**THE SURVEY OF INCOME AND PROGRAM PARTICIPATION**

**IMPLEMENTING AN SSI MODEL USING THE SURVEY OF INCOME AND PROGRAM PARTICIPATION**

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## 1. Introduction

Supplemental Security Income (SSI) is a Federal-State cash transfer program designed to meet the minimum income needs of the Nation's low-income aged and disabled populations. This paper describes the initial stages of the development of an SSI microsimulation model based on the Survey of Income and Program Participation (SIPP). This work is part of a larger effort to exploit the SIPP to improve the Social Security Administration's (SSA's) ability to respond to questions about the operation of its programs. A broader description of the project and its rationale is presented in a companion piece by Wixon and Vaughan (1991).

An overview of major features of the SSI program which were addressed in the model development is given in section II of the paper. The data set used to implement the model is discussed briefly in section III. A description of the development and evaluation of the model and simulation estimates is given in section IV. Section V discusses some of our future plans.

## II. Overview of the SSI program and the model

*An overview of SSI.* - Since the model attempts to mimic the eligibility and benefit determination process of the program to the extent permitted by the information available from the survey, an abbreviated description of program rules is required in order to understand the model development process. The eligibility determination involves three separate elements. The first involves establishing whether the individual meets one of the categorical criteria for program participation, i.e., is either disabled, blind, or is age 65 or older. The second and third involve determining financial need according to program criteria, i.e., whether an individual's or couple's countable income and resources (the program term for assets) fall below established limits. In 1984, the time-period covered by the SIPP data set we are have been using, the monthly income limit for the Federal portion of the program was $314 for individuals and $472 for couples, and the Federal resource limits were $1,500 for individuals and $2,250 for couples. (The respective values are $407, $610, $2,000 and $3,000 in 1991.) The income limits of individuals and couples who do not own their own living quarters, are not liable for rent, or do not pay their pro rata share of household expenses are reduced by 1/3.

Countable income is determined net of certain income disregards (the first $20 per month of earned or unearned income for an individual or couple, the next $65 of earnings, and one-half the remainder of earned income). Countable resources are defined net of certain exclusions (a home, household effects, and vehicle of reasonable value, life insurance with less than $1,500 of cash surrender value, an individual burial plot or burial essential funds of less than $1,500 held in separate account, and property essential to self-support).

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In the case of a couple with only one categorically eligible spouse, income of the ineligible spouse is *deemed* to the spouse who is categorically eligible. After deduction of personal allocation for the spouse and for ineligible minor children living in the home, and after application of income exclusions, the remaining income, if any, of the ineligible spouse is added to the income of the eligible spouse for purposes of establishing the categorically eligible spouse's income eligibility and Federal payment amount. The full value of the countable resources of the ineligible spouse is also deemed to the eligible spouse.

If the three elements of the eligibility test are met, the Federal benefit is calculated as the difference between countable income and appropriate Federal benefits standard.

*Representing the program with the model.* - Obviously, SSI program rules are much more complex than indicated by this brief description. While the SIPP data do not permit modeling many of the most detailed features of the program, the model we have developed deals with the program in a more detailed fashion than suggested by this abbreviated description of program features. In general, the scope of the model was determined on the basis of a joint review of SSI procedures and the SIPP data items readily available to us. However, a full characterization of the model and what it does and does not address in terms of the full set of program provisions is precluded here because here because of space limitations. For the most part, however, the model was designed to represent the basic program features as presented in the foregoing discussion. Perhaps the primary design consideration was that the model represent the basic structural features of the program which determine eligibility for and/or the amount of cash benefits (e.g., unit formation, categorical eligibility, the income disregards and other income counting rules, including deeming, guarantee levels, and the resource test) in the most detailed fashion supported by the data and in a way that would permit evaluation of the effects of alternative program arrangements. Another important goal was to develop improved estimates of program participation under current and alternative program arrangements.

*Principal limitations.* - The model has three important formal limitations at the present time. (1) It is restricted to noninstitutional population. Thus it cannot be used to address questions about the 10 percent of recipients residing in institutional. This limitation is imposed by the basic survey design. (2) It does not deal with State supplements, regardless of whether they are administered by SSA or directly by the States. (3) It is restricted to recipients age 18 or older. At a later stage, we plan to add modules to deal with State supplementation and to explore the feasibility of adding at least some capability for dealing with disabled children.[1]

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[1]In 1984, the number of disabled child beneficiaries was relatively small compared to the other two program subgroups (only about 250,000 disabled children compared to about 1.7 million nonaged disabled adults, and 2.1 million recipients aged 65 or older). Recent court decisions affecting the operational definition of childhood disability are expected to lead to a substantial increase in the number of minor children receiving benefits.

