SSI Eligibility and Participation Among the Oldest Old: Evidence from the AHEAD

by Paul S. Davies*

This article models Supplemental Security Income (SSI) eligibility and participation among persons aged 70 or older using data from the Study of Assets and Health Dynamics Among the Oldest Old. An econometric model estimates the influence of socioeconomic characteristics on the probability of SSI participation among eligible units. Finally, a policy simulation is conducted by increasing the unearned income disregard from $20 to $125.

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Summary

The proportion of elderly SSI recipients aged 70 or older has been growing in recent years, perhaps because of rising life expectancies overall and a higher incidence of poverty among the oldest old. In 1999, 84 percent of all elderly SSI recipients were 70 or older. This article examines Supplemental Security Income (SSI) eligibility and participation among the oldest old.

The analysis was based on 1993 data from the Study of Assets and Health Dynamics Among the Oldest Old that were used to build a detailed SSI eligibility model to identify individuals who meet the federal criteria for SSI income and resource eligibility. The participation rate among those eligible for federal SSI benefits is 53.9 percent, which is generally consistent with the findings of other studies. Furthermore, eligible participants would receive a significantly higher federal SSI benefit than eligible nonparticipants. Correspondingly, eligible participants have significantly lower incomes and assets than eligible nonparticipants.

An econometric model is used to estimate the influence of various demographic, financial, and health care use characteristics on the probability of SSI participation among eligible individuals and couples. The model corrects for measurement error in calculated benefits and for misclassifying someone as ineligible. The empirical results show that the effect of higher SSI benefits on the probability of participation is substantial—a $100 increase in benefits would increase the probability of participating for an average eligible unit by 15 percentage points. Many of the demographic, financial, and health care use variables also are important predictors of SSI participation among the oldest old.

The eligibility and participation models are also used to simulate the effect of increasing the SSI unearned income disregard from $20 to $125. Those made eligible by this policy change would receive a very low federal SSI benefit on average, suggesting that they are on the margin of eligibility under the original program rules. The simulated participation rate is 48.8 percent—5 percentage points lower than under the original program rules—reflecting the low benefit that new eligibles would receive. Only 36 percent of those made eligible by the new program rules are predicted to participate.

These SSI eligibility and participation models are potentially useful tools for policy analysis. It is fairly straightforward to use these models to change a feature of SSI eligibility, reestimate the group of eligible individuals and couples,

and predict participation among those who are eligible under the simulated program rules. New eligibles can be compared with those eligible under original program rules. New participants can be compared with old participants. Although these models focus only on individuals aged 70 or older, this type of analysis can be helpful in estimating the potential distributional effects of proposed SSI policy changes.

Introduction

Congress initiated the Supplemental Security Income (SSI) program in 1972 to provide a safety net for disabled and aged individuals who are poor. SSI is federally funded and administered by the Social Security Administration, replacing the state-run Old-Age Assistance, Aid to the Blind, and Aid to the Permanently and Totally Disabled programs. Eligible individuals and couples receive a federal SSI benefit based on monthly income (earned and unearned) and asset levels. The first SSI benefits were paid in 1974. State supplementation also is available in all but eight states. In 1993, 44 percent of all SSI recipients received state supplementation (U.S. House of Representatives 1993).[1]

Several previous studies have examined SSI eligibility and participation among the aged (see, for example, McGarry 1996, 2000; Choi 1998; Vaughan and Wixon 1991; Sheils and others 1990; Hill 1990; Coe 1985; Warlick 1982; Drazga, Upp, and Reno 1982; Menefee, Edwards, and Shieber 1981). However, with the exception of McGarry (2000) and Choi (1998), these studies were based on data from the 1980s or earlier. For example, McGarry (1996) used data from the 1984 Survey of Income and Program Participation (SIPP), as did Vaughan and Wixon (1991) and Sheils and others (1990). Coe's (1985) data were from the Panel Study of Income Dynamics for 1979. The data in Warlick (1982) were from the March 1975 Current Population Survey.

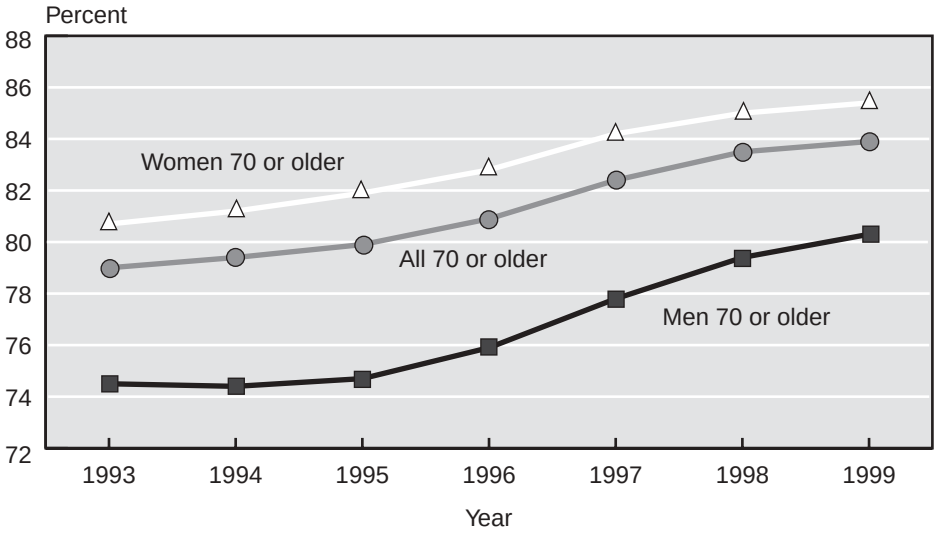
This study simulates SSI eligibility among the oldest old—persons 70 or older—and estimates a participation model using more recent data from the Study of Assets and Health Dynamics Among the Oldest Old (AHEAD). Wave 1 of the AHEAD, which was conducted in late1993 and early 1994, provides detailed information about demographic characteristics, income, assets, and health status for households in which at least one member was aged 70 or older at the time of the survey. This rich data source permits one to simulate SSI eligibility, examine the characteristics of those who are or are not eligible for SSI, and those who do or do not participate, while carefully controlling for various factors influencing SSI participation in an empirical model of the decision to participate.[2]

Focusing on the population aged 70 or older is relevant for a number of reasons. First, since 1993, individuals aged 70 or older have accounted for a rising share of elderly SSI beneficiaries (see Chart 1). In 1993, 79 percent of all elderly SSI beneficiaries were 70 or older, compared with 84 percent in 1999. Elderly women receiving SSI were more likely to be 70 or older than were their male counterparts—85.4 percent and 80.3 percent in 1999, respectively.

Second, individuals aged 70 or older differ from individuals aged 65 to 69 in several important ways. In 1998, median income of the older group was substantially lower, and a larger percentage of them were living in poverty (Grad 2000, 4, 6). They were also less likely to be in the labor force—11.1 percent compared with 28 percent for those aged 65 to 69 (Federal Interagency Forum on Aging Related Statistics 2000, 68). Finally, they were more likely to have experienced moderate or severe memory impairments than their younger counterparts (Federal Interagency Forum on Aging Related Statistics 2000, 75).

Third, as life expectancies continue to increase and the baby-boom generation ages, the population aged 70 or

Chart 1.
SSI recipients aged 70 or older as a proportion of all elderly SSI recipients, by sex, 1993–1999



SOURCE: Author's calculations from the *Annual Statistical Supplement* to the *Social Security Bulletin,* Table 7.E3, various issues.

older is projected to grow substantially (see Chart 2, which shows the projected populations for the two groups through 2080). Growth is especially dramatic between 2010 and 2040, fueled by the aging of the baby boomers. Over the 85 years from 1995 to 2080, the population aged 70 or older is projected to grow by 178 percent, compared with 108 percent for the younger group. To the extent that individuals in the older group continue to experience lower incomes and higher poverty rates than do younger groups, they may have great demand for SSI benefits.

This study also simulates SSI eligibility and participation under a scenario in which the unearned income disregard (the amount of unearned income excluded when calculating financial eligibility) is increased from $20 to $125. The simulation highlights some important differences between the new group of eligibles and the group eligible under current program rules, and predicted participants and nonparticipants. The model supports similar policy simulations for changes in other basic program parameters; however, special care must be taken when considering a policy change that might elicit a behavioral response (for example, the spending down of assets in response to an increase in the asset cutoff).

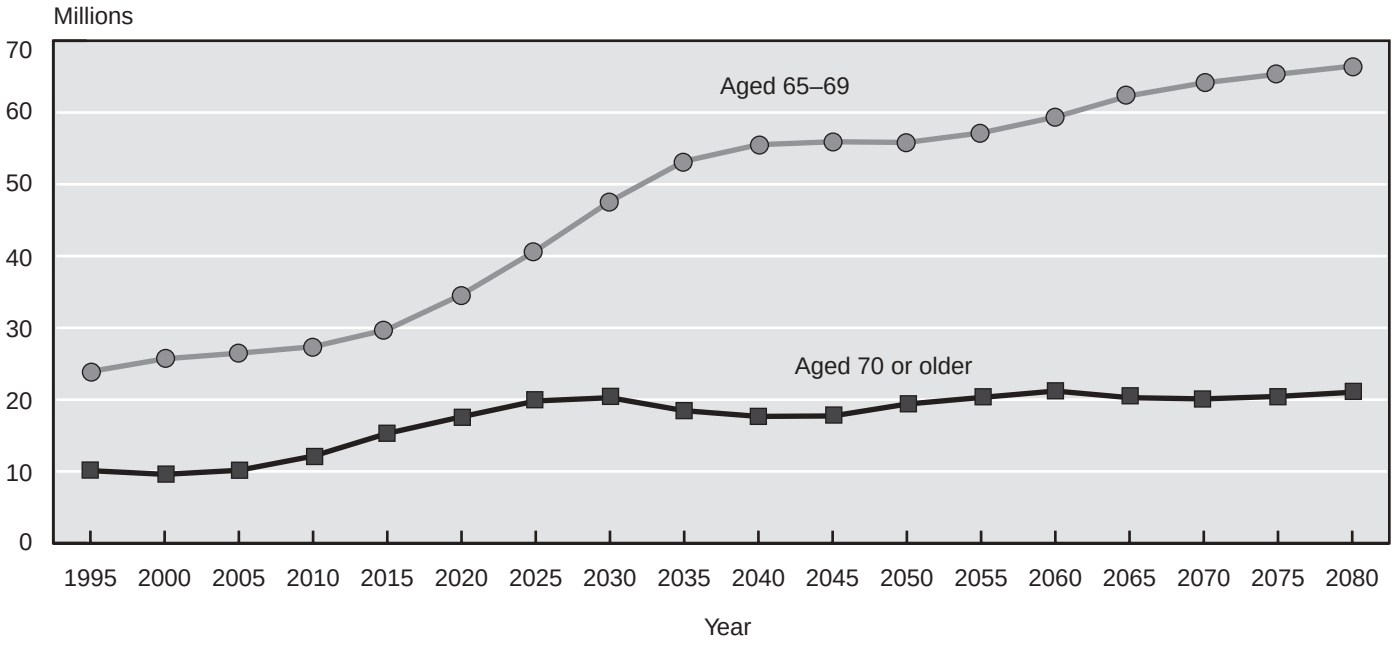
Given the nature of SSI benefits as an income source of last resort, one might expect all qualifying individuals and couples to participate in the program. However, that is not the case. Only 53.9 percent of those in the AHEAD who are eligible for federal SSI benefits actually participate. This finding is generally consistent with that of previous studies, which range from 45 percent to 60 percent. Participation rates in other means-tested programs, such as Aid to Families with Dependent Children (now Temporary Assistance for Needy Families) and Food Stamps, also are quite low (Fraker and Moffitt 1988).

However, based on economic theories of utility-maximizing behavior and benefit-cost analysis, nonparticipation by eligible units may be a rational, optimal choice. If the costs of participation (application costs, transportation costs to and from Social Security field offices, information costs, welfare stigma, and so on) are sufficiently high to outweigh the benefit of additional income from monthly SSI payments, nonparticipation may be the "correct" choice. The empirical analysis presented in this article explores the factors associated with SSI participation in greater detail.

