-FE), but with this new instrument and sample we still lose significance of the estimated effect of benefits on take-up in the second stage for both IV and IV-FE models. These results confirm that individuals are insensitive to expected SNAP benefits.

For the SSI participation analysis, the results using the new instrument are consistent with those using the potential benefit instrument variable (Table 5B). Theoretically, the Average Potential Benefits should only capture the changes in the SSI benefit level associated with Social Security claiming decision. Empirically, we find that the Average Potential Benefit has the expected sign and is statistically significant in the first stage (F=23 and F=18, for IV and IV-FE, respectively). The SSI benefits operate in the expected direction (positive) and statistically

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[32] The average cell size is 36 for the SSI analytical sample with a standard deviation of 22 and 69 for the SNAP sample with a standard deviation of 34.

[33] Sample size changed due to the construction of the average potential benefit. Observations have negative values of the new instrument are excluded from the analysis.

significant in the second stage as well. When comparing the OLS and IV estimates, the change in the estimated coefficient for the expected SSI benefit is very small, 0.45 to 0.41, and within the range found earlier. The IV-FE estimation results in an imprecisely estimation.

Measurement Error. While we have determined eligibility to the best of our ability given the data, measurement error may remain an issue. Therefore we also examine how robust our results are to different definitions of the eligible population, including 1) use Social Security retirement benefits estimated based on administrative earnings record rather than self-reported ones to re-determine eligibility and estimate the take-up equation; 2) relax the asset eligibility requirement; 3) estimate the take-up equations among those with income less than 130 percent of the poverty line for SNAP program; 4) estimate the take-up equation among eligibles age 65 and older for whom the disability test is removed for SSI program.

1. Using Estimated Social Security Benefits. While administrative earnings are an improvement over self-reported measures, earnings are less likely to be the main source of income for the population over age 62. Measurement error in Social Security benefits (OASDI) are perhaps of more concern given the focus of this paper. Rupp et al. (2007) and Strand, Rupp, and Davies (2009) use administrative OASDI payments show a higher take-up rate among SSI eligible compared to the literature using survey data. To address the potential measurement error in self-reported OASDI benefits, we estimate Social Security retired worker and auxiliary benefits using administrative earnings records and self-reported and imputed marital histories.[34]

Huynh, Rupp, and Sears (2002) find that people with low OASDI benefit amounts tend to over-report on average and people with high benefit amounts tend to underreport on average. Interestingly, they also report that the cross-over point is around a benefit of \$200-300 per month for the 1998 SIPP data, well under the SSI benefit guarantee that year (\$494 for individuals and \$741 for couples). Thus, one would expect both over-reporting and under-reporting of OASDI benefits among our sample.

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[34] If divorced with a previous marriage that lasted 10 or more years, we first determine if the ex-spouse is in the sample. If the ex-spouse is not in the sample, we match the respondent to someone else in the survey by gender, education, race, and 5-year birth year band. We then use the earnings histories of the matched spouse to compute the spousal and survivor benefit available from the ex-spouse. For the widows (widowers) whose deceased spouses are missing from the sample, we match the respondents with another widow(er) in the sample, based on gender, race, education, 5-year birth cohort, and retirement age. We then use the earnings histories of that person's deceased spouse to estimate survivor benefits.

We find a correlation of 0.75 between estimated Social Security benefits and self-reported ones. On average, the estimated Social Security benefits are higher than self-reported ones, with a difference of $1,740 annual, which is consistent with the literature of under-reporting income. About 28% over-report benefit amounts and individuals who tend to over-report are more likely to be concentrated on the bottom of the income distribution, and more likely to be widowed or divorced.

We re-estimate the eligibility for the SNAP and SSI using both administrative earrings and estimated Social Security benefits based on earnings records. The differences in eligibility and take-up for SSI and SNAP are fairly small, compared to estimates using self-reported Social Security benefits. The results of estimating the take-up equations using this new sample are summarized in Tables 6A and 6B. The estimated effect of the SNAP benefit level on the take-up decision is almost identical in magnitude. For the SSI, the estimates are largely consistent with those using self-reported Social Security benefits (Table 6B).

2. Relaxing the Asset Eligibility Requirement. The literature also suggests that households tend to under-report asset holdings (Czajka et al. 2003, for example), but the under-reporting is less a concern for study of the low-income population and the elderly population in general (Strand, Rupp, and Davies 2009). Nevertheless, we examine how robust our results are when relaxing the asset eligibility requirement.

Not surprisingly, the eligibility rate for the SNAP increases to 16 percent when relaxing the asset tests, and take-up rate declines to 20 percent. The similar pattern is observed for the SSI, with eligibility rate rises to 8.5 percent and take-up decline to 33 percent.

The results of estimating take-up equation among these new eligible samples are summarized in Table 7A and 7B. For the SNAP, again, while there is statistically significant relationship in the OLS model, we find that individuals are insensitive to changes of the expected benefits level in the IV estimations. For the SSI, the broad conclusions are the same.

3. Using 130 Percent of the Poverty Line to Determine Eligibility for the SNAP. To address the concern of measurement error in other income components or expenditures that we used to calculate various deductions, we also estimate the take-up equation for the SNAP among individuals whose household income is under 130 percent of the poverty line (using only gross income test).

In this analysis, our eligibility rate increases to 13 percent with a take-up of 24 percent. The results confirm that individuals are insensitive to expected SNAP benefits (Table 8A).

4. Estimate the Take-up Equations among those over Age 65 for the SSI. As discussed before, analysis of SSI is complicated by the fact that two distinct groups may enter the program, the aged and the disabled. As the disability standards are removed at age 65, we observe an eligibility surge. Additionally, while the work-limitation measure is not a perfect representation of the SSA disability criteria, our disability eligibility for individuals under 65 may be noisy. For these reasons, we estimate a separate take-up equation among eligibles age 65 and older for whom the disability test is removed for SSI program.

The broad conclusions are the same regardless of the estimation model (Table 8B). When comparing the OLS and IV results, however, the change in the estimated effect of SSI benefits on participation is relative substantial, increasing from 0.05 to 0.13. The IV results suggest that for older individuals whose SSI benefit increases by $100, participation increases by 13 percentage points.

8. Conclusion and Policy Implications

By providing income to elderly households, Social Security has the potential to influence take-up of means-tested programs among the elderly in two distinct ways. First, by lifting households out of poverty, the composition of the pool of eligible individuals changes. To the extent that there is individual heterogeneity in the take-up decision, changing the eligible pool could help explain the difference in take-up rates. However, we find very little support for this theory. While individuals who are serially-eligible have higher take-up rates, there is no differential take up among those who become eligible versus those who become ineligible as they become old enough to claim Social Security benefits.

Second, Social Security could influence take-up decisions by providing income and thus decreasing the expected public assistance benefit level for which one may claim, thus decreasing the benefit of participation. We find while the elderly are insensitive to the benefit change of the SNAP, they are sensitive to SSI benefits. Overall, we estimate that a $100 increase in SSI benefits leads to a four percentage point increase in the probability of participating in the SSI; however we also find substantial heterogeneity. Newly eligible individuals are estimated to be

two times as sensitive as the overall SSI-eligible population. These results are robust to numerous model specifications.

Additionally, this study emphasizes the importance of confronting measurement error when estimating program participation equations. Using administrative earnings rather than self-reported ones improves the measurement of one component of income used in computing SNAP/SSI eligibility. The IV approach and sensitivity tests using different definitions of the eligible population helps address the measurement error in the potential means-tested benefit level, and further confirm that our findings are robust.

Finally, by examining two programs – SSI and SNAP – in consistent ways, we can compare the estimated relationship between the expected public assistance benefits level on the take-up decision with little worry that the model assumptions are driving differences in the results. By comparing these two programs, we find two pieces of evidence that support the assertion that individuals prefer cash to in-kind transfers. First, take-up in SSI is much more sensitive to the expected public assistance benefit level than that in the SNAP, and second, eligible individuals keep SSI benefits more often than they maintain SNAP benefits.