**III.  The data**

The model was developed using data from waves 3 and 4 of the 1984 SIPP panel.  All demographic, income, and asset information, and basic survey weights were taken from wave 4.  The detailed information on disability and health used to operationalize a categorical measure of work disability was obtained from the 3$^{rd}$ wave topical module and matched to the wave 4 file on a person-by-person basis.  As a last step, the full combined wave 3-4 records of husbands and wives were matched to permit characterization of individual spouses as members of couples.  Although SIPP files have been exact matched to SSA benefit and earnings data, the matched data files have not yet been used in our modeling work.[2]  The basic file development was undertaken to support a wide range of analyses of the social and economic characteristics of the aged, disabled, and survivor populations and took place prior to the inception of the current modeling project (DelBene and Vaughan 1989).  All file development work and model implementation was done in the SAS language.  Finally, since some wave 4 persons had not been interviewed in wave 3, detailed health information from the wave 3 topical module was not available for all wave 4 interviewed persons.  This problem was addressed in the course of model development by creation of adjusted wave 4 weights.

A fair amount of data editing and aggregation, particularly in the area of assets, had been undertaken in connection with other earlier projects (DelBene and Vaughan 1989, Vaughan 1989), some of them SSI-related.  The most important of these edits concerned eliminating the counting of equity in owned homes as equity in rental property.  This problem arose because some homeowners with rental units in their homes also reported their residences as rental property.  This problem was originally detected at the Bureau of the Census because the reported market value of the putative rental property exactly matched the corresponding value reported for the home.  Under SSI program rules, the total equity of the home property is excluded from the resource test, even in instances in which the home property might be a duplex.  The presence of this problem undoubtedly contributed to Leavitt and Schulz's finding (1988, p. 16 and table 21) that 30 percent of the income eligible-asset ineligible aged owned rental property.  Incidently, our work on this problem led to questionnaire modifications in subsequent SIPP panels.

A good deal of additional work of this sort was done to reformulate native survey variables so that they would more closely approximate program constructs.  This process continued in an iterative fashion throughout the course of model development as our evaluations revealed shortcomings and suggested modifications to our original approaches.

**IV.  Development and evaluation of the model and the simulation estimates**

*The basic approach.* - In the balance of this paper we will discuss the approach we have

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[2]A more complete discussion SIPP match files and their eventual role in the project is provided in the companion piece by Wixon and Vaughan (1991).

taken to developing and validating the model.[3]  In addition to the usual techniques of reviewing the input and output values of key modules, range checking the output values of critical model variables and general review of the code by other analysts, once the model was basically operational it was further tested by attempting to simulate eligibility and Federal benefit amounts for persons reporting SSI in the survey.  Seven simulation runs were made for the reported participants, the performance of the model was reviewed each time, and modifications were introduced to address observed shortcomings.  Special attention was given to monitoring three types of model output by comparison of:

- the number of SSI recipients reported in the survey and simulated to meet each of the tree basic eligibility criteria (categorically defined work disability,[4] income, and resources) to the total number reporting SSI;

- the size distribution and mean of the simulated Federal benefit amount to an independent estimate of the actual size distribution; and

- the number of participants simulated to be eligible for a Federal payment to independent estimates of the number of Federal participants in the survey universe.

These comparisons were made both on the basis of eligibility units (individuals and married couples) and persons.  Because of space limitations, we are only able to report the most important highlights of our review.

As a final step in the evaluation of the preliminary implementation of the simulation, the mode-based eligibility and participant estimates were compared with SIPP- and CPS-based estimates developed by other researchers.

*The 1/3 reduction rule and the definition of disability.* - Our evaluation of simulated eligibility and benefits for reported participants led to two significant modifications of the first operational version of the model: (1) the attempt to simulate the benefit reduction associated with living in the household of another (in program parlance a *type B living arrangement),* was eliminated, and (2) the survey-based definition of categorical eligibility was expanded.

