Economic Research Service

efan

Electronic Publications from the Food Assistance & Nutrition Research Program

E-FAN-03-011

November 2003

The Relationship of Earnings and Income to Food Stamp Participation

A Longitudinal Analysis

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Abstract

Monthly income and earnings of households that are eligible to participate in the Food Stamp Program (FSP), but that do not participate, vary substantially more than income and earnings of participant households. In particular, many nonparticipant households have had a short-term drop in income. Other nonparticipants, however, have had long-term low income and are often very disadvantaged. Although nonparticipation by such households might partly reflect underreporting of participation or income, many households may not participate because the same conditions that limit their incomes, such as low literacy levels or physical or mental disability, also limit their ability to participate in the FSP. Many poor nonparticipants are receiving other benefits, such as Supplemental Security Income or Medicaid, suggesting an avenue by which agencies can reach eligible nonparticipants. This study considers the role that the dynamics of household income plays in determining FSP participation. The two main objectives of the analysis are to (1) determine the extent to which nonparticipation can reasonably be attributed to temporary low income, and (2) assess why some households that appear to have long-term low income do not participate.

This report was prepared by The Lewin Group and the Cornell Center for Policy Research under a research agreement from the Economic Research Service. The views expressed are those of the authors and not necessarily those of ERS or USDA.

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EXECUTIVE SUMMARY

The purpose of the Food Stamp Program (FSP) is to increase the food purchasing power of low-income households so that they can maintain a nutritious diet. Households are eligible for the program if their financial resources fall below certain income and asset thresholds. Research shows, however, that a considerable number of households that are eligible for food stamps are not participating in the program either by choice or because they do not know that they are eligible. Specifically, only an estimated 53 percent of all households eligible for food stamps received the benefits in 1999, declining from a high of 69 percent in 1994 (Cunnyngham 2002).

Policy makers have been concerned about the declining participation rate in the FSP. The Food and Nutrition Service's Strategic Plan for 2000 to 2005 calls for the agency to increase the rate of program participation among eligible people. The question remains as to why some eligible households are not participating.

In this report, we consider the role that the dynamics of household income plays in determining FSP participation. One reason that some eligible households might not participate is that their current income is much lower than they expect it to be over a longer period. Such households might regard their current low income to be a temporary phenomenon, and decide that the short-term benefits of participation are less than the costs of learning about the program, applying for benefits, using the food stamps, and perhaps being stigmatized by participation. The first objective of the analysis is to determine the extent to which non-participation can reasonably be attributed to temporary low income. The second objective is to assess why some households that appear to have low income for a long period do not participate. With better information, policy makers may be able to focus outreach efforts on non-participating long-term poor households.

To conduct this analysis, we analyzed the 1996 Survey of Income and Program Participation (SIPP) panel that follows households over a four-year period.

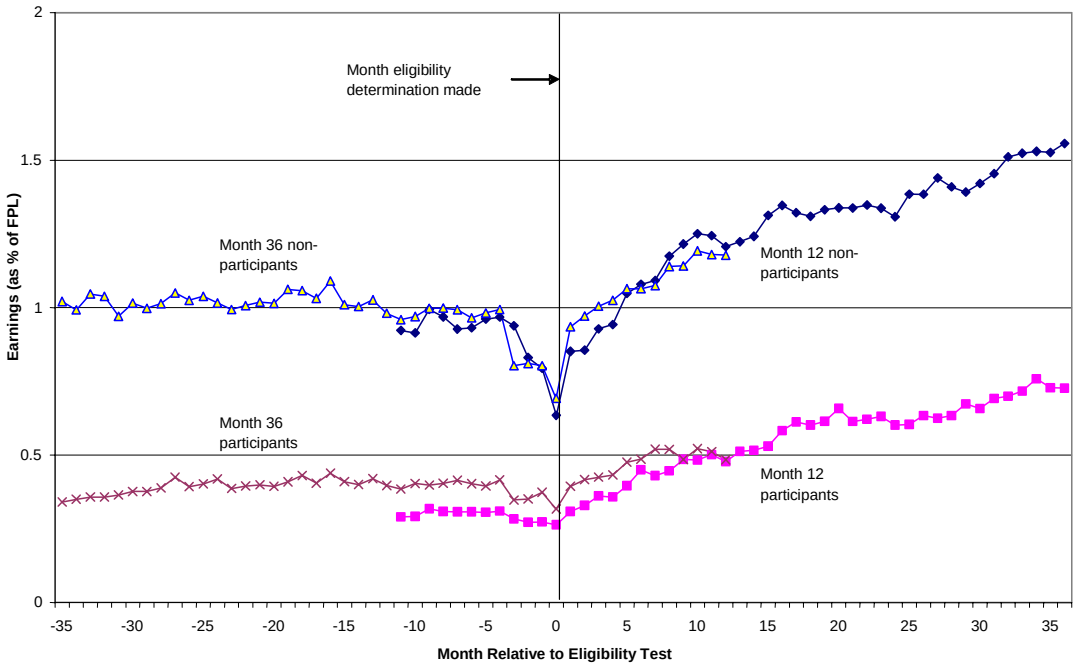
Key Findings

This report presents the following key findings:

- **A substantial share of food-stamp eligible households are not participating in the FSP.** Just under half of eligible households received food stamps in the month when their eligibility determination was made (the "reference month"). This rate most likely underestimates the true participation in the FSP, because there is evidence from other studies that some individuals fail to report their food stamp receipt on the SIPP. As mentioned above, Cunnyngham (2002), which relied on food stamp administrative data to measure participation estimated household participation rates of 53 percent in 1999. Still, it appears that a considerable number of households are not receiving benefits for which they are eligible.
- **Food stamp participation declined from 1997 to 1999.** Food-stamp eligible households in 1999 were less likely to participate in 1999 than in 1997, even though these households had lower incomes in 1999. This is consistent with findings from other studies that show a decline in participation rates every year from 1994 to 1999.