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Figure 1A. *SNAP Eligibility Rate by Age and Eligibility Criteria*
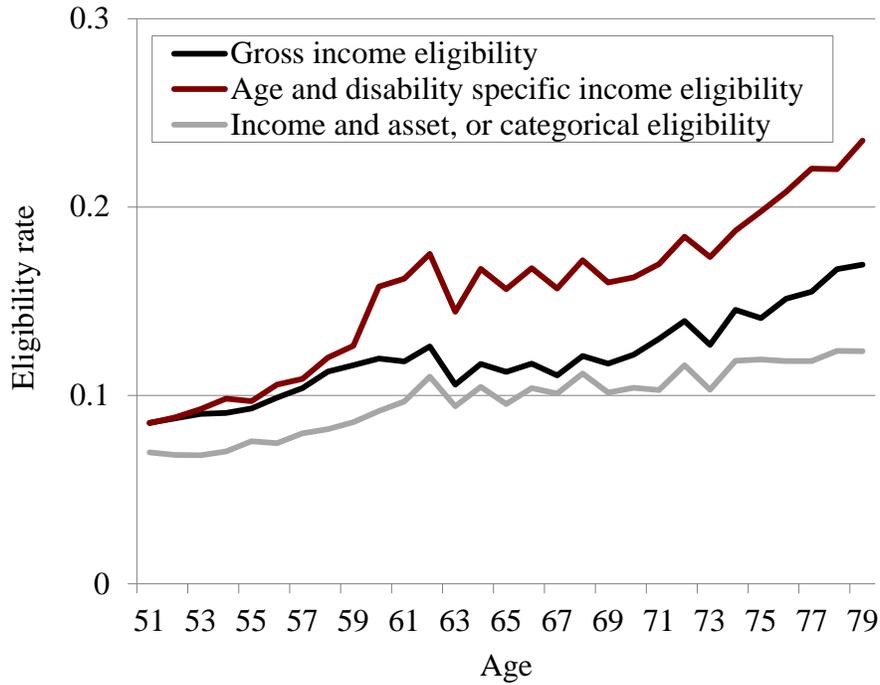
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 1B. *SNAP Take-up Rate by Age and Eligibility Criteria*
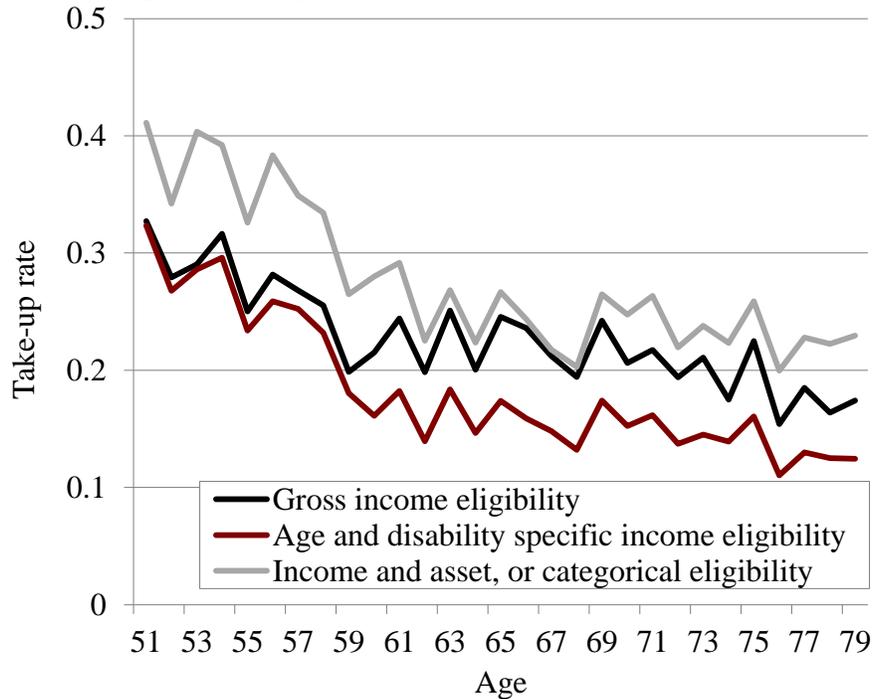
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 2A. *SSI Eligibility Rate by Age and Eligibility Criteria*
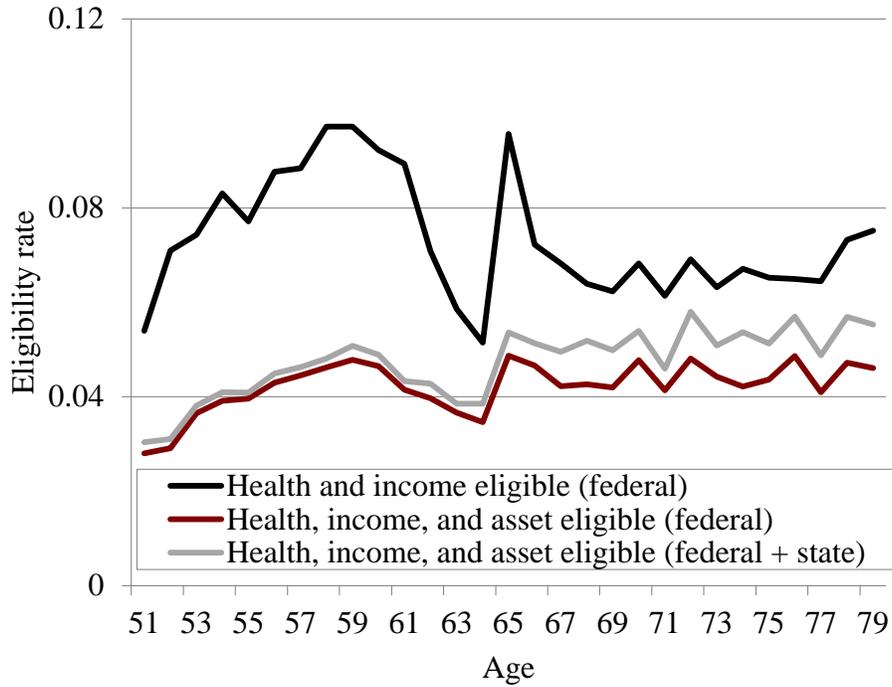
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 2B. *SSI Take-up Rate by Age and Eligibility Criteria*
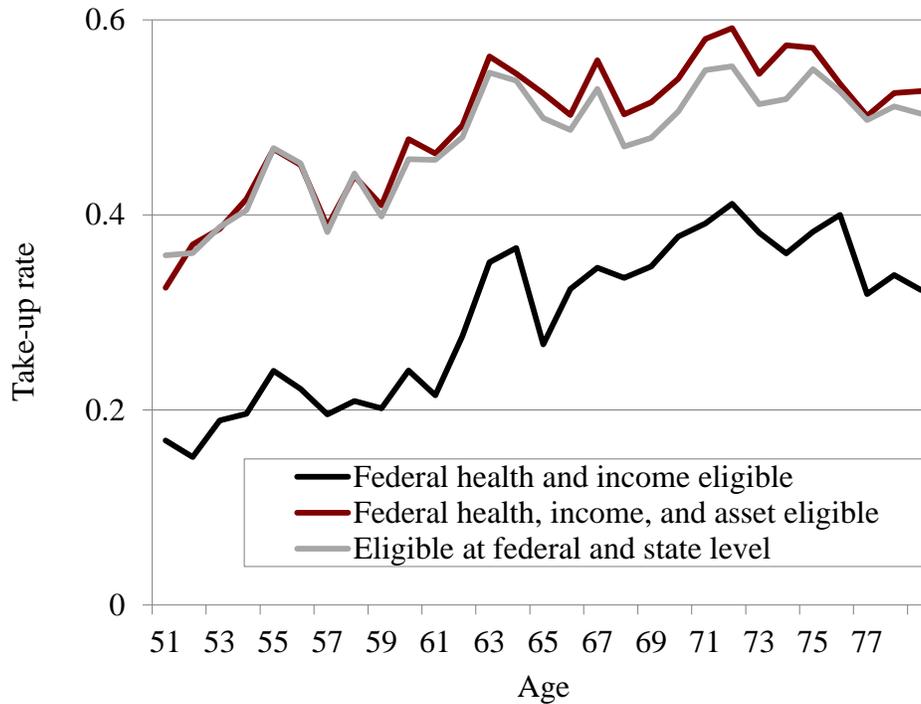
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 3A. *Ratio of Gross Income to Poverty Threshold by Age among SNAP Eligible Respondents*
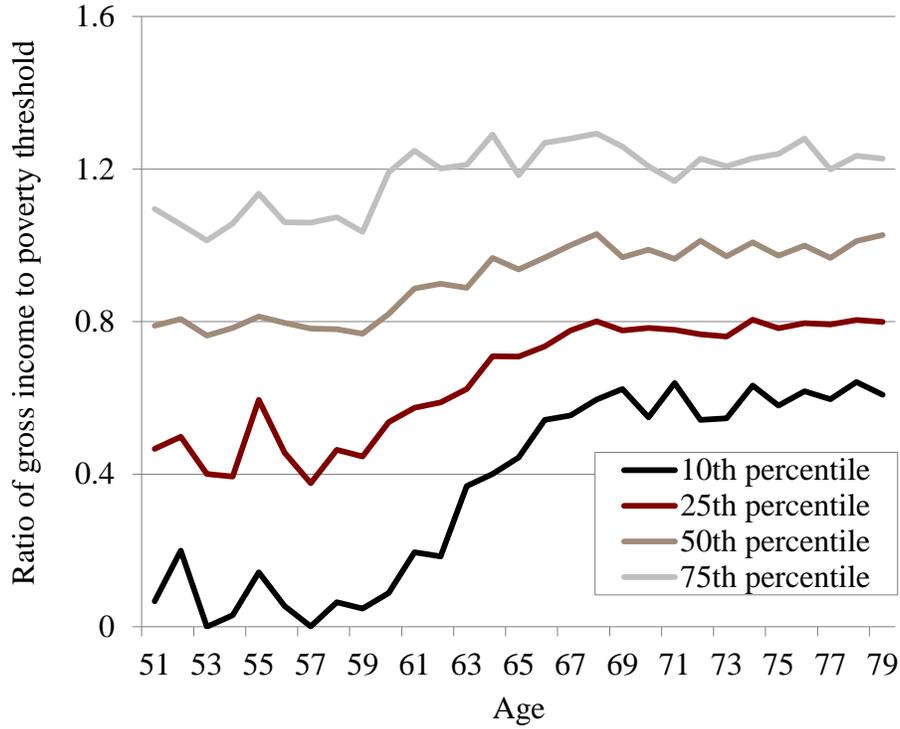