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[3]An important aspect of our evaluation of the model estimates involved an exploration of the extent to which the model estimates of the size of the eligible nonparticipant population and of participation rates are affected by a series of simple adjustments designed to address some of the known or suspected shortcomings of the simulation.  Space considerations prevented including a full discussion of that exploration in the proceedings.  However, the topic is dealt with in an addendum available from the authors.

[4]Since the measurement of categorical eligibility for the aged is straghtforward, it did not really have to be separately monitored.

**Table 1. - Comparison of administrative and simulated size distribution of monthly Federal SSI payment amounts, adult units, monthly average, August - November, 1984[1]**

Version of the simulation, 1984 SIPP

| Federal benefit amount | Administrative estimate[2] | Estimate I[3] | Estimate II[4] | Estimate III[5] | Estimate IV[6] | Estimate V[7] | Estimate VI[8] | Estimate VII[9] |
|---|---|---|---|---|---|---|---|---|
| Survey units reporting Federally administered SSI | ... | 3,354.4 | 3,354.4 | 3,338.6 | 3,250.3 | 3,181.6 | 3,250.3 | (10) |
| Income eligible | | | | | | | | |
| Number in 1,000's | 3,114.0 | 2,721.0 | 2,840.0 | 2,829.3 | 2,794.7 | 2,752.3 | 2,809.5 | 2,804.7 |
| Percent distribution | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| $1 - $19 | 4.2 | 3.5 | 3.1 | 3.1 | 3.0 | 3.0 | 3.0 | 3.0 |
| $20 - $39 | 5.8 | 6.4 | 6.1 | 6.2 | 6.2 | 6.3 | 6.3 | 6.3 |
| $40 - $59 | 6.2 | 7.1 | 5.1 | 5.1 | 5.2 | 5.2 | 5.2 | 5.2 |
| $60 - $79 | 5.5 | 6.7 | 6.0 | 6.0 | 5.9 | 5.9 | 5.8 | 5.8 |
| $80 - $99 | 4.8 | 3.7 | 3.8 | 3.8 | 3.8 | 3.7 | 3.7 | 3.5 |
| $100 - $119 | 4.4 | 4.0 | 3.1 | 3.1 | 2.9 | 3.0 | 3.0 | 3.0 |
| $120 - $139 | 4.0 | 4.4 | 4.3 | 4.3 | 4.3 | 4.4 | 4.3 | 4.3 |
| $140 - $179 | 12.4 | 11.0 | 14.8 | 14.8 | 14.8 | 14.6 | 14.5 | 14.5 |
| $180 - $208 | 2.9 | 4.0 | 4.4 | 4.4 | 4.5 | 4.4 | 4.4 | 4.4 |
| Exactly $209 | 5.7 | 15.6 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| $210 - $259 | 3.0 | 2.2 | 3.5 | 3.5 | 3.4 | 3.4 | 3.4 | 3.4 |
| $260 - $313 | 2.2 | 2.4 | 3.0 | 3.0 | 2.8 | 2.7 | 2.8 | 2.8 |
| Exactly $314 | 36.8 | 26.6 | 40.0 | 39.5 | 39.8 | 39.9 | 40.1 | 40.2 |
| $315 or more | 2.2 | 2.4 | 2.7 | 3.1 | 3.1 | 3.1 | 3.2 | 3.3 |
| Mean | $199 | $188 | $207 | $208 | $208 | $208 | $209 | $209 |
| Index of dissimilarity[11] | ... | 14.7 | 10.1 | 10.1 | 10.2 | 10.1 | 10.3 | 10.4 |

(...)    Not applicable.

[1]    Excluding units consisting of child beneficiaries under age 18.

[2]    Excludes recipients living in Medicaid Institutions but includes recipients living in other institutional settings excluded from the survey universe.  Tabulated directly from the SSI Characteristics Extract Record (CER).  Amount refers to budgeted Federal payment excludes retroactive payments and adjustments.

[3]    With assignment of approximately 30 percent of recipients as living in the household of another *(type B living arrangement)*.

[4]    All recipients treated as living in their own households *(type A living arrangement)*.

[5]    Incorporates extended categorical eligibility code for disability and eliminates units with members under age 18.

[6]    Eliminates from the simulation universe categorically ineligible parents reporting the presence of one or more children with a health impairment and presumed to be reporting SSI benefits received by one of the impaired children.

