Food Stamps and the Elderly: Why is Participation So Low?

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ABSTRACT

Estimates imply that only one-third of elderly persons who are eligible for food stamps actually participate in the program, which is half the rate that exists among younger people. This study investigates potential reasons for the relatively low take-up rate among the elderly. Analyzing new data, we conclude that the low take-up rate is not explained by measurement error and little is explained by various behavioral factors. Despite this much lower take-up rate, elderly who are eligible for assistance but not enrolled in the program do not appear to be especially needy.

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I. INTRODUCTION

People ages 60 and above account for just 10 percent of all food stamp recipients in the United States, but they account for almost 20 percent of the total population. The difference in food stamp use between the elderly and non-elderly is not due to different rates of eligibility but is primarily due to different rates of participation among those eligible. Previous estimates suggest that one-third of the eligible elderly actually receive food stamps, while the rate for the eligible non-elderly is twice as high (Rosso, 2001).[1]

More generally, numerous studies examine why people eligible for government transfer programs do not participate in those programs. One important set of explanations investigates measurement error as a possible reason for non-participation (e.g., Blank and Ruggles, 1996; Sanders and Taylor, 1998). Specifically, if researchers rely on insufficient or inaccurate information when computing eligibility, then they will incorrectly classify some individuals as eligible who are actually ineligible. Such a misclassification will result in a computed take-up rate that is biased downwards. Studies also examine whether behavioral factors explain why eligible people do not participate. For example, individuals might not participate because they have insufficient information about eligibility (e.g., Daponte, Sanders, and Taylor, 1999), they expect benefits to be low (e.g., McGarry, 1996; Blank and Ruggles, 1996), they think the costs of applying and

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[1] Rosso (2001) uses a combination of survey and administrative data to compute these rates. When only survey data are utilized, participation rates are estimated to be somewhat lower (e.g., Gundersen and Ziliak, 2002; Gundersen and Oliveira, 2001).

reapplying for aid are high (e.g., McConnell and Nixon, 1996), they believe participation

to be stigmatic (e.g., Moffitt, 1983), or they perceive a lack of need (e.g., McConnell and

Nixon, 1996). To the extent that any of these factors varies by age, they can potentially

explain the relatively low take-up rate among the elderly.

In this paper, we explicitly examine why food stamp participation is relatively low for

the elderly. We consider a broad array of explanations, including measurement error and

behavioral factors. We rely on a data set that is targeted at the elderly and collects

detailed information on income, wealth, medical expenditures, cognitive and physical

functioning, and various subjective reports on well-being.

Understanding this low participation is important for at least two reasons. First, if the

elderly are not receiving benefits they need and are qualified for, then identifying the

reasons for their low participation might improve the effectiveness of the Food Stamp

Program. Second, if a factor that caused the take-up rate to be low for the present

generation of elderly is not present among the next generation, then the food stamp

caseload and subsequent costs could increase at a faster rate than would otherwise be

expected. For example, if today's elderly have low participation because their birth

cohort has a strong distaste for reliance on public assistance that does not exist among

younger cohorts, then elderly food stamp caseload will rise as today's non-elderly

population enters old age. Both of these reasons will become even more important given

the well-known aging of the United States population.

Our findings suggest that the relatively low take-up rate among the elderly is not a

function of mis-measurement of eligibility. Rather, even when more accurate and

complete measures of income, wealth, and expenditures are used, the take-up rate is

much lower for elderly people. In addition, we find some evidence that previously

hypothesized behavioral factors (i.e., costs, benefits, and financial resources) account for

a modest fraction of the low take-up rates among the elderly. Finally, we present results

suggesting that among people eligible for food stamps, unmet need is relatively low

among the elderly despite the fact that so few elderly people eligible for food stamps

receive benefits.

II. BACKGROUND

The goal of the Food Stamp Program (FSP), one of the largest means-tested programs

in the United States (U.S.), is to provide nutrition assistance for low-income Americans..

In 1999, the program served an average of 19.3 million participants per month at an

annual cost of $19.3 billion (Committee on Ways and Means, 2000). Only Medicaid and

the Earned Income Tax Credit (EITC), which cost $103 billion and $30 billion per year,

respectively, are larger (Health Care Financing Administration, 2001; Committee on

Ways and Means, 2000). In contrast, the heavily-researched cash welfare assistance

program TANF served an average of 7.2 million individuals per month with a total

federal annual cost of $11.3 billion, and the School Lunch program served an average of

27 million children daily costing $6.2 billion (Committee on Ways and Means, 2000).

The elderly, who are defined by FSP rules as people age 60 and over, comprise an

important component of the current caseload. In 2000, 21 percent of all food stamp

households contained an elderly person and 10 percent of all food stamp recipients were

60 or older (Cunnyngham, 2001). However, the elderly are underrepresented among

food stamp recipients relative to their share in the total population; nearly twenty percent

of the population was 60 or older in 2000.

Understanding the differential take-up rate among the elderly (i.e., the age gradient in take-up) will become more important given the well-known aging of the United States population. Holding age-specific participation rates constant, the number of elderly who are expected to participate will increase from 1.72 million in 2000 to 2.11 million in 2010, or a 23 percent increase in just 10 years.[2] The number of elderly participants will almost double within a 30-year period, increasing to 3.36 million by 2030. However, these estimates would be much larger if the future elderly population participates in FSP at the rate they currently participate as non-elderly. For example, if the elderly participation rate increased to the rate of the current non-elderly, then the elderly enrollment in FSP would increase to 6.00 million, comprising 25 percent of the caseload.

Food Stamp Eligibility and the Elderly

Households, which the FSP defines as groups of individuals who live and purchase food together, face various income and asset restrictions to qualify for food stamps.[3] For non-elderly and non-disabled households, a gross income test and a net income test must both be satisfied, where each test is based on thresholds that vary by household size. An asset test must also be met. If gross income, net income, and assets are below the thresholds, then a household qualifies for food stamps.

Gross income is defined as all income for all household members, including that from working, investments, and transfers. Net income is then computed by allowing for

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[2] In 2000, there were 17.16 million food stamp recipients, and ten percent of these recipients were 60 or older (Cunnyngham, 2001). Combining this estimate with population estimates from the Census Bureau leads to an estimate of 3.77 percent of elderly and 6.72 percent of non-elderly receiving food stamps. We then apply these rates to the Census Bureau's population projections to determine the expected number of elderly and non-elderly participants into the future.
[3] See Rosso (2001) for a more detailed review of the rules, as well as how they have changed over time.

various deductions from the household's gross income. In 1997, these deductions

included:

- a standard deduction of $134 for each household,
- 20 percent of earned income,
- dependent care deduction not to exceed $200 for each child under 2 and $175 for all other dependents,
- legally owed child support payments, and
- shelter costs that are more than half of the household's income after all other deductions, up to $250, where allowable costs include rent or mortgage payments, taxes, and basic utilities.

The gross income limit is set at 130 percent of the poverty line and the net income limit is

set at 100 percent of the poverty line.

The asset limit in 1997 was $2,000. Excluded assets include the equity value of one's

home and lot and the first $4,650 of the fair market value of one licensed vehicle.[4]

Notably, pension plans such as company provided defined benefit plans and defined

contribution plans are excluded, but retirement savings such as IRAs are not.

Eligibility rules for households with an elderly or a disabled member are more liberal

along four important dimensions, where elderly is defined as a person age 60 and above

and disabled is defined as someone who receives income from a disability program.

First, an important difference is that these households are allowed to deduct from gross

income the amount of out-of-pocket medical expenditures in excess of $35 per month per

household. Despite the existence of Medicare, out-of-pocket medical expenditures are

often quite sizable for the elderly because of deductibles, co-insurance payments, and

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[4] The entire value of the vehicle is excluded if it is used for income producing purposes or as a home, if it is needed for long distance travel for work (other than the daily commute) or to carry most of the household's fuel or water, or if the owner has little equity in the vehicle.

non-covered costs such as prescription drugs and nursing homes (Liu, et al., 2000). Second, the shelter deduction is more generous for the elderly and disabled because no cap is placed on the amount of the deduction. Third, the elderly and disabled households face only the net income test, not the gross income test. Finally, the asset limit is increased from $2,000 to $3,000.