The article:

- Describes the AHEAD data,
- Discusses the SSI eligibility simulation,
- Presents descriptive statistics,
- Explains the econometric model, and
- Discusses the empirical results and the policy simulation.

Chart 2.
Social Security area population aged 65 to 69 and 70 or older, 1995–2080



SOURCE: Social Security Administration (1997a, Table 21, historical data and intermediate cost alternative).

Description of the Data

The Study of Assets and Health Dynamics Among the Oldest is a nationally representative data set (with oversamples of blacks and Hispanics) that provides detailed demographic, income, asset, family structure, health, and disability information for 8,223 individuals in 6,052 households. Interviews for the first wave of the AHEAD survey were conducted in late 1993 and early 1994. A household was qualified to be included in the survey if at least one member was born in 1923 or before. In other words, all households in the 1993 AHEAD contained at least one member aged 70 or older. Soldo and others (1997) provide an overview of the AHEAD study.

The AHEAD is a natural choice for estimating SSI eligibility because it allows the researcher to easily focus on the age-eligible SSI population, thereby avoiding the difficulties inherent in estimating SSI disability status. Furthermore, monthly measures of income from various sources, as well as self-reported values of several types of assets, are included for each respondent.

The AHEAD interview asks questions about income received in the prior month by the respondent and the spouse (if the respondent is married). The availability of income data for a month is important given the monthly nature of the SSI eligibility determination. The measures of income of the respondent and his or her spouse in the AHEAD that are useful for estimating SSI eligibility are Social Security benefits received last month, labor earnings last month, other regular income (from up to three additional sources), and private transfer income received from other family members. All income values are self-reported by the respondent.

Missing values result when the respondent does not know the income amount from a particular category or refuses to provide that amount. In the public-release version of the data (wave 1, public-release version 2.1) used here, missing values have been imputed for most variables. However, many of the imputations create problems for analyses of SSI eligibility and participation. Although many questions ask respondents to report the amount of income received from a given source in the previous month, all imputations recode the income amounts to annual totals. To continue working with data for a month, which is necessary for estimating SSI eligibility, missing values for Social Security income, SSI income, other income of the household head (and spouse) from up to three sources identified by the respondent, and investment income are imputed using the hot-deck routine in Stata version 6.0 (StataCorp 1999a). Marital status, age category, and an indicator for whether the family's nonhousing assets are above or below the sample median are used as classifying variables for donor cases.

The interview asks numerous questions about the value of assets owned by the respondent and the spouse (if present). Values are obtained for the following: home; other real estate; transportation (for example, cars, trucks, motor homes); any business owned completely or partially by the respondent or the spouse; individual retirement accounts or Keogh accounts; stocks or mutual funds; checking, savings, or money market funds; certificates of deposit, government savings bonds, or Treasury bills; corporate, municipal, other government, or foreign bonds; trust funds; and any other assets such as jewelry and collections. In each case, if the respondent does not know the value of the asset or refuses to report the value, a series of follow-up bracket questions attempt to ascertain the relevant range of the asset's value. The public-use version of the AHEAD includes hot-decked imputed values for each asset category and for total assets.

Smith (1997) reports that the use of bracketing questions in the AHEAD reduces item nonresponse among asset owners by more than 80 percent on average. For example, 32 percent of asset owners do not report the value of their checking or savings accounts, 20 percent do not report the value of their home, and 15 percent do not report the value of their vehicles. The follow-up bracket questions reduce those percentages to 7 percent, 2 percent, and 2 percent, respectively (Smith 1997, Table 2). One potential drawback to the follow-up bracketing questions, however, is that the distribution of bracketed responses may differ from the distribution of valid responses. Using business value and the value of stocks as examples, Smith (1997, Table 3) shows that asset values for bracketed respondents are weighted toward the upper end of the distribution of value categories when compared with cases that have valid responses. When estimating SSI eligibility, this weighting may cause individuals to be identified as ineligible even though they may in fact be eligible.

In preparing the data for the eligibility simulation and for statistical analysis, one member of each household is designated as the head of the household (hereafter referred to as the "head"). Many possibilities are available. For example, the male respondent could be designated the head, taking a "traditional" view of household structure. Alternatively, the older member, or the member answering certain types of questions, could be designated as the head, taking a more "functional" view. The AHEAD identifies a "financial respondent" and a "nonfinancial respondent." The financial respondent is the person considered to be more knowledgeable about the household's financial situation and therefore responds to questions about household members' income sources and assets. After creating a "couples" file and coding the analysis variables to attribute the information provided by

the financial respondent to the appropriate household member, the variables are recoded and the older member is designated as the household head. This designation is primarily for convenience so that the household head is age-eligible for SSI benefits (that is, aged 65 or older) in all cases. Recall that spouses are not required to have been born in 1923 or earlier to be included in the AHEAD household. Therefore, the spouse may or may not be age-eligible for SSI benefits. Such households must be treated carefully in determining SSI eligibility, as is described in the following section.

SSI Eligibility Criteria and Eligibility Simulation

The general goal of this simulation is to apply the SSI eligibility criteria for age, income, and resources to the AHEAD households to identify SSI units who appear to be eligible for SSI benefits. In this study, the term "SSI units" refers to the household head and spouse (if present) for whom SSI eligibility and participation is being examined. The household may include members other than the head and spouse. Since one criterion for inclusion in the AHEAD survey is that at least one household member must be aged 70 or older at the time of the survey, every household in the data contains at least one member who is age-eligible (or categorically eligible) for SSI benefits. Therefore, this section describes only the eligibility criteria for income and resources that are relevant to the current simulation. Additional details on SSI eligibility can be found in Social Security Administration (1997b) and U.S. House of Representatives (1993).

As mentioned above, the AHEAD survey was conducted in late 1993 and early 1994. Questions regarding income sources generally cover income received in the previous month, whereas the asset questions focus on the stock of currently held assets. Hence, the 1993 SSI federal benefit rates and program parameters are used to determine financial eligibility for respondents interviewed between October 1993 and January 1994. SSI financial eligibility for those interviewed after January 1994 is determined using the 1994 federal benefit rates and program parameters.

The asset cutoff and the disregards for unearned and earned income for SSI eligibility were unchanged from 1993 to 1994 (see Table 1). Individuals must have no more than $2,000 in countable assets to be eligible for SSI. The analogous cutoff for couples is $3,000. In general, the current market value of the first car and the value of the individual's or couple's home are excluded from countable assets.[3]

Information reported in the AHEAD was used to create three variables for the eligibility simulation: countable unearned income, countable earned income, and countable assets. Total unearned income is the sum of Social Security income in the previous month, other unearned income in the previous month (from up to three regular sources reported by the respondent), and average monthly cash assistance received from other family members.[4] Total unearned income is reduced by $20 to arrive at countable unearned income. Earned income is simply the amount of earnings from work last month as reported in the AHEAD. The first $65 of earned income, plus one-half of earned income beyond $65, is disregarded to create a measure of countable earned income. Any unused portion of the unearned income disregard also is applied against earned income. Since the AHEAD collects earned and unearned income information separately for the head and spouse, countable earned and unearned income measures are derived for each individual and for the unit as a whole. As described below, it is important to have a separate measure of each individual's earned and unearned income because, in certain situations, the income of an ineligible spouse is deemed by SSI program rules to be available to the eligible individual.

A variable for countable assets is developed at the unit level only, since the AHEAD does not collect asset information separately for the head and the spouse. This approach is perfectly acceptable: unlike the situation for earned and unearned income, the assets of an eligible individual and an ineligible spouse are always counted together in determining SSI eligibility. The value of one car and the value of the individual's or couple's home are subtracted from the summary asset measure available in the AHEAD to arrive at countable assets.

Table 1.
General program parameters for determining SSI financial eligibility, 1993 and 1994 (in dollars)

	1993	1994
	Federal benefit rate	
Individual	434	446
Couple	652	669
Unearned income disregard	20	20
Earned income disregard	$65 plus 1/2 of earned income beyond $65	$65 plus 1/2 of earned income beyond $65
	Asset cutoff	
Individual	2,000	2,000
Couple	3,000	3,000

SOURCE: U.S. House of Representatives (1993).

The simulation of SSI financial eligibility focuses on three general scenarios:

1. An individual who is age-eligible,
2. A couple in which both members are age-eligible, and
3. A couple in which only one member is age-eligible.

Simulating SSI financial eligibility is straightforward for the first two scenarios. Under the first scenario, if the individual federal benefit rate is greater than the sum of the individual's countable earned and unearned income, and if the individual's countable assets are less than $2,000, the individual is eligible for SSI. The SSI benefit for which the individual is eligible is equal to the difference between the individual federal benefit rate and the sum of the individual's countable earned and unearned income. Under the second scenario, the couple is eligible for SSI if the sum of their countable earned and unearned income is less than the federal benefit rate for couples and if their countable assets are less than $3,000. Subtracting the sum of their countable earned and unearned income from the federal benefit rate for couples yields the SSI benefit amount.

The same basic approach is used to determine eligibility under the third scenario. However, because one member is age-eligible and the other is not, the ineligible spouse's income may be deemed to the eligible individual. [5] If the ineligible spouse's deemable income is less than the difference between the maximum federal benefit for a couple and an individual ($218 in 1993 and $223 in 1994), no income is deemed and the eligible individual receives the individual benefit. If deemable income exceeds this amount, the couple's incomes are combined and eligibility is determined based on the federal benefit rate for couples (as in the second scenario above). However, according to the *Social Security Handbook* (Social Security Administration 1997b), an individual is not allowed to receive a higher SSI payment with deeming than he or she would receive without deeming.[6] Therefore, if the couple's resulting benefit calculated with deeming is greater than the individual benefit calculated without deeming, the eligible individual receives an SSI benefit based on the individual federal benefit rate (as in the first scenario).

Each of the three scenarios assumes that the individual or couple is living alone. Under SSI program rules, this means that the individual or couple is either living in its own household or, if living in someone else's household, is paying its prorated share of average household operating expenses (such as food, rent, mortgage, property taxes, heating fuel, gas, electricity, water, and sewage and garbage collection services). If the individual or couple is living in the household of another and does not pay its prorated share of average household operating expenses, the SSI benefit is reduced by one-third of the applicable federal benefit rate (Social Security Administration 1997b).

In the SSI eligibility simulations conducted for this study, the SSI concept of "living in the household of another" was determined using AHEAD questions about why individuals live together. As a proxy for that concept, benefits were reduced by one-third if the other household members (beyond the head and spouse) were present to financially help the head or spouse or if the other household members moved in to help the head or spouse or to help both themselves and the head or spouse.

Characteristics of SSI Eligibles and Participants

The analysis focuses first on two groups: those eligible for federal SSI benefits and those not eligible (based on the SSI eligibility simulation described above). The group of eligibles is then disaggregated into two other groups—those who are SSI participants and those who are eligible but not participating. The demographic and financial characteristics for the four groups are presented in Tables 2 and 3 (for eligibility) and Tables 4 and 5 (for participation). The tables present means and standard deviations for the selected variables. In all tables, the means are tested for statistical differences between the groups. Since the eligibility simulation and descriptive analyses are conducted at the SSI-unit level, all descriptive statistics are weighted by the AHEAD household weight. The centered household weight is used so that the weighted sample counts remain equal to the actual sample counts (this approach is appropriate for analyses that use probabilities and statistical tests).

SSI Eligibility

Eligible individuals and those who are not eligible have very different demographic profiles (see Table 2). Compared with those who are not eligible, the heads of SSI-eligible units are significantly older (79.2 versus 77.7 years old) and more likely to be women (75.5 percent versus 54.6 percent). SSI-eligible units are also more than twice as likely to contain a foreign-born head or spouse (22.8 percent versus 9.6 percent) and more than five times as likely to have a Hispanic head or spouse (23.4 percent versus 3.7 percent). Eligible units are also much less likely to contain a head or spouse who completed high school, receives pension or Social Security income, owns their home, or owns a car. Only 19 percent of eligible units contain a head or spouse who completed high school, compared with 40.6 percent of ineligible units, and they are roughly 10 times less likely to receive pension income (4.4 percent versus 48.6 percent).

