

**Errors in Survey Reporting and Imputation
and their Effects on Estimates of Food Stamp Program Participation***

Bruce D. Meyer
University of Chicago and NBER
and
Robert M. Goerge
Chapin Hall

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Abstract

Benefit receipt in major household surveys is often underreported. This misreporting leads to biased estimates of the economic circumstances of disadvantaged populations, program takeup, the distributional effects of government programs, and other program effects. We use administrative data on Food Stamp Program (FSP) participation matched to American Community Survey (ACS) and Current Population Survey (CPS) household data. We show that nearly thirty-five percent of true recipient households do not report receipt in the ACS and fifty percent do not report receipt in the CPS. Misreporting, both false negatives and false positives, varies with individual characteristics, leading to complicated biases in FSP analyses. We then directly examine the determinants of program receipt using our combined administrative and survey data. The combined data allow us to examine accurate participation using individual characteristics missing in administrative data. Our results differ from conventional estimates using only survey data, as such estimates understate participation by single parents, non-whites, low income households, and other groups. To evaluate the use of imputed ACS and CPS data, we also examine whether our estimates using survey data alone are closer to those using the accurate combined data when imputed survey observations are excluded. Interestingly, excluding the imputed observations leads to worse ACS estimates, but has less effect on the CPS estimates.

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I. Introduction

Comparisons of welfare and insurance program receipt in household surveys to those in administrative sources indicate that government benefits are substantially underreported. For example, more than forty percent of months of food stamp receipt and Temporary Assistance for Needy Families (TANF) receipt were not reported in the Current Population Survey (CPS) in 2004. This underreporting is evident in most large national surveys, and has typically grown over time (Meyer, Mok and Sullivan, 2009). An important consequence of underreporting is that it may lead to significant biases in studies that examine the determinants of program participation, the distributional consequences of programs, and other program effects. This study examines the misreporting of Food Stamp Program (FSP) benefits, using administrative microdata matched to two major survey datasets. We examine rates of misreporting, how misreporting varies with household characteristics, and how it affects estimates of program receipt. We also examine whether the use of imputed observations leads to less bias in FSP participation estimates.

The use of government programs is examined in a large literature that relies on potentially error ridden self-reports of program receipt. For example, a number of studies have examined the likelihood that those eligible for food stamps do participate in the program (Blank and Ruggles, 1996; Haider et al., 2003; Cunnyngham et al., 2008; Wu, 2010). The use of other programs has also been heavily studied. Blank and Ruggles (1996) examine the takeup of Aid to Families with Dependent Children (AFDC) as well as food stamps, while McGarry (2002) analyzes the takeup rate for Supplemental Security Income (SSI). A few takeup studies have made simple, but rough corrections for under-reporting, such as Bitler, Currie and Scholz (2003) who examine the Women, Infants and Children (WIC) program. Some other studies calculate takeup rates by dividing administrative data numerators, that do not suffer from under-reporting, by survey based denominators. In addition, many studies examine program receipt without conditioning on estimated eligibility.¹

Takeup studies typically show that participation rates among eligibles are well below one. However, given the extent of underreporting, a major part of what appears to

¹ For excellent reviews of research on program takeup, see Remler and Glied (2003) and Currie (2006).

be non-participation may actually be recipients whose receipt is not recorded in the household survey. A better understanding of underreporting and how it may bias takeup estimates has important implications for both policy makers and researchers. Policy makers have long been concerned with low participation rates in some programs, and have recently taken steps to increase participation (see U.S. GAO, 2004 for efforts to raise food stamp participation). In addition, accurate estimate of program receipt are needed to know who is benefiting from programs, why families choose not to participate in certain programs, and how individual characteristics affect participation. Such information can be used to increase takeup and better target programs to the most needy.

Underreporting will also bias studies of the distributional consequences of transfer programs. Studies that examine the extent to which food stamps increase the resources of poor families will understate the impact of the FSP when there is underreporting. In addition, correcting for underreporting bias will yield better measures of the well-being of the disadvantaged. There is a very large literature examining the distributional consequences of welfare and social insurance programs. For example, Jolliffe et al. (2005) examines the effects of the Food Stamp Program on poverty. Engelhardt and Gruber (2006) analyze the effects of social security on poverty and the income distribution. U.S. Census (2007), Scholz, Moffitt and Cowan (2008), and Meyer (2009) analyze the consequences of a wide variety of programs and taxes on features of the income distribution. The latter two studies employ simple, but rough corrections for program misreporting.

Our results also suggest biases in other types of analyses of program effects. Often, receipt of a program will be used as an explanatory variable in a regression. Mismeasurement of receipt will lead to bias in such estimates. In addition, our analyses indicate that the errors of measurement are correlated with a range of explanatory variables. Thus, it is unlikely that common instrumental variables such as a second observation on receipt will satisfy the requirements for a valid instrument, preventing the use of IV methods as a solution to this problem.

Lastly, the results presented in this paper should guide the improvement of household surveys. There are very few variables in household surveys for which we can obtain independent and accurate measures. We match administrative FSP and TANF

data to two major survey datasets. The Social Security Numbers on the food stamp and TANF records that we use have been verified (compared to SSA records) as a necessary condition for receipt of benefits, so the accuracy of the match is very high. Thus, these analyses provide an important benchmark for the quality of survey data.

In the following section, we summarize past work on the misreporting of government transfers, emphasizing food stamp misreporting. In Section III, we describe our data sources and matching. Section IV provides our main evidence on misreporting while Section V analyzes how misreporting varies with household characteristics. Section VI shows that misreporting affects our understanding of program receipt while Section VII discusses other implications of our misreporting results. In Section VIII we analyze imputation and the use of imputed data, and conclusions are offered in Section IX.

II. Previous Research

A number of studies have documented significant underreporting of food stamps in large national surveys such as the CPS or the Survey of Income and Program Participation (SIPP).² Several studies estimate underreporting by using administrative microdata that is directly linked to survey data. In perhaps the most comprehensive of these matching studies, Marquis and Moore (1990) show that 23 percent of survey respondents in four states, who were food stamps recipients according to administrative microdata, failed to report participation in the 1984 SIPP. Using a subset of these data, Bollinger and David (1997) find a nonreporting rate of 12 percent. Bollinger and David also conclude that higher income recipients are more likely and female recipients are less likely to fail to report receipt. Taeuber et al. (2004) examine FSP administrative records in Maryland linked to the national 2001 Supplementary Survey (American Community Survey), finding that about 40 percent of recipients do not report receipt.

² Underreporting is not unique to food stamps. In fact, there is evidence of significant underreporting in many government transfer programs. See Meyer, Mok, and Sullivan (2009) for a comprehensive summary and numerous cites to the literature. Excellent summaries of data reporting issues in surveys include Moore, Stinson and Welniak (2000), Bound, Brown and Mathiowetz (2001), and Hotz and Scholz (2002).

The main limitation to direct matching of survey and administrative microdata at the individual or household level is that such matches are rarely available, and when these matched data are available, it is typically only for a short time period and for a small subset of the survey respondents, such as a single state. An alternative approach compares reported receipt in a survey (weighted to population totals) to administrative reports of the number of recipients served or dollars distributed. Studies that use this approach also find evidence of substantial underreporting. For example, Primus et al. (1999) compare weighted food stamp dollars reported by households in the CPS Annual Demographic File (ADF) to administrative numbers. They find that the underreporting rate increased from 24 percent in 1990 to 37 percent in 1997. Bitler, Currie, and Scholz (2003) estimate food stamp underreporting rates between 1995 and 1999 of about 14 percent in the CPS Food Security Supplement and about 11 percent in the SIPP. Cody and Tuttle (2002) calculate underreporting rates for the CPS ADF that range from about 21 percent in 1991 to 36 percent in 1999.

Meyer, Mok, and Sullivan (2009) document the degree of underreporting of food stamps in several major household surveys by comparing the weighted total of reported food stamps receipt in household surveys with totals made available by the U.S. Department of Agriculture, Food and Nutrition Services. A time-series for these dollar reporting rates for the CPS, the SIPP, and the Consumer Expenditure (CE) Survey is reported in Figure 1. Month reporting rates for the CPS and SIPP can be found in Figure 2. Figures 1 and 2 show that food stamps are significantly under-reported in each of these surveys. The dollar and month reporting rates are remarkably similar, suggesting that most of the underreporting is due to understating the number of months of receipt. There is other evidence that finds that monthly amounts are actually quite close to the true average for several programs and datasets. Previous research indicates that about two-thirds of the underreporting of food stamps months in surveys results from failure to report receipt at all (Moore, Marquis and Bogen, 1996).

As well as being significantly below one, the reporting rates have tended to fall over time. As shown in Figure 2, between 1987 and 2006, reporting rates for food stamp months fell in the CPS from 0.73 to 0.53. The SIPP typically has the highest reporting rate for the FSP program, and these have fluctuated but not steadily declined over time.

III. Data

We examine two large and frequently used household datasets: the 2001 American Community Survey (ACS) and the 2002-5 Current Population Survey Annual Social and Economic Supplement (ASEC), formerly the Annual Demographic File or March CPS. These survey datasets are matched at the household level to administrative data on food stamp and TANF receipt in Illinois and Maryland. The ACS has replaced the Census of Population long form data and is the largest general purpose survey of U.S. households. The survey contains basic demographic information on households, characteristics of living units, receipt of government assistance, as well as information on citizenship, immigration status, education, labor force participation, and several categories of income. The ACS is also the best source of socio-economic data such as incomes at a fine geographic detail. Consequently, the ACS is currently being used by several cities and states to determine local poverty rates.³ The CPS-ASEC is probably the most extensively used dataset in labor economics. It is the source of our official income distribution and poverty statistics. It includes approximately 100,000 households who are interviewed in February through April, and report income and program receipt for the previous calendar year, as well extensive demographic and labor force participation information.

The administrative data provide information on food stamp and TANF receipt for Illinois and Maryland. The information includes start and end dates of receipt spells, amounts (for some years), as well as Social Security Number (SSN). The source of the Maryland data is the Client Automated Resource and Eligibility System (CARES) provided by the Maryland Department of Human Resources to the Census Bureau Data Integrated Division. The data provided to the Census Bureau currently cover the period 1998 through 2003. The source of Illinois data is the Illinois Department of Human Services (DHS) client database, a subsystem of the Client Information System. Each

³ See Levitan et al. (2010), Smeeding et al. (2010), and Zedlewski et al. (2010) .

extract contains mainly cross-sectional data, with some limited historical information. From these extracts, Chapin Hall has created the Illinois Longitudinal Public Assistance Research Database (ILPARD), a longitudinal database of public assistance cases (including FSP and AFDC/TANF receipt), currently containing data from February 1989 to the present. The ILPARD is updated monthly with new cases from the IDHS system and records that IDHS has changed in the past month. The Food Stamp Program data of the Illinois DHS Client Database contain information on all members of the household and their monthly utilization of the program. The data supplied to the Census Bureau cover 1998 through 2004.