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 3B. *Expected SNAP Benefit Level by Age among SNAP Eligible Respondents*
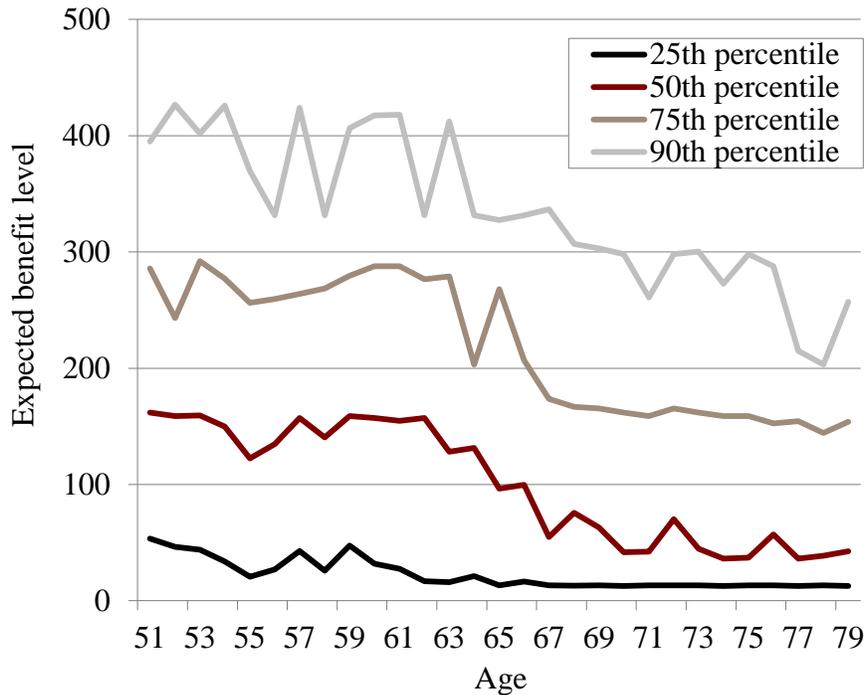
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 4A. *Ratio of Gross Income to Poverty Threshold by Age among SSI Eligible Respondents*
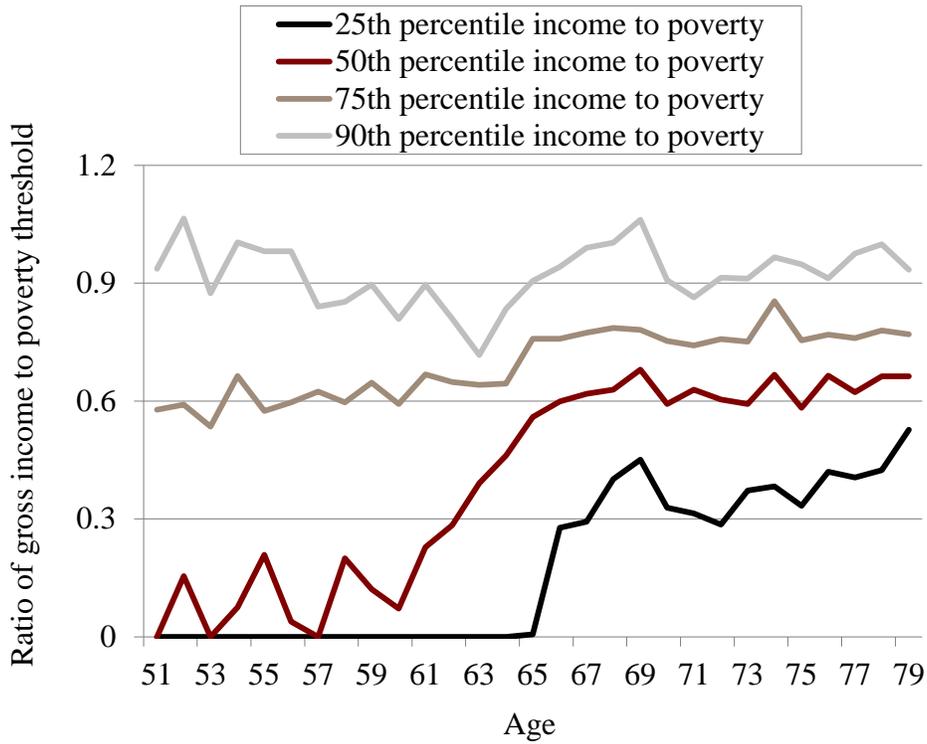
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 4B. *Expected SSI Benefit Level by Age among SSI Eligible Respondents*
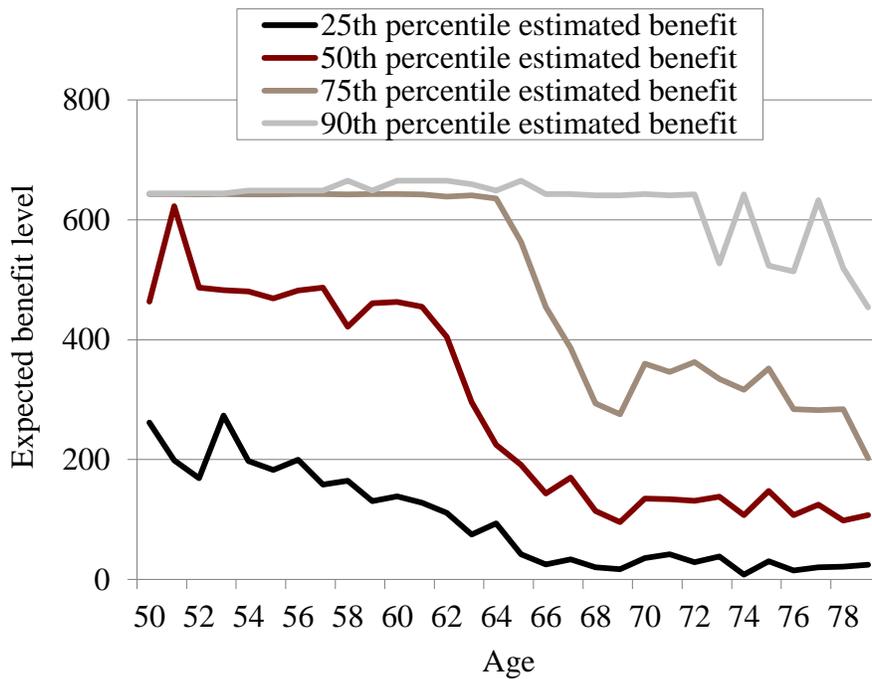
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 5A. *Transition Table SNAP, Eligibility by Age*
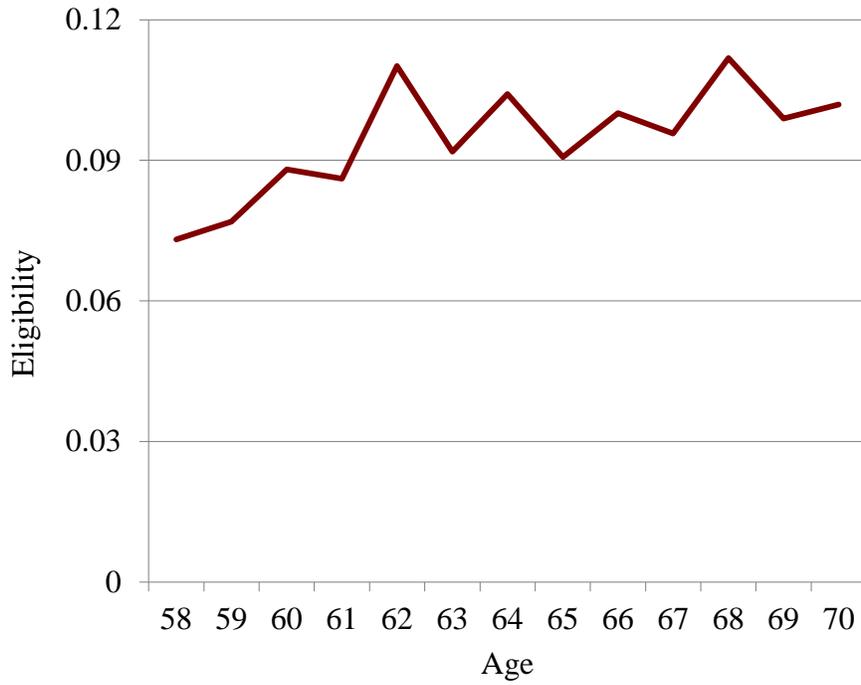
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Figure 5B. *Transition Table SSI, Eligibility by Age*
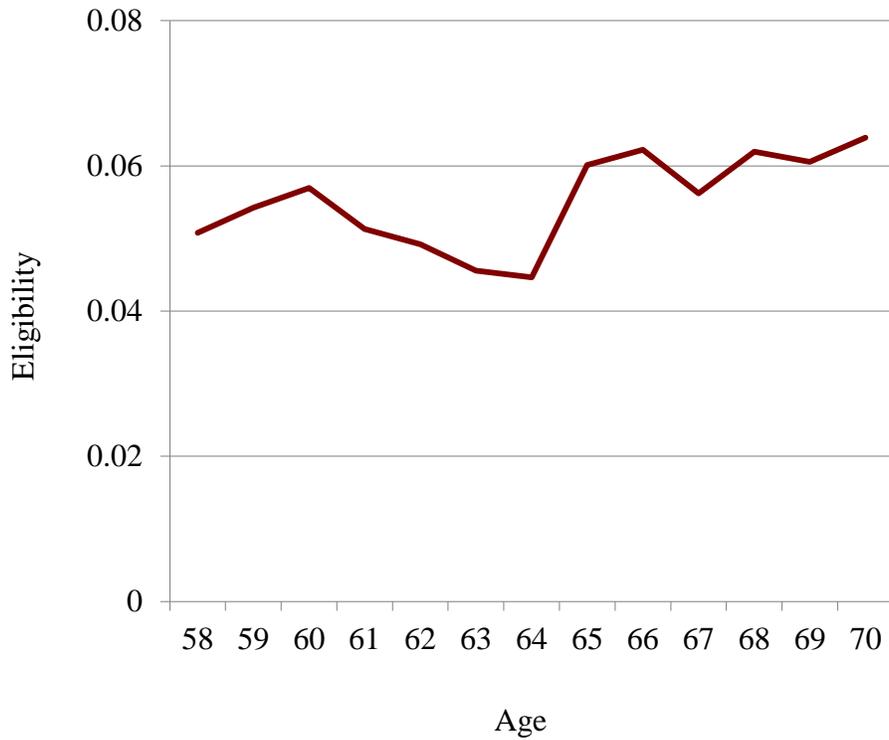
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 1A. *Take-up Rate by Eligibility Status, SNAP Program*