- **Non-participant households experienced substantially more variability in their monthly income and earnings than participant households.** In particular, before the months leading up to the reference month, mean income of non-participating, food-stamp eligible households fell by much more than mean income of participant households; similarly, their mean income grew much more rapidly after the reference month (see ***Exhibit ES.1***). This is consistent with the premise that expectations of higher future income explain why some non-participant households do not participate.

Exhibit ES.1: Monthly Household Income for Current Month Participants and Non-participants: Food Stamp Eligible Households



- **Participant households' income tended to fall below the food stamp gross income threshold throughout most of the 48-month SIPP panel.** Specifically, participant households' income was under 130 percent of the federal poverty level (FPL) in about 41 of the 48 months; non-participant households' income averaged 30 months below the threshold.
- **We found an inverted-U relationship between current household income and participation rates, holding other household characteristics constant.** That is, participation rates increase with income over the lowest income range, reach a maximum, and then decline. This is a surprising finding. It could be explained by the presence of a relatively large number of households in the lowest income groups that either have

temporary low income or higher income than reported. It could also be, however, that disadvantages leading to such low levels of income also lead to low participation.[1]

- **Models that reflect the potential importance of longer-term income demonstrate that part of the inverted-U shape and non-participation by some households with very low current income is due to the temporary nature of their low-reported income.** These models also indicate, however, that many households with very low long-term reported income do not participate.
- **Overall, non-participants were less disadvantaged than participants after controlling for longer-term income.** Non-participation was associated with households whose heads were able-bodied and without dependents, male, married, and at least a high school graduate, holding longer-term income constant.
- **While some non-participant households might be considered "temporarily poor," a surprisingly large share report low income over a longer term and are receiving other means-tested benefits.** As ***Exhibit ES.2*** shows, almost one quarter of all non-participants had income that temporarily fell below the food stamp gross income threshold during the SIPP reference wave (four-month period). A smaller share (4 percent) were temporarily not receiving food stamps and about 16 percent were Able-bodied Adult Without Dependents (ABAWDs). A relatively large share (35 percent) were not captured in one of the three preceding categories yet were receiving other means-tested benefits. This is a group that USDA might be able to reach with more extensive outreach efforts and increased coordination with other agencies and offices. Among the means-tested programs, the SSI and Medicaid programs had the highest levels of enrollment, followed by WIC and housing assistance.

Exhibit ES.2: Non-Participating, Food Stamp Eligible Households (Eligible in Month 12 of SIPP Panel)

Mutually Exclusive Category	% of Non-Participants
1. Temporarily Below 130% FPL	22.8%
2. Temporarily Off Food Stamps	3.8%
3. ABAWD	15.8%
4. Receiving Other Means-Tested Benefits	35.4%
SSI	*19.7%*
Medicaid	*18.1%*
WIC	*6.3%*
Housing Assistance	*5.5%*
AFDC/TANF	*1.8%*
5. Income Less Than 130% FPL for 48 Months	2.2%
6. Other	20.2%
Total Non-Participants	100.0%

[1] Other studies have found zero income households have substantially lower participation rates than those with low, but positive income (see Cunnyngham 2002). Wemmerus and Porter (1996) examined the group of zero-income households on the 1990 SIPP longitudinal file and found that many were financially viable, but a clear event or condition (e.g., a job loss, household dissolution, enrollment in school, or loss of cash benefits) precipitated the zero-income period.

- **Many persistently poor households that do not participate appear to be very disadvantaged.** We examined a group that reported income below 75 percent of poverty and reported assets below the FSP resource limit in separate months two years apart and found that a substantial share of the household heads have less than a high school education, are not currently married, are caring for a child, and/or are disabled or have a disabled household member. One-fifth of the non-participants were never in the labor force during any month of the 48-month period.

- **Under-reporting of FSP participation in SIPP might account for a substantial share of non-participation in persistently very poor households, but far from all of it.** As indicated earlier, evidence from other sources suggests that under-reporting is substantial in SIPP. It is likely that participation in our household sample was as much as 10 to 20 percent higher than reported. If under reporting is proportional to estimated participation rates at each income level, it could explain a substantial share of non-participation in very poor households, but substantial non-participation would remain. The estimated relationship between actual participation and long-term income is likely stronger than our estimated relationships between reported participation and various measures of long-term income.

In summary, many of the households not participating in the program have experienced a short-term drop in income. While current reported household income is low enough to meet the income test in a given month, this is a transitory phenomenon. However, long-term income does not explain why all households with low current reported income are not participating in the program. Non-participant households with long-term periods of low reported income are substantially more disadvantaged than other non-participant households. Although non-participation by such households might partly reflect under-reporting of participation or income, it appears that many do not participate because the same conditions that limit their income (e.g., low literacy levels or physical or mental impairments) also limit their ability to participate in the FSP as the program is currently implemented.

Future Research

Questions still remain regarding why long-term poor households are not participating in the program, especially because so many are receiving other means-tested assistance. Studies have found that participation rates by states vary tremendously. Are some states and localities better in conducting outreach and coordinating with other state programs than others, which might explain some of the variation in participation? Could states increase their participation rates significantly by developing stronger linkages between the FSP and other programs providing means-tested benefits? High SSI participation among long-term poor households that do not receive FSP suggests that disability might limit FSP access for some.

Exhibit ES-1 illustrates visually what we learn from longitudinal data that cannot be learned from a cross-section. While participants and non-participants have somewhat different mean incomes in the current months, income differences are substantially larger in months before and after the current months. In a cross-section, those differences might be partially captured in differences in other characteristics (e.g., education), but, as our findings show, substantial

differences remain even after controlling for such characteristics. Hence, the results demonstrate the value of using longitudinal income data in future analyses of food stamp participation.