Matching

Matching the survey and administrative data is accomplished using a variable called the Protected Identification Key or PIK. In order to receive food stamps, an individual must have a validated SSN (their name, gender, and date of birth must match SSA records). The FSP data are subject to regular audits by the USDA. The validated SSN is converted to a PIK by the Census Bureau. A PIK is obtained for 96.4 percent of the Illinois TANF and food stamp records over the entire period and 97.8 percent of the Maryland records. The Census Bureau uses name, address and date of birth from the ACS records to create a PIK for survey individuals. A PIK is successfully obtained for at least one member of 92.7 percent of ACS households in Illinois and 94.9 percent of ACS households in Maryland. A PIK is obtained for a considerably lower share of the CPS households. Prior to 2006, the respondent had to affirmatively consent to the possibility that their data might be matched to other sources of information, reducing the share of households that can be matched. We have a PIK for at least one member of 68 percent of Illinois CPS households and 81 percent of Maryland households. The analyses were done at the Chicago Census Research Data Center by University of Chicago researchers with Census Bureau Special Sworn Status.

Samples

The main sample for our analyses is households with a head of household at least age 16 and with at least one household member who has been assigned a PIK. We also examine some of our main results with the subsample of households in which all members have a PIK. We perform some analyses using the subpopulations of households with and without imputed values for the ACS or CPS food stamp receipt variable. Finally, in some cases we consider only households with income in the previous 12 months (previous calendar year for the CPS) below 200 percent of the federal poverty line to identify a population for whom the FSP is especially relevant.⁴

Definitions

Food stamp receipt in the ACS comes from the question “At any time DURING THE PAST 12 MONTHS, did anyone in this household receive Food Stamps?” To match this definition as well as possible we create a binary variable using the administrative data that indicates whether food stamps were received in the survey month or the previous 12 months by anyone in the household. Food stamp receipt in the CPS refers to receipt in the previous calendar year.

The food stamp household is notoriously difficult to define, but this complication does not impinge on our analyses. We examine whether a household in the ACS or CPS that reports (or does not report) receipt of food stamps, is a recipient in the administrative data. The household does not need to match a FSP assistance unit. We just examine whether any member of the survey household is part of a FSP assistance unit. Since not all individuals are assigned a PIK, there is likely some bias as we discuss below. This reliance on the ACS or CPS household definition greatly simplifies the analysis.

Missing PIKs and Nonrandom Matching

A high percentage of the ACS survey households have a PIK which allows them to be matched to the administrative data. Overall the percentage of ACS households that have a valid PIK is 92 percent in Illinois and nearly 95 percent in Maryland. However,

⁴ Most analyses were done with the household weights.

the rate is lower for those who are likely food stamp recipients. The rates are 89 percent in Illinois and 92 percent in Maryland for households with income below twice the federal poverty line. As mentioned above, the rates are much lower for the CPS sample, 68 and 81 percent for Illinois and Maryland, respectively. We examine what household characteristics are associated with it being unable to be linked to a PIK. The results of probit equations for whether a household is PIKed are reported in Appendix Table 1 for the ACS and Appendix Table 2 for the CPS. We find that we can reject that a PIK is missing at random. In the ACS, a number of characteristics are associated with a household being less likely to have a PIK, such as the household being small and the head being nonwhite, Hispanic, or a noncitizen. In the CPS, a PIK is less likely for smaller households and rural ones. In Illinois a missing PIK is also more common for non-whites and the unemployed, and in Maryland for Hispanics. Because of this nonrandomness in missing PIKs, in most of our analyses we weight observations by the inverse of the probability of that household having a PIK, where the covariates used in that prediction can be seen in Appendix Tables 1 and 2.

IV. Agreement between Survey and Administrative Reports

Table 1 reports a cross tabulation of administrative receipt of food stamps and ACS reports of food stamps for households in Illinois in the top panel and Maryland in the bottom panel. Each cell gives the sample count, the corresponding population estimate, the overall percentage, row percentage, and column percentage. Population estimates and all percentages are weighted by household weights adjusted for a missing PIK (multiplied by the inverse of the probability of having a PIK).

Focusing on the row percentages in the fourth row of each cell, we see that the ACS false negative rate is 32 percent in Illinois and 37 percent in Maryland. These are very high rates of failing to report receipt when a household is truly a recipient household. The false positive rate is 0.8 percent in Illinois and 0.5 percent in Maryland. By comparing the column total for reported receipt to the row total for administrative receipt, we see that there is also a net understatement of receipt of 23 percent in Illinois and 29 percent in Maryland. If we account for the dollar understatement conditional on

reporting receipt (which we can only do currently for Maryland) the net dollar understatement is much larger. Conditional on reporting receipt, in Maryland dollars are understated by 18 percent. Combining under-reporting of receipt with under-reporting of conditional dollars leads to a 42 percent understatement of dollars in Maryland.⁵ This figure is close to the 44 percent found nationally in the 2005 ACS in Meyer, Mok and Sullivan (2009). Earlier under-reporting rates cannot be calculated for the ACS from public use data since information on food stamp receipt is not released. These are very substantial rates of under-reporting. Approximately one-third of those households that receive are not recorded as receiving in the survey.

Table 2 repeats the ACS cross tabulations of Table 1, but only for those observations for which it is imputed as to whether or not the household receives food stamps. Several patterns are evident in this table. First, only a small share of households are imputed, approximately 2.1 percent in Illinois and 1.4 percent in Maryland. However, a large share of true food stamp households are imputed, 14.3 percent in Illinois and 11.3 percent in Maryland, and an even larger share of reported food stamp households are imputed in each state. Second, among those who are imputed, a very large share are true food stamp recipients (55 percent in Illinois and 49 percent in Maryland). Third, a substantial share of the false positives are due to imputation. These observations account for 41 percent of false positives in Illinois and 26 percent of false positives in Maryland, despite being no more than 2.1 percent of the total sample. Because of these imputed false positives, the overall false positive rate is not a good indicator of households' tendency to report receipt when they are not recipients.

Using CPS data, we repeat these cross-tabulations, reporting the results in Table 3 for the full sample and Table 4 for the imputed sample. The share of administrative food stamp recipient households that do not report receipt in the CPS is even higher than in the ACS. 48 percent of Illinois recipient households do not report, while 53 percent do not in Maryland. The share of non-recipients that report receipt remains low, just under 1.0 percent in Illinois and 0.4 percent in Maryland. Since the CPS data are for either 3 or 4 years, depending on the state, we can examine on reporting has changed over time (these

⁵ This figure is from the subsample of recipients with income less than twice the poverty line and will be updated with the full sample figure when available.

results are not separately indicated in the tables). In Illinois, there is some tendency for the false negative reporting to increase, while in Maryland the tendency is pronounced. By 2004, over 60 percent of recipients are failing to report receipt. A reasonable summary of the evidence from the two states is that half of recipients do not report food stamp receipt.

Accounting for both false negatives and positives, we can calculate from Table 3 that the net understatement of receipt is 39 percent in Illinois and 46 percent in Maryland. These numbers accord quite closely with the 39 percent for the Illinois time period and 38 percent for the Maryland time period reported in Meyer, Mok and Sullivan (2009) based on national aggregate data.

Table 4 displays a somewhat different pattern for imputed observations in the CPS than we saw in the ACS. First, a larger, but still small share of households are imputed, approximately 3.8 percent in Illinois and 2.9 percent in Maryland. However, a substantial share of true food stamp households are imputed, but a smaller share than in the ACS, 9.2 percent in Illinois and 9.4 percent in Maryland. About 7.9 percent of CPS reported food stamp households are imputed in Illinois, and 11.4 percent in Maryland. Second, among those who are imputed, the share that are true recipients is smaller than it was in the ACS (24 percent in Illinois and 17 percent in Maryland). Third, overall a larger share of the false positives is due to imputation. These observations account for 33 percent of false positives in Illinois and 51 percent of false positives in Maryland. Again, because of these imputed false positives, the overall false positive rate is not a good indicator of households' tendency to report receipt when they are not recipients.

Possible Biases in these Probabilities

Our methods will tend to slightly bias false negative and positive reports in the survey data for several reasons. First, in the ACS we consider a household to be a recipient household if food stamps are received anytime during a 13 month period rather than the 12 month period that is asked about in the ACS. The additional month added in the 13 month definition is the oldest of the 13 months. This convention leads more households to be classified as true recipient households than might be warranted. In

principle, this convention could lead to either higher or lower false negative and false positive rates. A reasonable assumption, though, is that the households affected by this convention have reporting rates between those of the households that are either participants or non-participants under either definition. In this case, false positive rate will have been biased downward and false negative rate biased upward. We can easily examine the magnitude of this potential bias by only defining administrative receipt based on the 12 months preceding the current month. When we do this exercise, false negative and false positive report rates are only negligibly different.

Second, a household that moved into the current state over the last year may have received food stamps in their previous state even if they didn't in their current state of residence. The administrative data from their current state of residence would not report that receipt. Thus, mobility across state lines will lead to an understatement of true food stamp receipt. Under the assumption that such households that received in a previous state but not the current state have reporting rates between those who received in neither or both states, the false positive rate will have been biased upward and the false negative rate biased downward. Since only about two percent of individuals move across state lines in a year, the likely bias is small.

Third, we include households in our samples if anyone in the household has a PIK. However, someone in the household may receive food stamps, but since they did not have a PIK we do not treat the household as a recipient household unless someone else in the household who has a PIK is a recipient in the administrative data. This issue would have the same affect as cross-state movers, i.e. it would tend to understate true food stamp receipt. Again, we might reasonably assume that affected households, those that are partially PIKed leading their administrative food stamp status to indicate non-receipt when they are recipients, have reporting rates between those whose administrative receipt is unaffected. Then, the false positive rate is biased upward and the false negative rate is biased downward. About 14 percent of ACS households with at least one PIK have members without a PIK, while 24 of CPS households in Illinois (15 percent in Maryland) have this situation. Thus, this bias is likely to be more substantial than the one due to migration.

Finally, a small fraction of the administrative records do not have a PIK. As in the last two cases, this type of error will lead some true recipient households to not appear as recipients in the administrative data. Again, if such households have reporting rates higher than true nonrecipients, but lower than other true recipients, the false positive rate would be overstated and the false negative rate understated.

Overall, it seems likely that false negatives are understated and false positives are overstated. The first possible bias can be directly examined and is found to be very small. The remaining three cases likely lead to overstatement of the false positive rate and understatement of the false negative rate.

V. What Affects the Agreement between the Survey Reports and the Administrative Records?

We next examine how misreporting of food stamp receipt differs across households. If misreporting does not depend on household characteristics, then it is fairly straightforward to correct estimates of takeup and the distributional effects of programs (examples of such corrections can be found in Meyer, Mok and Sullivan 2009, and Meyer 2009). However, if misreporting is correlated with household characteristics, we can use estimates of the relationship to adjust various analyses.

In the first two columns of Table 5 we report probit equations for the determinants of false negative reporting in the ACS. Here the sample is those who, according to the administrative data, are recipients of food stamps (true recipients). We report average derivatives of the probability of being a false negative reporter rather than coefficients to aid the interpretation of the magnitudes. We examine the effects of family type, number of family members of various ages, age, education, race and employment status of head, income relative to the poverty line for a family of a given composition, English fluency and citizenship, geographic location, reported receipt of other programs, true receipt of TANF, and length of food stamp receipt from the administrative data.

Despite a fairly small sample for this analysis, there are some noticeable differences across households in false negative reporting. Households headed by a person 50 or older are more likely to be false negative reporters (not report) than younger

households. This effect is significant in Illinois, but not quite so in Maryland. Recipients with a college education are much more likely to not report in Illinois, but in Maryland those with only a high school education are the most likely to not report. Males are significantly more likely to not report in Illinois, and the unemployed are less likely to fail to report in Maryland. Non-whites are more likely to be false negatives in both states.