	Take-up rate		Number of observations		Estimated benefit (per month)	
	Age 58-61	Age 62-64	Age 58-61	Age 62-64	Age 58-61	Age 62-64
Eligible both periods	0.38	0.32	541	507	$188	$163
Eligible first period, ineligible second period	0.08	N/A	385	N/A	$194	N/A
Ineligible first period, eligible second period	N/A	0.08	N/A	462	N/A	$188

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 1B. *Take-up Rate by Eligibility Status, SSI Program*

	Take-up rate		Number of observations		Estimated benefit (per month)	
	Age 58-61	Age 62-64	Age 58-61	Age 62-64	Age 58-61	Age 62-64
Eligible both periods	0.58	0.62	618	516	$423	$357
Eligible first period, ineligible second period	0.13	N/A	885	N/A	$164	N/A
Ineligible first period, eligible second period	N/A	0.09	N/A	483	N/A	$108

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 2A. *Summary Statistics for SNAP Eligibles*

	All eligible						Pre-ERA				ERA and older			
	All eligible		Eligible, take up		Eligible, no take up		Eligible, take up		Eligible, no take up		Eligible, take up		Eligible, no take up	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Age	65.98	8.17	64.96	8.49	66.31	8.04	56.26	3.09	56.71	3.12	71.10	5.01	70.85	5.14
Female	0.64	0.48	0.69	0.46	0.62	0.49	0.62	0.49	0.56	0.50	0.74	0.44	0.65	0.48
White	0.66	0.47	0.60	0.49	0.68	0.47	0.54	0.50	0.66	0.47	0.64	0.48	0.69	0.46
Married	0.36	0.48	0.26	0.44	0.39	0.49	0.31	0.46	0.44	0.50	0.22	0.41	0.37	0.48
Less than high school degree	0.55	0.50	0.63	0.48	0.52	0.50	0.58	0.49	0.44	0.50	0.67	0.47	0.56	0.50
Household size														
One person household (%)	0.45	0.50	0.48	0.50	0.43	0.50	0.37	0.48	0.34	0.47	0.56	0.50	0.48	0.50
Mean	1.99	1.33	2.01	1.45	1.98	1.29	2.42	1.68	2.36	1.55	1.72	1.18	1.80	1.10
Income to poverty														
0-50%	0.18	0.38	0.22	0.41	0.16	0.37	0.37	0.48	0.33	0.47	0.11	0.31	0.09	0.28
>50-75%	0.15	0.35	0.21	0.41	0.12	0.33	0.20	0.40	0.15	0.35	0.22	0.42	0.11	0.32
>75-100%	0.25	0.44	0.37	0.48	0.21	0.41	0.26	0.44	0.18	0.39	0.45	0.50	0.23	0.42
>100-125%	0.22	0.41	0.13	0.34	0.24	0.43	0.12	0.32	0.20	0.40	0.14	0.35	0.27	0.44
>125%	0.21	0.40	0.06	0.24	0.25	0.44	0.05	0.21	0.15	0.36	0.07	0.26	0.30	0.46
Mean	0.97	0.70	0.75	0.38	1.05	0.76	0.64	0.43	0.83	0.77	0.83	0.32	1.15	0.74
Own a home	0.51	0.50	0.35	0.48	0.57	0.50	0.34	0.47	0.54	0.50	0.36	0.48	0.58	0.49
Own a car	0.56	0.50	0.41	0.49	0.61	0.49	0.47	0.50	0.66	0.47	0.37	0.48	0.59	0.49
Receive SSI	0.20	0.40	0.40	0.49	0.14	0.34	0.28	0.45	0.08	0.28	0.49	0.50	0.16	0.37
Poor health	0.21	0.41	0.28	0.45	0.18	0.39	0.29	0.45	0.18	0.38	0.28	0.45	0.18	0.39
SNAP benefit														
Mean estimated benefit	149.83	159.01	150.84	162.34	149.50	157.91	210.23	183.13	205.25	176.02	108.97	130.65	123.13	141.12
Mean self-reported benefit	108.73	126.52	117.69	127.56	0.00	0.00	154.52	139.50	0.00	0.00	91.73	111.39	0.00	0.00
Ever previously eligible	0.53	0.50	0.67	0.47	0.49	0.50	0.54	0.50	0.36	0.48	0.76	0.43	0.55	0.50
Quarters of work	89.53	56.28	73.18	52.88	94.91	56.33	79.80	52.37	102.37	53.49	68.52	52.76	91.38	57.30
Mean % zipcode below 130% of poverty	0.21	0.41	0.27	0.44	0.20	0.40	0.33	0.47	0.23	0.42	0.22	0.42	0.18	0.38
Number of observations	9,353		2,291		7,062		833		1,897		1,458		5,165	

Note: Data on benefits are expressed in 2011 dollars using CPI-U.

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 2B. *Summary Statistics for SSI Eligibles*

	All eligible						Pre-ERA				ERA and Older			
	All eligible		Eligible, take up		Eligible, no take up		Eligible, take up		Eligible, no take up		Eligible, take up		Eligible, no take up	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Age	65.97	8.12	67.75	7.67	64.66	8.20	56.94	2.86	56.66	2.98	71.38	4.83	70.87	4.93
Female	0.69	0.46	0.74	0.44	0.65	0.48	0.71	0.45	0.58	0.49	0.75	0.43	0.70	0.46
White	0.62	0.49	0.61	0.49	0.62	0.49	0.59	0.49	0.61	0.49	0.62	0.49	0.63	0.48
Married	0.24	0.43	0.19	0.39	0.28	0.45	0.11	0.31	0.24	0.43	0.22	0.41	0.31	0.46
Less than high school degree	0.63	0.48	0.72	0.45	0.57	0.49	0.66	0.47	0.50	0.50	0.74	0.44	0.63	0.48
Household size														
One person household (%)	0.37	0.48	0.45	0.50	0.31	0.46	0.46	0.50	0.24	0.43	0.45	0.50	0.37	0.48
Mean	2.35	1.64	2.21	1.63	2.45	1.64	2.26	1.60	2.63	1.68	2.19	1.63	2.32	1.60
Income to poverty														
0-50%	0.53	0.50	0.64	0.48	0.44	0.50	0.97	0.18	0.64	0.48	0.52	0.50	0.29	0.45
>50-75%	0.23	0.42	0.22	0.41	0.24	0.43	0.02	0.15	0.13	0.34	0.29	0.45	0.32	0.47
>75-100%	0.15	0.35	0.11	0.31	0.18	0.38	0.00	0.06	0.06	0.24	0.14	0.35	0.27	0.44
>100-125%	0.05	0.21	0.03	0.16	0.06	0.24	0.00	0.06	0.06	0.24	0.03	0.18	0.06	0.24
>125%	0.05	0.22	0.01	0.10	0.08	0.27	0.00	0.05	0.11	0.31	0.01	0.11	0.06	0.24
Mean	0.47	0.50	0.34	0.37	0.57	0.56	0.04	0.21	0.45	0.68	0.44	0.36	0.66	0.42
Own a home	0.39	0.49	0.31	0.46	0.44	0.50	0.26	0.44	0.35	0.48	0.32	0.47	0.52	0.50
Own a car	0.39	0.49	0.29	0.45	0.47	0.50	0.29	0.45	0.49	0.50	0.29	0.45	0.44	0.50
Receive welfare	0.38	0.49	0.51	0.50	0.28	0.45	0.58	0.49	0.37	0.48	0.48	0.50	0.22	0.42
Poor health	0.32	0.47	0.34	0.47	0.30	0.46	0.49	0.50	0.42	0.49	0.29	0.45	0.21	0.41
SSI benefit														
Mean estimated benefit	316.25	253.62	366.43	255.38	279.22	245.87	592.46	122.81	417.05	231.60	290.44	243.17	172.34	199.01
Mean self-reported benefit	157.25	250.29	370.37	261.94	0.00	0.00	539.64	236.54	0.00	0.00	313.47	245.02	0.00	0.00
Ever previously eligible	0.56	0.50	0.72	0.45	0.44	0.50	0.66	0.47	0.38	0.49	0.74	0.44	0.48	0.50
Quarters of work	68.10	53.66	51.53	46.92	80.32	55.03	46.44	42.03	92.39	51.92	53.25	48.34	70.96	55.57
Mean % zipcode below 130% of poverty	0.27	0.44	0.26	0.44	0.28	0.45	0.33	0.47	0.31	0.46	0.24	0.42	0.25	0.43
Number of observations	4,503		1,948		2,555		422		925		1,526		1,630	