[7]    Eliminates unit members not interviewed in wave 3.

[8]    Adjusts weights to compensate for the elimination of unit members not interviewed in wave 3.

[9]    Implements treatment of rental assets under property essential to self-support rules and minor revisions to health definition.

[10]    Not available.

[11]    One-half the sum of the absolute differences between the survey and the CER-based program estimates by size category.

Source: Division of Economic Research, Office of Research and Statistics, Social Security Administration.  Simulation based on waves 3 and 4 of the 1984 panel of the Survey of Income and Program Participation (SIPP).

Table 2. - Comparison to independent estimates of the number of persons reported to be Federally administered Supplemental Security Income (SSI) recipients and simulated as eligible for a Federal payment by age, monthly average, August-November, 1984.

[Recipients in thousands]

| Characteristic | | All persons receiving a Federally administered payment | | | | Persons receiving a Federal payment | | |
|---|---|---|---|---|---|---|---|---|
| | | Total | 16-64[1] | Age 65 or older | | Subtotal | 16-64[1] | Age 65 or older |
| Number of recipients from administrative data | | | | | | | | |
| Total[2] | | 3,839.8 | 1,729.9 | 2,109.9 | | 3,507.1 | 1,644.4 | 1,862.7 |
| Living in institutions[3] | 355.3 | 208.5 | 146.8 | | 343.2 | 202.8 | 140.4 | |
| Medicaid certified[2] | | 186.4 | 94.3 | 92.1 | | 186.4 | 94.3 | 92.1 |
| Other[3] | | 168.9 | 114.2 | 54.7 | | 156.8 | 108.5 | 48.3 |
| Number of noninstituionalized recipients[5] | | 3,484.5 | 1,521.4 | 1,963.1 | | 3,163.9 | 1,441.6 | 1,722.3 |
| | | | | | | | | |
| Number of recipients reported in the survey | | | | | | | | |
| Reporting Federally administered SSI [6,7] | | 3,478.7 | 1,700.2 | 1,778.5 | | (8) | (8) | (8) |
| As a percent of noninstituionalized recipient | 99.8 | 11.8 | 90.5 | | (8) | (8) | (8) | |
| Simulated Federal eligibility status[9] | | | | | | | | |
| Number | | | | | | | | |
| Categorically eligible | ... | ... | ... | | 3,163.5 | 1,385.0 | 1,778.5 | |
| Income eligible | | ... | ... | ... | | 2,990.7 | 1,478.9 | 1,511.7 |
| Resource eligible | | ... | ... | ... | | 3,255.1 | 1,648.1 | 1,607.1 |
| Three-way eligible | | ... | ... | ... | | 2,596.7 | 1,225.3 | 1,371.4 |
| As a percent of noninstitutionalized recipients | | | | | | | | |
| Categorically eligible | ... | ... | ... | | 100.0 | 96.1 | 103.3 | |
| Income eligible | | ... | ... | ... | | 94.5 | 102.6 | 87.8 |
| Resource eligible | | ... | ... | ... | | 102.9 | 114.3 | 93.3 |
| Three-way eligible | | ... | ... | ... | | 82.1 | 85.0 | 79.6 |

(...) - Not applicable.

[1] Includes disabled children age 18-21.

[2] Budgeted for payment, monthly average, August through November, 1984 as estimated directly from the Characteristics Extract Record (CER).

[3] Estimated using the ratio of Medicaid Institutionalized to total institutionalized as estimated from the Quality Assurance Review sample for October 1986-September, 1987 with an adjustment to account for units receiving only a Federally administered state supplement among the institutionalized living in nonmedicaid facilities.

[4] Residual.

[5] Total minus number living in institutions.

[6] Based on the 4th wave of the 1984 panel of the Survey of Income and Program Participation.

[7] Including persons with Federal SSI, a Federally-administered State supplement, or both.

[8] Not available.

[9] Persons simulated to be eligible for a Federal SSI payment using version VII of the preliminary model.

Source: Division of Economic Research, Office of Research and Statistics, Social Security Administration.