Two variables that have been excluded from most previous studies also indicate significant differences—receipt of private money transfers and receipt of time transfers. A private money transfer is cash assistance received from other family members. A time transfer is time spent by other individuals to help with daily activities, personal care, or household chores (for example, shopping, yard work, and preparing meals). SSI-eligible units are less likely to receive private money transfers and significantly more likely to receive time transfers than their ineligible counterparts, suggesting that SSI-eligible units do not receive as much financial support from family and friends. The fact that eligible units receive more time transfers may indicate that they require more assistance with daily activities. Indeed, eligible units are significantly more likely to contain a severely disabled head or spouse than are ineligible units (15.1 percent versus 6.8 percent).[7]

Finally, although there is no statistical difference between eligibles and ineligibles in terms of the number of overnight hospital stays or doctor visits in the previous 12 months, SSI-eligible units incurred significantly lower

Table 2.
Characteristics of SSI-eligible units and units not eligible for SSI

	Eligible		Not eligible	
Variable	Mean	Standard deviation	Mean	Standard deviation
Calculated benefit (dollars) [a]	196.51	156.05	. . .	. . .
Age of unit head (years) [a]	79.17	6.61	77.73	5.92
Female-headed unit (percent) [a]	75.45	43.07	54.60	49.79
Foreign-born, head or spouse (percent) [a]	22.84	42.01	9.61	29.47
Entered U.S. in 1980 or later (percent) [a]	6.01	23.79	0.34	5.82
Entered U.S. before 1980 (percent) [a]	16.42	37.08	9.25	28.98
Hispanic, head or spouse (percent) [a]	23.43	42.39	3.65	18.74
Black, head or spouse (percent) [a]	26.30	44.06	6.15	24.02
Spouse (percent) [a]	16.08	36.77	40.08	49.01
Completed high school, head or spouse (percent) [a]	19.02	39.28	40.57	49.11
Pension, head or spouse (percent) [a]	4.39	20.51	48.57	49.98
Home ownership (percent) [a]	38.86	48.78	74.05	43.84
Social Security, head or spouse (percent) [a]	71.41	45.22	97.50	15.61
Residence in MSA (percent) [b]	68.94	46.31	73.34	44.22
Receipt of private money transfers (percent)	3.48	18.34	2.99	17.04
Receipt of time transfers (percent) [a]	27.96	44.92	11.26	31.61
Severe disability, head or spouse (percent) [a]	15.08	35.81	6.83	25.23
Number of overnight hospital stays in previous 12 months	0.51	1.19	0.46	0.99
Number of doctor visits in previous 12 months	6.41	7.15	6.58	7.20
Medical expenses in previous 12 months not covered by insurance (dollars) [a]	558.84	2,644.32	989.64	2,826.15
Private health insurance (percent) [a]	22.05	41.49	83.06	37.52
Car ownership (percent) [a]	31.44	46.47	75.88	42.78
Living with others (percent) [a]	23.92	42.69	17.27	37.80
Medicare (percent) [a]	90.58	29.23	97.69	15.04
Medicaid (percent) [a]	56.81	49.58	6.10	23.93
Number of observations	597		5,400	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means and standard deviations are calculated using household weights.
. . . = not applicable; MSA = metropolitan statistical area.

a. Sample means for eligible and ineligible units are statistically different at the 1 percent level of significance.
b. Sample means for eligible and ineligible units are statistically different at the 5 percent level of significance.

medical expenses in the previous 12 months that are not covered by insurance ($559 versus $990). One reason may be the greater prevalence of Medicaid coverage among SSI eligibles (56.8 percent of SSI-eligible units in the AHEAD survey contain a head or spouse who is covered by Medicaid, compared with just 6.1 percent of those not eligible for SSI), although they are much less likely to have private health insurance coverage.[8]

The study also looked at six variables relating to income and assets for eligible and ineligible units: SSI countable income (earned plus unearned), SSI countable assets, total unit income including SSI, total unit income excluding SSI, total assets, and net worth. The mean for each of those variables is significantly larger among SSI-ineligible units than among SSI-eligible units (see Table 3). This result should come as no surprise, given that SSI is an income support program for poor individuals and couples. What is somewhat surprising is the magnitude of the differences between the means. For example, mean countable assets are only $224 for eligible units but $110,605 for ineligible units. Average total unit income including SSI is only $399 for eligible units, compared with $1,934 for ineligible units. A similar difference exists between the two groups for total unit income excluding SSI.[9] The average SSI-eligible unit has just $1 in total assets for every $9 of total assets held by the average ineligible unit.

The quartile break points and medians in Table 3 give a better picture of the distribution of these variables for each group. The median eligible unit has no countable assets and just $434 in total unit income. By contrast, ineligible units have median countable assets of $22,000 and median total unit income of $1,325. Clearly, units in the upper quartile of the income and asset distributions drive the means for both groups.

SSI Participation

The study identified 597 units as eligible for SSI based on the criteria for income and resource eligibility. Of those, 345 report in the AHEAD survey that they are SSI participants and 252 that they are not participants; that is, 53.9 percent of all federally eligible units report receiving SSI benefits in the month before the survey.[10] That rate is slightly lower than the one reported by McGarry (2000), which is based on the same data but also considers state supplementation of federal SSI benefits.[11] It is also very close to the 56 percent participation rate reported by McGarry (1996) based on 1984 Survey of Income and Program Participa-

Table 3.
Income and assets of SSI-eligible units and units not eligible for SSI (in dollars)

Variable	Eligible	Not eligible
SSI countable income		
Mean [a]	236.95	1,794.61
Standard deviation	178.97	2,210.52
Quartile		
1st	0	769
2nd (median)	265	1,274
3rd	380	2,101
SSI countable assets		
Mean [a]	224.22	110,605.20
Standard deviation	490.72	326,053.60
Quartile		
1st	0	2,000
2nd (median)	0	22,000
3rd	157	101,000
Total unit income including SSI		
Mean [a]	398.69	1,934.11
Standard deviation	339.46	2,886.84
Quartile		
1st	297	806
2nd (median)	434	1,325
3rd	454	2,200
Total unit income excluding SSI		
Mean [a]	280.37	1,929.99
Standard deviation	357.97	2,888.42
Quartile		
1st	0	801
2nd (median)	290	1,323
3rd	400	2,200
Total assets		
Mean [a]	21,336.41	196,902.70
Standard deviation	41,785.77	412,716.70
Quartile		
1st	0	36,000
2nd (median)	850	100,000
3rd	30,000	216,000
Net worth		
Mean [a]	19,971.48	192,558.00
Standard deviation	41,045.09	409,788.70
Quartile		
1st	0	33,000
2nd (median)	600	96,000
3rd	29,500	212,000
Number of observations	597	5,400

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means, standard deviations, and quartiles are calculated using household weights.
Income is the amount reported for the previous month.

a. Sample means for eligible and ineligible units are statistically different at the 1 percent level of significance.

tion (SIPP) data. Sheils and others (1990) report participation rates ranging from 54 percent based on the March 1988 Income Supplement to the Current Population Survey (CPS) to 65 percent based on the 1984 SIPP. Vaughan and Wixon (1991) calculate a participation rate of 60 percent using the 1984 SIPP. The participation rates presented by McGarry (1996), Sheils and others (1990), and Vaughan and Wixon (1991), however, are representative of the SSI-eligible group aged 65 or older, whereas the rates calculated here and in McGarry (2000) are representative of those 70 or older.[12]

The mean calculated SSI benefit among all federally eligible units in the AHEAD is $196.51 (see Table 2). Not surprisingly, the mean calculated SSI benefit among participating units ($219.73) is higher than that among eligible, nonparticipating units ($169.43) as shown in Table 4.[13] Furthermore, the means are statistically different at the 1 percent level of significance. The correlation between reported SSI benefits and calculated SSI benefits

Table 4.
Characteristics of SSI participants and eligible nonparticipants

	Participants		Eligible nonparticipants	
Variable	Mean	Standard deviation	Mean	Standard deviation
Calculated benefit (dollars) [a]	219.73	152.99	169.43	155.49
Age of unit head (years)	79.15	6.56	79.20	6.68
Female-headed unit (percent)	75.14	43.28	75.81	42.91
Foreign-born, head or spouse (percent) [a]	27.48	44.71	17.42	38.01
Entered U.S. in 1980 or later (percent)	6.19	24.14	5.80	23.43
Entered U.S. before 1980 (percent) [a]	20.94	40.75	11.15	31.54
Hispanic, head or spouse (percent) [a]	32.86	47.04	12.42	33.05
Black, head or spouse (percent) [a]	31.80	46.64	19.88	39.99
Spouse (percent)	15.32	36.07	16.97	37.61
Completed high school, head or spouse (percent) [a]	8.95	28.59	30.77	46.24
Pension, head or spouse (percent) [a]	1.68	12.87	7.56	26.49
Home ownership (percent) [a]	30.10	45.94	49.09	50.09
Social Security, head or spouse (percent) [c]	68.04	46.70	75.33	43.19
Residence in MSA (percent)	66.88	47.13	71.35	45.30
Receipt of private money transfers (percent) [a]	1.37	11.66	5.93	23.67
Receipt of time transfers (percent) [a]	32.44	46.88	22.73	41.99
Severe disability, head or spouse (percent) [a]	18.70	39.05	10.85	31.16
Number of overnight hospital stays in previous 12 months [b]	0.62	1.40	0.38	0.87
Number of doctor visits in previous 12 months [a]	7.82	7.87	4.77	5.81
Medical expenses in previous 12 months not covered by insurance (dollars) [a]	193.31	464.30	985.34	3,820.36
Private health insurance (percent) [a]	6.30	24.34	40.41	49.17
Car ownership (percent) [a]	23.20	42.27	41.06	49.29
Living with others [b]	27.98	44.96	19.17	39.44
Medicare (percent) [b]	92.86	25.78	87.92	32.66
Medicaid (percent) [a]	86.95	33.74	21.65	41.27
Number of observations	345		252	
SSI participation rate (percent)				
Weighted	53.85			
Unweighted [d]	57.79			

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTE: Sample means and standard deviations are calculated using household weights.

MSA = metropolitan statistical area.

a. Sample means for participants and nonparticipants are statistically different at the 1 percent level of significance.
b. Sample means for participants and nonparticipants are statistically different at the 5 percent level of significance.
c. Sample means for participants and nonparticipants are statistically different at the 10 percent level of significance.
d. The unweighted SSI participation rate is included for completeness; however, it should not be used for population estimates because of the oversampling of blacks and Hispanics in the AHEAD.

among the eligible participants is 0.71 and is statistically different from zero at the 1 percent level. By comparison, the mean benefit amount for all aged SSI recipients (65 or older) was $243.62 in December 1993 (Social Security Administration 1996, Table 7.A5).

The mean age and the sex of unit heads in participant and nonparticipant units are not statistically different. However, participants are more likely to have a head or spouse who is foreign born (27.5 percent versus 17.4 percent).[14] Just over three-quarters of the foreign-born participants, and nearly two-thirds of foreign-born eligible nonparticipants, have a head or spouse who entered the United States before 1980. SSI participant units are significantly more likely to have a black or Hispanic head or spouse than are nonparticipant units and significantly less likely to have a head or spouse who has completed high school (9 percent compared with 30.8 percent).

SSI participants are also significantly less likely to own a home or car, receive Social Security benefits, and receive pension income than are eligible nonparticipants. However, the magnitude of the differences is not as pronounced as that between SSI-eligible and ineligible units.

SSI participants are significantly less likely to receive private money transfers than eligible nonparticipants but are significantly more likely to receive time transfers. Although SSI-eligible units are somewhat less likely to receive financial support from family and friends than ineligible units, those who participate in the SSI program are even less likely to receive such support (Table 4). A larger proportion of SSI participants receive time transfers than do eligible nonparticipants, as one might expect given that participants are more likely to be severely impaired and therefore may be in greater need of assistance.

Although there is no statistical difference between SSI eligibles and ineligibles in terms of the number of overnight hospital stays and doctor visits in the previous 12 months, SSI participants experience significantly more overnight hospital stays and doctor visits than eligible nonparticipants (Table 4). Even so, SSI participants have significantly lower medical expenses in the previous 12 months that are not covered by insurance, possibly because they are more likely to have Medicaid coverage than are eligible nonparticipants. Medicaid covers 87 percent of SSI participants in the AHEAD, compared with 22 percent of eligible nonparticipants. Although eligible nonparticipants are over six times more likely to have some form of private health insurance, they are less likely to have either Medicaid or private health insurance (62 percent compared with 93 percent of SSI participants).