Previous Studies of Food Stamp Take-up among the Elderly

The take-up rate - defined as the proportion of the population eligible for assistance who actually participate in the program - for the major means tested transfer programs is far from 100 percent. Estimates for Supplemental Security Income (SSI) among the elderly and AFDC are 50 to 75 percent (e.g., McGarry, 1996; Blank and Ruggles, 1996). Rosso (2001) estimates similar overall participation rates for the FSP, with 57 percent of all eligible households participating in the program in 1999. However, he also finds that take-up rates are far lower among elderly individuals (32 percent) when compared to non-elderly adults (58 percent) and children (68 percent). The low rate for the elderly implies that 3.6 million elderly households were eligible for food stamps but did not receive assistance (Rosso, 2001).

Previous studies examine a variety of explanations for the low take-up rate among various food stamp populations (e.g., Hollenbeck and Ohls, 1984; Blank and Ruggles, 1996; Daponte, Sanders, and Taylor 1999), and numerous reports for and by the U.S. Department of Agriculture (USDA) examine participation rates more generally (e.g., Rosso and Fowler, 2000; USDA, 2001; Kornfeld, 2002). One explanation for low take-up rates is measurement error; that is, studies have not accurately identified individuals who are eligible for food stamps. The eligibility rules are complex and depend on a

variety of factors, many of which are not measured even in the most detailed surveys. Sanders and Taylor (1998) provide evidence that such factors can largely explain the differential take-up rate between races. However, the previous literature has not investigated the problem of measurement error in estimates pertaining to the elderly.

Previous research has also examined behavioral explanations for low take-up. One study (summarized in McConnell and Ponza, 1999) identifies five reasons for non-participation in FSP among the elderly using both quantitative and qualitative methods: expected benefits are too low; costs of participating are too high; lack of information, either regarding program existence or eligibility; stigma against use of government assistance programs; and perceived lack of need. However, none of the studies of elderly participation systematically test whether behavioral factors explain any of the differences in take-up across age groups.

The main contribution of this paper is that we are the first to examine explicitly the factors that might account for the large differences in take-up rates between elderly and non-elderly households. Using a consistent framework, we attempt to explain why the elderly are much less likely to participate, focusing on measurement error and behavioral explanations. Second, we use a unique data set that focuses on the elderly. The data provide detailed financial information that is necessary to accurately assess eligibility and rich contextual information that facilitates the interpretation of underlying patterns.

III. DATA

A wide array of financial and demographic information is necessary to accurately determine whether an individual is eligible for food stamps, including labor market earnings, pension income, legally owed child support payments, assets, number of people

in the household, out-of-pocket medical expenditures, expenditures on rent, mortgage, utilities, and age. We use the 1998 and 2000 waves of the Health and Retirement Study (HRS) for our analysis because it collects almost all of this information. The HRS provides a large, nationally representative sample of individuals in the contiguous 48 states who are over the age of 50.[5] Importantly, individuals in their 50s have been found to have take-up rates similar to younger individuals (McConnell and Nixon, 1996), thus the HRS provides a sufficient age range to examine the age gradient in take-up.

Perhaps the greatest advantage of the HRS is that it is targeted at the elderly. Thus, it asks questions about income, wealth, and expenditures that are particularly relevant to the population we wish to study. The Appendix provides a detailed discussion of the information that is available in the HRS to assess eligibility, as well as the assumptions we make given its limitations. Moreover, the HRS asks many questions about the background, health, and well-being of the respondents that will be important to interpreting our results.

Second, the HRS asks about multiple sources of income, assets, and medical expenses and makes extensive use of unfolding brackets when asking about financial information, a technique shown to be highly effective (e.g., Hurd, et al., 1997). For example, 75 percent of the HRS population provided an exact value regarding bank account balances, but an additional 22 percent were willing to provide some information when the bracket questions were asked. Importantly, bracketed information is often sufficient for assessing eligibility because, for example, eligibility is determined simply by whether someone has

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[5] The HRS was initially a longitudinal survey of people 51 to 61 in 1992 and their spouses. These individuals have continued to be interviewed every other year since 1992, and additional cohorts were subsequently added making the 1998 and 2000 waves a nationally representative sample of roughly 20,000 individuals born before 1947.

assets of $2,000 or more. Hence, accurately reporting amounts above this level is not relevant.

These attributes of the HRS provide some important advantages over other nationally representative data sets that have been used to study take-up. The March 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. An important advantage of the SIPP is that it collects monthly income data.

Sample Description

For most of our analysis, we rely on the 1998 HRS. We include survey respondents who are 50 and older, whose household provided a family and financial respondent interview, who were not institutionalized, and who answered the food stamp receipt questions. These restrictions result in a sample of 19,590 individuals. We present some results from the 2000 HRS. For these data, we include all 1998 HRS respondents in our analysis sample with non-zero weights who answered the food stamp questions in 2000. These restrictions result in a sample of 17,067 individuals for 2000.

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 1998 out-of-pocket medical expenditures, and for 2000 medical insurance expenses. We imputed these values using a

predictive mean matching methodology, similar to that employed by the HRS. The Appendix provides further information regarding our imputation procedures.

The unit of observation for all of our analysis is the individual. For household variables like income or wealth, the values represent the total income or wealth for the household in which an individual resides.

Table 1 presents descriptive characteristics of the key variables for our 1998 sample. The demographic and financial variables exhibit the expected patterns. Older individuals are more likely to be female; less likely to be married, a minority, or working; and have fewer years of schooling. Income and wealth generally decline with age, whereas household medical expenses tend to increase.

The bottom sub-section of Table 1 presents additional characteristics of the sample. We calculate the proportion of the sample that cannot complete various activities: the less severe limitations include shopping for groceries and balancing a checkbook, and the more severe limitations include dressing and using the toilet. Cognition is measured by a 10-item module that asks the respondent to report such things as the date, the day of the week, and the name of the President; the composite score represents the number of correct answers. Three indicators for subjective assessments of financial difficulties (i.e., food insufficiency, skipping meals, and skipping medication) are also provided. The presence of these three conditions is reported for the two-year period prior to the survey.

Benchmarking the HRS Reports of FSP Participation

A common problem in measuring program participation is the underreporting of program receipt. For example, Bitler, Currie, and Scholz (2002) find that the CPS Food Security Supplement underestimates Food Stamp recipients by 15 percent in April 1999

when compared to administrative records. In addition, they find that the SIPP

underestimates April 1999 food stamp recipients by approximately 12 percent. We

perform similar comparisons using the HRS, FSP Program Operations data, and the FSP

Quality Control (QC) data for September 1997 (Rosso, 2001).[6] Our estimates indicate

that the HRS underreports participation in the FSP for the elderly by 8.4 percent.[7] Thus,

we find that HRS has relatively little underreporting when compared to these other

surveys, although such comparisons should be tempered by the fact that the surveys cover

different populations.

Finally, we can compare estimates of other quantities based on the HRS versus the

1997 QC, as reported by Cody and Castner (1999). The average calculated FSP benefit

for households with an elderly person from the HRS is $81, which is similar to the

average benefit of $63 reported in the QC data for the same population. However, this

comparison of mean benefits hides some underlying differences. For example, the

computed deductions in the HRS and QC data are less similar: mean medical deductions

are $21 in the HRS compared to $13 in the QC, and the mean household shelter

deduction is $78 in the HRS and $120 in the QC. Similarly, our computed FSP benefits

differ from the amount that HRS respondents report receiving. For example, the median

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[6] The FSP Program Operations data are administrative data collected each September. The Food Stamp
Program QC data, collected by FNS for quality control purposes, are based on a national probability sample
of approximately 50,000 participating food stamp households and a smaller number of denials and
terminations. For more information on the QC data see Cody and Castner (1999). The total number of
persons and households receiving benefits in the Program Operations data are distributed across subgroups
according to the distribution of the QC data.
[7] We first calculate the food stamp participation rate for individuals in September 1997 using weighted data
from the HRS 1998. The participation rate is defined as the number of program participants divided by the
population ages sixty and above. We then calculate the food stamp participation rate for September 1997
using the FSP Program Operations data, the QC data, and population data from the Population Estimates
Program of the Census Bureau. The percent of underreporting in the HRS is the difference between these
two participation rates divided by the participation rate using the administrative data ((0.03795-
0.03475)/0.03795). Note that the participation rate from the HRS is for the contiguous United States while
the one using the administrative data is for the entire United States.

difference between computed benefits and reported benefits for those who report

receiving benefits is $35 and 75 percent of the recipients have an absolute difference of at

least $96. Overall, these results suggest that the HRS does quite well, yet clearly

evidence exists that measurement error is present.