Higher income increases the likelihood that a recipient will not report receipt. For example, an increase in income from the poverty line to three times the poverty line increase the likelihood of false negative reporting by over 20 percentage points in each state. Rural households and those that report public assistance receipt are much less likely to fail to report receipt. Those recipients who speak only English at home in Illinois are much less likely to not report receipt. Non-U.S. citizens are surprisingly less likely to not report in Illinois, and the effect is significant. The measures of disability have conflicting effects, with a weakly significant effect of disability on the false negative rate in Illinois, but a positive effect of disabled, not working in Maryland.

We also examine the association of not reporting with reported receipt of other transfer programs in the ACS. Quite uniformly, true recipients who report receipt of other programs (public assistance, housing assistance) are more likely to report food stamp receipt. The effect is nearly twenty percentage points for reported public assistance receipt in both states. Reflecting the high imputed receipt rate among those for whom food stamp receipt is imputed, imputed observations are much less likely to be false negatives.⁶

Agreeing with the idea that regularity of receipt is important, those who received food stamps in more months in the previous year, are more likely to report receipt. This effect is very pronounced. An additional month of food stamp receipt is estimated to decrease the non-reporting probability by .03 in Illinois and .04 in Maryland, quite large effects. Finally, there is an insignificant effect of true TANF receipt, once we have accounted for the reporting of program receipt.

We also examine the frequency of reporting receipt in the ACS by those who are truly nonrecipients in columns 3 and 4 of Table 5. The sample for this false positive

⁶ We would like to add the FSP amount received from the administrative data in the future.

analysis, those who are truly nonrecipients, is much larger than that used for the false negative analysis. However, the false positive rate is so low that the number of false positives is much smaller than the number of false negatives. Given the small number of “ones” in this probit analysis, there are fewer significant determinants of reporting in these equations. However, in both states, the disabled who don’t work, those with reported public assistance, and those with food stamp receipt imputed are significantly more likely to have reported receipt when not a recipient. In Illinois, nonwhite, low-educated, young recipients with many children under 18 are more likely to falsely report receipt.

Analogous results for the determinants of misreporting in the CPS are reported in Table 6, but are somewhat less precise given the smaller samples. There are some clear areas of agreement between the CPS and ACS results, but there are notable differences as well. First examining false negative reporting, in Illinois, those over 50 are weakly significantly more likely to fail to report in Illinois, but the effect is the opposite in Maryland. More income relative to poverty increases the false negative rate in Illinois, but has an insignificant effect in Maryland. In both states, reported housing assistance and a longer period of food stamp receipt decrease false negative reporting, while true TANF receipt and the imputation of food stamp receipt increase the rate of false positive reporting. There is a noticeable increase in misreporting over the short sample time period, especially in Maryland.

As for false positive reporting in the CPS, in both states those with higher income are less likely to be false positives, while those with reported public assistance receipt or imputed food stamp receipt are more likely to be false positives. Additionally, in Illinois those under 50 and with reporting housing assistance are more likely to falsely report receipt, while in Illinois those households with fewer children under 18 and more members PIKed are more likely to falsely report. There is no discernable time trend in false positive reporting.

VI. The Effect of Misreporting on Estimates of Program Receipt

Having true food stamp receipt matched to survey data gives us the opportunity to directly examine if the use of administrative data provides a different understanding of the determinants of FSP receipt than we obtain from survey data alone. We first estimate the determinants of receipt using only survey data. We then re-estimate the determinants of receipt, combining the survey data with the administrative data on food stamp receipt, using the administrative measure of receipt as the dependent variable. We then compare the two equations for the use of food stamps.

The determinants of food stamp receipt using only ACS survey data can be seen in Table 7 columns 1 and 2 for Illinois and Table 8 columns 1 and 2 for Maryland. Column 1 includes observations where the dependent variable is imputed, whereas column 2 omits those observations. We have restricted our sample to households with income below twice the poverty line to have a sample for which food stamp receipt is a likely possibility. In this low-income sample, 20 percent of ACS households in Illinois report that they receive food stamps, while 17 percent of those in Maryland do (see Appendix Table 3). These estimates suggest that, controlling for household income, a household headed by a single parent is about ten percentage points more likely to be a recipient than a married couple household in both states. Those 50 or older are much less likely to be participants than those ages 40-49 in Illinois, while in Maryland the effect is only evidence for those 60 or older. The effects are large: at least 9 percentage points in Illinois and 8 percentage points in Maryland.

Education and income have the expected effects, with high school dropouts 6 percentage points more likely to participate in Illinois and 7 percentage points more likely in Maryland than those with some college. Income is a strong predictor of food stamp receipt. In Illinois, a household with income equal to half the poverty line is 7 percentage points more likely to receive food stamps than a household with income 1.5 times the poverty line. In Maryland, the difference is 10 percentage points. The estimates also suggest that a household with a non-employed or disabled head is much more likely to receive food stamps. In Illinois, non-whites are more likely to participate, while there is little difference in Maryland.

The largest effects come from an indicator for reported receipt of public assistance or housing assistance. Those reporting public assistance are more than three

times as likely to be recipients, while those receiving housing assistance are about twice as likely to be recipients.

Column 3 of Tables 7 and 8 repeat this analysis substituting an administrative dependent variable for the poorly reported survey measure of receipt. In the administrative data, 24 percent of low-income households in Illinois receive food stamps, while 23 percent of those in Maryland do (see Appendix Table 3). There are many notable differences between this specification and the previous one. Columns 4 and 5 of the tables report p-values for tests of equality of the derivatives based on the survey data alone and those based on the survey and administrative combined data. Households headed by a single individual or parent are much more likely to be recipient households in the combined data. In Illinois the difference is 4 percentage points while in Maryland it is 9 percentage points, and these differences are not statistically significant. The average derivative for race is also significantly different, with the specifications with the administrative dependent variable indicating that participation is four percentage points greater for non-whites than the survey data only specifications. The derivatives for reported receipt of public assistance or housing benefits are significantly different in most cases, as are those for having more family members with a PIK.

In Illinois, the effect of age, particularly being ages 50-59, is quite different in the combined data, and the difference is statistically significant. The effect of speaking English only is also significantly different. For Maryland, the effect of income is quite different in the combined data, indicating substantially larger differences in participation by income. Overall, one can reject that the combined data give the same estimates as the ACS survey data alone at a level below 0.0001 in Illinois and at 0.0004 in Maryland.⁷

Tables 9 and 10 use the CPS data to analyze the determinants of food stamp participation. Again, columns 1 and 2 of these Tables provide the average derivatives for the survey data only samples. In our sample of households with income less than twice the poverty line 19 percent of households report food stamp receipt in Illinois and 12 percent do in Maryland (see Appendix Table 4). There are quite a few similarities with the ACS data results. Again single parent households are more likely to be recipients,

⁷We have also estimated coefficients (as opposed to average derivatives) for each of the specifications. The overall results are very similar for the coefficients, though the differences between the combined and survey data estimates tend to be smaller.

holding constant income and other characteristics, though the effect is not significant in Maryland. Households with many children are more likely to receive food stamps, and this effect is significant in both states. Households headed by a person 70 or older are less likely to receive food stamps, while those that have low income, an non-employed head, report receipt of public assistance or housing benefits, are significantly more likely to receive food stamps in both states according to the CPS data. In Illinois, those without a high school degree are more likely, and those with a college degree less likely to receive than those with some college. There is some tendency toward higher receipt in rural areas, though the evidence is fairly weak. The survey data alone do not suggest that food stamp receipt has been rising over time in either of the states.

Column 3 of Tables 9 and 10 repeat this analysis substituting an administrative dependent variable for the poorly reported survey measure of receipt. In the administrative data, 27 percent of low-income households in Illinois receive food stamps, while 17 percent of those in Maryland do (see Appendix Table 4). While most of the significant derivatives remain significant and do not change sign, there are some notable changes in the magnitude of effects. The effect of being a single parent is much stronger in the combined data... [to be expanded.]

The combined administrative and survey data have some important implication that differ from those using the survey data alone. For example, Haider et al. (2003) and Wu (2010) emphasize lower food stamp takeup by older households in survey data. Gunderson and Ziliak (2008) find a more complicated pattern by age. The sharp differences in misreporting by age carry over to imply that the combined data show much less of a difference between the aged and non-aged in Illinois.

VII. The Consequences of Misreporting

The underreporting of food stamps in large surveys discussed above can lead to significant bias in studies of the Food Stamp Program. For example, a number of studies have examined participation rates for the FSP among eligibles or potential eligibles.⁸

⁸ For example, using data from the SIPP, Blank and Ruggles (1996) estimate take up rates among single mothers that are close to 50 percent in 1986-1987. Zedlewski and Brauner (1999) use data from the

Underreporting of food stamps will bias such estimates because much of what appears to be non-participation may actually be recipients whose receipt is not recorded in the household survey.⁹ To demonstrate the potential importance of underreporting bias we can adjust estimates of participation from the literature for underreporting using the comparison-to-aggregate results in Figure 1. For example, adjusting for underreporting bias in the SIPP would increase take up estimates in Blank and Ruggles (1996) by 15 percent from 0.52 to 0.60.¹⁰ An important limitation with this adjustment is that it assumes that the underreporting rate does not vary across different demographic groups. The estimates of Section V will allow us to relax this assumption.

Other studies of the FSP use survey data to examine the distributional consequences of the program. These studies show that the FSP has very important distributional consequences at the bottom. For example, new, alternative measures of poverty reported by U.S. Census (2006) indicate that Food Stamps and other noncash transfer programs lift a large number of people out of poverty. Several studies show that the FSP increases the resources of those in poverty and plays an important role in filling the poverty gap (Ziliak 2004; Bishop, Formby, and Zeager 1996). Meyer and Sullivan (2006) show that the FSP has an important effect on estimates of changes in family income over time. By not accounting for underreporting of food stamps, these studies understate the distributional effects of the FSP.^{11, 12}

To demonstrate the potential underreporting bias in studies of the distributional consequences of the FSP, we use data from the 2002 CPS ADF (for calendar year 2001) to calculate alternative poverty rates that include food stamps following the procedure of

National Survey of American Families to show that many welfare leavers do not participate in the FSP despite remaining eligible. Fraker and Moffitt (1988) find that 38 percent of eligibles participate using the 1979 Panel of the Income Survey Development Program (ISDP), the experimental precursor to the SIPP. Using data from the Health and Retirement Survey, Haider, Jackowitz, and Schoeni (2003) find that only about a third of the elderly who are eligible participate in the FSP. For a survey of the literature on take-up and other transfer programs see Currie (2004).

⁹ Survey underreporting of Food Stamps is not an issue in other studies of take up that use administrative microdata on Food Stamps to identify participation (GAO 2004; USDA 2003, 2005).

¹⁰ The estimate from Blank and Ruggles is from Table 1, Panel B, which includes left-censored and nonleft-censored spells of eligibility and participation. Our adjustment is based on the reporting rate for months in the SIPP for 1986-1987 (0.87).

¹¹ Other studies do address underreporting bias in the distributional analyses of the FSP. For example, see Primus et al. (1999) or Jolliffe et al. (2005).