Mean countable income, countable assets, total unit income excluding SSI, total assets, and net worth are significantly lower for SSI participants than for eligible nonparticipants (see Table 5). The magnitude of these differences, however, is not nearly as pronounced as it is between eligibles and ineligibles. The mean SSI participant, for instance, has roughly $1 of net worth for every $3 of net worth held by the average eligible nonparticipant. At all points in the distribution of these income and asset variables, SSI participants are worse off than SSI-eligible nonparticipants. As shown in Table 5, SSI participants have no more than $15 of SSI countable assets through the third quartile of the distribution, and their median net worth is only $100. Only when the income support provided by the SSI program is included does the median total unit income of SSI participants surpass that of eligible nonparticipants. As with eligibles and ineligibles, the mean income and asset values for the two groups appear to be driven by units in the upper portion of the relevant distributions.

Participation Model

The SSI participation model used in this study closely follows McGarry (1996). Assuming utility-maximizing behavior and accounting for both benefits and costs of participation, those who are eligible for SSI will choose to participate if the net change in indirect utility associated with participation is nonnegative. Think of P* as the net gain (loss) in indirect utility from SSI participation

$$P_i^* = V_i^p - V_i^{np} + \varepsilon_i = f(Benefit_i^*, Cost_i, \mathbf{X}_i) + \varepsilon_i$$

where V_i^p = indirect utility given participation,
V_i^{np} = indirect utility given nonparticipation,
$Benefit_i^*$ = true SSI benefit,
$Cost_i$ = costs of participation (monetary, nonmonetary),
$\mathbf{X}_i$ = vector of unit characteristics,
ε_i ~ $N(0, \sigma_\varepsilon^2)$ random error term unobserved by the researcher, including tastes for welfare.

We would expect to find the following relationships:

$$\frac{\partial P_i^*}{\partial Benefit_i^*} = f_B > 0 \text{, and } \frac{\partial P_i^*}{\partial Cost_i} = f_C < 0$$

In other words, net indirect utility from SSI participation is increasing in benefit levels and decreasing in costs of participation, holding constant the set of unit characteristics $\mathbf{X}_i$. The error term ε_i, by incorporating welfare tastes, allows for the possibility that a unit may not participate when $f(\cdot) > 0$ if ε_i is sufficiently negative because of distaste for welfare, or welfare stigma (Moffitt 1986).

The net gain (loss) in indirect utility, P_i^*, is clearly not observable by the researcher. One can, however, observe the discrete choice of participation or nonparticipation, P_i

$$P_i = \begin{cases} 1 \text{ if } P_i^* \geq 0 \\ 0 \text{ if } P_i^* < 0 \end{cases} \quad (1)$$

The true benefit level, $Benefit_i^*$, is not observed but is calculated by applying SSI program rules to self-reported income data from the AHEAD. The calculated benefit, $Benefit_i$, represents the true benefit, but with measurement error

$$Benefit_i = Benefit_i^* + \psi_i \quad (2)$$

where $\psi_i \sim N(0, \sigma_\psi^2)$.

Representing $f(\cdot)$ linearly as

$$f(Benefit_i^*, Cost_i, \mathbf{X}_i) = \gamma_0 + \gamma_1 Benefit_i^* + \gamma_2 Cost_i + \beta' \mathbf{X}_i$$

and substituting $Benefit_i^*$ from equation (2) leads to

$$P_i^* = \gamma_0 + \gamma_1 Benefit_i + \gamma_2 Cost_i + \beta' \mathbf{X}_i + (\varepsilon_i - \gamma_1 \psi_i) \quad (3)$$

Equations (1) and (3) characterize the simple probit model.

Probit estimation of equation (3) will result in inconsistent and biased coefficients because of nonzero correlation between $Benefit_i$ and ψ_i in the error term (Greene 2000, 370, 430). To produce consistent and unbiased estimates, an instrumental variables procedure is used as described in McGarry (1996). Representing the true benefit as

$$Benefit_i^* = \alpha' \mathbf{Z}_i + \nu_i \quad (4)$$

where $\nu_i \sim N(0, \sigma_\nu^2)$ is an unobserved random error term and substituting equation (4) into equation (2), the instrumental variables equation for the calculated benefit becomes

$$Benefit_i = \alpha' \mathbf{Z}_i + (\nu_i + \psi_i) \quad (5)$$

where $\mathbf{Z}_i$ is a vector of instrumental variables that are correlated with $Benefit_i$ but uncorrelated with ψ_i. In this case, the instruments in $\mathbf{Z}_i$ are the maximum potential SSI benefit including state supplementation and total unit Social Security income.[15] Using the estimated coefficients from equation (5), predicted benefit values ($\hat{B}enefit_i$) are obtained.

Table 5.
Income and assets of SSI participants and SSI-eligible nonparticipants (in dollars)

Variable	Participants	Eligible non-participants
SSI countable income		
Mean [a]	206.77	272.15
Standard deviation	170.28	182.71
Quartile		
1st	0	106
2nd (median)	234	307
3rd	330	405
SSI countable assets		
Mean [a]	144.90	316.78
Standard deviation	381.19	580.76
Quartile		
1st	0	0
2nd (median)	0	0
3rd	15	350
Total unit income including SSI		
Mean [a]	442.37	347.72
Standard deviation	107.05	481.70
Quartile		
1st	434	190
2nd (median)	454	345
3rd	466	434
Total unit income excluding SSI		
Mean [a]	222.64	347.72
Standard deviation	179.91	481.70
Quartile		
1st	0	190
2nd (median)	255	345
3rd	350	434
Total assets		
Mean [a]	10,517.22	33,960.29
Standard deviation	23,654.84	53,304.32
Quartile		
1st	0	5
2nd (median)	200	5,000
3rd	10,500	55,000
Net worth		
Mean [a]	9,671.77	31,989.22
Standard deviation	25,003.14	51,568.65
Quartile		
1st	0	0
2nd (median)	100	4,600
3rd	9,793	50,000
Number of observations	345	252

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means, standard deviations, and quartiles are calculated using household weights.
Income is the amount reported for the previous month.

a. Sample means for participants and nonparticipants are statistically different at the 1 percent level of significance.

The "corrected" probit model is represented as

$$P_i = \begin{cases} 1 \text{ if } P_i^* \geq 0 \\ 0 \text{ if } P_i^* < 0 \end{cases} \quad (6)$$

where, $P_i^* = \gamma_0 + \gamma_1 \hat{B}enefit_i + \gamma_2 Cost_i + \beta' \mathbf{X}_i + \mu_i$

$\hat{B}enefit_i = \hat{\alpha}' \mathbf{Z}_i$ and from equation (5),

$\mu_i = \varepsilon_i + \gamma_1 \nu_i$, and

$\mu_i \sim N(0, \sigma_\varepsilon^2 + \gamma_1^2 \sigma_\nu^2)$.

The predicted benefit, $\hat{B}enefit_i$, is no longer correlated with the error term because ψ_i has dropped out of the composite error μ_i. Maximum likelihood probit estimation of equation (6) will therefore produce consistent and unbiased estimates of γ_0, γ_1, γ_2, and β.[16]

One final empirical adjustment is made. As described in McGarry (1996), the possibility of measurement error in the calculated benefit leads to the possibility that SSI-eligible units could be misclassified as ineligible. Although McGarry (1996) finds that measurement error is more important than misclassification error, the fact that 2.9 percent of the units classified here as ineligible report the receipt of SSI benefits in the AHEAD suggests that correcting for misclassification may be important (see the discussion of ineligible participants in the appendix). Following the methodology of McGarry (1996), the probability of being income eligible can be calculated as

$$P(Benefit_i^* > 0) = P(Benefit_i - \psi_i > 0) = \Phi(Benefit_i / \sigma_\psi) \quad (7)$$

since $\psi_i \sim N(0, \sigma_\psi^2)$. Assuming that the reported benefit is equal to the true benefit, σ_ψ is estimated on the basis of those observations for which both a self-reported and a calculated benefit are available (McGarry 1996, 348).[17]

$$\hat{\sigma}_\psi = \sqrt{\frac{\sum_{i=1}^{n} (Benefit_i^* - Benefit_i)^2}{n}} \quad (8)$$

For each unit classified as resource eligible (that is, each unit that meets SSI's asset restrictions), the probability of being income eligible is calculated as $\Phi(Benefit_i / \hat{\sigma}_\psi)$. The participation model in equation (6) is then estimated for all resource-eligible units with the probability of being eligible ($\Phi(Benefit_i / \sigma_\psi)$) essentially serving as a weight for each observation to correct for potential misclassification error.[18]

For estimation, $Cost_i$ and $\mathbf{X}_i$ are replaced with a vector of socioeconomic variables designed to capture both costs of participation and personal and unit characteristics associated with participation. In addition to standard demographic variables such as age and sex of the unit head, marital status, educational attainment, race, ethnicity, and foreign-born status, a number of independent variables are included to control for financial status, familial support, disability status, and use of health care services. For example, indicators are included for pension receipt, Social Security receipt, and home ownership under the hypothesis that eligible units with financial resources will be less likely to participate in the SSI program. Direct measures of income and assets are not included since SSI eligibility and benefit amount calculations already incorporate those items.

AHEAD income data refer to income received in the previous month. However, SSI-eligible units with substantial variation in income from month to month may exhibit different SSI participation patterns than those with more stable monthly income. Therefore, a crude proxy for income variance across months is included as an independent variable in the participation model. The proxy is constructed as the sum of earned and unearned income in the reference month less one-twelfth of the previous year's total income. Large values (either positive or negative) of this variable suggest greater income variance. *A priori*, it is not clear whether income variance should be positively or negatively associated with SSI participation. One could argue that eligible units with greater income variance will be more likely to participate, using SSI benefits to "smooth" income and consumption in "bad" months. On the other hand, eligible units with less income variance (that is, those with stable, but low, income) may rely more heavily on SSI purely for subsistence.

Familial support variables include indicators for the receipt of private money transfers and of time transfers. As mentioned above, these variables are often excluded from studies of participation in income support programs, although they may play an important role. The hypothesis here is that eligible units with stronger family support networks will be less likely to turn to public programs for support. However, to the extent that receipt of time transfers is indicative of greater need for assistance (perhaps due to poor health or disability), it may be positively related to SSI participation.

The variables for disability and use of health care are also likely to be important in explaining SSI participation among eligible elderly units. Low-income, elderly individuals with severe disabilities may be more likely to participate in the SSI program, not only for the income support but also for the access SSI typically provides to the Medicaid program. Similarly, eligible units who experienced a greater number of hospital stays and doctor visits in the previous 12 months may be more likely to participate because of SSI's Medicaid link. Eligible units with large medical expenses not covered by insurance are particularly vulnerable and may be more

likely to participate in SSI. However, out-of-pocket medical expenses may act as a proxy for Medicaid coverage. Noting the greater prevalence of Medicaid coverage among SSI participants, which has the effect of reducing out-of-pocket medical expenses relative to those of SSI-eligible nonparticipants, the estimated coefficient on the medical expenses variable may in fact be negative. Private health insurance coverage is expected to be negatively related to SSI participation.

Some of the demographic variables can be viewed as proxies for the costs of SSI participation. For example, one might expect additional years of education to reduce the cost of SSI participation by increasing the ease of filling out application forms. In this sense, educational attainment would have a positive impact on SSI participation (McGarry 1996). However, greater educational attainment also is an indication of greater human capital investment, which is generally associated with enhanced lifetime earnings and, therefore, less need for public support. With respect to disability and health status, McGarry (1996) points out that poor health may restrict mobility, thereby increasing the costs and reducing the likelihood of SSI participation. However, to the extent that poor health has reduced lifetime earnings and related savings, the need for income support from SSI may be much greater.

Two additional variables are included to represent the costs of SSI participation. An indicator of residence in a metropolitan statistical area (MSA) is included as a proxy for access to Social Security offices. Residents of metropolitan areas are likely to live closer to a Social Security office than are individuals and couples who reside in rural areas. Furthermore, public transportation networks are typically more developed and more accessible in metropolitan areas than in rural areas. An indicator for car ownership is included under the hypothesis that individuals and couples with access to an automobile have greater access to Social Security offices.