IV. MEASUREMENT ERROR AND LOW TAKE-UP

We begin our analysis by determining whether measurement error can explain why

the computed take-up rate for the elderly is relatively low. Measurement error is of key

importance when computing take-up rates because it could cause ineligible individuals to

be misclassified as eligible. This type of a misclassification would cause the take-up rate

to be less than unity, even if all eligible individuals participate in the program. Such

measurement concerns could explain the relatively low take-up rate among the elderly if

the measurement error increased with age. We consider two types of measurement error:

misclassification that arises because previously used survey data do not contain all of the

information necessary to compute eligibility, and misclassification that arises from the

misreporting of information that is actually collected.

Misclassification Due to Insufficient Information

It is possible that the relatively low take-up rate among the elderly is due to the fact

that the underlying data sets used to estimate food stamp take-up do not collect some of

the necessary information to assess eligibility. To examine the importance of having

more information available in the HRS, we calculate "eligibility" using various criteria,

and then compute the take-up rate in each age group. We present the results in Table 2.

The first criterion is based solely on the gross income test.[8] This calculation is interesting because it is often used as a rough proxy for eligibility and relies only on income data, which are available in many surveys. As can be observed, the take-up rate declines with age from 0.310 for the 50 to 59 year olds to 0.132 for people 80 and older. Hence, there is a 17.8 percentage point drop in the take-up rate between the 50-59 and 80+ age groups.

The second criterion applies the gross and net income tests to all individuals, where the net income test includes the standard deduction and the earnings deduction but not the medical expense or excess shelter deductions. This criterion is useful because it applies the same rules across all ages, allowing us to examine the extent to which differential rules across age groups explain the age gradient. The take-up rate increases a few percentage points across the various age groups when compared to the first criterion (e.g., by 2.1 percentage points for the 60-69 age group), but a strong decline with age of 16.8 percentage points still exists (i.e., 0.320 for 50-59 vs. 0.152 for 80+).

The third, fourth, and fifth criteria incrementally apply the remaining income-related eligibility rules, including the ones that apply only to the 60 and older population. As can be observed, accounting for the various deductions causes the take-up rates to decline. For example, once all income-related deductions are accounted for, take-up among the 80 and older population is 11.5 percent versus 15.1 percent when medical and shelter deductions are not included. This pattern suggests that individuals who are eligible because of large deductions are not very likely to participate. While the deductions cause

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[8] As described previously, the elderly do not officially face a gross income test. The first criterion supposes that one is in effect at the same level (130 percent of the poverty line) as the one in effect for the younger population.

the take-up rate to drop, our primary concern is the age gradient and it remains largely unaffected.

The sixth criterion adds the age-appropriate asset test: $2,000 for 50 to 59 year olds and $3,000 for those 60 and above in non-housing assets less a $4,650 vehicle deduction. The take-up rate goes up substantially for each age group. Clearly, many people who were thought to be eligible actually had high assets that made them ineligible, which underscores the importance of including asset data in eligibility calculations. However, the age gradient remains large, with a 21.0 percentage point difference between the 50-59 and 80+ age groups.

In the seventh criterion, we define eligibility as accurately as possible given our data. In addition to the age-specific income and asset tests, we classify as eligible those households who would be adjunctively eligible based on participation in SSI or TANF.[9] Relative to the first crude criterion, the take-up rate is between 5 and 10 percentage points higher for all groups. That is, our best estimate is that 41.4 percent of 50 to 59 year olds who are eligible for food stamps take-up the program. However, the rate for the oldest group is only 20.8 percent.

In sum, our analyses suggest that the take-up rate is higher when richer and more complete data are used to assess eligibility (Table 2). At the same time, having more detailed information does not change the age gradient, with a gap in take-up of greater than 20 percentage points between 50 to 59 year olds and 80+ year olds. Moreover, the gradient exists within the population that the FSP defines as "elderly," with take-up rates

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[9] Data on SSI receipt are only available for HRS respondents, but the food stamp rules dictate that all household members must receive SSI for the household to be adjunctively eligible. We code households as receiving SSI if they are a one-person household and the individual participates in SSI or they are a two-person household and both members receive SSI benefits.

roughly 10 percentage points lower for people 80+ relative to people in their 60s. This conclusion is tempered somewhat by the fact that the HRS does not collect income information on a monthly basis, the time period over which eligibility is determined.

Misclassification Due to Incorrect Responses

Even though the HRS collects much of the information necessary to determine eligibility, there remains the possibility that individuals simply respond to survey questions with error.[10] Moreover, the likelihood of such error could systematically be related to age. If the elderly are more likely to incorrectly respond to questions, then such measurement error could at least partially explain the age gradient.

To assess this possibility, we first calculate the participation rate of those individuals who we classify as not being eligible. To the extent that individuals responded without error, we would expect the participation rate among this sample to be very low. If the elderly simply reported with more error than the non-elderly and this error was unsystematic (i.e., mean zero), then we would expect the estimated participation rate to increase with age among those who are classified as ineligible. We find that less than 1.5 percent of people classified as not eligible for food stamps report that they received food stamps (see Table 3, criterion 1). More importantly, the estimated share that participates among those who are determined to be ineligible declines with age, providing strong evidence against the hypothesis that measurement error can explain the age gradient.

The previous evidence is suggestive only to the extent that measurement error is unsystematic. If the elderly are more likely to underreport income and wealth when they

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[10] One possibility which we do not explore here is that older individuals are more likely to not report participating in FSP when in fact they do. We do not believe this concern to be important because a similar

misreport, and therefore they appear eligible when they truly are not, then it is possible that measurement error could still be responsible for the relatively low computed take-up rate among the elderly. As a second test of the importance of measurement error, we calculate the take-up rate for those who have income and assets that are below 75 percent of the respective thresholds, holding all other rules imposed in criterion 7 in Table 2 constant. We would expect that we would be less likely to misclassify these individuals as compared to those near the eligibility line. As expected, the take-up rate is (slightly) higher when this criterion is used (see Table 3, criterion 2) rather than criterion 7 in Table 2. However, the age gradient does not change, remaining at roughly 20 percentage points. This finding provides evidence that systematic underreporting of income and wealth by the elderly is not likely to account for the computed low take-up.

Income from all household members is one factor that determines eligibility. The financial respondent in an HRS household must report the income for all residents in the household. If the proxy reports are more likely to be reported with error, and proxy reporting is more common among the elderly, then the income for such households could be particularly error ridden. To investigate this issue, we re-compute the take-up rate for only those elderly who do not have other household members. This restriction, reported as criterion 3 in Table 3, decreases the sample size significantly (relative to criterion 7 in Table 2) but does little to change the age gradient.

As a final approach to assessing the role of measurement error, we compute the take-up rate for those who are adjunctively eligible for food stamps because of SSI or TANF receipt. Presumably, individuals report other program eligibility with less error as

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age gradient was found in a study which relied on administrative data and thus not plagued by such concerns (Rosso, 2001).

compared to the financial information necessary to assess FSP eligibility on its own. Food stamp take-up is about 50 percent higher when the sample is restricted to people who participate in SSI or TANF, which is also consistent with the hypothesis that they have lower stigma or better information about government programs (Table 3, criterion 4). However, the age gradient still persists. In sum, our analyses suggest that measurement error does not explain the age gradient observed in food stamp participation rates.

V. BEHAVIOR AND LOW TAKE-UP

Given that the previous section suggests that the relatively low take-up rate among the elderly is not an artifact of measurement error, we turn our attention to behavioral explanations for the differences in take-up by age. We first briefly discuss a conceptual model of program participation and our empirical framework. We then provide results from tests of these behavioral explanations.