Note: Data on benefits are expressed in 2011 dollars using CPI-U.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 3A. *SNAP Participation among the Elderly*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SNAP benefit	0.016	**	0.041		0.007		0.008	
	(0.008)		(0.038)		(0.007)		(0.034)	
Age	-0.026		-0.028	*	0.057		0.066	**
	(0.017)		(0.017)		(0.036)		(0.038)	
Age square	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
Female	0.009		0.009					
	(0.021)		(0.021)					
Married	0.001		0.024		0.013		0.071	
	(0.021)		(0.039)		(0.033)		(0.047)	
White	-0.032	*	-0.031	*				
	(0.020)		(0.020)					
High school and above	-0.049	**	-0.049	**				
	(0.019)		(0.019)					
Household size	-0.007		-0.020	*	0.004		-0.001	
	(0.009)		(0.021)		(0.009)		-(0.022)	
Children under 15	0.080	***	0.080	***	0.044		0.036	
	(0.028)		(0.028)		(0.028)		(0.028)	
Poor health	0.045	**	0.044	**	0.060	***	0.044	**
	(0.020)		(0.019)		(0.019)		(0.018)	
Own a home	-0.092	***	-0.092	***	-0.012		-0.032	
	(0.020)		(0.020)		(0.027)		(0.027)	
Own a car	-0.045	**	-0.043	**	0.024		0.045	**
	(0.019)		(0.019)		(0.021)		(0.021)	
Receive SSI	0.257	***	0.266	***	0.086	***	0.091	***
	(0.022)		(0.025)		(0.022)		(0.025)	
Quarters worked	0.000	**	0.000	**				
	(0.000)		(0.000)					
Poverty density by zip-code	0.016		0.012		-0.007		-0.014	
	(0.020)		(0.021)		(0.020)		(0.020)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.298	***			0.360	***
			(0.034)				(0.029)	
F-test of excluded inst.			65				153	
R square	0.181		0.178		0.035		0.036	
Number of observations	6,498		6,498		6,498		6,498	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 3B. *SSI Participation among the Elderly*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SSI benefit	0.044	***	0.043	**	0.028	***	-0.041	
	(0.005)		(0.020)		(0.005)		(0.034)	
Age	0.097	***	0.097	***	0.171	***	0.177	***
	(0.019)		(0.018)		(0.043)		(0.045)	
Age square	-0.001	***	-0.001	***	-0.001	***	-0.001	***
	(0.000)		(0.000)		(0.000)		(0.000)	
65 plus	0.104	***	0.102	***	0.129	***	0.051	
	(0.025)		(0.027)		(0.032)		(0.051)	
Female	-0.017		-0.018					
	(0.031)		(0.036)					
Married	0.008		0.006		0.087	*	-0.013	
	(0.031)		(0.037)		(0.049)		(0.070)	
White	0.006		0.005					
	(0.018)		(0.018)					
High school and above	-0.053	**	-0.053	**				
	(0.022)		(0.022)					
Household size	-0.020		-0.020		-0.009		-0.014	
	(0.013)		(0.013)		(0.008)		(0.009)	
Children under 15	0.019		0.019		0.060	**	0.068	**
	(0.044)		(0.043)		(0.029)		(0.031)	
Poor health	0.006		0.006		-0.045	**	-0.048	**
	(0.017)		(0.016)		(0.020)		(0.021)	
Own a home	-0.077	***	-0.077	***	0.020		0.021	
	(0.017)		(0.017)		(0.034)		(0.035)	
Own a car	-0.052		-0.053		0.028		0.019	
	(0.032)		(0.035)		(0.025)		(0.027)	
Receive welfare	0.190	***	0.190	***	0.047	***	0.065	***
	(0.025)		(0.020)		(0.020)		(0.023)	
Quarters worked	-0.001	***	-0.001	**				
	(0.000)		(0.000)					
Poverty density by zip-code	-0.017		-0.016		0.045	**	0.056	**
	(0.020)		(0.020)		(0.022)		(0.024)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.179	***			0.210	***
			(0.026)				(0.031)	
F-test of excluded inst.			72				46	
R square	0.222		0.222		0.123		0.037	
Number of observations	3,875		3,875		3,875		3,875	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 4A. *SNAP Participation among the Newly Eligible Elderly*

	Model (1)		Model (2)	
	OLS		IV	
Estimated SNAP benefit	0.002		0.006	
	(0.011)		(0.047)	
Age	-0.020		-0.020	
	(0.025)		(0.025)	
Age square	0.000		0.000	
	(0.000)		(0.000)	
Female	0.008		0.008	
	(0.023)		(0.023)	
Married	0.028		-0.024	
	(0.027)		(0.047)	
White	0.000		0.000	
	(0.021)		(0.023)	
High school and above	0.009		-0.009	
	(0.020)		(0.021)	
Household size	0.009		0.007	
	(0.010)		(0.023)	
Children under 15	0.039		0.039	
	(0.035)		(0.036)	
Poor health	0.010		0.010	
	(0.027)		(0.027)	
Own a home	-0.070	***	-0.070	***
	(0.025)		(0.025)	
Own a car	-0.048	**	-0.048	**
	(0.023)		(0.024)	
Receive SSI	0.243	***	0.243	***
	(0.039)		(0.039)	
Quarters worked	0.000		0.000	
	(0.000)		(0.000)	
Poverty density by zip-code	0.048	*	0.047	*
	(0.027)		(0.027)	
Wave indicator	Yes		Yes	
State indicator	Yes		Yes	
IV (the Potential Benefit)			0.280	***
			(0.059)	
F-test of excluded inst.			22	
R square	0.131		0.131	
Number of observations	2,217		2,217	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 4B. *SSI Participation among the Newly Eligible Elderly*