Because the 1984 SIPP panel did not collect the information needed to determine if non-owners had rental liability or contributed their prorata share of household expenses, the assignment of type B living arrangement had to be made largely on the basis of household relationships, i.e., operationally , all participant units which included the household reference person, a reference person's spouse, an adult sibling of the reference person, household member unrelated to the head, or a person listed as a co-owner of the home were considered to be "own household" units.  All others were assigned a type B living arrangement and thus were subject to the 1/3 reduction.  This procedure yielded far too many recipient units with type B living arrangements (26 percent as opposed to about 6 percent as indicated by program data).  Comparison of the simulated and actual monthly benefits size distributions (see the first two columns of table 1) indicated too many units receiving the maximum payment for an individual living in another's household ($209) and too few receiving the usual maximum for individuals ($314), thus confirming that the overassignment was having an undesirable affect on the simulated size distribution as well.  Suppressing the assignment of the 1/3 living arrangement reduction increased the degree of similarity between the new simulated size distribution, shown as Estimate II in column 3 of the table, and the actual size distribution (as indicated by a decline in the distributions' index of dissimilarity from 14.7 to 10.1).[5]  At the same time, the difference between the simulated and actual average monthly benefit shifted from an understatement of $11 to a slightly smaller overstatement of $8, a reduction of just less than 25 percent in the absolute difference between the simulated and actual means.  In addition, the number of units simulated as income eligible also increased (by about 4 percent) and the percentage of units simulated as income eligible rose from 89 to 93 percent.  Of course, such an increase would be expected, since the income standard for units initially classified as living in the household of another effectively increased by 50 percent.

Despite the fact that suppression of the 1/3 reduction rule reduced the discrepancy between the simulated and actual Federal benefit estimates, inspection of the proportion of units falling in the $209 and $314 size categories in the simulated distributions subsequent to Estimate I also shows that the failure to adequately account for the 1/3 reduction rule contributes to distortion of the simulated size distribution, if to a lesser degree.  In fact, an informal assessment suggests it could account for 4-5 of the 10 points of the index of dissimilarity for the final Estimate VII size distribution and perhaps 1/3 of the discrepancy between the actual mean and the final Estimate VII mean.

Beginning with the 1987 panel, information on rental liability and expense sharing was added to the standard SIPP data set.  We look forward to using this new data when we are able to take

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[5]The index of dissimilarity may be interpreted as the percentage of recipient units in the simulated distribution that would have to shift monthly benefit amount categories to obtain equivalent distributions.  The index is constructed by taking the absolute difference between the administrative and survey percentage for each amount category, summing across all categories, dividing by 2.

advantage of the more recent panels.[6]

Initially, the measure of categorical disability was defined to include only persons reported as unable to work because of a health condition or disability. Review of the results of this assignment revealed two difficulties: (1) approximately 30 percent of the nonaged participants were not being classified as disabled by the measure, and (2) the reported number of participant units exceeded the number of units believed to belong to the survey universe. After some consideration, we took three steps designed to address these two problems. First, we expanded the definition of categorical disability to over three additional groups (Estimate III):

- disabled persons able to work, but only occasionally or irregularly, and with earnings, if any, below the maximum allowable under the program in each of the four months prior to interview, *i.e.*, below the maximum Substantial Gainful Activity (SGA) amount of $300,[7]
- individuals reported to be unable to read ordinary print in a newspaper with glasses or contact lenses, and;
- persons classified on the basis pf procedures developed in earlier research (Vaughan 1989) as receiving a social security disability benefit.

Second, about 90,000 parents, categorically ineligible under the extended survey definition and who were reported to have a minor child with a health impairment, were also eliminated from the participant universe (Estimate IV). These individuals were considered to be reporting the child's SSI benefit rather than to be participants in their own right. This decision was motivated by three considerations. First, the 1984 SIPP panel did not collect information on SSI benefits received by children *per se*, thus requiring that it be reported on the parent's own questionnaire if it were to be reported at all. Second, the fact that the number of nonaged adult participants and participant units nominally exceeds independent estimates of the number in the survey universe[8] provides indirect evidence of such reporting anomalies. Finally, the simulated financial eligibility rate for the categorically ineligible was considerably below that for the balance of participants, further suggesting that there may indeed have been a group of nonparticipants who were not disabled among the nonaged reporting receipt of SSI benefits in the survey.

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[6]Incidently, the general approach we used to represent the 1/3 reduction rule is likely used in many CPS- and SIPP-based SSI simulations (see for example, Sheils, *et al.,* 1990, pp. IV-63 to IV-64).