As discussed further in this report, there is some evidence to suggest that earnings in the more distant past (three or more years earlier) might have substantial predictive power. Analysis using restricted research files of the SIPP that are matched to the Social Security Administration's Summary Earnings Records (SER), which span the entire household's earnings history, could test this hypothesis. In addition, analysis of this special dataset would assess whether our findings are replicated using SER earnings data, which are not subject to the recall error found on national surveys.[2]

Another study could attempt to replicate these findings using other SIPP panels. The findings would provide information on whether the composition of participants and non-participants has changed over time – particularly with respect to income histories. We might find, for instance, that participants in the 1992 and 2001 SIPP panels experienced a drop in income more recently than those in the 1996 panel, because of the recession in the early nineties and in early 2000. Our findings concerning the role of long-term income suggest that, holding current income and other characteristics constant, participation will be lower for the 1992 and 2001 panels. Hence, the comparison offers another opportunity to test whether transitory income reductions are less likely than long-term ones to result in FSP participation.

The findings also underscore the value of matching FSP administrative data to the SIPP. Although this is difficult because administrative records are held by individual states, it would greatly help research efforts to understand the determinants of participation, and why some households that appear to be very disadvantaged do not report participation.[3]

[2] Originally, we had intended to analyze this matched file for this study but were not granted access to the data in time for inclusion in this report.

[3] A similar recommendation was made in Wittenburg et al. (2001), a report that presented 10 potential data development initiatives that would improve the quality or reduce the cost of data resources at the U.S. Department of Agriculture. Because the availability of FSP administrative records varies by state, the authors concluded that the linkage would likely be limited to a select number of states.

I. INTRODUCTION

The purpose of the Food Stamp Program (FSP) is to increase the food purchasing power of low-income households so that they can maintain a nutritious diet. Households are eligible for the program if their financial resources fall below certain income and asset thresholds. Research shows, however, that a considerable number of households that are eligible for food stamps are not participating in the program either by choice or because they do not know that they are eligible. Specifically, only an estimated 53 percent of all households eligible for food stamps received the benefits in 1999, declining from a high of 69 percent in 1994 (Cunnyngham 2002).

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This report, funded by the U.S. Department of Agriculture's (USDA's) Economic Research Service, examines the long-term earnings patterns of eligible households and relates these to their participation in the FSP. This report addresses the following research questions:

- To what extent are individuals eligible for the FSP not participating in the program?
- How do the characteristics between participants and eligible non-participants differ?
- How do the income and earnings of participants differ from those of eligible non-participants, both in the current month and over longer periods?
- To what extent are historical and future earnings patterns predictive of participation in the FSP for the 1996 cohort, given individual characteristics?
- What is the relationship between participation and long-term income among eligible beneficiaries?

To conduct this analysis, we analyzed the 1996 Survey of Income and Program Participation (SIPP) panel that follows households over a four-year period.

The rest of the report is organized as follows:

- Chapter II provides an overview of the Food Stamp Program and presents a review of the previous research.
- Chapter III describes the methodology used to conduct this study – the conceptual approach to the empirical analysis, the data source, and the research samples.
- Chapter IV presents findings on the food stamp participation of low-income households and compares the characteristics of the participants to those of non-participants.
- Chapter V examines the relationship between participation in a single month and income over a longer period.
- Chapter VI examines subgroups of our research sample considered to be "very poor" and "persistently very poor," presenting findings on the income, earnings, and characteristics of participants and non-participants.
- Chapter VII summarizes the major findings from the reports and offers suggestions for further research.

II. BACKGROUND AND PREVIOUS RESEARCH

This chapter provides an overview of the FSP (including eligibility criteria and barriers to enrolling in the program, documented in earlier studies), outlines the trends in FSP participation, discusses how prior studies have calculated participation, and describes recent policy changes that likely affected food stamp participation.

A. Overview of the Food Stamp Program

The FSP provides low-income households with coupons or electronic benefits they can use to purchase most food and food products.[4] The federal government oversees the program, establishing the eligibility criteria, while welfare offices across the U.S. implement these policies.

1. Eligibility

The FSP determines eligibility based on the income and assets of the household, which includes all individuals living in the same residence who purchase and prepare meals together. A household without an aged or disabled member must meet the gross income, net income, and asset tests.[5]

- **Gross Income.** Most households must have gross income less than 130 percent of the federal poverty level (FPL), or $1,628 per month for a household of three in fiscal year (FY) 2003.[6]
- **Net income.** Net income is calculated by deducting from gross income a standard deduction ($134 in FY 2003), child care costs (up to a maximum of $200 for each child under age 2 and $175 for each other dependent), legally owed child support payments, some shelter costs, out-of-pocket medical expenses in excess of $135 for elderly or disabled members in excess of $35, and 20 percent of earned income. Net income must fall below the poverty guideline, or $1,252 per month for a household of three in FY 2003.
- **Assets.** Most households cannot have assets valued at over $2,000.[7] Ownership of a house does not count toward these limits, but in most cases an automobile valued above $4,650 does.[8]

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4 Food stamps cannot be used to purchase alcoholic beverages, tobacco, food to be eaten in the store, vitamins or medicines, pet foods, or any non-food items, other than seeds and plants used in home gardens to produce food (USDA FAQ, 2000).

5 Households with a disabled or elderly member are not subject to the gross income test, but are subject to the net income test.

6 Throughout this report, we use the term "federal poverty level" or FPL to denote the federal poverty *guidelines* issued by the U.S. Department of Health and Human Service (HHS). The USDA uses the guidelines, and not the federal poverty thresholds, to determine eligibility for the FSP.

7 Households with a member age 60 or older or disabled can have assets valued up to $3,000 rather than $2,000. The higher asset limit did not apply for persons with disabilities prior to the 2002 Farm Bill.

Eligible households receive the maximum benefit minus 30 percent of their net income. The maximum benefit for a household of three is $366 per month in FY 2003.