¹² Other studies of the distributional consequences of the FSP that may be affected by underreporting bias include those that look at the consumption-smoothing role of the FSP (Ziliak and Gunderson, 2003; Blundell and Pistaferri, 2003).

several studies of alternative poverty (for example see U.S. Census 2006). We then adjust these alternative poverty estimates for underreporting by scaling up the dollars of food stamps in the CPS sample using the reporting rates for food stamps from Figure 1.¹³ As shown in Figure 3, including food stamps in the measure of resources used to determine poverty reduces poverty substantially. The official poverty rate in 2001 was 11.7 percent. Adding reported food stamps reduces the poverty rate to 11.3 percent, which is a decrease in the number of poor individuals of 1.1 million. After adjusting for underreporting of food stamps in the CPS, the poverty rate falls even further, to just under 11 percent, effectively lifting another 900,000 individuals out of poverty. The differences are particularly large when looking at extreme poverty, such as those below 25 percent of the official poverty line. Including reported food stamps reduces those below 25 percent of the poverty threshold by 14 percent. After adjusting for underreporting, this measure of extreme poverty falls by an additional 14 percent. These results in Figure 3 demonstrate that underreporting bias will lead to a significant understatement of the distributional effects of the FSP. However, these simple adjustments assume that underreporting is random—that the characteristics of FSP households that do not report receipt in surveys are the same as those of FSP households that do report receipt. The estimates of Section V provide the information to allow underreporting to vary with observable characteristics.

VIII. Evaluating Food Stamp Imputation in the ACS and CPS [to be updated]

When responses regarding receipt or amounts are missing in surveys, components of income are often predicted using other information. A large share of government payments to individuals are imputed in most household surveys in this way. In 2005, 24 percent of food stamp dollars were imputed in the CPS, and 17 percent were imputed in the ACS (Meyer, Mok and Sullivan 2009). In the most recent year available (2004), 36 percent of dollars were imputed in the SIPP. In our 2001 ACS data, 23 percent of reported recipients were imputed in Illinois and 18 percent in Maryland. We use the

¹³ We allocate a benefit amount to CPS households that do not report receipt based on the amount each household would be eligible for if they did receive. We allocate these benefits to the nonreceivers with the highest predicted probability of receipt following the procedure in Meyer and Sullivan (2006).

unique data we have to evaluate the quality of food stamp imputations in the ACS and to examine the validity of common practice in the use of imputed data.

Food stamp receipt in the ACS is, as in other Census data sets, imputed using hot deck methods. Households (not in group quarters) are classified by state into one of twenty cells, defined by full interactions of family type, presence of children, poverty status, and the race of the reference person. The data go through what is called a “geosort” before the imputation process. The most recent nonmissing response from a given cell at the smallest level of geography available is substituted for a missing response.

It is unclear how to evaluate the accuracy of the ACS imputations. Those who do not answer the food stamp question are very likely to be recipients. Thus, the share of imputed observations for which food stamp receipt is incorrectly imputed will be higher than a sample with a low food stamp rate (such as a random sample) where errors could be kept low by never imputing a positive response to the receipt question. We settled on the idea that an appropriate test of the accuracy of imputations really depends on the use to which one is putting the potentially imputed data. In our case, we are interested in the determinants of program receipt. A natural test of the imputation process is whether or not the survey based estimates of the determinants of program receipt are closer to the combined data estimates when the imputed observations are included.

Comparing the estimates with and without the imputed values also provides an implicit test of the common practice among researchers of dropping imputed observations (we need a list of cites here, but that should be easy to find). To compare the estimates we use the chi-square statistic that measures the distance between the sets of estimates, weighting by the precision of the individual estimates and accounting for the covariances. We find that including the imputed observations leads to estimates that are much closer to those based on the combined data with and administrative dependent variable. The chi-square statistic is about 50 lower including the imputed data in Illinois and 30 in Maryland (with less than 30 degrees of freedom).¹⁴

This striking result, that we do much better including the imputed observations than excluding them, prompts the question of why the imputed values are so good. This

¹⁴ The exact numbers will be substituted once they have gone through Census Bureau disclosure review.

question is especially appropriate since we are including a very large set of controls in the probit equation for receipt of food stamps in the first place. We speculate that the use of fine geographic information in the ACS imputation process leads to the surprisingly accurate imputations. This imputation process can be thought of as a way of bringing sensitive information into the data in a way that does not disclose any sensitive information.¹⁵

IX. Conclusions and Possible Extensions [to be updated]

Benefit receipt in major household surveys is often underreported. This misreporting has important implications for our understanding of the economic circumstances of disadvantaged populations, program takeup, the distributional effects of government programs, and studies of other program effects. We use administrative data on Food Stamp Program (FSP) participation matched to American Community Survey (ACS) household data. We show that over thirty percent of true recipient households do not report receipt in the ACS. Misreporting, both false negatives and false positives, varies with individual characteristics. From these results we infer likely biases in several types of FSP analyses. We then directly examine the determinants of program receipt using our combined administrative and survey data. The combined data allow us to examine accurate participation using individual characteristics missing in administrative data. Our results differ from conventional estimates using only survey data, as such estimates overstate multiple program participation and participation by families with many children and understate participation by older individuals. To evaluate the use of imputed ACS data, we also examine whether our estimates using survey data alone are closer to those using the accurate combined data when imputed survey observations are excluded. Interestingly, excluding the imputed observations leads to worse estimates.

There are many possible extensions of this work. For example, the ACS is currently being used to calculate poverty rates that incorporate in-kind transfers such as

¹⁵ We confirmed that imputed responses do not include people who gave an amount but didn't check the "yes" box on the questionnaire. Such a situation would also make it seem that the imputations were surprisingly accurate. We should confirm that such errors are corrected in an edit phase or are just rare.

food stamps (Levitan et al. 2010, Smeeding et al. 2010). The data described here along with extensions of these methods can be used to optimally employ the reported information on food stamp receipt combined with additional imputed recipients and dollars to account for under-reporting. Additional work is also needed to incorporate the validation sample information we describe here to other empirical settings.

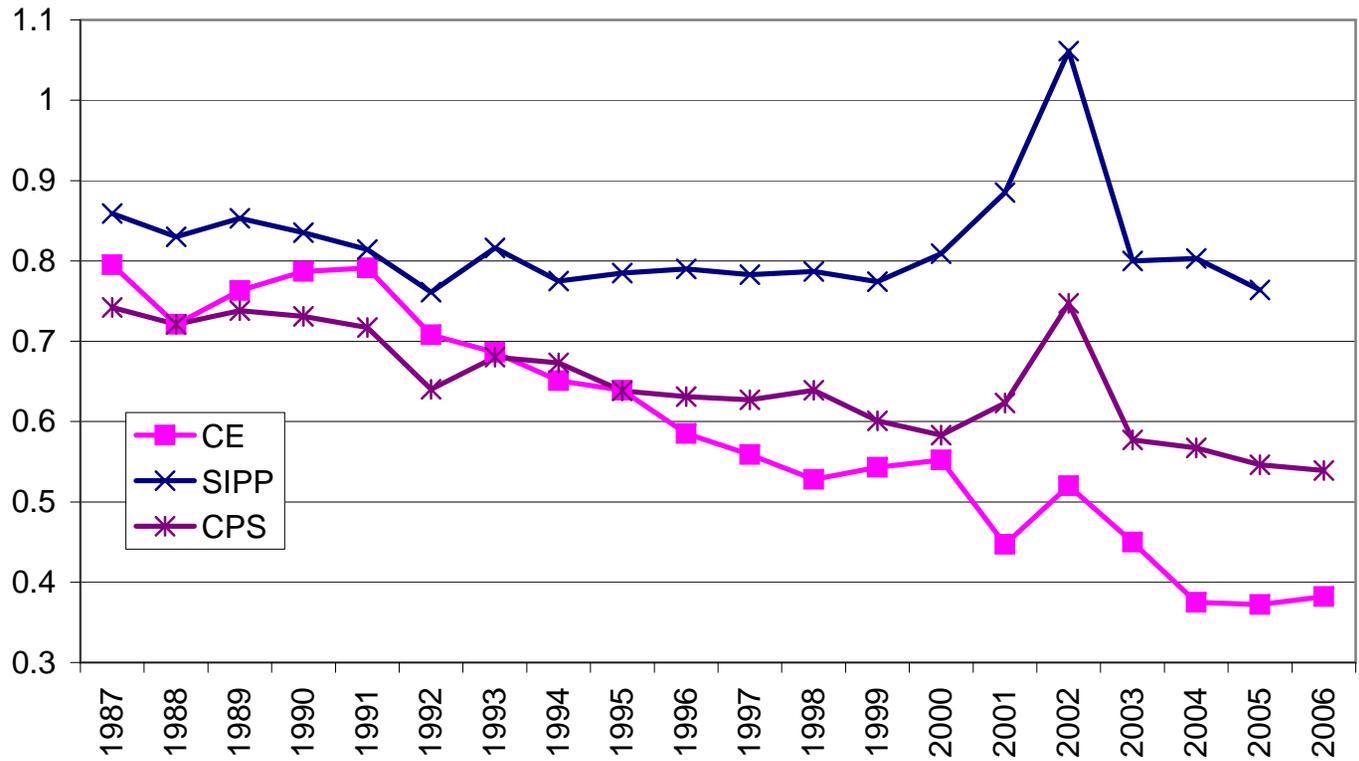
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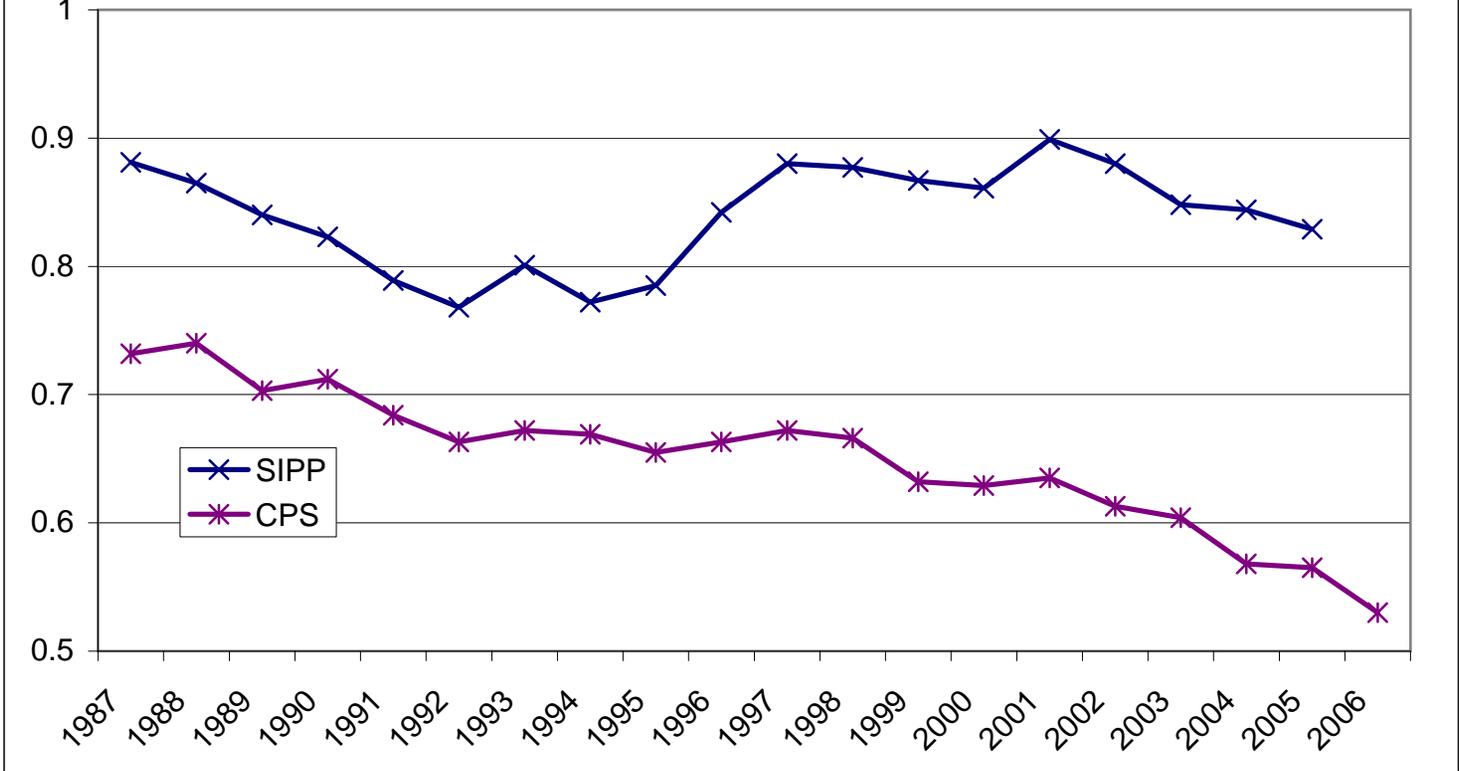
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Figure 1
Reporting Rates for Food Stamp Dollar Amounts, 1987-2004