Our Empirical Framework

To motivate our empirical framework, consider a model in which individuals maximize a utility function over consumption and leisure, subject to a budget constraint. Furthermore, suppose that there are costs associated with participation in FSP, perhaps due to the time or direct costs associated with applying for aid. Then, program participation (P) would be a function of the benefits associated with participation (B), the costs associated with participation (C), and the resources available to the individual (M), holding all else equal (X); in mathematical notation, $P = f(B, C, M, X)$.

Based on this conceptual model, we estimate reduced-form logits of food stamp participation that include age and important explanatory factors such as benefits, costs, and financial resources. The goal of the analysis is to examine empirically whether participation varies systematically by age after we account for these other factors. We estimate the logit models including all individuals we compute to be eligible. Table 4 presents descriptive information for these individuals.

The first factor we consider is the benefits of program participation, with the underlying hypothesis being that higher benefits will make someone more likely to participate. We calculate benefits for each respondent based on survey information and food stamp programmatic rules. The descriptive statistics indicate that calculated benefits adjusted for household size are lower for older individuals, implying that differential benefits across age might explain part of the differential take-up (see Table 4). However, benefits are a function of gross income, deductions, and household size, and the simple conceptual model suggests that income also enters the participation decision directly. Thus, in our regression framework, high benefits for an individual are largely determined by high deductions. If individuals are unaware of these deductions, then the prediction that higher benefits will cause individuals to be more likely to participate would be weakened.

Second, we include measures of the financial resources available to individuals, with the hypothesis being that more financial resources would make an individual less likely to participate. Turning to Table 4, total income is fairly similar across the age groups, but the relatively older individuals possess far greater assets. The differential total asset amounts are mainly explained by the greater amount of debt held by younger individuals,

rather than by the differences asset exemption levels ($3000 for the elderly vs. $2000 for the non-elderly). These wealth differences could explain part of the take-up differential.

The third factor we consider is the costs of program participation. Previous studies have speculated less about the costs of participation, presumably because costs are difficult to measure. The opportunity cost of time is likely to be higher for younger people because they are more likely to be working, and thus time costs might actually be hiding an even larger underlying age gradient in take-up (Table 4). Another possibility is that physical or mental health problems make it more costly and difficult to learn about eligibility, contact and visit the FSP office, and continuously reapply for benefits. Health status and physical functioning are clearly worse among older people, which could explain part of the age gradient (Table 4).[11]

Next, we turn to the "all else equal" part of the model. Consistent with previous studies, we include demographic factors such as education, gender, and race. Gender or racial differences in participation could generally reflect cultural or other unobserved disparities, and the gender and racial composition differs by age (Table 4). Education is more difficult to interpret. It could capture informational differences, perhaps higher education implying more information if cognitive functioning is important or higher education implying less information if social networks are important to learning about program participation. At the same time, education is also closely related to permanent economic status: between two people who look equally needy based on income and

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[11]Among the people eligible for food stamps, the prevalence of disability is lower among the 60-69 age group than the 50-59 age group. We investigated this issue further by examining a wide array of health measures, and the finding was robust. At the same time, among the entire sample (Table 1), not just those eligible for food stamps (Table 4), health status and disability outcomes are better for the 50 to 59 year olds than the 60 to 69 year olds, as expected. Therefore, the pattern in Table 4 is driven by selection into program eligibility.

assets, the person who is more educated may be better off because his/her earnings

capacity in the future is stronger.

Even after adjusting for these factors that fit into the conceptual model, it may be that

the elderly are different than the non-elderly in ways that are more fundamental, implying

that the age gradient in take-up will persist. For example, an elderly person's need or

perception of need might be different. Alternatively, the elderly might value benefits less

due to stigma; that is, older cohorts that grew up before the major expansion in

government transfer programs may have greater distaste for government assistance

programs.

While such concerns are difficult to measure, the HRS provides a few indicators that

are suggestive of such factors. First, the HRS contains several measures of subjective

well-being: self-reported food insufficiency, whether the individual skipped meals, and

whether the individual skipped taking medications because of lack of resources. Among

people eligible for food stamps, the means of all of these variables are much lower among

the elderly than the non-elderly (Table 4). We empirically explore the role of stigma by

using indicators for SSI and TANF receipt; people participating in other government

transfer programs are presumably less stigmatized by participating in FSP. People who

are enrolled in SSI or TANF may also be more likely to know about FSP, so these

indicators also capture differences in information.

Regression Estimates of Take-up

We present estimates from logit models of food stamp take-up in Table 5. The

derivatives, evaluated at the means of the covariates, and their standard errors are

reported with coefficient estimates available from the authors upon request. The first

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model includes the age variable represented by the four categories used in previous tables: 50-59, 60-69, 70-79, and 80+. Alternative specifications of the age effect were explored, with these groups leading to a parsimonious and accurate representation of the differences. The coefficient estimates imply large differences between the groups. Although much of the 20.8 percentage point differential between the youngest and oldest groups stems from differences between the 50-59 and 60-69 age groups, large differences among the 60-69, 70-79, and 80+ groups still exist.

The subsequent models add various factors that are hypothesized to affect program take-up. In Table 5, model [2] we see that controlling for the demographic factors increases the age gradient between the oldest and youngest groups by 3.1 percentage points (-0.208 vs. -0.239). In models not shown, we found that the factor that caused the largest increase in the age gradient was education; older people have less education and more educated people are much less likely to take-up food stamps. The direct effects of the demographic factors are consistent with previous findings.

Despite the fact that older eligibles have smaller benefits and higher income and assets, adjusting for these three factors and home ownership has little effect on the age gradient (Table 5, model [3]). It is interesting to note, however, that the difference between non-Hispanic Whites and non-Hispanic Blacks and Hispanics is reduced substantially when accounting for financial factors.

The conceptual framework suggests that larger benefits should lead to higher participation, but the models imply a negative effect. The negative effect is driven by the medical and shelter deductions. That is, when the model is re-estimated, but the amounts of these deductions are included directly in the model and not included in the benefit

calculation, the effectsof benefits becomes positive, while the deductions have large negative effects. This pattern is consistent with the hypothesis that many elderly become eligible for a large benefit simply because they have large deductions, and it is exactly these people who have low take-up rates. Presumably these people are not aware that they are eligible (or eligible for such a large benefit) or they are not needy.

The next model, [4] in Table 5, adds the indicators of the costs of participation. Owning a vehicle actually reduces take-up by 6.5 percentage points, suggesting that people who own a car may have less need, all else equal. The people who cannot complete tasks that are similar to those required to apply and use benefits – shopping for groceries and balancing a checkbook – are not less likely to use food stamps, suggesting that these health problems are not barriers to enrollment. However, these estimates are not precise. The indicators of limitations that represent more severe health problems – dressing and toileting – are positively associated with take-up, suggesting that they measure underlying need for help. However, adding these variables has very little effect on the age gradient.

We next add cognition as another measure of the cost of participation (model [5]). Cognition is only measured for people 65 and older, and thus we drop the 60-69 dummy variable, making the 60 to 69 age group the new reference group. We find no evidence that cognitively limited people are less likely to participate. Moreover, the age gradient does not change when controlling for cognition when compared to the previous age-group differences.

Given that an age gradient persists after accounting for observable differences in benefits, costs, resources, and demographic factors, it is useful to determine whether there

is any evidence of more fundamental differences across the age groups. One possibility is that the formula that determines eligibility, which is based on income, assets, and other factors described in Section II, does not accurately identify people who are in need, which may vary by age. That is, for the same levels of income, assets, and all other factors that determine benefits and eligibility, the elderly may simply be less needy. Although underlying need is difficult to measure, we explore this issue using two indicators: whether the person reported skipping medications or having insufficient food because of financial difficulties. Among the population eligible for food stamps, the elderly are much less likely to have these problems (Table 4). These indicators are added to the regression models, with the hypothesis being that the age gradient would shrink. However, this is not the case; there is no change in the gap between age groups (Table 6, model [1]).

Elderly persons face more liberal eligibility criteria. A natural question is whether take-up among the younger people would be as low as it is among the elderly if they faced the same, more liberal eligibility rules. We explore this issue by taking advantage of the fact that disabled people and younger people whose spouse is 60 or older also face the more generous eligibility criteria. Including an indicator variable for whether the person (under 60) faces the special eligibility criterion (model [2] in Table 6), we find that special eligibility is not associated with take-up, and including it in the model does not change the age gradient.