Empirical Results

The empirical results presented here are for three specifications of the model:

- A single probit estimation of equation (3) with no corrections for benefit measurement error or misclassification of ineligible units;
- A probit that adds the correction for benefit measurement error as described in equations (4), (5), and (6);[19] and
- The full model described in equation (6), including the correction for misclassification of ineligible units developed in equations (7) and (8).

Two sets of results are included for each specification: one with the probit coefficients (and indicators for statistical significance) and a second with the parameters transformed to represent marginal effects ($\partial P / \partial X$).[20]

The results are substantively consistent across the three specifications of the model: the estimated coefficients are relatively consistent in terms of magnitude, sign, and significance levels (see Table 6). Only the indicators for spouse, time transfer, and car ownership change signs across the three specifications, but the coefficients are not significantly different from zero in any specification. Several variables that were not significant in the first two specifications become significant in the third, which includes the correction for misclassification of income eligibility. For example, the indicator for female-headed units and the foreign-born indicator for those who entered the United States in 1980 or later become significant, as do the Social Security indicator and the number of overnight hospital stays in the previous 12 months. The discussion below focuses on the results of the model with corrections for measurement error and misclassification of eligibility.

As expected, the calculated or predicted SSI benefit amount is positively related to SSI participation. The statistical significance of the relationship is rather weak for the model with the correction for measurement error (significant at the 10 percent level) but is very strong when the correction for misclassification of eligibility is added. Consistent with McGarry (1996), the magnitude of the relationship between SSI benefits and SSI participation roughly doubles from the simple probit (0.08) and the probit corrected for measurement error (0.06) to the specification with corrections for both measurement error and misclassification of ineligible units (0.15). The marginal effect for the latter specification is substantial, indicating that a $100 increase in the predicted SSI benefit would increase the probability of SSI participation by 15 percentage points.

Five of the eight demographic control variables are significantly related to SSI participation. Only the age of the unit head, the spouse indicator, and the indicator for foreign-born units who entered the United States before 1980 are not significant. Female-headed units are more likely to participate, as are units with a black or Hispanic head or spouse. SSI-eligible units in which either the head or the spouse completed high school are significantly less likely to participate. This finding is consistent with the standard human capital argument discussed above, in which those with greater educational attainment tend to have higher lifetime earnings and should therefore have less need to turn to income assistance programs for support.

Although the characteristics described in Table 4 show that SSI participants are more likely to be foreign born

than SSI-eligible nonparticipants, SSI-eligible units with a foreign-born head or spouse who entered the United States in 1980 or later are significantly less likely to participate, all else being equal. This finding is consistent with other studies of welfare participation among immigrants (Tienda and Jensen 1986; Jensen 1988). The value of the marginal effect suggests that SSI-eligible, foreign-born units who entered the United States in 1980 or later are 19 percentage points less likely to participate in SSI than otherwise similar SSI-eligible, native-born units.

All three of the indicators for financial status are statistically significant in the specification of the model with both corrections. Two of them—receipt of pension income and home ownership—are negatively related to SSI participation among eligible units (see Table 6). The

Table 6.
Parameter estimates and marginal effects for SSI participation probits

	Simple probit		Probit corrected for measurement error		Probit corrected for measurement error and misclassification of eligibility	
Variable	Parameter	∂P/∂X	Parameter	∂P/∂X	Parameter	∂P/∂X
Intercept	1.48		1.49		-0.70	
Calculated benefit [a]	0.20 ***	0.08	. . .	. . .	. . .	. . .
Predicted benefit [a]	. . .	. . .	0.16 *	0.06	0.43 ***	0.15
Age of unit head	-0.02	-0.01	-0.01	-0.01	0.00	0.00
Female-headed unit	0.15	0.06	0.13	0.05	0.28 *	0.09
Foreign born, head or spouse						
Entered U.S. in 1980 or later	-0.40	-0.15	-0.53	-0.20	-0.68 **	-0.19
Entered U.S. before 1980	-0.17	-0.07	-0.24	-0.09	-0.09	-0.03
Hispanic, head or spouse	0.80 ***	0.30	0.82 ***	0.31	0.69 ***	0.26
Black, head or spouse	0.40 **	0.16	0.40 ***	0.16	0.39 ***	0.14
Spouse	0.08	0.03	0.03	0.01	-0.15	-0.05
Completed high school, head or spouse	-0.52 **	-0.20	-0.50 **	-0.19	-0.35 **	-0.11
Pension, head or spouse	-0.15	-0.06	-0.28	-0.11	-0.57 **	-0.17
Home ownership	-0.56 ***	-0.22	-0.55 ***	-0.22	-0.45 ***	-0.15
Social Security, head or spouse	0.38	0.15	0.24	0.09	0.66 ***	0.20
Residence in MSA	-0.61 ***	-0.24	-0.63 ***	-0.24	-0.42 ***	-0.15
Receipt of private money transfers	-0.98 **	-0.34	-0.96 **	-0.33	-0.83 ***	-0.22
Receipt of time transfers	0.09	0.04	-0.02	-0.01	-0.02	-0.01
Severe disability, head or spouse	0.32	0.13	0.34	0.14	0.06	0.02
Proxy for income variance [a]	0.03 **	0.01	0.03 *	0.01	0.02 *	0.01
Number of overnight hospital stays in previous 12 months	0.08	0.03	0.09	0.04	0.09 **	0.03
Number of doctor visits in previous 12 months	0.04 ***	0.01	0.04 ***	0.02	0.03 ***	0.01
Medical expenses in previous 12 months not covered by insurance [a]	-0.06 ***	-0.02	-0.06 ***	-0.02	-0.02 *	-0.01
Private health insurance	-1.09 ***	-0.39	-1.12 ***	-0.40	-1.12 ***	-0.34
Car ownership	0.03	0.01	0.02	0.01	-0.08	-0.03
Log likelihood	-272.05		-275.08		-981.61	
Pseudo R^2	0.34		0.33		0.36	
Number of observations	597		597		2,292	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Probits are estimated using household weights.
. . . = not applicable; MSA = metropolitan statistical area.
*** Significant at the 1 percent level.
** Significant at the 5 percent level.
* Significant at the 10 percent level.

a. Measured in hundreds of dollars for probit estimation.

marginal effects of these variables are quite strong. SSI eligible units in which the head or spouse receives pension income are 17 percentage points less likely to participate than are eligible units without pension income. SSI-eligible homeowners are 15 percentage points less likely to participate than eligible units who do not own a home. These relationships are consistent with the hypothesis that eligible units with financial resources will have less need for income support from the SSI program.

The third financial status variable—receipt of Social Security income—is positive and significant. Although the sign of the coefficient may seem somewhat puzzling, it is consistent with previous studies (McGarry 2000, 1996). Whereas one might expect SSI-eligible units who receive Social Security income to be less likely to need additional support from the SSI program, this effect may be offset by greater knowledge of and contact with the Social Security Administration (SSA) and its programs among Social Security beneficiaries. In other words, since Social Security beneficiaries have had at least some contact with SSA, they may be more likely to use the SSI program to supplement their retirement income, even if the SSI benefit amount is quite small. The positive relationship between receipt of Social Security benefits and SSI participation also has a programmatic explanation. When an individual visits a Social Security office to apply for Social Security benefits, he or she is routinely checked for SSI eligibility.

The proxy for income variance is positive and significant (at the 10 percent level) in all three specifications (see Table 6). As discussed above, the expected direction of the relationship between SSI participation and income variance is unclear *a priori*. The empirical results contradict McGarry (1996) and lend support to the argument that eligible units with greater income variance are more likely to participate in the SSI program, perhaps using SSI benefits to smooth consumption in months of lower-than-average income.

Under the hypothesis that SSI-eligible units who receive financial support from their families would have less need for public support, the model includes a variable for receipt of private money transfers. An indicator for the receipt of time transfers controls for the potential impact that the need for assistance with daily activities (due to age, health, or disability) has on SSI participation among SSI-eligible units. Consistent with the descriptive statistics in Table 4, SSI-eligible units who receive private money transfers are significantly less likely to participate in SSI. Although the statistics in Table 4 indicate that receipt of time transfers is significantly more likely among SSI participants than among SSI-eligible nonparticipants (32.4 percent versus 22.7 percent), there is no causal relationship between receipt of time transfers and SSI participation when other covariates are held constant.

The variables for use of health care services are very strongly related to SSI participation, although not always in the expected direction. The number of doctor visits in the previous 12 months is positively related to SSI participation, a result that is strong both statistically and substantively (see Table 6). An increase of one standard deviation in the number of doctor visits in the previous 12 months (that is, seven additional doctor visits in a year) results in an increase of 7 percentage points in the probability of SSI participation. The number of overnight hospital stays in the previous 12 months is positively and significantly related to SSI participation but only in the specification with corrections for both measurement error and misclassification of ineligible units. The presence of a severely disabled head or spouse is not significantly related to SSI participation among eligible units.

SSI eligible units with higher medical expenses in the previous 12 months that were not covered by insurance (that is, out-of-pocket medical expenses) are significantly less likely to participate, though only at the 10 percent level. Although this finding may seem counterintuitive, it is consistent with the descriptive results presented in Table 4 and may represent the effect of Medicaid coverage among SSI participants. Given that most SSI participants are automatically enrolled in Medicaid, they are likely to have substantially lower out-of-pocket medical expenses than SSI-eligible nonparticipants who do not have Medicaid coverage. Other private health insurance coverage, which is significantly more prevalent among SSI-eligible nonparticipants, is negatively related to SSI participation, as expected. Private health insurance coverage reduces the probability of SSI participation among eligible units by 34 percentage points.

In terms of proxies for the costs of SSI participation, eligible units residing in a metropolitan area are significantly less likely to participate, and ownership of an automobile has no significant impact on SSI participation. Although the result for residence in a metropolitan area is counterintuitive, it is consistent with previous studies (McGarry 2000, 1996). One plausible explanation is that the MSA variable is acting as a proxy for the availability of other support services, such as food banks and senior citizens' centers. Such services are likely to be more widely available in metropolitan areas than in rural areas. If that is the case, one could interpret the estimated coefficient as indicating that alternative support programs are more attractive than SSI in metropolitan areas, even among SSI-eligible units. The fact that the variable for car ownership is not statistically significant, coupled with the negative coefficient on the MSA indicator, suggest that lack of access to SSA offices is not a strong impediment to participation.

Policy Simulation

The model is also used to simulate eligibility for federal SSI benefits under a scenario in which the unearned income disregard increases from $20 to $125. That change produces a new group of eligibles who can be compared with eligible units under the original program rules. Using the results of the empirical model, SSI participation is simulated under the new rules to identify the characteristics of predicted participants and predicted eligible nonparticipants.

Other changes to the SSI eligibility criteria can be explored in a similar way, such as changing the amount of allowable assets or changing the amount of earned income excluded when calculating eligibility and benefits.[21] However, this model is not sufficiently detailed, nor do the data contain sufficient observations, to conduct policy simulations of changes in idiosyncratic features of the SSI eligibility criteria (such as changes in the treatment of 401(k) plans, burial funds, or life insurance) or administrative changes in the eligibility determination process.

Eligibility Simulation

To conduct this eligibility simulation, the amount of the unearned income disregard in the eligibility algorithm is changed and the simulation is run again. In this case, the only possible outcome of the policy simulation is that more units will be eligible for SSI benefits than under the original SSI program rules. A useful way to consider the results of the eligibility simulation is to compare the characteristics of three groups of SSI-eligible units:

1. Original eligibles—those eligible under the original program rules (that is, the same 597 units who were described in Tables 2 and 3);
2. New eligibles—those who become eligible for SSI as a result of the simulated rule change; and
3. All eligibles—the entire group of SSI-eligible units under the simulated program rules (that is, the first two groups combined).

The characteristics of these three groups are presented in Tables 7 and 8. To aid in identifying differences between the original eligibles, new eligibles, and all eligibles under the simulated program rules, the mean characteristics of the three groups were tested for statistically significant differences.

When the unearned income disregard is increased from $20 to $125, an additional 256 units become eligible for SSI. In all, 853 units are eligible for SSI under this policy simulation (see Table 7), a 43 percent increase over the number under the original program rules.