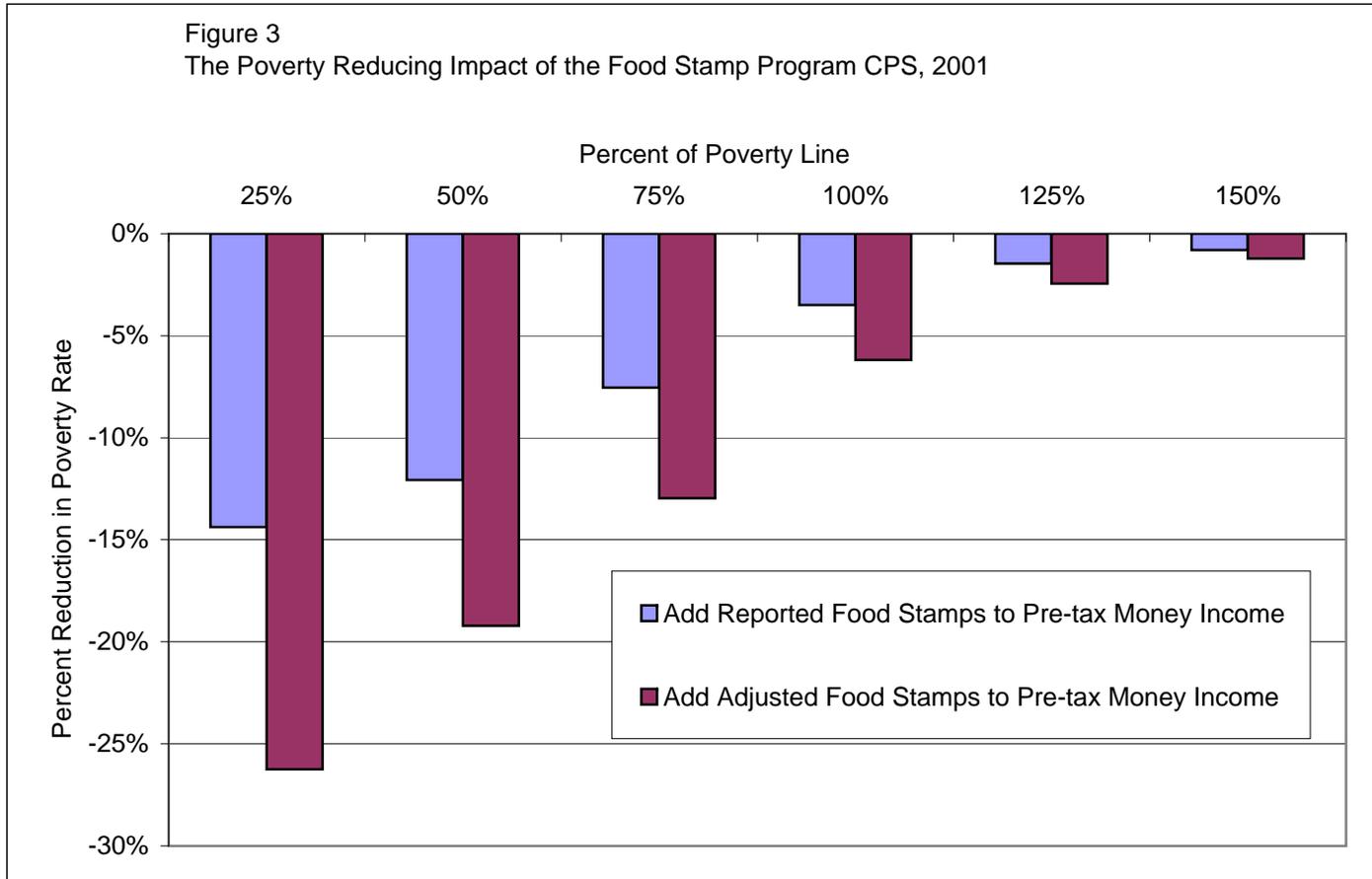
Notes: Data are from Meyer, Mok, & Sullivan (2008). Reporting rates for each year are calculated as the ratio of the total weighted dollars reported for each program in the CPS divided by the respective administrative aggregate. Sources for administrative numbers are reported in Meyer, Mok, and Sullivan (2008).

Figure 2
Reporting Rates for Average Months of Receipt, 1987-2006



Notes: See notes to Figure 1.

Figure 3
The Poverty Reducing Impact of the Food Stamp Program CPS, 2001



Notes: Data are from the 2002 CPS ADF using annual income measures reported for calendar year 2001. For 2001, the fraction with pre-tax income below 25%, 50%, 75%, and 100% of the poverty line were 0.029, 0.048, 0.078, and 0.117 respectively.

Table 1 – Mis-reporting of Food Stamp Receipt, 2001 ACS, Full Sample

Administrative Receipt	ACS Report		Total
	No Food Stamps	Food Stamps	
<i>Illinois</i>			
No Food Stamps	19,630	88	19,718
	4,193,387	34,883	4,228,270
	91.15	0.76	91.91
	99.18	0.83	100.00
	97.24	12.10	91.91
Food Stamps	321	728	1,049
	118,834	253,289	372,123
	2.58	5.51	8.09
	31.93	68.07	100.00
	2.76	87.90	8.09
Total	19,951	816	20,767
	4,312,222	288,172	4,600,393
	93.74	6.26	100.00
	93.74	6.26	100.00
	100.00	100.00	100.00
<i>Maryland</i>			
No Food Stamps	9,042	33	9,075
	1,880,871	9,615	1,890,485
	93.39	0.48	93.86
	99.49	0.51	100.00
	97.66	10.92	93.86
Food Stamps	163	296	459
	45,121	78,454	123,574
	2.24	3.90	6.14
	36.51	63.49	100.00
	2.34	89.08	6.14
Total	9,205	329	9,534
	1,925,991	88,069	2,014,060
	95.63	4.37	100.00
	95.63	4.37	100.00
	100.00	100.00	100.00

Notes: The entries in each cell from top to bottom are sample count, population estimate, overall %, row %, column %. Estimates are weighted by household weight adjusted for PIK probability.

Table 2 – Mis-reporting of Food Stamp Receipt, 2001 ACS, Imputed Food Stamp Receipt Sample

Administrative Receipt	ACS Report		Total
	No Food Stamps	Food Stamps	
<i>Illinois</i>			
No Food Stamps	146	37	183
	29,905	14,181	44,086
	30.74	14.58	45.32
	67.83	32.17	100.00
	94.55	21.60	45.32
Food Stamps	6	154	160
	1,723	51,463	53,186
	1.77	52.91	54.68
	3.24	96.76	100.00
	5.45	78.40	54.68
Total	152	191	343
	31,629	65,644	97,273
	32.52	67.48	100.00
	32.52	67.48	100.00
	100.00	100.00	100.00
<i>Maryland</i>			
No Food Stamps	60	9	69
	12,060	2,494	14,553
	42.26	8.74	51.00
	82.86	17.14	100.00
	96.54	15.54	51.00
Food Stamps	3	56	59
	432	13,553	13,985
	1.51	47.49	49.00
	3.09	96.91	100.00
	3.46	84.46	49.00
Total	63	65	128
	12,491	16,047	28,538
	43.77	56.23	100.00
	43.77	56.23	100.00
	100.00	100.00	100.00

Notes: The entries in each cell from top to bottom are sample count, population estimate, overall %, row %, column %. Estimates are weighted by household weight adjusted for PIK probability.

Table 3 – Mis-reporting of Food Stamp Receipt, CPS, Full Sample

Administrative Receipt	CPS Report		Total
	No Food Stamps	Food Stamps	
<i>Illinois 2002-2005</i>			
No Food Stamps	6,836	78	6,914
	17,267,477	170,642	17,438,119
	89.32	0.88	90.21
	99.02	0.98	100.00
	94.98	14.84	90.21
Food Stamps	452	459	911
	912,736	980,703	1,918,714
	4.72	5.07	9.80
	48.21	51.79	100.00
	5.02	85.18	9.80
Total	7,288	537	7,825
	18,180,213	1,151,345	19,331,558
	94.04	5.96	100.00
	94.04	5.96	100.00
	100.00	100.00	100.00
<i>Maryland 2002-2004</i>			
No Food Stamps	2,884	13	2,897
	5,921,409	24,700	5,946,109
	94.32	0.39	94.71
	99.58	0.42	100.00
	97.09	13.77	94.71
Food Stamps	103	90	193
	177,371	154,684	332,055
	2.83	2.46	5.29
	53.42	46.58	100.00
	2.91	86.23	5.29
Total	2,987	103	3,090
	6,098,780	179,384	6,278,164
	97.14	2.86	100.00
	97.14	2.86	100.00
	100.00	100.00	100.00

Notes: The entries in each cell from top to bottom are sample count, population estimate, overall %, row %, column %. Estimates are weighted by household weight adjusted for PIK probability.

Table 4 – Mis-reporting of Food Stamp Receipt, CPS, Imputed Food Stamp Receipt
Sample

Administrative Receipt	CPS Report		Total
	No Food Stamps	Food Stamps	
<i>Illinois 2002-2005</i>			
No Food Stamps	195	27	222
	510,438	56,398	566,834
	68.62	7.58	76.20
	90.05	9.95	100.00
	78.19	61.96	76.20
Food Stamps	68	22	90
	142,388	34,918	177,006
	19.14	4.65	23.80
	80.44	19.56	100.00
	21.81	38.04	23.80
Total	263	49	312
	652,826	91,016	743,842
	87.76	12.24	100.00
	87.76	12.24	100.00
	100.00	100.00	100.00
<i>Maryland 2002-2004</i>			
No Food Stamps	56	7	63
	136,636	12,705	149,341
	75.62	7.03	82.65
	91.49	8.51	100.00
	85.31	61.89	82.65
Food Stamps	12	6	18
	23,526	7,825	31,350
	1302.00	4.33	17.35
	75.04	24.96	100.00
	14.69	38.11	17.35
Total	68	13	81
	160,162	20,530	180,692
	88.64	11.36	100.00
	88.64	11.36	100.00
	100.00	100.00	100.00

Notes: The entries in each cell from top to bottom are sample count, population estimate, overall %, row %, column %. Estimates are weighted by household weight adjusted for PIK probability.