Participation in SSI and TANF is closely linked with food stamp participation. Including indicators for participation in these programs reduces the disparity across age groups by about 15 percent when compared to model [4] in Table 5. This result may be

due to differences in stigma or differences in program knowledge across the age groups. Regardless, the age gap remains quite large.

The last two models in Table 6 investigate whether persistence in eligibility can account for the age gradient. People who are persistently eligible have a greater incentive to enroll in the program because the transaction costs of applying for benefits result in receipt of food stamps for several months or years rather than one or two months. Since income of the poor elderly is largely determined by the amount of their Social Security benefit, which is fixed, their income is presumably more persistent. This story would imply that the age gradient in take-up would actually be larger if we accounted for this factor. We investigate this issue by using the 2000 data to examine take-up after controlling for eligibility in the previous period, 1998. As shown in model [6] of Table 6, eligibility in 1998 is a very strong predictor of food stamp receipt in 2000. However, the age gradient changes very little.

Interpreting the Results

Our best estimates imply that over two-thirds of the elderly who are eligible for assistance are not enrolled. Moreover, neither measurement error nor any of the behavioral factors that we examined were able to explain why take-up is so low among the elderly. Therefore, we speculate on a few alternative hypotheses that may deserve closer investigation in future analyses.

First, it is possible that the age-gradient in take-up could be explained by differential mortality. Specifically, the age gradient could indicate that the type of individuals who forego the food stamp program are less likely to die. To examine this possibility, we estimate a mortality model between 1998 and 2000 to examine the differences in

mortality between those who participated in FSP and those who did not.[12] We find that mortality is in fact higher for those who participated. However, the difference was quite modest, statistically insignificant, and could explain less than 10 percent of the differential participation rate between the youngest and oldest age groups.[13]

A large number of studies suggest that caloric need decreases with age because of metabolic changes (e.g., Kenkel and Ray, 2001; Amersbach, 2001). This pattern is consistent with the age pattern of food consumption reported in Table 7. A lower physiological need for food would translate into a lower demand for food stamps, perhaps explaining some of the relatively low take-up rate among the elderly. However, such an explanation would need to be supplemented with the elderly being unwilling to substitute food expenditures with other expenditures. In other words, even if the elderly technically had enough money to purchase food, the availability of food stamps could free up money for other necessary or desired expenditures.

Another similar explanation for the age gradient is that older people are simply less needy. Table 7 provides several indicators of need for people who are eligible for food stamps, separately by program participation. Within each age group, virtually every indicator suggests a lower level of need among eligible individuals who do not participate in food stamps. Moreover, the level of need among the eligible non-participants is far

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[12] We estimate the probability of dying by the 2000 wave for all FSP-eligible individuals in 1998 using a logit model. The primary regressor of interest is whether individuals participate in the food stamp program. As other controls, we include age, age-squared, gender, education, and race; we did not control for factors such as income and wealth in an attempt to let participation explain as much of the age difference as possible.

[13] The implied marginal impact of FSP participation on mortality is 0.003 with a standard error of 0.011. To evaluate the practical significance of this coefficient, we first translate it into the marginal two-year survival probability (1-0.003) and then compute the implied by 30-year survival probability difference by raising the quantity to the 15th power. This quantity implies that differential mortality can explain a 5 percent decline in the odds of food stamp participation between the 50-59 age group and the 80+ age group, when in fact we observe a decline of over 62 percent.

lower among the older population. For example, while 26 percent of 50-59 year old non-participants had skipped meals, only 3 percent of people 80 and older had done so. Similarly, the majority of eligible non-participants in the oldest age group own homes, and the median value of their homes is $48,000.

VI. CONCLUSION

Food stamps are an important source of assistance for roughly 20 million Americans. However, national estimates show that nearly two-thirds of the people 60 and older who are eligible for food stamps do not receive them (Rosso, 2001). While take-up among younger people who are eligible is not 100 percent, it is roughly twice as high as it is among the elderly. The goal of this study is to help understand why take up declines precipitously with age.

We find that accurately measuring eligibility is important for determining take-up. Moving from a very crude measure of eligibility to our most complete assessment raises the estimated take-up rates by roughly 50 percent. However, the gap in take-up between the elderly and people in their 50s does not diminish. We continue to find that the take-up rate is 20 percentage points lower among people 80 and older relative to people in their 50s. Hence, our results suggest that measurement error does not explain the age gradient in food stamp participation.

Given these findings, we investigate alternative explanations for the gap. A wide array of factors is considered: benefits of participation, costs of participation, demographics, information, persistence in eligibility, and participation in alternative assistance programs. But most of the differences between the old and the young persist: a

difference in age of 20 years translates into a difference in food stamp take-up of 12 to 16 percentage points.

Despite the relatively low take-up rate of the elderly, they are far less likely to skip meals or medications and more likely to be food sufficient than people in their 50s. We conclude that, although it is important to understand why such a large share of the elderly are not participating in food stamps, the need for food assistance appears to be lower for those who are older.

APPENDIX: DETERMINING ELIGIBILITY

To compute FSP eligibility, we use the final version of the first public release of the 1998 and 2000 Health and Retirement Study (HRS98 and HRS00) and the University of Michigan (UM) income and wealth imputations for both surveys. Table A1 summarizes the eligibility rules, data availability, and data limitations.

FSP eligibility is based on meeting income and asset tests that are conditional on household size and structure. A household is defined as a group of individuals who purchase and prepare food together in the same residence. The HRS only collects information on who resides together, and thus our definition of a household does not account for who purchases and prepares food together. The income and asset tests also differ for households that include an elderly person, defined as an individual age 60 and above, or a disabled person, defined as one who receives federal or state disability payments. We define a disabled individual as one who receives Social Security Disability Insurance (SSDI), Veterans Disability, or Worker Compensation benefits.[14]

The gross income test compares household income to 130 percent of the HHS poverty line. The HRS asks about 24 types of income. An important data issue, and perhaps the primary limitation of using the HRS to assess eligibility, is that the questions are asked about annual income and not monthly income. We calculate monthly income by computing a simple average. A second data issue is that UM imputations are not provided for questions regarding the income of residents who are not HRS respondents, hereafter referred to as "co-residents." We impute these values ourselves.

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[14] Rules permit the disabled and elderly to apply for Food Stamps separately from other household members if other household income is below 165 percent of the poverty line. We do not account for this rule.

We impute missing data using a "predictive mean matching" method (Little, 1988). This method is similar to that used by UM for their imputations and can be viewed as an extension of "hot-decking." The procedure imputes a missing value for an individual by using an actual outcome value from a "similar" person within the data set, where similarity is based on a regression analysis. The imputation procedure utilizes the information contained in the unfolding bracket questions. Table A2 shows the information that is actually provided and the results of the imputations.[15]

The net income test compares net income, defined as gross income less applicable deductions, to 100 percent of the HHS poverty line. The earned income deduction is computed from the average monthly income.

The out-of-pocket medical expenditure deduction (for the elderly and disabled) is based on three questions asked about medical expenses in the HRS. The first question asks about expenditures on doctor, outpatient, and dental visits and the second question asks about special and home care expenditures; both of these questions ask about total expenditures over two years, which we adjust to monthly expenditures by a simple average. The third question asks about monthly prescription drug costs. There are also three questions on health insurance premiums. Transportation expenses to and from medical appointments, and medical expenses for co-residents are ignored.

Households are allowed a deduction for excess shelter costs such as rent or mortgage payments, property taxes, and utilities, where excess costs are defined as those above

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[15] To impute co-resident earnings, we first impute employment status and bracket response so that everyone can be placed into a bracket. These imputations use gender, marital status, race/ethnicity, age, and age-squared of the co-resident and education and household income of the financial respondent as the predictor variables. We impute the actual value by running a pooled regression across all of the observations, but then choose donors only from within ones own bracket. The predictors for these imputations are the same as the ones used in the employment status and bracket imputations. We use the same methodology to impute other income.

one-half of household income after all other deductions are taken. The HRS asks one question about rent and mortgage payments, with a follow-up question about whether the mortgage payment includes property taxes and/or insurance costs. To estimate total shelter expenditures, we obtain the average utility and tax expenditures as a proportion of rent or mortgage payments from the 1997 Consumer Expenditure Survey (CEX), and then we adjust the HRS reported payments appropriately. Based on 1997 national averages, utilities are 30 percent of rent and 57 percent of mortgage and property taxes, and utilities and property taxes are 126 percent of mortgage payments alone. Our calculations implicitly assume that housing insurance costs are zero.