	Model (1)		Model (2)	
	OLS		IV	
Estimated SSI benefit	0.021	***	0.105	*
	(0.007)		(0.062)	
Age	0.071	**	0.083	***
	(0.029)		(0.028)	
Age square	0.000	**	-0.001	***
	(0.000)		(0.000)	
65 plus	0.122	***	0.214	***
	(0.040)		(0.065)	
Female	-0.058		-0.027	
	(0.033)		(0.049)	
Married	-0.003		0.110	
	(0.039)		(0.098)	
White	-0.018		0.010	
	(0.022)		(0.031)	
High school and above	-0.036		-0.044	*
	(0.023)		(0.023)	
Household size	-0.002		-0.002	
	(0.011)		(0.012)	
Children under 15	0.040		0.015	
	(0.047)		(0.053)	
Poor health	0.026		0.028	
	(0.022)		(0.027)	
Own a home	-0.095	***	-0.101	***
	(0.032)		(0.030)	
Own a car	-0.006		0.024	
	(0.024)		(0.029)	
Receive welfare	0.226	***	0.207	***
	(0.038)		(0.047)	
Quarters worked	-0.001	***	0.000	
	(0.000)		(0.001)	
Poverty density by zip-code	-0.003		-0.029	
	(0.024)		(0.034)	
Wave indicator	Yes		Yes	
State indicator	Yes		Yes	
IV (the Potential Benefit)			0.127	***
			(0.043)	
F-test of excluded inst.			10	
R square	0.231		0.090	
Number of observations	1,103		1,103	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 5A. *SNAP Participation among the Elderly: Using the Average Potential Benefit as IV*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SNAP benefit	0.015	*	0.038		0.009		0.014	
	(0.008)		(0.037)		(0.007)		(0.040)	
Age	-0.019		-0.021		0.054		0.080	*
	(0.017)		(0.018)		(0.039)		(0.042)	
Age square	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
Female	0.001		0.001					
	(0.023)		(0.022)					
Married	0.020		0.002		-0.014		0.048	
	(0.022)		(0.041)		(0.036)		(0.055)	
White	-0.028		-0.027					
	(0.020)		(0.020)					
High school and above	-0.043	**	-0.044	**				
	(0.020)		(0.020)					
Household size	-0.001		-0.014		0.006		0.002	
	(0.009)		(0.021)		(0.010)		(0.025)	
Children under 15	0.070	***	0.070	***	0.024		0.015	
	(0.027)		(0.027)		(0.028)		(0.027)	
Poor health	0.038	*	0.037	*	0.053	***	0.051	**
	(0.021)		(0.021)		(0.020)		(0.019)	
Own a home	-0.069	***	-0.070	***	-0.029		-0.048	*
	(0.027)		(0.020)		(0.028)		(0.028)	
Own a car	-0.057	***	-0.054	***	0.002		0.029	
	(0.019)		(0.020)		(0.023)		(0.023)	
Receive SSI	0.252	***	0.259	***	0.047	*	0.058	**
	(0.025)		(0.027)		(0.026)		(0.028)	
Quarters worked	0.000	***	0.000	***				
	(0.000)		(0.000)					
Poverty density by zip-code	0.010		0.006		-0.019		-0.035	
	(0.022)		(0.022)		(0.021)		(0.230)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Average PotBen)			0.342	***			0.304	***
			(0.040)				(0.032)	
F-test of excluded inst.			72				88	
R square	0.180		0.177		0.033		0.035	
Number of observations	5,871		5,871		5,871		5,871	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 5B. *SSI Participation among the Elderly: Using the Average Potential Benefit as IV*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SSI benefit	0.045	***	0.041	**	0.028	***	0.049	
	(0.005)		(0.020)		(0.005)		(0.052)	
Age	0.088	***	0.089	***	0.179	***	0.177	***
	(0.019)		(0.020)		(0.043)		(0.043)	
Age square	-0.001	***	-0.001	***	-0.001	***	-0.001	***
	(0.000)		(0.000)		(0.000)		(0.000)	
65 plus	0.063	***	0.057		0.102	***	0.122	**
	(0.023)		(0.058)		(0.032)		(0.061)	
Female	-0.014		-0.016					
	(0.029)		(0.044)					
Married	-0.007		-0.013		0.007		-0.011	
	(0.028)		(0.061)		(0.008)		(0.085)	
White	0.003		0.002					
	(0.022)		(0.022)					
High school and above	-0.051	**	-0.051	**				
	(0.024)		(0.023)					
Household size	-0.022	*	-0.022	*	-0.008		-0.007	
	(0.012)		(0.012)		(0.008)		(0.008)	
Children under 15	0.009		0.009		0.050	*	0.049	*
	(0.043)		(0.043)		(0.029)		(0.030)	
Poor health	0.001		0.001		-0.046	**	-0.045	**
	(0.016)		(0.016)		(0.020)		(0.020)	
Own a home	-0.082	***	-0.083	***	0.036		0.037	
	(0.021)		(0.043)		(0.034)		(0.034)	
Own a car	-0.053	*	-0.054		0.015		0.018	
	(0.029)		(0.036)		(0.026)		(0.027)	
Receive welfare	0.187	***	0.189	***	0.034	*	0.028	
	(0.023)		(0.029)		(0.020)		(0.025)	
Quarters worked	-0.001	***	-0.001	*				
	(0.000)		(0.000)					
Poverty density by zip-code	-0.017		-0.015		0.031		0.028	
	(0.020)		(0.026)		(0.022)		(0.024)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Average PotBen)			0.158	***			0.125	***
			(0.028)				(0.030)	
F-test of excluded inst.			23				18	
R square	0.224		0.224		0.107		0.100	
Number of observations	3,875		3,875		3,875		3,875	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 6A. *SNAP Participation among the Elderly: Using Estimated Social Security Benefits*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SNAP benefit	0.018	**	0.064		0.010		0.003	
	(0.008)		(0.045)		(0.007)		(0.040)	
Age	-0.030	*	-0.032	*	0.048		0.051	
	(0.016)		(0.016)		(0.035)		(0.038)	
Age square	0.000	*	0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
Female	0.005		0.004					
	(0.020)		(0.020)					
Married	-0.007		0.035		0.005		0.053	
	(0.021)		(0.043)		(0.032)		(0.050)	
White	-0.027		-0.023	*				
	(0.020)		(0.019)					
High school and above	-0.046	**	-0.047	**				
	(0.019)		(0.019)					
Household size	-0.005		-0.030	*	0.002		0.002	
	(0.009)		(0.024)		(0.009)		(0.026)	
Children under 15	0.077	***	0.077	***	0.062	**	0.044	
	(0.027)		(0.027)		(0.028)		(0.027)	
Poor health	0.045	**	0.042	**	0.053	***	0.041	**
	(0.019)		(0.019)		(0.018)		(0.017)	
Own a home	-0.089	***	-0.091	***	-0.023		-0.042	
	(0.020)		(0.020)		(0.026)		(0.026)	
Own a car	-0.042	**	-0.036	**	0.030		0.045	**
	(0.018)		(0.019)		(0.021)		(0.020)	
Receive SSI	0.268	***	0.284	***	0.100	***	0.106	***
	(0.022)		(0.026)		(0.021)		(0.026)	
Quarters worked	0.000	**	0.000	**				
	(0.000)		(0.000)					
Poverty density by zip-code	0.021		0.013		-0.010		-0.016	
	(0.020)		(0.021)		(0.019)		(0.200)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.238	***			0.295	***
			(0.034)				(0.029)	
F-test of excluded inst.			42				105	
R square	0.186		0.177		0.036		0.036	
Number of observations	6,879		6,879		6,879		6,879	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 6B. *SSI Participation among the Elderly: Using Estimated Social Security Benefits*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SSI benefit	0.039	***	0.040	***	0.019	***	-0.014	
	(0.045)		(0.012)		(0.005)		(0.017)	
Age	0.143	***	0.143	***	0.165	***	0.154	***
	(0.020)		(0.020)		(0.037)		(0.037)	
Age square	-0.001	***	-0.001	***	-0.001	***	-0.001	***
	(0.000)		(0.000)		(0.000)		(0.000)	
65 plus	0.073	***	0.074	***	0.084	***	0.042	
	(0.023)		(0.023)		(0.030)		(0.036)	
Female	-0.047		-0.047					
	(0.029)		(0.031)					
Married	0.000		0.001		0.056		0.012	
	(0.039)		(0.041)		(0.042)		(0.047)	
White	0.017		0.017					
	(0.022)		(0.022)					
High school and above	-0.049	**	-0.048	**				
	(0.023)		(0.022)					
Household size	-0.012		-0.012	*	-0.011		-0.014	*
	(0.013)		(0.013)		(0.007)		(0.007)	
Children under 15	-0.014		-0.014		0.064	**	0.060	**
	(0.035)		(0.034)		(0.027)		(0.027)	
Poor health	0.007		0.007		-0.045	**	-0.048	**
	(0.016)		(0.016)		(0.018)		(0.018)	
Own a home	-0.092	***	-0.092	***	-0.025		-0.012	
	(0.018)		(0.018)		(0.029)		(0.030)	
Own a car	-0.079	**	-0.079	**	0.020		0.014	
	(0.031)		(0.031)		(0.022)		(0.022)	
Receive welfare	0.199	***	0.199	***	0.033	*	0.042	
	(0.021)		(0.021)		(0.018)		(0.019)	
Quarters worked	-0.001	***	-0.001	**				
	(0.000)		(0.000)					
Poverty density by zip-code	-0.005		-0.005		0.061	***	0.066	***
	(0.023)		(0.023)		(0.020)		(0.020)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.383	***			0.389	***
			(0.022)				(0.026)	
F-test of excluded inst.			259				222	
R square	0.185		0.185		0.100		0.081	
Number of observations	4,336		4,336		4,336		4,336	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 7A. *SNAP Participation among the Elderly: Relaxing the Asset Eligibility Requirement*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SNAP benefit	0.030	***	0.012		0.007		-0.003	
	(0.006)		(0.033)		(0.006)		(0.026)	
Age	-0.028	**	-0.027	**	0.045	*	0.046	*
	(0.012)		(0.012)		(0.027)		(0.028)	
Age square	0.000	**	0.000	**	0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
Female	0.002		0.002					
	(0.015)		(0.014)					
Married	-0.004		-0.017		0,006		0.038	
	(0.033)		(0.025)		(0.025)		(0.034)	
White	-0.015	**	-0.037	**				
	(0.017)		(0.016)					
High school and above	-0.054	***	-0.057	***				
	(0.014)		(0.015)					
Household size	-0.006		0.002		0.005		0.009	
	(0.007)		(0.014)		(0.007)		(0.016)	
Children under 15	0.080	***	0.082	***	0.032		0.030	
	(0.024)		(0.024)		(0.023)		(0.023)	
Poor health	0.052	***	0.054	***	0.061	***	0.042	***
	(0.017)		(0.017)		(0.015)		(0.015)	
Own a home	-0.088	***	-0.090	***	-0.026		-0.031	
	(0.015)		(0.017)		(0.021)		(0.020)	
Own a car	-0.060	***	-0.060	***	0.018		0.026	
	(0.015)		(0.018)		(0.017)		(0.017)	
Receive SSI	0.286	***	0.283	***	0.075	***	0.077	***
	(0.022)		(0.023)		(0.018)		(0.020)	
Quarters worked	0.000	**	0.000	**				
	(0.000)		(0.000)					
Poverty density by zip-code	0.012		0.015		-0.014		-0.007	
	(0.015)		(0.015)		(0.015)		(0.016)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.253	***			0.347	***
			(0.033)				(0.024)	
F-test of excluded inst.			57				208	
R square	0.228		0.226		0.029		0.028	
Number of observations	9,648		9,648		9,648		9,648	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 7B. *SSI Participation among the Elderly: Relaxing the Asset Eligibility Requirement*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SSI benefit	0.024	***	0.088	***	0.016	***	0.010	
	(0.003)		(0.019)		(0.003)		(0.041)	
Age	0.057	***	0.048	***	0.114	***	0.115	***
	(0.012)		(0.013)		(0.031)		(0.031)	
Age square	0.000	***	-0.001	***	-0.001	***	-0.001	***
	(0.000)		(0.000)		(0.000)		(0.000)	
65 plus	0.108	***	0.226	***	0.162	***	0.154	**
	(0.017)		(0.032)		(0.023)		(0.064)	
Female	-0.032	*	-0.011					
	(0.017)		(0.019)					
Married	-0.062	**	-0.110	**	-0.007		-0.004	
	(0.029)		(0.037)		(0.031)		(0.040)	
White	-0.015		-0.020					
	(0.016)		(0.015)					
High school and above	-0.072	***	-0.083	***				
	(0.014)		(0.015)					
Household size	-0.010		-0.010		-0.007		-0.007	
	(0.007)		(0.008)		(0.006)		(0.006)	
Children under 15	0.019		-0.030		0.047	**	0.048	**
	(0.025)		(0.026)		(0.022)		(0.023)	
Poor health	0.005		-0.006		-0.041	***	-0.041	**
	(0.012)		(0.015)		(0.014)		(0.014)	
Own a home	-0.079	***	-0.071	***	-0.015		-0.014	
	(0.015)		(0.016)		(0.023)		(0.023)	
Own a car	-0.123	***	-0.105	***	-0.001		-0.006	
	(0.022)		(0.022)		(0.019)		(0.019)	
Receive welfare	0.241	***	0.223	***	0.058	***	0.060	***
	(0.022)		(0.019)		(0.016)		(0.021)	
Quarters worked	-0.001	***	0.000					
	(0.000)		(0.000)					
Poverty density by zip-code	-0.011		-0.030		0.018		0.018	
	(0.018)		(0.022)		(0.017)		(0.018)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.083	***			0.080	***
			(0.015)				(0.026)	
F-test of excluded inst.			44				17	
R square	0.330		0.237		0.100		0.100	
Number of observations	6,405		6,405		6,405		6,405	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 8A. *SNAP Participation among the Elderly: Using 130 Percent of Poverty Line*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SNAP benefit	0.015	**	0.022		0.005		-0.009	
	(0.007)		(0.033)		(0.007)		(0.031)	
Age	-0.013		-0.012		0.051		0.045	
	(0.014)		(0.014)		(0.031)		(0.031)	
Age square	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
Female	0.009		0.010					
	(0.016)		(0.016)					
Married	-0.008		0.004		-0.008		0.017	
	(0.016)		(0.023)		(0.029)		(0.038)	
White	-0.035	**	-0.036					
	(0.017)		(0.017)					
High school and above	-0.058	***	-0.058	**				
	(0.016)		(0.016)					
Household size	-0.001		-0.003		0.001		0.007	
	(0.007)		(0.011)		(0.008)		(0.014)	
Children under 15	0.080	***	0.080	***	0.066		0.052	
	(0.025)		(0.024)		(0.025)		(0.024)	
Poor health	0.066	***	0.066	*	0.044	***	0.029	**
	(0.019)		(0.019)		(0.017)		(0.016)	
Own a home	-0.096	***	-0.096	***	-0.046		-0.044	*
	(0.017)		(0.017)		(0.028)		(0.023)	
Own a car	-0.060	***	-0.059	***	0.021		0.016	
	(0.017)		(0.017)		(0.018)		(0.018)	
Receive SSI	0.290	***	0.291	***	0.091	*	0.086	**
	(0.023)		(0.024)		(0.020)		(0.023)	
Quarters worked	0.000		0.000	***				
	(0.000)		(0.000)					
Poverty density by zip-code	0.002		0.001		-0.038		-0.027	
	(0.016)		(0.015)		(0.017)		(0.019)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.270	***			0.348	***
			(0.031)				(0.026)	
F-test of excluded inst.			76				182	
R square	0.218		0.218		0.029		0.024	
Number of observations	8,320		8,320		8,320		8,320	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.

Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Table 8B. *SSI Participation among the Elderly: Eligibles over Age 65*

	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS		IV		FE		IV-FE	
Estimated SSI benefit	0.046	***	0.132	***	0.016	***	0.010	
	(0.007)		(0.033)		(0.003)		(0.041)	
Age	0.240	***	0.204	**	0.114	***	0.115	***
	(0.079)		(0.081)		(0.031)		(0.031)	
Age square	-0.002	***	-0.001	**	-0.001	***	-0.001	***
	(0.001)		(0.000)		(0.000)		(0.000)	
Female	0.049		0.068					
	(0.037)		(0.048)					
Married	0.029		0.110	**	-0.007		-0.004	
	(0.049)		(0.053)		(0.031)		(0.040)	
White	0.028		0.029					
	(0.022)		(0.023)					
High school and above	-0.101	***	-0.087	***				
	(0.021)		(0.023)					
Household size	-0.014		-0.015		-0.007		-0.007	
	(0.019)		(0.022)		(0.006)		(0.006)	
Children under 15	0.068		0.079		0.047	**	0.048	**
	(0.068)		(0.007)		(0.022)		(0.023)	
Poor health	0.014		0.007		-0.041	***	-0.041	**
	(0.022)		(0.025)		(0.014)		(0.014)	
Own a home	-0.119	***	-0.093	***	-0.015		-0.014	
	(0.024)		(0.028)		(0.023)		(0.023)	
Own a car	-0.049		-0.019		-0.001		-0.006	
	(0.043)		(0.052)		(0.019)		(0.019)	
Receive welfare	0.283	***	0.274	***	0.058	***	0.060	***
	(0.030)		(0.032)		(0.016)		(0.021)	
Quarters worked	0.000	***	0.000	***				
	(0.000)		(0.000)					
Poverty density by zip-code	-0.007		-0.030		0.018		0.018	
	(0.022)		(0.027)		(0.017)		(0.018)	
Wave indicator	Yes		Yes		Yes		Yes	
State indicator	Yes		Yes		Yes		Yes	
IV (the Potential Benefit)			0.190	***			0.080	***
			(0.036)				(0.026)	
F-test of excluded inst.			38				17	
R square	0.229		0.121		0.100		0.100	
Number of observations	2,271		2,271		2,271		2,271	

Note: * indicates significant at 10% confidence level; ** indicates significant at 5% level; *** indicates significant at 1% level.
Source: Authors' calculation based on the *Health and Retirement Study* (HRS), 1992-2010.

Appendix A. Determining Program Eligibility

Appendix A1. *Eligibility Criterion for the Supplemental Nutrition Assistance Program* (Effective for Oct. 1, 2012 through Sept. 20, 2013)

To get benefits from the Supplemental Nutrition Assistance Program, households must meet certain tests, including income and resources tests:

Income

Households have to meet income tests unless all members are receiving TANF, SSI, or in some places, general assistance. Most households must meet both the gross and net income tests, but a household with an elderly person or a person who is receiving certain types of disability payments has to meet only the net income test.

Gross income means a household's total, non-excluded income, before any deductions have been made. The gross income limit is set at 130 percent of the poverty line. *Net income* means gross income minus allowable deductions. In 2012, deductions are allowed as follows:

- A 20 percent deduction from earned income;
- A standard deduction of $149 for households sizes of 1 to 3 people and $160 for a household size of 4 (higher for some larger households);
- A dependent care deduction when needed for work, training, or education;
- Legally-owed child support payments;
- Out of pocket medical expenses for elderly or disabled members that are more than $35 for the month;
- Some states allow homeless households a set amount of $143 for shelter costs; and
- Excess shelter costs that are more than half of the household's income after the other deductions. Allowable costs include the cost of fuel used for heating and cooking, electricity, water, the basic fee for one telephone, rent or mortgage payments and taxes on the home. The amount of the shelter deduction cannot be more than $469 unless one person in the household is elderly or disabled. The limit is higher in Alaska, Hawaii and Guam.

The net income limit is set at 100 percent of the poverty line.

Resources

Households may have $2,000 in countable resources, such as a bank account, or $3250 in countable resources if at least one person is age 60 or older, or is disabled. Excluded assets include the equity value of one's home and lot, the resources of people who receive SSI or TANF, licensed vehicles that are used for income-producing purposes or as a home, or for long

distance travel for work, the first $4,650 of the fair market value of one licensed car,[35] and most retirement (pension) plans.[36]

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[35] With passage of the *Farm Security and Rural Investment Act of 2002,* States have the option to expand state SNAP asset and categorical eligibility. Currently 39 States exclude the value of all vehicles entirely. Of the remaining States, 11 totally exclude the value of at least one vehicle per household. The other 3 states exempt an amount higher than the SNAP's standard auto exemption to determine the countable resource value of a vehicle.

[36] The 2008 Farm Bill excluded most retirement accounts from resources when determining eligibility for SNAP. Before 2008, individual retirement account (IRAs) were not exempt from the Food Stamp asset test.