Table 5 - The Determinants of Mis-reporting, 2001 ACS, Probit Average Derivatives, Households with Income Less Than Twice the Poverty Line

	False Negative		False Positive	
	Illinois	Maryland	Illinois	Maryland
Single, no children	-0.0862 (0.0716)	0.0437 (0.0877)		
Single, with children	-0.0802 (0.0539)	0.1203 (0.0753)		
Multiple adults, no children	-0.1036 (0.0857)	-0.0135 (0.1067)		
Number of members under 18	-0.0306 (0.0264)	-0.0185 (0.0329)	0.0069 (0.0033)	-0.0020 (0.0036)
Number of members 18 or older	-0.0248 (0.0341)	0.0405 (0.0363)	-0.0024 (0.0034)	0.0053 (0.0050)
Number of members PIKed	0.0308 (0.0268)	0.0358 (0.0333)	-0.0085 (0.0038)	0.0060 (0.0040)
Age >= 50	0.1514 (0.0513)	0.1319 (0.0663)	-0.0225 (0.0075)	-0.0063 (0.0086)
Male	0.0877 (0.0356)	-0.0335 (0.0483)	-0.0106 (0.0061)	0.0032 (0.0080)
Less than high school	0.0688 (0.0431)	0.0659 (0.0589)	0.0140 (0.0068)	0.0063 (0.0099)
High School graduate	-0.0001 (0.0425)	0.1147 (0.0576)	-0.0032 (0.0085)	0.0111 (0.0126)
College graduate and beyond	0.2197 (0.0745)	-0.0586 (0.1201)		
White	-0.0897 (0.0368)	-0.1110 (0.0422)	-0.0239 (0.0071)	-0.0082 (0.0083)
Employed			-0.0054 (0.0066)	-0.0261 (0.0151)
Unemployed	-0.0206 (0.0554)	-0.2504 (0.0668)		
Not in labor force	-0.0077 (0.0404)	-0.0627 (0.0513)		
Poverty index	0.0010 (0.0003)	0.0008 (0.0004)	-0.0001 (0.0000)	-0.0001 (0.0001)
Disabled	-0.0637 (0.0386)	-0.0333 (0.0584)	0.0076 (0.0084)	-0.0069 (0.0084)
Disabled, not working	-0.0382 (0.0465)	0.1179 (0.0505)	0.0159 (0.0082)	0.0226 (0.0097)
Speaks English only	0.0455 (0.0507)	-0.1448 (0.0838)		
Non-U.S. Citizen	-0.1545 (0.0327)	0.0697 (0.1011)		
Rural	-0.1000 (0.0472)	-0.1079 (0.0476)	-0.0051 (0.0088)	
Reported public assistance receipt	-0.2693 (0.0549)	-0.2453 (0.0632)	0.0442 (0.0091)	0.0622 (0.0186)
Reported housing assistance receipt	-0.0336 (0.0397)	-0.0248 (0.0481)	0.0108 (0.0070)	0.0007 (0.0081)
FS receipt imputed	-0.3115 (0.0647)	-0.3833 (0.0899)	0.0700 (0.0110)	0.0447 (0.0139)
Length of FS receipt spell	-0.0275 (0.0034)	-0.0384 (0.0036)		
Administrative TANF receipt	0.0658 (0.0446)	0.0273 (0.0514)		
Observations	789	344	3,357	1,455

Notes: Delta-method standard errors in parentheses. All specifications also include controls for mode of interview (mail-back, CATI, CAPI). All analyses conducted using household weights adjusted for PIK probability. For the false negative probits, the unreported omitted family type is multiple adults with children, the education category is some college, the employment category is employed, the race group is nonwhite, and the geographic area is within-MSA. The unreported omitted education category for the false negative probits is some college or more, the race group is nonwhite, the employment category is not employed, and the geographic area is within-MSA. Rural status was also controlled for in the false positive Maryland regression.

Table 6 - The Determinants of Mis-reporting, CPS, Probit Average Derivatives, Households with Income Less Than Twice the Poverty Line

	False Negative		False Positive	
	Illinois	Maryland	Illinois	Maryland
Single, no children	-0.1312 (0.0779)	0.0558 (0.1755)		
Single, with children	-0.0227 (0.0620)	-0.0323 (0.1203)		
Multiple adults, no children	-0.0245 (0.0739)	0.0668 (0.1416)		
Number of members 18 or over	0.0391 (0.0371)	0.0370 (0.0794)	0.0092 (0.0067)	-0.0170 (0.0130)
Number of members under 18	-0.0230 (0.0224)	-0.0968 (0.0616)	0.0044 (0.0049)	-0.0251 (0.0120)
Number of members PIKed	-0.0171 (0.0194)	0.0484 (0.0433)	-0.0047 (0.0044)	0.0222 (0.0118)
Age >= 50	0.0881 (0.0525)	-0.1418 (0.0832)	-0.0382 (0.0147)	-0.0010 (0.0109)
Male	-0.0603 (0.0446)	0.0195 (0.0858)	-0.0130 (0.0104)	0.0106 (0.0094)
Less than high school	-0.0695 (0.0479)	-0.0620 (0.1111)	0.0193 (0.0134)	
High School graduate	-0.0293 (0.0463)	-0.0002 (0.0926)	-0.0001 (0.0117)	0.0008 (0.0079)
College graduate and beyond	0.0373 (0.1103)	-0.0295 (0.1223)		
White	-0.0503 (0.0415)	-0.0509 (0.0810)	0.0046 (0.0098)	0.0094 (0.0096)
Employed			-0.0016 (0.0117)	0.0012 (0.0089)
Unemployed	0.0396 (0.0664)	0.0235 (0.1532)		
Not in labor force	0.0199 (0.0447)	-0.0074 (0.0832)		
Poverty index	0.0010 (0.0004)	-0.0003 (0.0008)	-0.0003 (0.0001)	-0.0002 (0.0001)
Rural	-0.0276 (0.0548)	-0.0684 (0.1346)		
Reported public assistance receipt	-0.3293 (0.0722)		0.0957 (0.0197)	0.0872 (0.0332)
Reported housing assistance rece	-0.1753 (0.0409)	-0.2732 (0.0871)	0.0571 (0.0146)	-0.0032 (0.0116)
FS receipt imputed	0.3580 (0.0552)	0.1932 (0.1103)	0.0544 (0.0113)	0.0443 (0.0156)
Length of FS receipt spell	-0.0281 (0.0051)	-0.0196 (0.0086)		
Administrative TANF receipt	0.0986 (0.0580)	0.2466 (0.0766)		
Linear time trend	0.0222 (0.0157)	0.0980 (0.0373)	0.0018 (0.0047)	-0.0000 (0.0056)
Observations	689	136	1462	504

Notes: Delta-method standard errors in parentheses. Samples are pooled across all years for both states (IL:2002-2005, MD:2002-2004). All analyses conducted using household weights adjusted for PIK probability. For the false negative probits, the unreported omitted family type is multiple adults with children, the education category is some college, the employment category is employed, the race group is nonwhite, and the geographic area is within-MSA. The unreported omitted education category for the false negative probits is some college or more, the race group is nonwhite, and the employment category is not employed. Reported public assistance receipt was controlled for in the Maryland false negative regression. Less than hi school was controlled for in the Maryland false positive regression. Disabled status was

Table 7 – Food Stamp Receipt in Survey Data and Combined Data, 2001 Illinois ACS, Probit Average Derivatives, Households with Income less than Twice the Poverty Line

	Survey data with imputed	Survey data without imputed	Combined Data	Equality Test p-value, with imputed	Equality test p-value, without imputed
Single, no children	0.0670 (0.0320)	0.0694 (0.0324)	0.1164 (0.0361)	0.0901	0.1051
Single, with children	0.1076 (0.0247)	0.0991 (0.0252)	0.1429 (0.0272)	0.0941	0.0424
Multiple adults, no children	0.0696 (0.0344)	0.0512 (0.0347)	0.0959 (0.0392)	0.3628	0.1519
Number of members under 18	0.0188 (0.0099)	0.0130 (0.0100)	-0.0066 (0.0145)	0.0420	0.1415
Number of members 18 or older	0.0027 (0.0111)	0.0026 (0.0106)	-0.0201 (0.0138)	0.0562	0.0529
Number of members PIKed	0.0145 (0.0076)	0.0148 (0.0078)	0.0692 (0.0131)	0.0000	0.0000
Age 16-29	-0.0208 (0.0231)	-0.0308 (0.0230)	-0.0055 (0.0264)	0.4209	0.2197
Age 30-39	0.0061 (0.0221)	-0.0148 (0.0217)	0.0061 (0.0262)	0.9956	0.3472
Age 50-59	-0.0981 (0.0261)	-0.0943 (0.0256)	-0.0405 (0.0294)	0.0245	0.0440
Age 60-69	-0.1144 (0.0278)	-0.1005 (0.0272)	-0.0806 (0.0320)	0.2454	0.5427
Age >= 70	-0.1641 (0.0278)	-0.1407 (0.0272)	-0.1619 (0.0321)	0.9656	0.3037
Less than high school	0.0648 (0.0184)	0.0522 (0.0182)	0.0687 (0.0218)	0.7580	0.2863
High School graduate	0.0239 (0.0186)	0.0261 (0.0184)	0.0318 (0.0212)	0.5690	0.6594
College graduate and beyond	-0.0584 (0.0313)	-0.0541 (0.0307)	-0.0569 (0.0329)	0.9905	0.8972
White	-0.0380 (0.0178)	-0.0418 (0.0178)	-0.0801 (0.0191)	0.0053	0.0153
Employed	-0.0380 (0.0164)	-0.0274 (0.0160)	-0.0217 (0.0188)	0.2792	0.7497
Poverty index	-0.0007 (0.0001)	-0.0007 (0.0001)	-0.0007 (0.0001)	0.5801	0.8840
Disabled	0.0906 (0.0182)	0.0817 (0.0176)	0.0774 (0.0209)	0.4844	0.9183
Disabled, not working	0.0271 (0.0193)	0.0251 (0.0188)	0.0086 (0.0224)	0.3507	0.4215
Speaks English only	0.0343 (0.0207)	0.0317 (0.0210)	0.0850 (0.0245)	0.0048	0.0041
Rural	0.0293 (0.0191)	0.0324 (0.0187)	0.0458 (0.0189)	0.2486	0.3731
Reported public assistance receipt	0.3189 (0.0240)	0.2970 (0.0240)	0.2386 (0.0315)	0.0197	0.0969
Reported housing assistance receipt	0.1461 (0.0184)	0.1322 (0.0180)	0.1811 (0.0217)	0.0457	0.0068
Observations	4,591	4,379	4,146		
Joint significance test P-value				0.0000	0.0000

Notes: Delta-method standard errors in parentheses. All analyses conducted using household weights adjusted for PIK probability. The unreported omitted family type is multiple adults with children, the age group is 40-49, the education group is some college, the race group is nonwhite, the employment group is not employed, and the geographic area is within MSA.