Households are allowed a deduction for dependent care expenses. We include special and home care expenses for elderly dependents as medical expenses because households receive higher deductions counting them as medical expenses. Childcare expenditures are not collected in the HRS and are ignored. This assumption seems to be reasonable because only 2.1 percent of households in the HRS have a co-resident age five and under, and only 4.4 percent of non-elderly households and 0.3 percent of elderly households took this deduction in FY 1997 (Cody and Castner, 1999).

Households can also deduct child support payments, but these data are also not collected in the HRS. Ignoring such payments should have little effect because zero percent of elderly households took this deduction in FY 1997 and only 0.1 percent of non-elderly households took this deduction (Cody and Castner, 1999).

Households must also meet an asset test, with the limit being $2,000 for households without elderly and disabled persons and $3,000 for households with elderly or disabled persons. Certain assets are excluded from this test, including a fraction of the value of

one vehicle, home and lot value, and pensions. The HRS collects information about 10 different types of asset values and these values are at sufficient detail to properly exclude assets. The two limitations are that vehicle use and number of vehicles are not inquired, which could potentially underestimate allowable deductions.

Several other important rules exist. First, households in which all members receive SSI and TANF are adjunctively eligible. We do not have program participation data for co-resident household members. We consider a household with anyone receiving TANF to be adjunctively eligible, and we consider households with all respondents receiving SSI and no co-residents to be adjunctively eligible. Individuals who reside in California and receive SSI are not eligible for Food Stamps because of a cash-out program; this rule is ignored because state identifiers are not available on the public release file. Finally, recent changes have imposed work requirements and citizenship requirements on eligibility. We ignore the work requirements because they do not apply to the elderly, and we ignore citizenship requirements because of the HRS sampling frame.

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	Age Group			
	50-59	60-69	70-79	80+
Sample size	5,341	6,744	4,799	2,706
Demographics				
Female	0.530	0.543	0.569	0.641
Married	0.704	0.692	0.593	0.346
Non-Hispanic White	0.804	0.819	0.858	0.867
Non-Hispanic Black	0.097	0.094	0.077	0.079
Hispanic	0.074	0.066	0.046	0.040
Working	0.725	0.374	0.125	0.040
Education	12.96	12.24	11.76	10.94
Financial resources				
Income of respondent and	73.7	52.9	38.0	27.8
spouse ($000 per year)	[51.0]	[34.8]	[25.5]	[16.9]
Income of other household	6.0	4.7	3.6	4.5
members ($000 per year)	[0]	[0]	[0]	[0]
Household housing wealth	91.9	110.4	103.9	91.0
($000)	[60.0]	[75.0]	[75.0]	[55.0]
Household non-housing wealth	222.0	273.6	213.3	208.1
($000)	[47.0]	[67.0]	[62.5]	[33.0]
Household shelter expenses	9.9	5.7	3.1	2.6
($000 per year)	[7.1]	[0]	[0]	[0]
Respondent medical expenses	120.5	124.3	125.4	139.5
($ per month)	[59.6]	[62.5]	[74.5]	[85.0]
Food stamp receipt	0.040	0.038	0.035	0.039
SSI receipt	0.012	0.022	0.026	0.037
Other indicators				
Cannot shop for groceries	0.064	0.078	0.129	0.300
Cannot balance checkbook	0.042	0.048	0.088	0.201
Cannot dress oneself	0.054	0.071	0.103	0.180
Cannot use toilet oneself	0.031	0.036	0.060	0.124
Cognitive score	-	9.510	9.413	8.895
Food insufficient	0.093	0.080	0.066	0.060
Skipped meals	0.034	0.021	0.014	0.008
Skipped medications	0.071	0.052	0.050	0.038

Notes: All sample means are weighted. SSI receipt is coded one if a single person received SSI or both members of a married couple received SSI and zero otherwise. Cognitive score is only available for the population 65 and older.

Table 2. Food Stamp Take-up Rates by Age Group Using Various Eligibility Criteria
(Standard error of take-up rate reported in parentheses)

Eligibility Criterion	50-59	60-69	70-79	80+
Sample size	5,341	6,744	4,799	2,706
1. Gross income test				
Proportion eligible	0.095	0.130	0.137	0.247
Take-up rate	0.310	0.226	0.201	0.132
	(0.020)	(0.013)	(0.015)	(0.013)
2. Gross and net income test, not taking into account shelter and out-of-pocket medical expenditure deductions				
Proportion eligible	0.091	0.115	0.115	0.207
Take-up rate	0.320	0.247	0.235	0.152
	(0.020)	(0.015)	(0.018	(0.014)
3. Age-specific income test, not taking into account shelter and medical expenditure deductions				
Proportion eligible	0.091	0.117	0.115	0.208
Take-up rate	0.320	0.244	0.235	0.151
	(0.020)	(0.014)	(0.018)	(0.014)
4. Age-specific income test, not taking into account shelter expenditure deduction				
Proportion eligible	0.094	0.139	0.155	0.265
Take-up rate	0.312	0.209	0.176	0.121
	(0.020)	(0.013)	(0.014)	(0.012)
5. Actual age-specific income test				
Proportion eligible	0.096	0.155	0.166	0.283
Take-up rate	0.305	0.191	0.164	0.115
	(0.019)	(0.012)	(0.013)	(0.011)
6. Actual age-specific income and asset tests				
Proportion eligible	0.064	0.092	0.102	0.150
Take-up rate	0.413	0.306	0.258	0.203
	(0.025)	(0.017)	(0.019)	(0.019)
7. Best assessment: age-specific income and asset tests and adjunctive eligibility				
Proportion eligible	0.071	0.099	0.110	0.161
Take-up rate	0.414	0.312	0.250	0.208
	(0.024)	(0.017)	(0.018)	(0.018)

Notes: All tabulations are weighted. The first line of each couplet is the proportion of the population in the group, and the second line is the food stamp take-up rate for that group. Because all means are weighted, the proportion of the population in each group does not allow one to directly back out sample sizes for each group. However, the unweighted means are very similar.

Table 3. Food Stamp Take-up Rates by Age Group Using Various Eligibility Criteria
(Standard error of take-up rate reported in parentheses)

Eligibility Criterion	50-59	60-69	70-79	80+
Sample size	5,341	6,744	4,799	2,706
1. Not eligible				
Proportion not eligible	0.929	0.901	0.890	0.839
Take-up rate	0.012	0.008	0.008	0.007
	(0.002)	(0.001)	(0.001)	(0.002)
2.Eligible, income and assets < 75% of eligibility thresholds				
Proportion eligible	0.052	0.071	0.073	0.110
Take-up rate	0.464	0.330	0.319	0.241
	(0.029)	(0.020)	(0.024)	(0.023)
3. Eligible, without co-residents				
Proportion eligible	0.036	0.060	0.081	0.122
Take-up rate	0.398	0.328	0.259	0.221
	(0.034)	(0.022)	(0.022)	(0.022)
4. Eligible, and receive SSI or TANF				
Proportion eligible	0.022	0.027	0.028	0.038
Take-up rate	0.663	0.538	0.432	0.440
	(0.044)	(0.035)	(0.042)	(0.044)

Notes: All tabulations are weighted. The first line of each couplet is the proportion of the population in the group, and the second line is the food stamp take-up rate for that group. Because all means are weighted, the proportion of the population in each group does not allow one to directly back out sample sizes for each group. However, the unweighted means are very similar. SSI receipt is coded one if a single person received SSI or both members of a married couple received SSI and zero otherwise.