[7]As it turned out, all participants in this group with earnings had earnings below $190, the SGA minimum.

[8]However, even after the edit, parents of minor children remained disproportionately represented among those reporting recipiency but no work disability. The size of the differential suggests that there could well be 40,000 or so additional parents who are erroneously identified as recipients because they reported their disabled child's benefits on their own questionnaires. The final resolution of this problem rests with the use of later panels which directly enumerate children's SSI benefits and/or the development of matches with SSI program data so that actual recipiency status can be more accurately determined. In the meantime, the remaining problem likely exaggerates, slightly, the extent to which survey health variable appear to underidentify nonaged adult participants categorically eligible on the basis of health.

Finally, we discarded approximately 70 thousand participant units with at least one nonaged member of who detailed disability information was not available because they had not been interviewed in wave 3 (Estimate V). The participant sample was then reweighted to compensate for the deletions (Estimate VI). Such units were also discarded from the nonparticipant sample after which it was also reweighted.

*Characterization of the Federal benefit estimates.* - The basic character of the Federal benefit estimates was evident from our discussion of the problems surrounding the one-third reduction rule. The simulated distribution appears to reproduce te program size distribution fairly well, and the simulated means are also reasonable close to the program mean. The same degree of similarity is observed when the simulation results are given at the person level and disaggregated by age (data not shown). Given that the benefit size distribution represents the key program output, the relatively close alignment between the simulated and actual size distribution speaks well for both the model and the underlying SIPP income data. If allowance is made for the remaining problems associated with the 1/3 reduction rule, the simulated size distributions would appear to come just about as close to reproducing the actual distribution as is the case for the social security benefits as reported in the SIPP (Vaughan 1989). We also fell that close attention to the character of the simulated size distribution proved to be very valuable in identifying and overcoming problems with the model and would recommend that other modelers closely monitor it as well. Finally, although we did not make use of administrative data on social security benefit amounts from the SIPP match file in this preliminary work, substitution of the administrative amounts for the survey reports of social security would likely be quite instructive. Since social security is by far the most frequent source of income received by participants and nonparticipating eligibles, use of actual amounts might well reveal a good deal about the relative contribution of model weaknesses and nonsampling error to the overall error affecting simulated benefits.

*Comparisons of the eligibility estimates for participants to independent estimates.* - The survey estimate of the number of persons receiving Federally administered SSI, along with the corresponding independent estimate, is given in the left half of table 2. The number of participants simulated as eligible for a Federal payment according to the three eligibility criteria (categorical, income, and resources) are compared to independent to the survey universe on the right-had side of table 2.

Because SSI participants status is reported in the survey in a way that appears to identify all persons receiving Federally-administered payments (including those receiving only a Federally-administered state supplement), receipt of a Federal payment *per se* is not directly observable. Consequently, the simulation had to be run against all persons reporting Federally-administered payments. For this and other reasons, estimates for some of the separate dimensions of eligibility exceed the independent estimate of the total number of persons receiving a Federal payment.

There are three particularly noteworthy aspects to the table . First, some detail is given on the derivation of the independent estimates. It is important to note that the estimate for the institutionalized includes persons living in institutional settings other than those certified to

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receive reimbursement under the Medicaid program. This is important because analysts have tended to make adjustment for only the Medicaid institutionalized (see the top section of the table). Second, as shown in the middle of the left panel of the table, the survey estimate of the number of nonaged adult recipients exceeds the corresponding independent estimate while the estimate for the aged falls short of its independent estimate. These differences arise from some unknown combination of sampling, nonsampling and coverage errors. Finally, the estimates of participants eligible according to all three of the eligibility criteria range between 80 and 85 percent of the corresponding independent estimates (82 percent for both categories of participants combined, 85 percent for nonaged disabled adults, and 80 percent for the aged, as shown in the table's lower right panel). These differences are attributable to a combination of the sampling, nonsampling and coverage errors noted above plus errors in the model and the additional direct effect that nonsampling errors have on the model estimates.