Table 8 – Food Stamp Receipt in Survey Data and Combined Data, 2001 Maryland ACS, Probit Average Derivatives, Households with Income less than Twice the Poverty Line

	Survey data with imputed	Survey data without imputed	Combined Data	Equality Test p-value, with imputed	Equality test p-value, without imputed
Single, no children	0.0861 (0.0461)	0.0757 (0.0447)	0.1485 (0.0515)	0.1685	0.1157
Single, with children	0.1083 (0.0351)	0.0880 (0.0328)	0.1965 (0.0389)	0.0294	0.0086
Multiple adults, no children	0.0547 (0.0500)	0.0422 (0.0480)	0.0975 (0.0547)	0.3601	0.2487
Number of members under 18	0.0202 (0.0144)	0.0260 (0.0137)	0.0027 (0.0191)	0.2658	0.1653
Number of members 18 or older	0.0039 (0.0174)	-0.0101 (0.0165)	0.0153 (0.0208)	0.6115	0.2977
Number of members PIKed	0.0165 (0.0118)	0.0136 (0.0111)	0.0612 (0.0183)	0.0082	0.0082
Age 16-29	0.0274 (0.0300)	0.0308 (0.0288)	0.0141 (0.0332)	0.6357	0.5723
Age 30-39	-0.0386 (0.0288)	-0.0533 (0.0278)	-0.0454 (0.0323)	0.8105	0.7884
Age 50-59	-0.0315 (0.0366)	-0.0158 (0.0347)	-0.0375 (0.0369)	0.8662	0.5483
Age 60-69	-0.0856 (0.0358)	-0.0832 (0.0344)	-0.0702 (0.0384)	0.6623	0.7232
Age >= 70	-0.1346 (0.0359)	-0.1288 (0.0350)	-0.1354 (0.0386)	0.9984	0.8646
Less than high school	0.0739 (0.0237)	0.0527 (0.0225)	0.1089 (0.0271)	0.0969	0.0114
High School graduate	0.0130 (0.0232)	0.0102 (0.0220)	0.0510 (0.0255)	0.1081	0.0941
College graduate and beyond	0.0114 (0.0361)	0.0181 (0.0343)	-0.0147 (0.0407)	0.4343	0.3433
White	0.0055 (0.0187)	0.0042 (0.0179)	-0.0355 (0.0211)	0.0204	0.0333
Employed	-0.0488 (0.0227)	-0.0562 (0.0219)	-0.0078 (0.0247)	0.0832	0.0533
Poverty index	-0.0010 (0.0001)	-0.0008 (0.0001)	-0.0013 (0.0002)	0.0338	0.0002
Disabled	0.0773 (0.0235)	0.0743 (0.0221)	0.0933 (0.0249)	0.4667	0.4044
Disabled, not working	0.0093 (0.0242)	0.0098 (0.0224)	0.0465 (0.0266)	0.1086	0.1327
Speaks English only	0.0716 (0.0306)	0.0524 (0.0284)	0.0772 (0.0393)	0.8855	0.4957
Rural	0.0499 (0.0183)	0.0561 (0.0174)	0.0491 (0.0225)	0.9462	0.6907
Reported public assistance receipt	0.3020 (0.0324)	0.2754 (0.0316)	0.3728 (0.0408)	0.1119	0.0279
Reported housing assistance receipt	0.1021 (0.0198)	0.0943 (0.0190)	0.1337 (0.0241)	0.1356	0.0644
Observations	1945	1866	1799		
Joint significance test P-value				0.0004	0.0000

Notes: Delta-method standard errors in parentheses. All analyses conducted using household weights adjusted for PIK probability. The unreported omitted family type is multiple adults with children, the age group is 40-49, the education group is some college, the race group is nonwhite, the employment group is not employed, and the geographic area is within MSA.

Table 9 – Food Stamp Receipt in Survey Data and Combined Data, Illinois CPS, Probit Average Derivatives, Households with Income less than Twice the Poverty Line

	Survey data with imputed	Survey data without imputed	Combined Data	Equality Test p-value, with imputed	Equality test p-value, without imputed
Single, no children	-0.0119 (0.0256)	-0.0042 (0.0277)	0.0001 (0.0386)	0.7372	0.9046
Single, with children	0.0547 (0.0214)	0.0681 (0.0227)	0.1333 (0.0308)	0.0164	0.0555
Multiple adults, no children	0.0192 (0.0226)	0.0117 (0.0248)	0.0664 (0.0346)	0.1803	0.1142
Number of members 18 or over	-0.0069 (0.0104)	-0.0042 (0.0110)	0.0128 (0.0143)	0.1745	0.2500
Number of members under 18	0.0227 (0.0058)	0.0209 (0.0061)	0.0309 (0.0087)	0.4445	0.3328
Age 16-29	-0.0111 (0.0198)	-0.0223 (0.0211)	-0.0378 (0.0291)	0.3634	0.6204
Age 30-39	-0.0118 (0.0194)	-0.0060 (0.0209)	0.0040 (0.0280)	0.5257	0.6845
Age 50-59	0.0016 (0.0228)	-0.0015 (0.0245)	0.0287 (0.0369)	0.4431	0.3836
Age 60-69	-0.0110 (0.0240)	-0.0057 (0.0262)	-0.0625 (0.0353)	0.1389	0.1007
Age >= 70	-0.1313 (0.0254)	-0.1262 (0.0275)	-0.1579 (0.0352)	0.5931	0.4952
Less than high school	0.0503 (0.0165)	0.0392 (0.0176)	0.0455 (0.0248)	0.7299	0.8844
High School graduate	0.0266 (0.0158)	0.0271 (0.0169)	0.0409 (0.0236)	0.5613	0.5754
College graduate and beyond	-0.0892 (0.0267)	-0.1126 (0.0289)	-0.1557 (0.0442)	0.1836	0.4246
White	-0.0211 (0.0133)	-0.0276 (0.0142)	-0.0762 (0.0196)	0.0038	0.0103
Employed	-0.0399 (0.0141)	-0.0396 (0.0152)	-0.0665 (0.0207)	0.2421	0.2391
Poverty index	-0.0009 (0.0001)	-0.0009 (0.0001)	-0.0015 (0.0002)	0.0011	0.0009
Disabled	0.0466 (0.0451)	0.0423 (0.0533)	0.0377 (0.0719)	0.8699	0.9226
Rural	0.0275 (0.0167)	0.0235 (0.0179)	0.0383 (0.0262)	0.7132	0.5668
Reported public assistance receipt	0.2179 (0.0268)	0.2183 (0.0311)	0.2077 (0.0432)	0.6018	0.5924
Reported housing assistance receipt	0.1517 (0.0147)	0.1590 (0.0155)	0.1999 (0.0243)	0.1054	0.1878
Linear time trend	0.0039 (0.0053)	0.0069 (0.0057)	0.0180 (0.0079)	0.0606	0.1429
Observations	2981	2572	2151		
Joint significance test P-value				0.0000	0.0000

Notes: Delta-method standard errors in parentheses. Samples are pooled across all years (2002-2005). All analyses conducted using household weights adjusted for PIK probability. The unreported omitted family type is multiple adults with children, the age group is 40-49, the education group is some college, the race group is nonwhite, the employment group is not employed, and the geographic area is within MSA.

Table 10 – Food Stamp Receipt in Survey Data and Combined Data, Maryland CPS, Probit Average Derivatives, Households with Income less than Twice the Poverty Line

	Survey data with imputed	Survey data without imputed	Combined Data	Equality Test p-value, with imputed	Equality test p-value, without imputed
Single, no children	-0.0687 (0.0511)	-0.0422 (0.0530)	-0.0229 (0.0623)	0.4302	0.7301
Single, with children	0.0133 (0.0437)	0.0289 (0.0465)	0.0775 (0.0491)	0.1847	0.3169
Multiple adults, no children	-0.0509 (0.0413)	-0.0279 (0.0425)	0.0235 (0.0560)	0.1533	0.3028
Number of members 18 or over	-0.0213 (0.0258)	-0.0190 (0.0269)	0.0055 (0.0246)	0.3562	0.4055
Number of members under 18	0.0235 (0.0117)	0.0271 (0.0116)	0.0541 (0.0181)	0.0725	0.0869
Age 16-29	-0.0086 (0.0287)	-0.0135 (0.0292)	-0.0428 (0.0431)	0.3599	0.4319
Age 30-39	-0.0285 (0.0257)	-0.0328 (0.0265)	-0.0043 (0.0419)	0.5404	0.4558
Age 50-59	0.0249 (0.0291)	0.0203 (0.0300)	0.0382 (0.0461)	0.7735	0.6789
Age 60-69	0.0372 (0.0344)	0.0174 (0.0344)	-0.0052 (0.0519)	0.3747	0.6237
Age >= 70	-0.0714 (0.0353)	-0.0815 (0.0364)	-0.1675 (0.0599)	0.0714	0.0964
Less than high school	-0.0056 (0.0262)	-0.0086 (0.0264)	0.0073 (0.0405)	0.6685	0.5944
High School graduate	0.0031 (0.0241)	-0.0080 (0.0245)	-0.0085 (0.0360)	0.6934	0.9914
College graduate and beyond	0.0191 (0.0300)	0.0022 (0.0312)	-0.0420 (0.0510)	0.1491	0.2782
White	0.0048 (0.0182)	0.0041 (0.0185)	-0.0118 (0.0261)	0.4967	0.5070
Employed	-0.0391 (0.0191)	-0.0455 (0.0186)	-0.0633 (0.0280)	0.3914	0.5114
Poverty index	-0.0003 (0.0001)	-0.0003 (0.0002)	-0.0003 (0.0002)	0.7260	0.7191
Disabled	0.1046 (0.0629)	0.0699 (0.0647)	0.0022 (0.0867)	0.0602	0.2960
Rural	0.0495 (0.0278)	0.0533 (0.0283)	0.0682 (0.0388)	0.5421	0.6224
Reported public assistance receipt	0.1934 (0.0327)	0.1774 (0.0337)	0.2246 (0.0590)	0.6295	0.3745
Reported housing assistance receipt	0.1378 (0.0221)	0.1400 (0.0222)	0.1593 (0.0364)	0.5765	0.6110
Linear time trend	-0.0002 (0.0096)	0.0048 (0.0097)	0.0329 (0.0164)	0.0190	0.0448
Observations	808	733	640		
Joint significance test P-value				0.0085	0.0079

Notes: Delta-method standard errors in parentheses. Samples are pooled across all years (2002-2004). All analyses conducted using household weights adjusted for PIK probability. The unreported omitted family type is multiple adults with children, the age group is 40-49, the education group is some college, the race group is nonwhite, the employment group is not employed, and the geographic area is within MSA.