2. Barriers to Participation

As noted in Chapter I, there is a significant share of households eligible for the FSP who are not receiving the benefits. Researchers have identified several barriers that may affect households' "take-up" in the FSP. The more common factors include: lack of awareness of the program; stigma associated with using food stamps; and costs associated with program participation. In addition, implementation of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) may have produced new barriers, or reinforced existing barriers. For example, it may have increased worker and client confusion about potential eligibility in the context of leaving the Temporary Assistance for Needy Families (TANF) program.

- **Lack of awareness.** Some households are unaware that they are eligible for benefits. In surveys of low-income households not participating in the program, between one-third and one-half thought they were ineligible. Findings from focus groups found that most thought that their income was too high or their assets too valuable (McConnell and Ponza, 1999).
- **Welfare stigma.** For some, there is stigma associated with applying for and using food stamp benefits. An analysis of the National Food Stamp Survey (NFSS) found that approximately 7 percent of the sample identified a stigma-related or psychological reason as the most important grounds for not participating in the FSP (Dion and Pavetti, 2000). The advent of Electronic Benefit Transfer (EBT) cards in most states may reduce some of the stigma associated with making purchases with food stamps.
- **Costs of participation.** The costs of participation include the time spent applying and being recertified (the latter generally occurs once or twice a year, although can occur more often, if they have earned income); the loss of privacy in divulging personal information; and for non-exempt participants, the time spent fulfilling food stamp work requirements. About 5 percent of eligible non-participant households in the NFSS responded that too much money, time, and hassles were involved in participating in the FSP. In the National Survey of America's Families (NSAF), 10 percent of former welfare families and 17 percent of non-welfare families reported leaving food stamps because of administrative problems or hassles (Dion and Pavetti, 2000).
- **Welfare reform.** PRWORA instituted work requirements, mandatory sanctions for noncompliance, and time limits on TANF receipt and gave states the option to apply sanctions to food stamps. While some of these provisions do not directly affect the food stamp entitlement, they may result in some leaving the TANF rolls for work or due to the more mandatory requirements or time limits. In seven out of the eight leaver studies reporting food stamp benefit receipt in the quarter after exit, fewer than half of the leavers continued to receive food stamps (Acs and Loprest, 2001). In addition, state diversion

[8] Beginning in 2001, states have the option to substitute the TANF vehicle rules in the states for the food stamp vehicle rules, where doing so would result in lower resources. The rules apply to all food stamp households, regardless of whether they received TANF benefits.

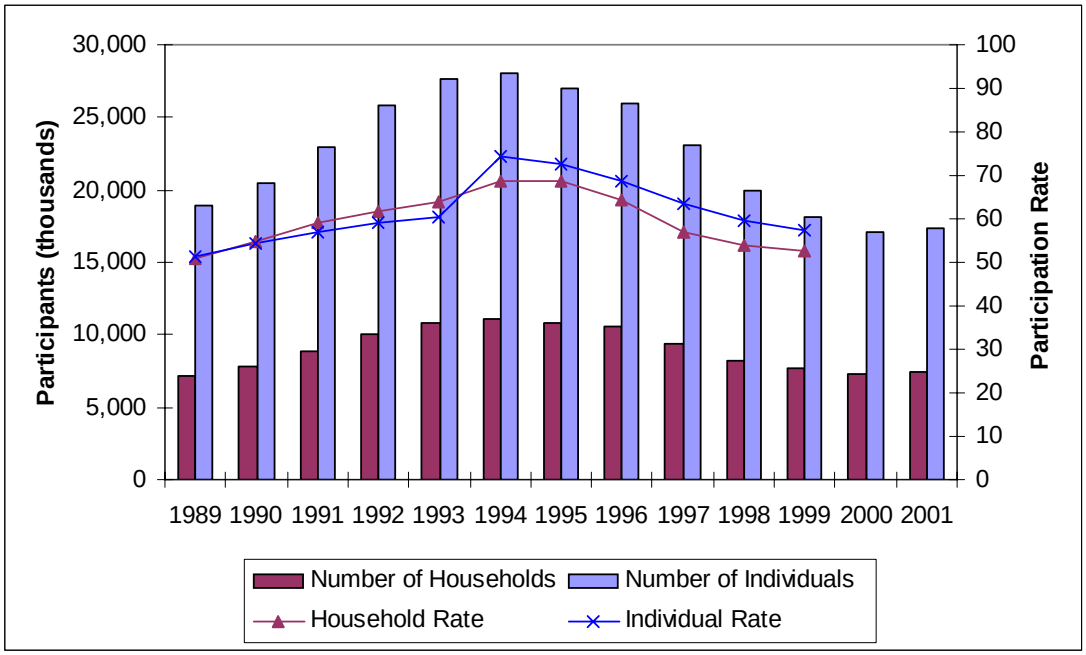
policies, in which states offer families a lump sum payment or other assistance as an alternative to enrolling in TANF, or impose job search requirements as a condition of enrollment, may reduce the number who enroll in the FSP. PRWORA also disqualified some groups from participating in the FSP. This is discussed in Section II.D.

B. Trends in Participation

Throughout most of the 1980s, food stamp participation in the U.S. hovered around 20 million individuals. Starting in 1988, participation steadily increased until 1994 – increasing annually by about 7 percent. This coincided with the recession. Starting in 1994, participation declined – decreasing annually by about 8 percent – perhaps due to the improvement in the economy and enactment of PRWORA (See ***Exhibit II.1***)

It is also important to examine the trends in the participation rates, which are defined as the percent of the population eligible for food stamps receiving the benefit during a given month. The percent of households and individuals eligible was about 51 percent in 1989 and increased steadily until 1994, when the participation rate among eligible households peaked at 69 percent and the rate among eligible individuals reached 74 percent.