*Comparisons with other studies.* - Following standard practice, we compared our participation and eligibility estimates with those of other researchers. Results from the four SIPP- and CPS-based studies listed in the reference section, all those we readily able to locate that provided the required information, were considered.[9]

For the aged, there is a clear difference between participation rates stemming from CPS-based simulations and those based on the SIPP.[10] Excluding one very low SIPP-based estimate, which would appear to be something of an outlier, the average participation rate for the SIPP-based simulations is 63 percent, or 9 percentage points above the average for the CPS-based simulations. The participation rate as estimated from version VII of our model is 60 percent and so falls in the range given by the other studies based on SIPP.

We were able to locate only two other recent studies, one based on the SIPP (Doyle, *et al.* 1990) and one on the CPS (Zedlewski and Meyer 1989), that gave participation rate estimates for nonaged disabled adults. In the CPS study, the participation rate given for nonaged disabled adults was similar to that for the aged (55 percent). However, the rate given in the SIP-based study was considerably lower (37.8 percent), close to the 41 percent participation rate from our simulation. Although there are a number of differences among these three studies which somewhat hinder comparisons, it appears that the two SIPP-based studies (our own and that of Doyle *et al.*) differ from the CPS-based study principally in their estimate of the number of nonparticipating eligibles. This may well reflect the fact that the 1984 SIPP disability measures

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[9]A table comparing these studies' estimates of eligibles, participants, eligible nonparticipants, and participation rates is available from the authors.

[10]Other work we have done suggests that most, if not all SIPP/-CPS differences are attributable to a larger number of income eligible, resource ineligible aged given by the SIPP. In our work, when only resources (assets) also identified in the CPS are considered in the SIPP context, SIPP and CPS estimates of the number of eligible but not participating aged were quite similar. This finding held regardless of whether the CPS subset of SIPP assets was defined on the basis of the directly measured SIPP values or on the basis of a 6 percent capitalization of the respective income flows.

are more comprehensive than those available from the CPS. However, it struck us as particularly noteworthy that the two SIPP-based rates for the nonaged were so much below the SIPP-based rates for the aged. While it is certainly conceivable that the actual participation rate for the nonaged disabled could differ from that of the aged, there is no obvious reason why this should be the case. In fact, recent SSA studies (Oberheu 1991, 1990) suggest a possibly explanation-if those found to be financially ineligible are excluded, about half of disability applicants during 1986-87 did not meet the program disability criteria and were denied benefits.[11] Thus the low participation rate for the nonaged disabled relative to the aged, taken together with the substantial disability denial rate experienced by actual applicants during approximately the same time period, suggests that the SIPP health measures may be identifying as disabled many nonparticipants who would not be found to meet the program definition of disability were they to apply for benefits. Indeed, if the individuals defined as categorically eligible by the survey measures were only as likely to meet program definitions of disability as were 1986-87 applicants, the estimated number of nonaged disabled eligible nonparticipants would be halved. This would yield an adjusted participation rate of 58 percent, a rate not appreciably different than that simulated for the aged under version VII of the model (60 percent).

## V. Future plans

In general we are pleased with our experience so far in using the SIPP as the basis for modeling the SSI program. Of course, as we have indicated, a number of problems remain. We expect to work with the Bureau of the Census to enhance the selection of SIPP variables relevant to SSI modeling. Our efforts to edit the native SIPP data so that they better represent program variables will continue. We also look forward to expanding the reach of our preliminary model to include State supplementation. Implementing the model on more recent SIPP data sets, especially those which will permit a more adequate treatment of SSI rules regarding living arrangements, is also a high priority.

We would like to incorporate data from the SIPP match files to better identify SSI participants and to substitute administrative data on social security benefit amounts for reported values. The use of these matched data will lead directly to improved model estimates and will permit more precise evaluation and calibration of the model by providing a known population of participants to test it against. Since the matched data should also allow us to identify recent denials and identify the basis of denial, we may also be able to learn more about the strengths and weaknesses of the survey health measures when used as proxies for the programmatic definition of disability.

Finally, over the longer term, we expect to expand our modeling effort to the social

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[11]In Oberheu's studies, initial denials that were changed to allowances within 18 months of application were treated as allowances. The 50 percent disability denial rate was calculated by the present authors by excluding from the denominator those who were recorded as ineligible because of excess income of resources or who died prior to completing the eligibility determination process.

security program itself in order to provide SSA with improved analytical tools for answering distributional questions about the Old-Age, Survivors, and Disability Insurance (OASDI) program *per se* and for comparing trade-offs between SSI and OASDI alternatives when policies focusing on income adequacy are at issue.

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