Appendix Table 1 – The Determinants of a Household having a PIK
ACS, Probit Average Derivatives

	Illinois	Maryland
Single, no children	-0.0124 (0.0119)	-0.0032 (0.0169)
Single, with children	0.0215 (0.0122)	0.0039 (0.0138)
Multiple adults, no children	0.0032 (0.0126)	0.0115 (0.0166)
Number of members under 18	0.0243 (0.0053)	0.0207 (0.0076)
Number of members 18 or older	0.0322 (0.0047)	0.0219 (0.0052)
Age 16-29	-0.0130 (0.0084)	0.0240 (0.0104)
Age 30-39	-0.0084 (0.0080)	-0.0027 (0.0087)
Age 50-59	0.0065 (0.0082)	0.0080 (0.0089)
Age 60-69	-0.0022 (0.0092)	0.0152 (0.0104)
Age >= 70	-0.0192 (0.0093)	0.0187 (0.0106)
Less than high school	-0.0000 (0.0075)	-0.0184 (0.0100)
High School graduate	0.0052 (0.0064)	-0.0172 (0.0084)
College graduate and beyond	0.0071 (0.0065)	-0.0220 (0.0075)
Hispanic	-0.0435 (0.0104)	-0.0782 (0.0151)
Black	-0.0298 (0.0075)	-0.0082 (0.0071)
Other	-0.0710 (0.0107)	-0.0779 (0.0113)
Unemployed	-0.0101 (0.0125)	0.0023 (0.0158)
Not in the labor force	-0.0019 (0.0066)	-0.0243 (0.0080)
Poverty index	0.0000 (0.0000)	0.0000 (0.0000)
Disabled	-0.0119 (0.0067)	0.0165 (0.0090)
Disabled, not working	-0.0080 (0.0081)	-0.0048 (0.0091)
Speaks English only	0.0162 (0.0092)	-0.0048 (0.0111)
Speaks English poorly	0.0097 (0.0110)	-0.0107 (0.0141)
Non-U.S. Citizen	-0.0300 (0.0102)	0.0055 (0.0123)
Rural	0.0142 (0.0077)	-0.0042 (0.0078)
Reported housing assistance receipt	-0.0106 (0.0106)	0.0110 (0.0125)
Observations	21,957	9,996

Notes: Delta-method standard errors in parentheses. All specifications also include controls for mode of interview (mail-back, CATI, CAPI). All analyses conducted using household weights. For the false negative probits, the unreported omitted family type is multiple adults with children, the education category is some college, the age category is 40-49, the employment category is employed, the race group is non-Hispanic white, and the geographic area is within-MSA.

Appendix Table 2 – The Determinants of a Household Having ϵ
PIK, CPS, Probit Average Derivatives

	Illinois	Maryland
Single, no children	-0.2860 (0.0263)	-0.1697 (0.0447)
Single, with children	-0.0269 (0.0252)	-0.0648 (0.0393)
Multiple adults, no children	-0.2737 (0.0230)	-0.1307 (0.0398)
Number of members under 18	0.0610 (0.0118)	0.0553 (0.0217)
Number of members 18 or over	0.0248 (0.0089)	0.0034 (0.0129)
Age 16-29	-0.0282 (0.0165)	-0.0098 (0.0271)
Age 30-39	-0.0034 (0.0148)	-0.0219 (0.0235)
Age 50-59	-0.0168 (0.0149)	-0.0448 (0.0224)
Age 60-69	-0.0380 (0.0178)	-0.0318 (0.0277)
Age >= 70	-0.0322 (0.0190)	-0.0343 (0.0291)
Less than high school	-0.0194 (0.0165)	0.0257 (0.0252)
High School graduate	-0.0299 (0.0123)	-0.0270 (0.0203)
College graduate and beyond	-0.0071 (0.0128)	-0.0274 (0.0196)
Hispanic	-0.0268 (0.0157)	-0.1032 (0.0290)
Black	0.0428 (0.0126)	-0.0150 (0.0154)
Other	0.0537 (0.0237)	-0.0056 (0.0345)
Unemployed	0.0702 (0.0246)	0.0045 (0.0524)
Not in labor force	0.0223 (0.0133)	-0.0158 (0.0212)
Poverty index	0.0000 (0.0000)	0.0000 (0.0000)
Disabled	0.0172 (0.0456)	0.1547 (0.0805)
Rural	0.0922 (0.0151)	0.0828 (0.0278)
Reported housing assistance receipt	0.1844 (0.0278)	0.0481 (0.0320)
Linear time trend	-0.0307 (0.0041)	-0.0484 (0.0084)
Observations	10836	3744

Notes: Delta-method standard errors in parentheses. Samples are pooled across all years for both states (IL:2002-2005, MD:2002-2004). All analyses conducted using household weights. The unreported omitted family type is multiple adults with children, the age category is 40-49, the education category is some college, the employment category is employed, the race group is non-Hispanic white, and the geographic area is within-MSA.

Appendix Table 3 – Summary Statistics, 2001 ACS, PIKed Households with Income Less than Twice the Poverty Line

Variable	Illinois			Maryland		
	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation	Sample Size
Administrative food stamp receipt	0.2432	0.4291	4,146	0.2323	0.4224	1,799
ACS-reported food stamp receipt	0.2035	0.4027	4,146	0.1745	0.3797	1,799
CATI	0.0927	0.2900	4,146	0.0962	0.2949	1,799
CAPI	0.4625	0.4987	4,146	0.4138	0.4927	1,799
Mail-back	0.4448	0.4970	4,146	0.4900	0.5000	1,799
Unemployed	0.0676	0.2511	4,146	0.0674	0.2508	1,799
Not in labor force	0.5061	0.5000	4,146	0.5359	0.4988	1,799
Noncitizen	0.1113	0.3145	4,146	0.0631	0.2433	1,799
Number of months of food stamp receipt	9.1006	4.1855	789	8.9877	4.2661	344
Administrative TANF receipt	0.0634	0.2438	4,146	0.0787	0.2694	1,799
Age >= 50	0.4494	0.4975	4,146	0.4751	0.4995	1,799
Single, no children	0.5227	0.4995	4,146	0.5515	0.4975	1,799
Single, with children	0.1944	0.3958	4,146	0.2258	0.4182	1,799
Multiple adults, no children	0.1263	0.3323	4,146	0.1046	0.3062	1,799
Multiple adults, with children	0.1566	0.3635	4,146	0.1180	0.3227	1,799
Male	0.4043	0.4908	4,146	0.3585	0.4797	1,799
Number of members under 18	0.8757	1.3459	4,146	0.8510	1.3016	1,799
Number of members over 18	1.5941	0.8070	4,146	1.4988	0.7065	1,799
Number of members PIKed	2.1410	1.4885	4,146	2.1357	1.4431	1,799
Age 17-29	0.2034	0.4025	4,146	0.1699	0.3756	1,799
Age 30-39	0.1796	0.3839	4,146	0.1896	0.3921	1,799
Age 40-49	0.1677	0.3736	4,146	0.1655	0.3717	1,799
Age 50-59	0.1134	0.3171	4,146	0.1157	0.3199	1,799
Age 60-69	0.1112	0.3144	4,146	0.1316	0.3381	1,799
Age >= 70	0.2249	0.4176	4,146	0.2278	0.4195	1,799
Less than high school	0.3436	0.4750	4,146	0.3330	0.4714	1,799
High school	0.3264	0.4690	4,146	0.3409	0.4741	1,799
Some college	0.2298	0.4207	4,146	0.2319	0.4222	1,799
College graduate and beyond	0.1002	0.3003	4,146	0.0942	0.2922	1,799
Non-Hispanic white	0.5762	0.4942	4,146	0.5149	0.4999	1,799
Employed	0.4263	0.4946	4,146	0.3967	0.4894	1,799
Poverty index	111.67	56.62	4,146	114.14	55.63	1,799
Disabled	0.3038	0.4599	4,146	0.3475	0.4763	1,799
Disabled, not working	0.1790	0.3834	4,146	0.2018	0.4015	1,799
Speaks English only	0.7738	0.4184	4,146	0.8836	0.3208	1,799
Rural	0.1852	0.3885	4,146	0.1286	0.3349	1,799
ACS-reported public assistance receipt	0.0601	0.2377	4,146	0.0565	0.2310	1,799
ACS-reported housing assistance receipt	0.1429	0.3500	4,146	0.1732	0.3785	1,799
Food stamp receipt imputed	0.0512	0.2205	4,146	0.0426	0.2020	1,799

Notes: All analyses conducted using household weights corrected for PIK probability. Reported demographic characteristics are for the household head.

Appendix Table 4 – Summary Statistics, CPS, PIKed Households with Income Less than Twice the Poverty Line

	Illinois			Maryland		
	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation	Sample Size
Age 40-49	0.1467	0.3539	2,151	0.1442	0.3516	640
Number of members PIKed	2.0670	1.4670	2,151	1.8763	1.3195	640
Age >= 50	0.4937	0.5001	2,151	0.5724	0.4951	640
Male	0.3912	0.4881	2,151	0.3939	0.4890	640
Non-Hispanic white	0.5917	0.4916	2,151	0.6033	0.4896	640
Employed	0.3894	0.4877	2,151	0.3707	0.4834	640
Unemployed	0.0517	0.2215	2,151	0.0372	0.1894	640
Not in labor force	0.5588	0.4966	2,151	0.5921	0.4918	640
Food Stamp receipt imputed	0.0963	0.2951	2,151	0.0793	0.2704	640
Number of months of food stamp receipt	9.4111	3.3482	689	8.7004	4.0234	136
Administrative TANF receipt	0.0416	0.1998	2,151	0.0482	0.2144	640
CPS-reported food stamp receipt	0.1947	0.3960	2,151	0.1175	0.3223	640
Single adult, no children	0.4194	0.4936	2,151	0.4861	0.5002	640
Single adult, with children	0.1358	0.3426	2,151	0.1143	0.3184	640
Multiple adults, no children	0.2014	0.4011	2,151	0.2119	0.4090	640
Multiple adults, with children	0.2435	0.4293	2,151	0.1877	0.3907	640
Number of members over 18	1.5845	0.7965	2,151	1.5087	0.7572	640
Number of members under 18	0.8709	1.3472	2,151	0.6069	1.0789	640
Age 17-29	0.1775	0.3821	2,151	0.1220	0.3275	640
Age 30-39	0.1821	0.3860	2,151	0.1614	0.3682	640
Age 50-59	0.1041	0.3055	2,151	0.1370	0.3441	640
Age 60-69	0.1331	0.3397	2,151	0.1151	0.3195	640
Age >= 70	0.2565	0.4368	2,151	0.3203	0.4670	640
Less than high school	0.3024	0.4594	2,151	0.2827	0.4507	640
High school graduate	0.3658	0.4818	2,151	0.3921	0.4886	640
College graduate and beyond	0.1063	0.3083	2,151	0.1508	0.3581	640
Poverty index	116.93	54.61	2,151	116.35	56.57	640
Disabled	0.0113	0.1055	2,151	0.0129	0.1130	640
Rural	0.2118	0.4087	2,151	0.0653	0.2472	640
CPS-reported public assistance receipt	0.0415	0.1995	2,151	0.0349	0.1838	640
CPS-reported housing assistance receipt	0.1348	0.3416	2,151	0.1713	0.3771	640
Linear time trend	3.5455	1.1136	2,151	3.0543	0.8323	640
Administrative food stamp receipt	0.2744	0.4463	2,151	0.1721	0.3777	640
Some college	0.2255	0.4180	2,151	0.1744	0.3798	640

Notes: All analyses conducted using household weights corrected for PIK probability. Samples are pooled across all years for both states (IL:2002-2005, MD:2002-2004). Reported demographic characteristics are for the household head.