Table 4. Mean Characteristics of FSP Eligible Individuals

	50-59	60-69	70-79	80+
Sample size	423	765	561	500
Demographics				
Age	55.0	64.5	74.2	85.3
Education	9.91	9.04	8.22	7.81
Female	0.64	0.63	0.71	0.79
Non-Hispanic Black	0.30	0.29	0.23	0.21
Hispanic	0.22	0.20	0.19	0.15
Other	0.03	0.03	0.06	0.03
Total residents	2.40	2.16	1.83	1.63
Benefits and financial factors				
Calculated food stamp benefits				
($ per HH member per month)	50.2	49.9	37.2	37.3
Total income ($000 per year)	9.9	9.6	9.9	9.0
Total assets ($000)	14.3	6.7	32.8	31.7
Housing wealth ($000)	24.0	23.0	30.9	31.0
Non-housing wealth ($000)	-9.8	-16.3	2.0	0.7
Earn. deduction ($ per month)	93.9	50.6	18.7	12.9
Med. deduction ($ per month)	4.9	85.8	109.5	130.6
Shelter deduction ($ per month)	59.6	174.6	102.5	111.9
Home owner	0.50	0.46	0.56	0.56
Costs and other factors				
Working	0.28	0.13	0.04	0.03
Vehicle owner	0.53	0.49	0.41	0.27
Cannot shop for groceries	0.25	0.22	0.27	0.47
Cannot balance checkbook	0.13	0.12	0.18	0.32
Cannot dress oneself	0.21	0.18	0.21	0.29
Cannot use toilet oneself	0.13	0.10	0.12	0.19
Cognitive score	-	8.79	8.65	7.99
Food insufficient	0.39	0.33	0.28	0.20
Skipped meals	0.21	0.14	0.08	0.03
Skipped medications	0.24	0.16	0.09	0.08
Enrolled in SSI	0.17	0.22	0.23	0.23
Enrolled in TANF	0.16	0.05	0.03	0.02

Notes: All sample means are weighted. Cognitive score is only available for the population 65 and older; for each age group, the sample size or cognitive score is 0, 306, 480, and 394.

Constant:
(1) -0.070** (2) -0.061 (3) 0.088* (4) 0.092* (5) 0.175*
SE: (0.017) (0.043) (0.045) (0.047) (0.075)

Ages 60-69:
(1) -0.095** (2) -0.105** (3) -0.102** (4) -0.102** (5) -
SE: (0.025) (0.025) (0.026) (0.026) -

Ages 70-79:
(1) -0.160** (2) -0.186** (3) -0.164** (4) -0.176** (5) -0.039
SE: (0.026) (0.028) (0.028) (0.028) (0.028)

Ages 80+:
(1) -0.208** (2) -0.239** (3) -0.216** (4) -0.241** (5) -0.110**
SE: (0.030) (0.032) (0.032) (0.033) (0.033)

Female: starts at (2)
(2) 0.096** (3) 0.084** (4) 0.070** (5) 0.062*
SE: (0.022) (0.022) (0.022) (0.028)

Education:
(2) -0.010** (3) -0.009** (4) -0.008** (5) -0.006
SE: (0.003) (0.003) (0.003) (0.004)

Non-Hispanic Black:
(2) 0.086** (3) 0.057* (4) 0.049* (5) 0.022
SE: (0.024) (0.024) (0.024) (0.028)

Hispanic:
(2) 0.082** (3) 0.055+ (4) 0.050+ (5) 0.005
SE: (0.029) (0.029) (0.029) (0.036)

Other:
(2) 0.124* (3) 0.091+ (4) 0.075 (5) 0.073
SE: (0.050) (0.049) (0.049) (0.053)

Total residents:
(2) -0.010 (3) 0.063** (4) 0.060** (5) 0.133**
SE: (0.007) (0.015) (0.015) (0.023)

Benefit amount: starts at (3)
(3) -0.708** (4) -0.702** (5) -1.518**
SE: (0.181) (0.179) (0.256)

Income:
(3) -0.014** (4) -0.013** (5) -0.038**
SE: (0.003) (0.003) (0.005)

Assets:
(3) 0.003 (4) 0.003 (5) -0.099*
SE: (0.005) (0.005) (0.045)

Home owner:
(3) -0.197** (4) -0.174** (5) -0.085**
SE: (0.020) (0.021) (0.031)

Vehicle owner: starts at (4)
(4) -0.065** (5) -0.014
SE: (0.022) (0.026)

Cannot shop for groceries:
(4) 0.004 (5) 0.035
SE: (0.026) (0.029)

Cannot balance checkbook:
(4) -0.028 (5) -0.014
SE: (0.029) (0.035)

Cannot dress oneself:
(4) 0.084** (5) 0.054+
SE: (0.027) (0.030)

Cannot use toilet oneself:
(4) 0.040 (5) 0.006
SE: (0.032) (0.035)

Cognitive score: only (5)
(5) -0.006
SE: (0.007)

Sample size: 2,249 2,249 2,249 2,249 1,180
R-squared: 0.023 0.043 0.095 0.105 0.133# Table 5. Logit Models for Program Take-up: 1998

	(1)	(2)	(3)	(4)	(5)
Constant	-0.070**	-0.061	0.088*	0.092*	0.175*
	(0.017)	(0.043)	(0.045)	(0.047)	(0.075)
Ages 60-69	-0.095**	-0.105**	-0.102**	-0.102**	-
	(0.025)	(0.025)	(0.026)	(0.026)	-
Ages 70-79	-0.160**	-0.186**	-0.164**	-0.176**	-0.039
	(0.026)	(0.028)	(0.028)	(0.028)	(0.028)
Ages 80+	-0.208**	-0.239**	-0.216**	-0.241**	-0.110**
	(0.030)	(0.032)	(0.032)	(0.033)	(0.033)
Female		0.096**	0.084**	0.070**	0.062*
		(0.022)	(0.022)	(0.022)	(0.028)
Education		-0.010**	-0.009**	-0.008**	-0.006
		(0.003)	(0.003)	(0.003)	(0.004)
Non-Hispanic Black		0.086**	0.057*	0.049*	0.022
		(0.024)	(0.024)	(0.024)	(0.028)
Hispanic		0.082**	0.055+	0.050+	0.005
		(0.029)	(0.029)	(0.029)	(0.036)
Other		0.124*	0.091+	0.075	0.073
		(0.050)	(0.049)	(0.049)	(0.053)
Total residents		-0.010	0.063**	0.060**	0.133**
		(0.007)	(0.015)	(0.015)	(0.023)
Benefit amount ($000s)			-0.708**	-0.702**	-1.518**
			(0.181)	(0.179)	(0.256)
Income ($000s)			-0.014**	-0.013**	-0.038**
			(0.003)	(0.003)	(0.005)
Assets ($00000s)			0.003	0.003	-0.099*
			(0.005)	(0.005)	(0.045)
Home owner			-0.197**	-0.174**	-0.085**
			(0.020)	(0.021)	(0.031)
Vehicle owner				-0.065**	-0.014
				(0.022)	(0.026)
Cannot shop for groceries				0.004	0.035
				(0.026)	(0.029)
Cannot balance checkbook				-0.028	-0.014
				(0.029)	(0.035)
Cannot dress oneself				0.084**	0.054+
				(0.027)	(0.030)
Cannot use toilet oneself				0.040	0.006
				(0.032)	(0.035)
Cognitive score					-0.006
					(0.007)
Sample size	2,249	2,249	2,249	2,249	1,180
R-squared	0.023	0.043	0.095	0.105	0.133

+ significant at 10%; * significant at 5%; ** significant at 1%. Table reports marginal effects evaluated at the mean of all covariates. Standard errors of the marginal effects are in parentheses. All regressions are weighted. Excluded groups are 50-59 and non-Hispanic White. The cognitive score is only available for individuals 65 and above. Observations with missing data are dropped.