Exhibit II.1: Food Stamp Participation



Source: Rosso, 2001 and Rosso, 2003

NOTE: The methodology for calculating participation rates changed in 1994. The household rate was 64.6 percent using the older method and 68.8 percent using the revised method. The individual rate was 61.4 percent using the older method and 74.3 percent using the revised method.

As was true for the number of individuals and households receiving the benefit, the participation rate among eligibles coincided roughly with changes in the economy in the 1990s. Estimates from models of the relationship between the economy and FSP participation indicate

that the decline in unemployment rates in the 1990s accounted for about 28 to 44 percent of the decline in food stamp caseloads (Dion and Pavetti, 2000). Thus, the economy likely explains some, although not all, of the changes in participation over time.

C. Calculating Participation Rates

It is important to note that the rates of participation are dependent on which national data source is used and how eligibility is estimated. The data sources most commonly analyzed include the Current Population Survey (CPS) and the SIPP. The CPS allows researchers to examine participation rates over a number of years, and for more recent years than other data sources. However, this data source does not provide information on asset balances, which is contained in the SIPP. In addition, while both data sources are subject to underreporting, the SIPP responders report higher levels of participation. The FSP Operations data offer the most accurate participation counts; several studies use this data source to supplement or adjust estimates from other data sources (e.g., Castner and Cody, 1999; and Schirm, 2000).

It is also useful to consider how other studies that report participation rates define their samples. Wilde et al (2000) included all families in the CPS (1994 - 1998) with household income below 130 percent of the FPL. These families would have met the gross income test, although might not have met the net income or asset tests. Acs et al (2000) included all families in the NSAF in which the average annual hours worked by all adult family members exceeded 1,000 and whose income fell below twice the FPL. Other studies (e.g., Blank and Ruggles, 1996; McConnell and Nixon, 1996; Castner and Cody, 1999, and Trippe and Sykes, 1994) used criteria to replicate the eligibility determination process, applying the income and asset tests to predict eligibility.[9] In addition, Blank and Ruggles limited the sample to single mothers.

The participation rates from these studies ranged from 28 percent of all individuals with income below 130 percent of poverty in 1998 (Wilde et al, 2000) to 66 percent of all single mothers in the 1986 and 1987 SIPP who met the income and asset tests (Blank and Ruggles, 1996).

There is substantial evidence that under-reporting biases estimates of relationships between participation, household earnings potential, and assets. Bollinger and David (2001) examined the extent of underreporting, its relationship to attrition, and its effects on analyses of the determinants of participation using 1984 SIPP, matched with administrative program records in three states. They found that the number of respondents in the three states who participated in the program at the time of the first or second wave interview was about 13 percent higher than the number that reported participating. They also found that those who failed to report participation in these early waves were also less likely than others to participate in later waves. The participation rates calculated in this report are based on *reported* participation, rather than actual participation, so underestimate the actual rate.

[9] Castner and Cody (1999) used the CPS, which, as mentioned above, does not ask individuals about the value of their assets. This study imputed the probability that non-pure public assistance units would pass the asset test. Pure public assistance units (all members are receiving TANF or SSI) are automatically eligible and thus not affected by the asset test.

Bollinger and David modeled the relationship between participation rates and both earnings potential and assets using data from the fourth wave of the SIPP (the wave in which asset data were collected). They specified a probit model for actual participation and embedded it within a model for reporting error and biased attrition. They found that, in comparison to models that ignored this problem, their estimates showed higher participation rates among the households with the lowest earnings potential and assets, and lower participation rates among the households with higher earnings potential and assets. Thus, under-reporting and biased attrition make it appear that the relationship between the probability of participation and these two variables is not as strong as it really is.

D. PRWORA's Effect on Food Stamp Participation

In addition to changes in the economy, the enactment of PRWORA in 1996 had several provisions that likely affected food stamp participation.

- **Legal Immigrants:** PRWORA disqualified most legal immigrants from the FSP, though households that were participating in the program when the legislation was signed were eligible until September 1997. Congress later restored benefits to many children of immigrants and to elderly and disabled immigrants who resided in the U.S. in August 1996; however, PRWORA appears to have deterred their participation. Participation among children born in the U.S. who lived with their legal immigrant parents fell by 37 percent compared with a decline of 15 percent among children living with native-born parents (USDA, 1999).
- **ABAWDs:** PRWORA mandated work activities for Able-bodied Adults Without Dependents (ABAWDs), and limited their eligibility to three months of benefits in a 36-month period if they were not working or participating in qualifying work activities. Some exemptions were granted under waiver to areas with high unemployment rates or insufficient jobs. The number of ABAWDs dropped by about one-third between 1996 and 1997 (USDA, 1999).
- **Thrifty Food Plan:** PRWORA reduced the maximum food stamp benefit from 103 percent back to 100 percent of the Thrifty Food Plan. However, it is unlikely that this provision had much effect on participation. Essentially, it reduced the average benefit from 80 cents per person per meal to 75 cents (Gundersen et al, 1999).
- **TANF Provisions:** As mentioned above, the PRWORA provisions that replaced the Aid to Families with Dependent Children (AFDC) program with the TANF program imposed work participation requirements, time limits, and sanctions for noncompliance on most TANF recipients. States were also given greater flexibility to impose shorter time limits and diversion policies. These changes could affect food stamp participation in several ways. First, TANF recipients who leave the program for work, time limits, or noncompliance may leave the food stamp program even though they still meet the food stamp eligibility requirements. Second, TANF provisions such as work requirements and time limits and state diversion programs may all discourage some from applying. Third, TANF may help some recipients find employment that pays enough to make them ineligible for food stamps.

E. Differences in Participation by Subgroup

Certain characteristics make a person more or less likely to receive food stamps. Several key subgroups emerge from the literature. These include: TANF leavers; employed eligibles; disadvantaged recipients; and two-parent households.