Comparison of Original Eligibles and New Eligibles. The characteristics of the new eligibles are similar in many respects to the original eligibles, although there are some important differences. New eligibles appear to be somewhat better off economically than original eligibles—the expected result, given that the policy simulation has relaxed the SSI eligibility criteria. The average calculated benefit for new eligibles is only $51, compared with $271 for original eligibles.[22] This very low average calculated benefit indicates that new eligibles were on the margin of eligibility under the original program rules. New eligibles are significantly more likely than original eligibles to receive Social Security income and to own a car, although similar proportions of each group receive pension income, are homeowners, and receive private money transfers and time transfers. Given that Social Security income is a key source of income for many elderly SSI units, it is likely that a large proportion of new eligibles obtain eligibility because they are able to disregard an additional $105 of their (unearned) Social Security income each month under the simulated program rules.

The new eligibles and original eligibles are statistically similar based on the average age of the unit head (79.3 and 79.2, respectively), the proportion with a spouse present (14.8 percent and 16.1 percent), and the proportion who live in a metropolitan area (69.3 percent and 68.9 percent). However, the two groups are statistically different for a number of telling demographic characteristics. For example, a significantly smaller proportion of newly eligible units contain a head or spouse who is foreign born (14.5 percent versus 22.8 percent), Hispanic (12.3 percent versus 23.4 percent), and black (17 percent versus 26.3 percent). Significantly more of the newly eligible units have a head or spouse who completed high school (24.1 percent versus 19 percent). The characteristics for which the two groups are statistically different are consistent with the previous observation that the new eligibles are somewhat better off than the original eligibles. Minority and foreign-born households (especially recent entrants) tend to have lower incomes than white and native-born households. Those who have completed high school tend to have better earnings opportunities than high school dropouts.

New and original eligibles appear to have similar health-related characteristics. Statistically similar proportions of the two groups contain a head or spouse who has a severe disability (14.3 percent of new eligibles and 15.1 percent of original eligibles). Each group also has comparable numbers of overnight hospital stays and doctor visits in the previous 12 months. The primary differences are in the dollar amount of out-of-pocket medical expenses and the proportion with private health

Table 7.
Characteristics of SSI eligibles under original program rules, those made eligible for SSI as a result of the simulated rule change, and all SSI eligibles under the simulated program rules

	SSI eligibles under original program rules		Those made eligible for SSI as a result of the simulated rule change		All SSI eligibles under the simulated program rules	
Variable	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Calculated benefit (dollars) [a]	271.49	122.21	50.89	28.20	201.78	144.89
Age of unit head (years)	79.17	6.61	79.28	6.91	79.20	6.70
Female-headed unit (percent)	75.45	43.07	77.85	41.60	76.21	42.60
Foreign-born, head or spouse (percent) [a]	22.84	42.01	14.51	35.29	20.21	40.18
Entered U.S. in 1980 or later (percent) [a]	6.01	23.79	0.96	9.77	4.42	20.56
Entered U.S. before 1980 (percent)	16.42	37.08	13.55	34.30	15.52	36.23
Hispanic, head or spouse (percent) [a]	23.43	42.39	12.32	32.93	19.92	39.96
Black, head or spouse (percent) [a]	26.30	44.06	17.03	37.66	23.37	42.34
Spouse (percent)	16.08	36.77	14.80	35.58	15.68	36.38
Completed high school, head or spouse (percent) [b]	19.02	39.28	24.18	42.90	20.65	40.50
Pension, head or spouse (percent)	4.39	20.51	5.80	23.42	4.84	21.47
Home ownership (percent)	38.86	48.78	42.15	49.48	39.90	49.00
Social Security, head or spouse (percent) [a,c]	71.41	45.22	99.34	8.10	80.23	39.85
Residence in MSA (percent)	68.94	46.31	69.34	46.20	69.07	46.25
Receipt of private money transfers (percent)	3.48	18.34	2.59	15.93	3.20	17.61
Receipt of time transfers (percent)	27.96	44.92	24.57	43.13	26.89	44.36
Severe disability, head or spouse (percent)	15.08	35.81	14.27	35.05	14.83	35.56
Number of overnight hospital stays in previous 12 months	0.51	1.19	0.47	0.85	0.50	1.09
Number of doctor visits in previous 12 months	6.41	7.15	6.46	8.21	6.43	7.50
Medical expenses in previous 12 months not covered by insurance (dollars)	558.84	2,644.32	893.11	3,018.22	664.46	2,770.44
Private health insurance (percent) [a,d]	22.05	41.49	36.26	48.17	26.54	44.18
Car ownership (percent) [a]	31.44	46.47	41.91	49.44	34.75	47.64
Living with others	23.92	42.69	24.98	43.37	24.25	42.89
Medicare (percent) [a,d]	90.58	29.23	98.39	12.62	93.05	25.45
Medicaid (percent) [a,d]	56.81	49.58	42.07	49.46	52.15	49.98
Number of observations	597		256		853	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means and standard deviations are calculated using household weights.
MSA = metropolitan statistical area.

a. Sample means for SSI eligibles under the original program rules and for those made eligible for SSI as a result of the simulated rule change are statistically different at the 1 percent level of significance.
b. Sample means for SSI eligibles under the original program rules and for those made eligible for SSI as a result of the simulated rule change are statistically different at the 10 percent level of significance.
c. Sample means for SSI eligibles under the original program rules and for all SSI eligibles under the simulated program rules are statistically different at the 1 percent level of significance.
d. Sample means for SSI eligibles under the original program rules and for all SSI eligibles under the simulated program rules are statistically different at the 10 percent level of significance.

insurance coverage. Uncovered medical expenses in the previous 12 months are $893 for new eligibles, and $559 for original eligibles, although the difference is not statistically significant. This finding may seem puzzling given the similar health-related characteristics of the two groups and because the new eligibles are significantly more likely to have private health insurance coverage than are original eligibles (36.3 percent versus 22.1 percent). However, because most of the new eligibles are not SSI participants, they are very unlikely to have Medicaid coverage.[23] Lack of Medicaid coverage may be driving the larger out-of-pocket medical expenses for this group.

Mean income and SSI countable assets are significantly greater for new eligibles than for original eligibles (see Table 8). Again, this is the expected result, especially since the calculated SSI benefit for new eligibles is significantly smaller than for original eligibles, as shown in Table 7. Median values for the income and asset variables are larger for new eligibles, although the differences in the distributions of the variables are not nearly as pronounced as for eligible and ineligible units under the original program rules. However, consistent with the information presented in Table 3, the upper portion of the relevant distribution drives the means of the income and asset variables for new eligibles.

Comparison of All SSI Eligibles Under the Simulated Rules with Original Eligibles. Despite the significant financial differences between original eligibles and new eligibles described above, the profile of all SSI eligibles under the simulated program rules is statistically quite similar to that of the SSI eligibles under the original program rules, with some exceptions (see Table 7). The mean simulated SSI benefit for all eligibles under the simulated program rules ($202) is significantly smaller than that for original eligibles ($271).[24] Because of the influence of new eligibles on the means for all eligibles under the simulated program rules, the latter are significantly more likely than original eligibles to receive Social Security benefits, to have private health insurance coverage, and to have Medicare coverage, but they are less likely to have Medicaid coverage.

SSI eligibles under the simulated program rules have significantly higher average SSI countable income, SSI countable assets, and total unit income than SSI eligibles under the original program rules (see Table 8). Total assets and net worth, on the other hand, are quite similar for the two groups.

Participation Simulation

SSI participation is predicted by applying the estimated coefficients from the participation model (Table 6) to the characteristics of each SSI-eligible unit under the simulated program rules. More formally,

$$\hat{P}_i^* = \Pr(\hat{P}_i = 1) = \Phi(\hat{\gamma}_0 + \hat{\gamma}_1 NewBenefit_i + \hat{\gamma}_2 Cost_i + \hat{\beta}' \mathbf{X}_i) \quad (9)$$

where $\hat{P}_i^*$ is the predicted probability of participation, $\Phi(\cdot)$ is the normal cumulative distribution, $\hat{\gamma}_0$, $\hat{\gamma}_1$, $\hat{\gamma}_2$, and $\hat{\beta}$ are the estimated coefficients, $NewBenefit_i$ is the SSI benefit amount in the simulation and all other variables are as previously defined. Tables 9 and 10 present the characteristics of predicted SSI participants and predicted SSI-eligible nonparticipants under the $125 unearned income simulation using the predicted probabilities from equation (9).

Characteristics of Predicted Participants and Predicted Eligible Nonparticipants. The policy simulation results in a predicted participation rate of 48.8 percent, which is 5 percentage points lower than under the original program rules. This result reflects the fact that new eligibles qualify for a very low benefit (just $51) and therefore are unlikely to participate (only 36 percent are predicted to participate). The participation rate for original eligibles under the simulated program rules increased slightly, from 53.9 percent to 54.7 percent, reflecting the larger benefit available to them. Overall, the model predicts that 416 sample units will participate under the simulated program rules, 21 percent more than under the original program rules. The average calculated benefit for predicted participants ($233) is significantly greater than for predicted eligible nonparticipants ($172). Under the original program rules, average benefits are $220 for participants and $169 for eligible nonparticipants (see Table 4).

As one would expect, predicted participants and predicted eligible nonparticipants are significantly different in a number of ways (see Table 9). Predicted participants are significantly more likely than eligible nonparticipants to be foreign born (and to have entered the United States before 1980), to be Hispanic or black, to receive time transfers, and to be severely disabled. Predicted participants are significantly less likely to have completed high school, to receive pension or Social Security income, to own their home, to receive private money transfers, and to own a car. Although predicted participants had significantly more overnight hospital stays and doctor visits in the previous 12 months, they had significantly lower uncovered (out-of-pocket) medical expenses in the previous 12 months and were significantly less likely to have had private health insurance coverage. A significantly larger proportion of predicted participants had Medicaid coverage.

SSI countable income and SSI countable assets are significantly lower for predicted participants than for predicted eligible nonparticipants, as are total assets and net worth (see Table 10). The pattern of these relation-

Table 8.
Income and assets of SSI eligibles under original program rules, those made eligible for SSI as a result of the simulated rule change, and all SSI eligibles under the simulated program rules (in dollars)

Variable	SSI eligibles under the original program rules	Those made eligible for SSI as a result of the simulated rule change	All SSI eligibles under the simulated program rules
SSI countable income			
Mean [a,b]	161.10	378.17	229.69
Standard deviation	143.09	103.19	165.98
Quartile			
1st	0	335	89
2nd (median)	156	375	245
3rd	275	403	359
SSI countable assets			
Mean [a,b]	224.22	361.74	267.68
Standard deviation	490.72	626.75	540.84
Quartile			
1st	0	0	0
2nd (median)	0	0	0
3rd	157	500	240
Total unit income including SSI			
Mean [a,c]	438.44	537.60	469.77
Standard deviation	329.45	131.55	285.98
Quartile			
1st	338	473	381
2nd (median)	431	526	473
3rd	507	549	532
Total unit income excluding SSI			
Mean [a,b]	280.37	518.88	355.73
Standard deviation	357.97	134.01	324.93
Quartile			
1st	0	463	225
2nd (median)	290	500	378
3rd	400	533	495
Total assets			
Mean	21,336.41	23,453.61	22,005.43
Standard deviation	41,785.77	39,031.79	40,923.98
Quartile			
1st	0	50	0
2nd (median)	850	1,600	1,100
3rd	30,000	37,000	34,000
Net worth			
Mean	19,971.48	20,584.85	20,165.30
Standard deviation	41,045.09	40,621.74	40,888.25
Quartile			
1st	0	0	0
2nd (median)	600	1,120	1,000
3rd	29,500	35,125	31,000
Number of observations	597	256	853

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means, standard deviations, and quartiles are calculated using household weights.
Income is the amount reported for the previous month.

a. Sample means for SSI eligibles under the original program rules and for those made eligible for SSI as a result of the simulated rule change are statistically different at the 1 percent level of significance.

b. Sample means for SSI eligibles under the original program rules and for all SSI eligibles under the simulated rules are statistically different at the 1 percent level of significance.

c. Sample means for SSI eligibles under the original program rules and for all SSI eligibles under the simulated rules are statistically different at the 10 percent level of significance.

ships is similar to that observed under the original program rules. Total unit income including predicted SSI benefits is higher for predicted participants than for predicted eligible nonparticipants. In contrast, total unit income excluding SSI benefits is significantly lower for predicted participants than for predicted eligible nonparticipants. This result is consistent with the results under the original program rules and suggests that SSI benefits play an important role in elevating the standard of living for elderly participants.