Table 6. Logit Models for Program Take-up: 1998 and 2000

	1998			2000	
	(1)	(2)	(3)	(4)	(5)
Constant	0.073	0.073	-0.048	0.149**	-0.075
	(0.047)	(0.048)	(0.051)	(0.049)	(0.052)
Ages 60-69	-0.101**	-0.105*	-0.090+	0.009	-0.015
	(0.026)	(0.045)	(0.046)	(0.027)	(0.027)
Ages 70-79	-0.173**	-0.177**	-0.143**	-0.053+	-0.078**
	(0.029)	(0.046)	(0.048)	(0.029)	(0.029)
Ages 80+	-0.233**	-0.237**	-0.196**	-0.211**	-0.214**
	(0.034)	(0.049)	(0.051)	(0.036)	(0.035)
Female	0.073**	0.073**	0.068**	0.062**	0.053*
	(0.022)	(0.022)	(0.023)	(0.024)	(0.023)
Education	-0.008**	-0.008**	-0.006*	-0.010**	-0.007*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Non-Hispanic Black	0.045+	0.045+	0.025	0.039	0.031
	(0.024)	(0.024)	(0.025)	(0.025)	(0.024)
Hispanic	0.026	0.026	0.016	-0.006	-0.020
	(0.030)	(0.030)	(0.031)	(0.031)	(0.030)
Other	0.071	0.071	0.063	0.081	0.065
	(0.049)	(0.049)	(0.050)	(0.054)	(0.053)
Total residents	0.058**	0.059**	0.082**	0.097**	0.082**
	(0.015)	(0.015)	(0.016)	(0.019)	(0.018)
Benefit amount ($000s)	-0.683**	-0.684**	-0.703**	-1.302**	-1.113**
	(0.178)	(0.178)	(0.188)	(0.213)	(0.203)
Income ($000s)	-0.012**	-0.013**	-0.018**	-0.026**	-0.019**
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
Assets ($00000s)	0.004	0.004	0.003	-0.043	-0.025
	(0.005)	(0.005)	(0.005)	(0.028)	(0.027)
Home owner	-0.171**	-0.171**	-0.146**	-0.111**	-0.102**
	(0.021)	(0.021)	(0.022)	(0.025)	(0.025)
Vehicle owner	-0.068**	-0.068**	-0.060**	-0.053*	-0.029
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Cannot shop for groceries	0.004	0.004	-0.013	-0.007	0.002
	(0.026)	(0.026)	(0.027)	(0.027)	(0.026)
Cannot balance checkbook	-0.029	-0.029	-0.004	-0.003	-0.012
	(0.029)	(0.029)	(0.030)	(0.029)	(0.028)
Cannot dress oneself	0.082**	0.082**	0.061*	0.010	-0.021
	(0.027)	(0.027)	(0.028)	(0.028)	(0.027)
Cannot use toilet oneself	0.032	0.032	0.023	0.067+	0.066*
	(0.032)	(0.032)	(0.033)	(0.034)	(0.033)
Food insufficient	0.067**	0.067**	0.057*		
	(0.022)	(0.022)	(0.022)		
Skipped medications	-0.020	-0.019	0.018		
	(0.029)	(0.029)	(0.030)		
Special eligibility		0.005	0.022		
		(0.046)	(0.048)		
SSI receipt			0.201**		
			(0.025)		
TANF receipt			0.458**		
			(0.048)		
Eligible in 1998					0.239**
					(0.025)
Sample size	2,249	2,249	2,249	1,845	1,845
R-squared	0.108	0.108	0.176	0.114	0.159

+ significant at 10%; * significant at 5%; ** significant at 1%. Table reports marginal effects evaluated at the mean of all covariates. Standard errors of the marginal effects are in parentheses. All regressions are weighted. Excluded groups are 50-59 and non-Hispanic White. Observations with missing data are dropped.

Table 7. Are Needy Elderly Getting Benefits?
Sample: Individuals Eligible for Food Stamps

	Participates in FSP				Doesn't Participate in FSP			
	50-59	60-69	70-79	80+	50-59	60-69	70-79	80+
Mean individual food expenditures ($ per week)	64	44	37	35	67	62	55	44
% skipped meals	0.26	0.15	0.14	0.03	0.18	0.14	0.06	0.03
% skipping medications	0.26	0.13	0.08	0.08	0.22	0.18	0.09	0.08
% owning a home	0.36	0.28	0.36	0.40	0.60	0.54	0.63	0.60
Median housing wealth among home owners (000s)	25.0	30.0	33.0	26.0	35.0	42.0	42.0	48.0
Median non-housing wealth among wealth holders (000s)	1.0	1.0	0.4	1.0	1.8	2.0	2.0	1.2
Mean ratio of income to threshold	0.76	0.79	0.91	0.84	1.05	0.96	1.07	1.01

Notes: All sample means are weighted.

Table A1. Rules for Food Stamp Eligibility, HRS Information, and Adjustments

	Eligibility rules for non-elderly and non-disabled HHs	Differences in rules for elderly and disabled HHs	Source of information in HRS	Data limitations; adjustments made
Gross income				
-Test	-Total inc. <= 130% of HHS poverty line	-Not subject to gross inc. test	-24 types	-Annual inc. reported; monthly average used
Net income				
-Test	-Total inc. less deductions <= 100% of HHS poverty line	-No difference	-See above	-See above
Deductions				
-Standard	-$134 per HH	-No difference	-No info. Necessary	-N/A
-Earned inc.	-20% of earned inc.	-No difference	-5 types	-N/A
-Out-of-pocket medical exp.	-None	-Elderly medical exp. > $35 per elderly HH	-4 types (doctor, prescriptions, home care, insurance premiums)	-Not reported for co-res.; ignored for co-res.
-Excess shelter exp.	-Excess shelter costs > 1/2 of the household's income, max. of $250	-No max. deduction	-1 type (mortgage/prop. taxes, rent)	-Utility exp. not collected; CEX used to adjust for utility exp.
-Dependent care exp.	-Max. of $200 for dep. < 2 and $175 for dep. >=2	-No difference	-None collected	-Dependent exp. not collected; ignored
-Child support payments	-Legally owed child support to a non-HH member	-No difference	-None collected	-Child support payments not collected; ignored
Assets				
-Test	-Assets <= $2000	-Assets <= $3000	-10 types	
-Excluded assets	-Vehicle value, max. of $4650; home and lot value; burial plot value; and pensions	-Value of vehicle used to transport a disabled HH member, no max.	-Vehicle, home and lot, and pension values asked about separately	-Use and number of vehicles not collected; ignored*
Other				
-SSI and TANF adjunctive eligibility	-If all HH members receive program then eligibility presumed	-No difference	-Respondent SSI and TANF receipt collected	-Co-res. SSI receipt not collected; HH with co-res. ignored
-Work req.	-Able-bodied head of HH may be required to work	-Not subject to work req.	-3 types of disability program participation	-Ignored
-Citizenship	-Some permanent residents are eligible	-Eligible if > 65 and in US on 8/22/96	-US born and date of arrival in US	-Ignored

Notes: 1997 maximum deduction amounts presented (Cody and Castner, 1999). *Entire vehicle value may be deducted if vehicle is used for a specified purpose (e.g., used for income-producing purposes). We do not know the number of vehicles per household.

Table A2. Descriptive Characteristics for Imputation of Co-Residents' Earnings and Income and Household Insurance Premiums for 1998 and 2000

	Earnings	
Co-resident Earnings	1998	2000
Number of co-res.>= 18 years old	5,697	5,274
Reported exact value	2,758	2,752
Reported bracketed information	1,382	1,266
Reported work but no earnings info.	705	912
Reported no info.	852	344
Mean value (excluding zeroes)		
Before imputation	$18,220	$17,579
After imputation	$16,145	$17,395

	Other Income	
Co-resident Other Income	1998	2000
Number of households with co-res.	4,347	3,450
Reported exact value	3,187	2,424
Reported bracketed information	528	268
Reported no info.	632	758
Mean value (excluding zeroes)		
Before imputation	$17,749	$7,698
After imputation	$14,902	$7,601

1998 Insurance Premiums	Employment	Medicaid	Other
Number of households	13,596	13,596	13,596
Reported exact value	13,134	13,387	13,525
Reported no info. for ins. prem.	462	209	71
Mean exp.			
Before imputation	$23.88	$16.36	$11.25
After imputation	$24.03	$16.39	$11.73

2000 Insurance Premiums	Employment	Medicaid	Other
Number of households	12,868	12,868	12,868
Reported exact value	12,499	12,642	12,848
Reported no info. for ins. prem.	369	226	20
Mean exp.			
Before imputation	$26.73	$17.08	$15.63
After imputation	$26.72	$17.41	$15.61

Notes: These tabulations are based on the authors' calculations using the HRS. The means are weighted. The unit of analysis for the co-resident earned income is the co-resident. The unit of analysis for co-resident income and medical insurance expenses is the household. The co-resident earnings and income imputations are done for all respondents ages 50 and older. The insurance premium imputations are done on the analysis sample. The insurance premiums are calculated per month.