1. TANF Leavers

Between 1994 and 1997, the number of food stamp recipients receiving cash assistance fell by 27 percent, while the number not receiving cash assistance increased by 9 percent (USDA, 1999). There was a substantial decrease in the national welfare caseload during this period (17 percent). Some who left TANF did not leave the FSP.

A number of studies have tracked TANF recipients after they left welfare and estimated the share of TANF leavers that continued to receive food stamps. Among five leaver studies, the participation rates at TANF exit range from 38 percent in Washington State to 63 percent in Missouri. These percentages declined for the cohort of leavers 12 months after TANF exit (Dion and Pavetti, 2000). Many of these former TANF recipients continued to be eligible for food stamps. An Urban Institute study estimated that only 42 percent of welfare leavers who remained income eligible for food stamps received the benefit (CBPP, 2000). Zedlewski and Brauner (1999) found evidence that former welfare recipients left the FSP at significantly higher rates than those who had not been on welfare, even though the incomes of the two groups were quite similar.

2. Employed Eligibles

A smaller share of working FSP-eligible households participate in the FSP than non-working eligible households. In January 1994, 46 percent of working FSP-eligible households participated in the program, compared with 69 percent of all FSP-eligible households (McConnell and Ponza, 1999). The participation rate is increasing for working eligible households. From 1996 to 1997, the participation rate for individuals in eligible single-parent households with earnings increased by 9 percentage points, while the rate for individuals in eligible single-parent households without earnings fell by 9 percentage points (Castner and Cody, 1999).

Using a panel of SIPP data covering the period from October 1989 to August 1993, McConnell and Ponza, (1999) examined the length of FSP participation spells, and the events that preceded entry into and exit from the FSP for working and nonworking households. They found:

- Working households are larger and more likely to have children than other FSP-eligible households;
- Working eligibles are typically eligible for a larger than average benefit due to the larger household size (although have a lower per person benefit); and
- Working households are more likely than other households to have experienced a change in household income or composition preceding their entry into the FSP.

Gleason et al (1998) found that individuals who are working at the time they enter the program stay on food stamps for shorter periods than non-working recipients, all else equal.

3. Extent and Duration of Need

Blank and Ruggles (1996) conducted a joint longitudinal analysis of participation in AFDC and FSP by female-headed households with children, using the 1986 and 1987 SIPP panel files. They found that: eligible non-participant households tend to have higher incomes than participant households; many non-participant households experience only short periods of eligibility; and non-participant households have heads that are older, white, without disabilities, and educated and have fewer children. Thus, they concluded that FSP is most likely to be utilized by those with the greatest long-term need, whose alternative earning opportunities are most limited. This suggests two groups of women among the eligibles: A relatively disadvantaged group with low future income expectations who enrolls in public assistance immediately, and another less disadvantaged group who (largely correctly) predicts future income increases and do not seek benefits. Nonetheless, they do find evidence of a substantial number of very disadvantaged female-headed households with children who do not participate, even though their benefits would be large.

Gleason et al (1998) examined long-term food stamp receipt and found that individuals' economic circumstances and household structure are the most important determinants of how long they receive food stamps. In addition, recipients whose household income is below the poverty line when they start receiving food stamps tend to stay on the program longer, even after controlling for employment status.

4. Two-Parent Households

Married-couple households with children are declining as a proportion of the FSP caseload (Castner and Cody, 1999). Wilde et al (2000) found that participation by two-parent families declined by 41 percent, compared with a decrease among single-parent families of 26 percent.

III. METHODOLOGY

This chapter describes our methodology for conducting the empirical analysis presented in Chapters IV-VI, including the conceptual approach, the data source, the method for approximating eligibility in the FSP, and the samples examined.

A. Conceptual Approach

Our conceptual approach to the empirical analysis conducted in this report is in the spirit of Friedman's well-known "permanent income hypothesis" (Friedman 1957). Friedman hypothesized that "permanent income" (i.e., expected long-term income) is a stronger predictor of consumption than current income. He argued that transitory shocks to income (i.e., deviations of current income from expected long-term income), whether positive or negative, only affect consumption to the extent that they affect the consumer's expectations about permanent income. Consumers are hypothesized to smooth out the effects of transitory good or bad fortune on consumption over a long period.

One important aspect of the permanent income hypothesis has substantial empirical support in the consumption literature. The hypothesis predicts that, after controlling for current income, current consumption will depend positively on past and future income, as well, and many studies have found such relationships**.** However, some studies also find evidence that "finance constraints" limit consumer ability to make consumption decisions based solely on permanent income; i.e., many have limited ability to borrow against higher future income, and some cannot accumulate sufficient savings during relatively high-income periods to maintain their consumption in low-income periods. This might be why, for instance, some empirical studies have found positive relationships between predictable changes in income and consumption, contrary to what the permanent income hypothesis would predict.[10] We would expect finance constraints to be particularly important for households with relatively low permanent incomes. Even so, however, as long as some households with temporarily low income are able to consume more than their current income would suggest because of higher long-term income, we would expect to find a positive relationship between current consumption and past and future income, holding current income constant.

Although long-term income expectations of households are not observed, the relationship between consumption and long-term expected income can be estimated in various ways. One classical approach to estimation is to use past and future income as instrumental variables for current income in a regression of current consumption on current income.[11]

In the context of participation in FSP, there are many reasons to think that current participation among those identified as eligible in the SIPP is related to expected long-term household income, rather than current income only. While current household income is low enough to meet the income test, this might be a very transitory phenomenon. If we compare two

[10] Parker (1999) reviews recent literature. See Deaton (1992) for a comprehensive presentation of the consumption literature.

[11] See, for instance, Deaton (1992).

households with identical current incomes, but different expected long-term incomes, the household with higher expected long-term income is less likely to participate in FSP, for three reasons:

- The household is likely to have more access to other resources, not measured in SIPP, that can be used to purchase food. If SIPP captured those resources accurately, the household might not pass the asset test. Even if the household did pass the asset test, the asset test itself might not fully capture the available resources;
- The cost of applying for and using food stamps, and the stigma associated with using them, is more likely to be a deterrent to participation for the household with higher expected long-term income;[12] and
- The household with higher expected long-term income is less likely to be aware of the availability of food stamps, perhaps because of less familiarity or contact with programs that serve low-income populations.