Interesting comparisons can be made between SSI participants under the original program rules (Tables 4 and 5) and predicted SSI participants under the simulated program rules (Tables 9 and 10). Because the SSI program rules have been liberalized, the predicted participants are better off financially than the SSI participants under the original rules. For example, 75.1 percent of predicted participants under the simulated program rules receive Social Security income, compared with 68 percent of participants under the original program rules. Total unit income (including and excluding predicted SSI benefit amounts), total assets, and net worth also are higher for predicted participants under the simulated program rules, but their SSI countable income is lower

Table 9.
Characteristics of predicted SSI participants and predicted SSI-eligible nonparticipants under simulated program rules

Variable	Predicted participants		Predicted eligible nonparticipants	
	Mean	Standard deviation	Mean	Standard deviation
Calculated benefit (dollars) [a]	233.47	147.87	171.53	135.22
Age of unit head (years)	79.21	6.74	79.20	6.67
Female-headed unit (percent)	77.10	42.05	75.36	43.12
Foreign-born, head or spouse (percent) [a]	25.56	43.65	15.09	35.82
Entered U.S. in 1980 or later (percent)	5.05	21.92	3.81	19.15
Entered U.S. before 1980 (percent) [a]	20.22	40.18	11.03	31.34
Hispanic, head or spouse (percent) [a]	29.55	45.65	10.72	30.95
Black, head or spouse (percent) [a]	28.53	45.18	18.44	38.80
Spouse (percent)	15.51	36.22	15.83	36.52
Completed high school, head or spouse (percent) [a]	11.94	32.44	28.97	45.39
Pension, head or spouse (percent) [a]	2.09	14.31	7.46	26.29
Home ownership (percent) [a]	30.16	45.92	49.21	50.02
Social Security, head or spouse (percent) [a]	75.07	43.29	85.17	35.56
Residence in MSA (percent)	68.46	46.49	69.65	46.00
Receipt of private money transfers (percent) [a]	1.40	11.74	4.92	21.64
Receipt of time transfers (percent) [a]	31.93	46.65	22.07	41.50
Severe disability, head or spouse (percent) [a]	18.07	38.50	11.73	32.20
Number of overnight hospital stays in previous 12 months [a]	0.61	1.31	0.39	0.82
Number of doctor visits in previous 12 months [a]	7.59	8.15	5.32	6.63
Medical expenses in previous 12 months not covered by insurance (dollars) [a]	297.15	690.05	1015.19	3781.18
Private health insurance (percent) [a]	7.46	26.29	44.75	49.75
Car ownership (percent) [a]	25.05	43.35	44.01	49.67
Living with others (percent) [a]	29.72	45.73	19.03	39.28
Medicare (percent)	92.21	26.82	93.85	24.04
Medicaid (percent) [a]	68.39	46.52	36.65	48.21
Predicted SSI participation rate (percent)	48.8			
Number of observations	853			

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means and standard deviations are calculated using household weights.

MSA = metropolitan statistical area.

a. Sample means for predicted participants and predicted eligible nonparticipants are statistically different at the 1 percent level of significance.

($189) than for participants under the original program rules ($207) because of the $105 expansion in the unearned income disregard.

A smaller proportion of predicted participants than of original participants are foreign born, Hispanic, or black, but a larger proportion have completed high school. Receipt of time transfers, the prevalence of severe disabilities, the number of overnight hospital stays, the number of doctor visits, and out-of-pocket medical expenses in the previous 12 months are similar between predicted participants under the simulated program rules and participants under the original program rules. However, predicted participants are somewhat more likely to have private health insurance coverage (7.5 percent versus 6.3 percent).

Future Research

One issue that deserves careful attention in future research is the potential value of using administrative data on receipt of SSI benefits in place of survey self-reports of SSI participation. As discussed in the appendix, there is a substantial mismatch between the two sources of data. Matching SSI administrative data to the AHEAD will enhance the accuracy of the eligibility simulation and the participation model and thus increase one's confidence in the results of important policy simulations. (See Davies and others (2002) for a discussion of matched SSI data in the context of the Survey of Income and Program Participation.)

Another useful direction for future research would be to build into the model features of eligibility for other social programs. Medicaid and Food Stamp eligibility are very closely related to SSI eligibility. Explicitly adding these programs to the model would allow for analyses of program interactions, which may be particularly important when

Table 10.
Income and assets of predicted SSI participants and predicted SSI-eligible nonparticipants under simulated program rules (in dollars)

Variable	Predicted participants	Predicted eligible nonparticipants
SSI countable income		
Mean [a]	187.87	269.62
Standard deviation	160.80	160.93
Quartile		
1st	0	170
2nd (median)	177	284
3rd	301	375
SSI countable assets		
Mean [a]	185.97	345.69
Standard deviation	440.76	611.42
Quartile		
1st	0	0
2nd (Median)	0	0
3rd	100	450
Total unit income including SSI		
Mean [a]	523.07	418.87
Standard deviation	154.72	388.26
Quartile		
1st	422.34	300
2nd (median)	559	418
3rd	571	506
Total unit income excluding SSI		
Mean [a]	289.61	418.87
Standard deviation	222.97	388.26
Quartile		
1st	76	300
2nd (median)	306	418
3rd	430	506
Total household assets		
Mean [a]	13,949.75	29,697.36
Standard deviation	33,483.57	45,630.33
Quartile		
1st	0	100
2nd (median)	300	4,400
3rd	12,000	45,000
Net worth		
Mean [a]	12,731.08	27,263.84
Standard deviation	32,941.69	46,138.61
Quartile		
1st	0	0
2nd (median)	200	3,000
3rd	10,500	43,000
Number of observations	853	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means, standard deviations, and quartiles are calculated using household weights.

Income is the amount reported for the previous month.

a. Sample means for predicted participants and predicted eligible nonparticipants are statistically different at the 1 percent level of significance.

contemplating the potential implications of various policy proposals.

Appendix: Characteristics of Ineligible Participants

Based on the eligibility simulation reported in this article, 2.9 percent of the AHEAD sample units classified as ineligible report receiving SSI income (compared with 1.3 percent in McGarry's (2000) analysis using AHEAD data). Stated differently, of the 504 units in the AHEAD who report receiving SSI benefits, an estimated 345, or 68.5 percent, are eligible for SSI based on the federal eligibility criteria. Based on the findings of McGarry (2000), this misclassification occurs in part because the estimates do not reflect state supplementation of federal SSI benefits. State supplements effectively relax the federal SSI eligibility criteria by allowing individuals with higher incomes (and assets in some cases) to remain eligible for SSI benefits; therefore, some units classified as ineligible here would probably be considered eligible if state supplementation was incorporated into the eligibility simulation. Even so, using the same data, McGarry (2000) finds only 392 self-reported participants among SSI eligibles.

A quick analysis of the characteristics of ineligible participants suggests that state supplemention may not be the largest or only problem. Table A-1 presents descriptive information on the 159 ineligible participants in total and disaggregated by reason for ineligibility (income only, resources only, or income and resources). Approximately 81 percent of ineligible units are ineligible because of income only, 8 percent because of resources only, and 11 percent because of income and resources.

Compared with eligible SSI participants in Tables 4 and 5, ineligible participants are much less likely to be foreign born, Hispanic, or black; somewhat more likely to have a spouse present; and much more likely to have completed high school or to have pension or Social Security income. In fact, virtually all ineligible participants (99 percent) receive Social Security benefits. Mean SSI countable income is substantially greater among ineligible participants ($598) than among eligible participants ($207), as are mean SSI countable assets ($8,141 versus $145), mean total unit income ($802 versus $442 including SSI, $624 versus $223 excluding SSI), and mean total assets ($31,202 versus $10,517).

The average difference between the calculated SSI benefit and the self-reported SSI benefit among all ineligible participants is $371. The average difference between countable income and the SSI income cutoff for this group is $211, and the average difference between countable assets and the SSI asset cutoff is $5,938. Among units who are ineligible because of resources only, the average amount of countable assets is over $22,000-on average, more than $20,000 above the SSI resource cutoff. The situation is even worse for those who are ineligible because of income and resources. Their average countable income is $1,026 ($611 greater than the income cutoff, on average), and their average countable assets exceed $53,000 ($51,000 greater than the asset cutoff, on average).

These differences are sufficiently large that one can safely assume that simulation error is not the primary problem. Reporting error and errors in imputation are more likely candidates. Reporting error is likely to be an important source of error in self-reports of SSI benefit receipt, and imputation error is more likely to be important in terms of the income and asset amounts used in the eligibility simulation. Davies and others (2002) examine ineligible participants in the context of a simulation model of SSI eligibility based on data from the Survey of Income and Program Participation (SIPP) exact-matched to administrative records from the Social Security Administration. The differences are markedly reduced when administrative records of SSI receipt in a given month are used in place of survey self-reports of SSI receipt, which suggests that there is a substantial degree of reporting error in self-reported SSI participation. This issue can be revisited if and when SSI administrative data matched to the AHEAD sample are released.

Further evidence that imputation may account for some of the differences is shown in Table A-2, which presents the percentage of AHEAD units with at least one imputed income item and at least one imputed asset item, by SSI eligibility and participation status. A substantially smaller percentage of eligibles have imputed income and asset values. Among participants, ineligible participants are more likely to have imputed income values than eligible participants (9.2 percent versus 2.7 percent, respectively) but slightly less likely to have imputed asset values (19 percent versus 20.6 percent). For the sample of participants, probit estimation of eligibility status using an income imputation flag and an asset imputation flag as independent variables indicates that participants are significantly more likely to be ineligible if they have an imputed income value. The coefficient on the asset imputation flag is not statistically significant (results not shown). Combined with the fact that the majority of ineligible participants are ineligible because of income (Table A-1), that result suggests that the income imputation method may be problematic. However, when the AHEAD income imputations are used rather than the imputation method described in this article, similar results are obtained regarding the number of ineligible participants, the proportion of participants who are ineligible because of income, and the relationship between income imputation and the probability of being an ineligible

Table A-1.
Characteristics of ineligible participants by reason for ineligibility