Appendix A2. *Eligibility Criterion for Supplemental Security Income*
(Effective January 1, 2012 – December 31, 2012)

To qualify for Supplemental Security Income at the federal level, an individual or couple must meet certain health, income, and resource criteria. States may also provide supplemental benefits based on the federal criteria or separate requirements.

Health

Individuals receiving SSI must be aged, blind or disabled. An individual is considered "aged" once he or she has reached age 65. In order to be considered disabled, an individual must have a medically-determinable physical or mental impairment lasting, or already has lasted, at least 12 continuous months or is expected to result in death and, if age 18 or older, prevents him or her from doing any substantial gainful activity. Blindness is limited to those who have central visual acuity of 20/200 or less in their better eye with the use of a correcting lens, or have tunnel vision of 20 degrees or less.

Income

To be eligible for SSI, total countable income for an individual or couple may not exceed the federal benefit rate. The 2012 federal benefit rate is $698 per month per person and $1,048 per month per couple. The federal benefit rate is reduced by one-third for those living in the household of another and who receive room and board from the householder.

Countable income is divided into *earned* and *unearned* income. Earned income, which includes wages and self-employment income, counts less than unearned income. The first $65 plus half the remainder of earned income is discounted. After the first $20, unearned income, including Social Security benefits, pensions, unemployment, and interest income, is counted fully. If the recipient has no unearned income, an additional $20 is discounted from his or her earned income.

If only one member of the couple is eligible for SSI based on health, the income of the spouse may be deemed to the recipient if the spouse's countable income exceeds one half of the federal benefit rate for an individual less deductions for each child ineligible for SSI. After deeming, the individual receives whichever is less, the federal benefit rate for couples less the countable income from the individual and deemed income from the spouse, or the individual federal benefit rate less the countable income from the individual only.

Resources

The federal resource limitation is $2,000 for an individual and $3,000 for a couple. Countable resources include cash, bank accounts, stocks, bonds and land. Resources that do not

apply toward the federal resource limitation include the individual's primary residence, household goods and personal effects, property used in business, up to $1,500 in life insurance, up to$1,500 for burial expenses, and one car.

In couples where only one member is health-eligible, the spouse's resources over $3,000 are counted toward the couple's resource limit.

State supplements

An individual or couple may receive a federal SSI benefit, a state SSI benefit, or both. States that administer their own supplementary payment programs to SSI recipients are free to establish their own eligibility criteria. Some are more lenient than the federal criteria, expanding SSI eligibility. Others award optional supplementation to those in certain living arrangements or with specific disabilities.

Appendix A3. Imputation of Income from Additional Household Members

A household's SNAP eligibility and benefit level depends on household income, which includes the income earned by all non-exempt household members. However, the primary measure of household income in the RAND HRS data files includes the income of only the respondent and the respondent's spouse or partner. The HRS does include questions on the income of additional household members, but the availability and content of these data vary from year to year. Exact income observations are available for some individuals, and bracketed income observations are available for others, but in many instances no income information is available. Consequently, one must impute the income for bracketed and missing observations in order to properly account for the income of additional residents.

For the 2002 through 2010 data collections, RAND imputed these data. Although the RAND data files do not provide the results of the imputation directly, they do include the ratio of total household income, including income from additional household members, to the U.S. Census poverty threshold. For these years, we back out total household income by multiplying this ratio by the appropriate poverty threshold.

For the 1992 through 2000 data collections, we impute income from additional residents. First, we assume zero income for any child (under the age of 15) for whom no income data is available. We then use a hot-deck procedure to impute the remaining missing and bracketed income observations. This procedure randomly assigns to each individual the observed income of an individual with similar characteristics, based on the individual's reported income bracket, age, and educational attainment, as well as the income range of the respondent and spouse. Certain characteristics are unobserved for some individuals; in these instances we run a limited hot-deck using only the observed characteristics. Due to the limited number of exact income observations, we pool the observations into two time ranges: one for the 1992 through 1996 data collections and another for the 1998 and 2000 waves. We then calculate total household income by adding the observed or imputed income of each additional household member to the income of the respondent and spouse/partner.

Appendix Table A1. *HRS Information and Adjustments for Determining SNAP Program Eligibility*

	Eligibility rules	Differences in rules for elderly and disabled households	Source of information in the HRS	Data limitations and adjustments made
Gross income test	Total income <= 130 percent of HHS poverty line.	Not subject to gross income test.	Income of respondent and spouse, plus income of additional household members (for the 1992 through 2000 data collections). Ratio of household income to the U.S. Census poverty threshold times the poverty threshold (for the 2002 through 2010 data collections).	Income data for additional household members often bracketed or missing. Use hot-deck procedure to impute (see Appendix A-3). Reported household size is occasionally inconsistent with the number of observed residents. For 1992 through 2000 data collections, use the number of observed residents. For the 2002 through 2010 data collections use the reported household size.
Net income test	Total income less deductions <= 100 percent of HHS poverty line.	No difference.	See above.	See above.
Deductions				
Standard	Standard deduction.	No difference.	No information necessary.	N/A
Earned income	20 percent of earned income.	No difference.	Sum of earnings, self-employment earnings, business income, and rental income.	Income of additional household members not broken down by source. Do not include their income as earned income.

Dependent care	Uncapped deduction for dependent care needed for work, training, or education.	No difference.	Data unavailable.	Ignored.
Excess shelter deduction	Excess shelter costs > 1/2 of the household's income. Capped.	No cap.	Sum of mortgage payments, rental payments, park and association fees, and real estate taxes.	Some costs reported in brackets. For closed brackets, use the midpoint. For open brackets, use the lower bound.
				Utility expenditure data are unavailable, Ignored.
Child support payment	Legally owed child support to a non-household member.	No difference.	Data unavailable.	Ignored.
Medical expense	None.	Elderly medical expenses >= $35 per month.	Respondent's and spouse or partner's out-of-pocket medical expenses.	None.
Asset test				
Limit	Assets <= $2,000.	Assets <= $3,000.	Net value of real estate and secondary residences (excluding primary residence), businesses, IRA/Keogh accounts, stocks, checking accounts, CDs, bonds, and other savings and debts.	Data does not distinguish between Keogh Plans (included) IRAs (excluded). Include both.
Excluded assets	Primary home and vehicle under $4,650.	Value of vehicle used to transport a disabled household member, no maximum.	Value of primary residence and transportation assets.	No data available on vehicle use. Exclude all transportation assets.

Other

AFDC/TANF and SSI	If all household members receive program then eligibility presumed.	No difference	Respondent and spouse's SSI income.	Data on TANF receipt unavailable. Assume no TANF receipt. Data on SSI receipt by additional household members is unavailable. Assume additional household members do not receive SSI.
Work requirements	Able-bodied household head may be required to work.	Not subject to work requirements.	Data unavailable.	Ignored.
Citizenship	Some permanent residents are eligible.	Eligible if > 65 years older and in U.S. on 8/22/96.	Place of birth.	Ignored.
Institutionalized	Not eligible if institutionalized.	In nursing home is not eligible.	Institutionalized individuals are assigned zero weight.	Limit the sample to observations with non-zero weight.

Appendix Table A2. *HRS Information and Adjustments for Determining SSI Program Eligibility*

	Eligibility rules	Source of information in the HRS	Data limitations and adjustments made
Health eligibility	Respondent is considered aged, blind or disabled.		
Aged	Respondent's age >= 65.	Age is derived from the year for which income is reported less the respondent's birth year.	
Blind	Respondent is considered blind.	Self-report of vision.	No objective report of vision is available.
Disabled	Respondent is considered disabled.	Whether disability limits work or if labor force status is listed as disabled.	No objective report of disability is available.
Income eligibility	Countable earned and unearned income is less than the federal benefit rate.		
Earned income	One-half earned income less the first $65 or $85 if the respondent has no unearned income.	Earnings from employment + self-employment, in the previous year.	Income information is annual rather than monthly. Annual income is divided by twelve. Self-employment income is available at the household level for wave 2.
Unearned income	Unearned income less the first $20.	Rental income + social security retirement income + social security disability income + pension income + social security income + unemployment and worker's comp + veteran's benefit + welfare + lump sum and other income, in the previous year.	Income information is annual rather than monthly. Annual income is divided by twelve.

Living in the household of another	Federal benefit rate is reduced by one-third if living in the household of another and not paying rent.	Not owning house and not paying rent	
Deduction for the children of an ineligible spouse	Deemed income from an ineligible spouse is reduced based on the number of ineligible children	Children in HRS family data	Data for other family members (not respondent of spouse) is unreliable and may not match the self-report of household size
Resource eligibility	Countable resources under $2,000 for an individual and $3,000 for a couple.		
Countable resources		IRA + trusts not reported elsewhere + Stocks, mutual funds, and investment trusts + Checking, savings, money market accounts + CD, government savings bonds, T-bills + Bonds and bond funds + Other savings, assets + Net value of 2nd home + Net value of other real estate + Net value of businesses	Assets are reported at the household level. Assets are divided equally between respondent and spouse. No data is available for burial plots. The total value of all vehicles is given without the number of vehicles, so a potential second vehicle is not included. Face value of life insurance is not included.