There is one other potentially important reason why current household income, as reported in the survey, might be substantially lower for apparently eligible households than expected long-term income: measurement error. Such errors could be random (simple response or recording errors on specific questions) or systematic (deliberate under reporting of income from certain sources). In the absence of such errors, the household might not meet the FSP income test.

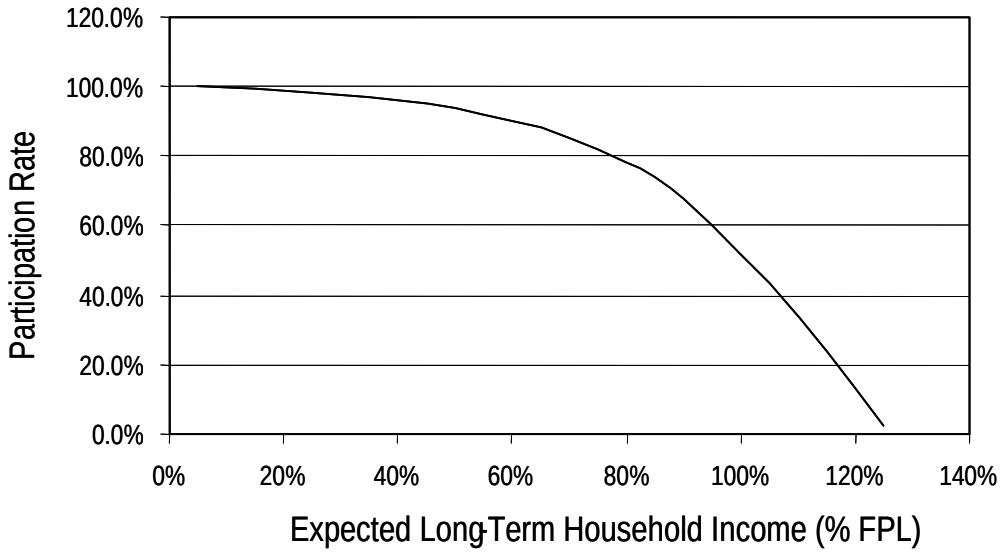
Much of the analysis focuses on the cross-section relationship between the FSP participation rate and various measures of income, with income expressed as a percentage of the FPL. If measured income accurately reflected expected long-term income, we would expect to find a negative relationship, with relatively high participation rates for households with the lowest incomes, and much lower rates for households with incomes near the income ceiling (***Exhibit III.1***). The program's success in reaching the households with the lowest expected long-term incomes could be assessed by the size of the gap between 100 percent participation and actual participation for those households. If, unlike for the hypothetical case drawn, we found a large gap for the households with the lowest expected long-term incomes, policymakers would want to know more about why such households were not participating, and whether changes in the program to close the gap were warranted.

Unfortunately, we do not observe expected long-term income, and the cross-section relationship between the participation rate and the most readily observed measure of income – current reported income – might look quite different from the relationship between the participation rate and expected long-term income for the reasons listed above. When we are able to measure income in multiple periods, as in the SIPP, we can consider various ways of assessing the extent to which longer-term observed income affects the cross-section relationship between participation and current measured income. In fact, even though we can never observe expected

[12] Any change of more than $25 in monthly gross income had to be reported to the FSP during the period of analysis examined for this report. More recently, states have been offered reporting options to lessen the burden on states and participating households.

long-term income, we can use indirect methods to assess the relationship between participation and expected long-term income.

Exhibit III.1: Hypothetical Relationship between FSP Participation and Expected Long-term Income



Thus, in Chapter V we will:

- Consider the cross-section relationship between participation and income measured over a 12-month period ("annual" income), rather than just the current month;
- Consider how past and future month income shifts the cross-section relationship between participation and current month income; and
- Present estimates of the relationship between the participation rate and expected long-term income, employing an instrumental variables method that has become a classic method in the consumption function literature.

In micro-data analysis of the relationship between consumption and income, the usual assumption is that the determination of income is exogenous to the determination of consumption. For the analysis of FSP participation, the corresponding assumption would be that income is determined exogenously relative to FSP participation. This assumption is suspect, however, because potential participants know that the size of FSP benefits is inversely related to income. Any decisions that affect income also affect food stamp eligibility and the potential value of food stamps. Hence, it seems more appropriate to think of FSP participation as jointly determined with current income.

Two other important conceptual issues arise in the examination of the cross-section relationship between FSP participation and income. One is that various observable characteristics of a household might affect participation, holding expected long-term income constant. For instance, we would expect ABAWD households to be less likely than other households to participate, at

least in part because of the special rules introduced in 1996. Such variables shift the participation rate/expected long-term income relationship up or down. As these variables might be correlated with expected long-term income, it is important to control for them when estimating the relationship between FSP participation and expected long-term income, and to consider how changes in their value shift the participation/expected long-term income relationship.

We would expect the same characteristics to affect participation rates, given any current income, but the observed relationship might be different because the characteristics themselves are related to the differences between measured and expected long-term income. For instance, given any value for current income, we would expect ABAWD households with well-educated heads to have higher expected long-term income than non-ABAWD households with less-educated heads. When we include such variables in the estimation of the cross-section relationship between FSP participation and current income, they likely capture some of the effect of expected long-term income on participation.

Second, there are many observable behaviors of a household that are likely to be affected by expected long-term income, as well as by other factors that might affect FSP participation. The most obvious of these is participation in other programs that the household might be eligible for, such as TANF, SSI and Medicaid. Such variables are considered endogenous to the FSP participation decision.