Variable	All ineligible participants		Participants ineligible due to—					
			Income only		Resources only		Income and resources	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Calculated benefit (dollars)	-192.70	279.79	-149.27	141.36	147.40	96.11	-610.86	514.41
Self-reported benefit (dollars)	178.02	187.64	152.32	163.43	163.52	95.98	351.25	265.19
SSI countable income (dollars)	597.69	318.04	553.76	213.74	240.70	127.82	1,025.75	512.03
SSI countable assets (dollars)	8,141.28	30,908.94	317.39	563.00	22,175.05	25,905.77	53,551.73	70,735.99
Total unit income including SSI (dollars)	801.98	415.92	731.19	319.87	430.06	95.50	1,411.02	500.88
Total unit income excluding SSI (dollars)	623.96	324.77	578.86	219.98	266.55	139.58	1,059.78	520.12
Total assets (dollars)	31,201.98	65,737.04	14,687.05	28,542.85	40,816.18	39,067.94	135,003.50	128,385.50
Net worth (dollars)	29,541.95	63,924.30	13,492.68	26,617.01	39,709.11	39,094.10	130,089.30	126,713.50
Difference between calculated benefit and self-reported benefit (dollars)	370.73	370.12	301.59	249.85	16.11	71.53	962.11	505.08
Difference between countable income and income cutoff (dollars)	210.68	274.83	149.27	141.36	. . .	. . .	610.86	514.41
Difference between countable resources and resource cutoff (dollars)	5,937.69	30,938.60	. . .	. . .	20,175.05	25,905.77	51,286.79	70,859.64
Age of unit head (years)	79.03	6.32	78.70	6.23	81.26	4.42	80.30	7.38
Female-headed unit (percent)	79.41	40.56	80.81	39.53	72.35	46.55	73.07	45.64
Foreign-born, head or spouse (percent)	17.96	38.50	19.19	39.53	16.55	38.68	10.46	31.49
Entered U.S. in 1980 or later	0.88	9.39	1.07	10.35	. . .	. . .	. . .	. . .
Entered U.S. before 1980	17.07	37.74	18.12	38.67	16.55	38.68	10.46	31.49
Hispanic, head or spouse (percent)	16.23	36.99	19.71	39.94	. . .	. . .	. . .	. . .
Black, head or spouse (percent)	18.27	38.76	16.91	37.63	59.38	51.12	10.78	31.92
Spouse (percent)	21.34	41.10	21.84	41.48	. . .	. . .	26.49	45.41
Completed high school, head or spouse (percent)	23.42	42.48	21.97	41.57	15.91	38.07	35.78	49.33
Pension, head or spouse (percent)	8.46	27.92	7.05	25.70	. . .	. . .	21.01	41.92
Home ownership (percent)	37.13	48.47	30.71	46.31	41.24	51.24	77.32	43.09
Social Security, head or spouse (percent)	98.54	12.04	99.23	8.75	83.45	38.68	100.00	0.00
Residence in MSA (percent)	76.73	42.39	76.02	42.86	59.59	51.07	88.13	33.29
Receipt of private money transfers (percent)	1.50	12.20	1.38	11.70	7.32	27.11	. . .	. . .
Receipt of time transfers (percent)	32.48	46.98	29.51	45.79	49.07	52.03	45.28	51.22
Severe disability, head or spouse (percent)	13.57	34.36	11.21	31.67	19.09	40.91	26.81	45.58
Number of overnight hospital stays in previous 12 months	0.60	1.03	0.59	1.07	0.28	0.47	0.83	0.90
Number of doctor visits in previous 12 months	7.77	7.97	7.64	7.27	4.79	3.38	9.81	12.41
Medical expenses in previous 12 months not covered by insurance (dollars)	509.13	2,494.54	437.03	2,697.40	591.93	967.05	946.11	1,182.79
Private health insurance (percent)	18.52	38.97	14.81	35.66	9.42	30.40	46.32	51.31
Car ownership (percent)	39.81	49.10	38.21	48.78	8.59	29.16	62.61	49.79
Living with others (percent)	50.55	50.15	51.84	50.16	33.73	49.21	48.85	51.44
Medicare (percent)	95.50	20.80	94.98	21.91	92.63	27.20	100.00	0.00
Medicaid (percent)	77.31	42.02	85.12	35.72	77.90	43.19	26.13	45.21
Number of observations	159		128		13		18	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Sample means and standard deviations are calculated using household weights.

Income is the amount reported for the previous month.

. . . = not applicable; MSA = metropolitan statistical area.

participant. This leads to the conclusion that income imputation in general, rather than the specific method used in this article, creates problems for analyses of low-income populations.

Table A-2.
Imputation of AHEAD income and assets, by SSI eligibility and participation status

	Number of observations	Percentage with at least one imputed income item	Percentage with at least one imputed asset item
Eligible	597	13.5	28.2
Participant	345	2.7	20.6
Nonparticipant	252	26.1	37.2
Not eligible	5,400	34.4	45.1
Participant	159	9.2	19.0
Nonparticipant	5,241	35.1	45.8

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTE: Frequencies are calculated using household weights.

Table A-3.
Ordinary least squares instrumental variables results for predicted SSI benefit amount

Variable	Coefficient	Standard error
Census division weighted-average maximum SSI benefit	0.6402 ***	0.0113
Head and spouse combined Social Security income	-0.5979 ***	0.0197
Adjusted R^2	0.8590	
Number of observations	597	

SOURCE: Author's calculations using data from the Study of Assets and Health Dynamics Among the Oldest Old.

NOTES: Ordinary least squares estimates are calculated using household weights.

*** Significant at the 1 percent level.

Notes

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[1] Statistics for 1993 are presented to match the time period of the survey data used in the empirical portion of the article. In 1993, 17 states plus the District of Columbia provided federally administered state supplements. The others provided state-administered supplements.

[2] McGarry (2000) independently used AHEAD data to conduct research on this topic. The discussion in this article highlights differences and similarities between McGarry's approach and findings and those of the study presented here.

[3] According to SSI program rules, the entire value of the first automobile is excluded from countable assets if that automobile is used to obtain medical treatment or for employment. Otherwise, the first $4,500 of current market value of the first vehicle is excluded (Social Security Administration 1997b). In practice, however, the entire value of the first automobile is generally excluded.

Under SSI program rules, the cash surrender value of life insurance policies can be excluded, as long as the total face value of all life insurance policies for the individual does not exceed $1,500; otherwise, the total cash surrender value is countable. The value of an individual's burial space and up to $1,500 in funds set aside for burial expenses are also excluded from countable resources (Social Security Administration 1997b, sections 2160-2162). AHEAD provides data for the value of life insurance policies if the policyholder dies (not face value or cash surrender value) and does not collect information on the value of burial spaces. Choi (1998) considers the value of life insurance by simply eliminating from the sample of eligibles all individuals with life insurance with a face value of more than $1,500, thereby eliminating nearly 43 percent of sample members who otherwise appear to be eligible. Choi's application of the program rules probably leads to an underestimate of the number of eligible individuals because the face value of a life insurance policy typically exceeds the cash surrender value by a substantial margin. A "look-up" table from the Social Security Administration's Program Operations Manual System estimates that the cash surrender value of a life insurance policy is equal to just 60 percent of face value if the policy has been in effect for 20 years or more. For policies that have been in effect for fewer years, the percentage is considerably smaller (Social Security Administration 2000, SI 01130.300). Given the shortcomings of the data and the associated analytic complications, the model excludes life insurance, burial spaces, and burial funds.

[4] Cash assistance received is "average" in the sense that the AHEAD reports cash assistance received last year. For the SSI eligibility simulation, this annual amount was divided by 12 to convert it to an average monthly amount.

[5] An age-ineligible spouse could be categorically eligible for SSI based on disability. This scenario would be treated in the same manner as the second scenario described above in terms of simulating financial eligibility for SSI. However, this

scenario was ignored because of the relative infrequency with which it occurs in the AHEAD and the inherent difficulty of predicting SSI disability eligibility with survey data.

[6] It is possible to generate a higher calculated benefit with deeming using the federal benefit rate for couples than without deeming using the federal benefit rate for individuals if the spouse's income is predominantly earned income.

[7] The indicator of severe impairment is defined as a unit with a head or spouse who needs help or has difficulty with four or more activities of daily living (ADLs), which include walking across the room, dressing, bathing, eating, getting in and out of bed, and toileting.

[8] In 1993, 79 percent of all SSI recipients were automatically eligible for Medicaid, 2.4 percent were automatically eligible subject to completing a separate Medicaid application, and 18.3 percent faced more restrictive Medicaid eligibility criteria. States also provide Medicaid coverage to qualified Medicare beneficiaries, persons in institutions, and other "medically needy" individuals, subject to certain income and resource limitations (U.S. House of Representatives 1993).

[9] Note that for units not eligible for SSI, unit income including SSI and unit income excluding SSI are slightly different, despite the fact that ineligible units should not be receiving SSI benefits. A fraction of ineligible units in the AHEAD report participating in the SSI program. See the discussion of ineligible participants in the appendix.

[10] Of the 5,400 AHEAD sample units classified as ineligible, 159 (or 2.9 percent) report receiving SSI benefits. Other studies of SSI eligibility suffer from similar misclassification problems, although the magnitude of the problem is not quite as large. For example, McGarry (2000) reports that 1.3 percent of ineligible sample units report income from SSI. See the appendix and Tables A-1 and A-2 for additional discussion of ineligible participants.

[11] When McGarry (2000) calculates SSI eligibility using federal and state criteria, she finds that 392 out of 674 eligible units participate, resulting in a weighted participation rate of 55.9 percent (Table 2, p. 30). Based on federal criteria only, McGarry finds 581 eligible units (Table 1, p. 29), 16 fewer than the 597 eligible units in this analysis. She does not report the number of participants among units eligible based on federal criteria only, but it is likely to be fewer than 392 since some of those units are eligible only because the state supplements effectively relax the federal eligibility criteria.

[12] Sheils and others (1990) report participation rates disaggregated by age group that permit direct comparison with the findings. Their results suggest that the SSI participation rate among elderly individuals aged 70 or older is 57 percent in both the 1988 CPS and the 1984 SIPP (author's calculations from Sheils and others (1990, Tables IV-3 and V-4).

[13] Although McGarry (2000) considers state and federal eligibility, her average calculated SSI benefits are only slightly higher than those presented here for participants ($223) and are somewhat lower for eligible nonparticipants ($156; Table 2, p. 30).

[14] SSI administrative records indicate that 28.2 percent of aged SSI recipients in December 1993 were foreign born (Parrott, Kennedy, and Scott 1998).

[15] The public release version of AHEAD wave 1 provides census division codes but not state of residence. Therefore, the maximum potential SSI benefit including state supplementation is derived by adding to the relevant SSI federal benefit rate (individual or couple) the weighted-average maximum supplement for the census division, where the number of elderly SSI participants in a state serves as the weight for that state's maximum supplement amount. This approach allows some use of state variation in SSI supplementation even though state codes are not available on the AHEAD public-use file.

[16] Note that for identification purposes in probit estimation, one must assume that $\mu_i \sim N(0, 1)$. The coefficients γ and β are then identified up to a factor of proportionality and are equal to $\gamma_i^* / (\sigma_\varepsilon^2 + \gamma_1^2 \sigma_v^2)$ and $\beta^* / (\sigma_\varepsilon^2 + \gamma_1^2 \sigma_v^2)$ where γ_i^* and β^* are the true coefficients.

[17] If and when the AHEAD data are eventually linked to SSA administrative records, this becomes a testable assumption.

[18] The model assumes no misclassification of eligibility because of assets. This amounts to the assumption that asset eligibility is measured without error. Although this may not be a realistic assumption, there is no alternative because data are not available to support calculation of the probability of resource eligibility. Also note from Table A-1 that the problem of participants being ineligible because of resources is much smaller than the problem of their being ineligible because of income.

[19] The results from OLS estimation of the instrumental variables equation (5) are presented in Table A-3.

[20] The marginal effects represent the effect of a change in an independent variable (∂X) on the probability of SSI participation (∂P). For continuous variables, the marginal effects are evaluated as $\partial P / \partial X = \phi(\hat{\beta}' \overline{X}) \hat{\beta}$ where $\phi(t)$ is the normal probability density function, $\hat{\beta}$ is the vector of estimated parameters, and $\overline{X}$ is the vector of means of the independent variables. For dummy variables, the marginal effects are evaluated as $\partial P / \partial X = \Phi(\hat{\beta}' \overline{X}_1) - \Phi(\hat{\beta}' \overline{X}_0)$ where $\overline{X}_1 = \overline{X}_0 = \overline{X}$ for continuous variables and $\overline{X}_1 = 1,\ \overline{X}_0 = 0$ for dummy variables (StataCorp 1999b, 71-73, 78-79).

[21] These changes in eligibility criteria should be treated carefully, as they may evoke a behavioral response. For example, changing allowable asset levels may affect the spending down of savings and other assets when approaching old age (see Neumark and Powers (1998) for more on SSI savings incentives for the elderly). Changing the income disregards may affect labor market behavior, although such a response would probably be small among the elderly. Sheils and others (1990) use the 1984 SIPP to simulate the effect of changes to the asset test on SSI eligibility and participation among the elderly. McGarry (2000) conducts several policy simulations using AHEAD data.

[22] Note that although the number of original eligibles is unchanged by definition, the mean simulated benefit for this group has increased significantly, by $74 (from $197 to $271), because of the increased exclusion of unearned income. Two of the income variables for the original eligibles also have changed as a result of the rule change. SSI countable income has decreased, and total unit income including SSI has increased. All other characteristics of original eligibles in Tables 7 and 8 are unchanged from their values in Tables 2 and 3.

[23] The new eligibles are largely SSI nonparticipants because some of the self-reported SSI participants who were found to be ineligible by the simulation based on the original program rules (see the discussion in the appendix) have become eligible as a result of the policy simulation conducted in this section.

[24] The mean simulated SSI benefit for all eligibles under the simulated program rules is larger than the overall average calculated SSI benefit under the original program rules ($197, see Table 2), as expected, although the difference is not statistically significant.

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