We do not include household participation in other programs or labor market variables in our analysis of participation. Such variables are likely to be strong predictors of participation, holding income constant, because they would surely capture much of the effect of expected long-term income, as well as other factors (e.g., participation costs), on participation.[13] However, from a policy perspective, it is much more useful to know how changes in an exogenous characteristic affect program participation, not controlling for the effects of this change on other behaviors (e.g., not holding participation in other programs constant). Put differently, if we know that households are less likely to participate in FSP if they do not participate in other programs, holding other things constant, that only suggests that the cause for non-participation in FSP might be the same as the cause for non-participation in other programs; it does not tell us what the cause is. If we control for participation in other programs we will clearly misrepresent the extent to which a household's participation is determined by its income prospects and other exogenous factors. A more complete analysis would examine joint determination of participation in multiple programs.[14]

It is also important to recognize that current income itself is endogenous, because households presumably understand that increasing their income, perhaps through increased earnings, will normally reduce the value of the household's food stamp benefit. Put differently, a change in any exogenous factor that induces a household to participate in FSP potentially induces the household to reduce its income, because food stamps will now partially replace the lost income.

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[13] Moffitt and Fraker (1989) find particularly strong labor supply effects of food stamps for unmarried adults without children. They cite evidence of much smaller, but still significant, effects for other households.

[14] See, for instance, Blank and Ruggles (1996) for a joint analysis of participation in AFDC and FSP.

Although we often discuss the relationship between participation and income as if causality is from income to participation only, we recognize that current income is endogenous to current participation. Income in other periods, and expected long-term income, might more reasonably be assumed exogenous to current participation.

B. Data

As mentioned above, we have used the 1996 SIPP to conduct all of the analysis presented in this report. The 1996 SIPP survey asked questions on income, labor force participation, program participation, and general demographic characteristics. The "core" survey is broken into 12 waves, with each wave conducted every four months for a total of 48 months. In addition to the core content, the SIPP also asks questions on a variety of topics in particular waves. These are referred to as "topical modules" and cover such topics as child- and adult-well-being, assets and liabilities, child care, child support, disability, and health care. For the purposes of our study, in addition to the information from the core, we examined information from the Assets, Liabilities and Eligibility; Migration History; Medical Expenses and Utilization of Health Care; and Child Care topical modules to determine the food stamp eligible population.

For the analysis presented in this report, we rely on the longitudinal research files. For these files, the Census Bureau uses the information from other months to impute missing values for households in a specific month. However, it does not impute values for data missing due to household attrition. In the first month of the 1996 panel, there were 36,730 households surveyed. By the end of the panel, 25,886 households remained in the survey. Because information (primarily earnings and income data) spanning the entire 48-month panel period is needed, we only included in our research samples those households that appeared in the research universe for the entire 48-month period.[15] As discussed later, this likely has some effects on the findings.

Another area of concern was the "seam bias" in the SIPP, which is the uneven distribution of changes between the last month of one interview and the first month of the next interview because of recall error. While the introduction of the computer-assisted personal interviewing (CAPI) instrument in 1996 was hypothesized to reduce some of this bias in the SIPP, we observed larger changes in outcomes such as earnings and income between waves than within the waves. For analysis presented in Chapter V, we examined the relationship between food stamp participation and annual income, which reduces some of the seam bias found in the monthly income variables.

C. Eligibility Determination

As discussed in Section II.A, in order for one to qualify for food stamps, one must meet certain criteria established by the Food and Nutrition Services (FNS). To determine our research sample, we attempted to replicate those eligibility criteria. Essentially, households must pass

[15] All analysis presented in this report have been weighted using the person-level weights associated with the individual designated as the head of household.

three tests – the gross income, net income, and asset tests. These tests are outlined in the shaded box.[16]

Determining Food Stamp Eligibility

- **Apply Gross Income Test:** The household's gross income must be less than 130% of the poverty line.[17]
- **Apply Net Income Test:** The household's net income must be less than 100% of the poverty line. Net income is calculated by subtracting the following deductions from gross income.[18]

Gross Income
- 20% Earned Income Deduction
- $134 Standard Deduction
- Dependent Care Deduction
- Medical Cost Deduction
- Child Support Deduction
- Excess Shelter Deduction

Net Income

Note that the dependent child deduction is equal to $200 for each child under 2 years old and $175 for all other dependents and the medical cost deduction is limited to elderly or disabled members who have costs exceeding $35 a month. The excess shelter deduction is calculated by subtracting the adjusted income divided by two from the sum of utility costs and rent or mortgage payments and real estate taxes. If this amount is positive, the excess cost is deducted up to a maximum of $134, unless there is an elderly or disabled member of the household, in which case there is no limit to the size of the deduction.

- **Apply Asset Test:** The household's assets must be less than $2,000 when there are no elderly people in the home or less than $3,000 if there are elderly people in the household. Starting in 2002, this higher limit applied to households with disabled individuals; we applied the $2,000 limit for these households, reflecting the rules in place in 1997.

  Part of the challenge of replicating the asset test is assessing the value of household vehicles. Cars are valued differently depending on the purpose for which they are used. If the car is being used for work or training, then the car is valued at the fair market value over $4,650; if used for other purposes, it is valued at the fair market value over $4,650 *or the equity value*, whichever is greater. Other restrictions apply.[19]

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[16] Certain individuals are categorically ineligible for food stamps. These include full-time students, people on strike, and certain immigrants. We only excluded immigrants from our research sample.

[17] Households with an elderly person or a person who is receiving certain types of disability payments only has to meet the net income test.

[18] For a more detailed discussion of deductions, see : http://www.fns.usda.gov/fsp/.

[19] For a more detailed explanation of the car test, see (http://www.fns.usda.gov/fsp/MENU/APPS/ELIGIBILITY/ resources/resources.htm).

In order for us to predict eligibility, we identified certain types of households that face different eligibility criteria. These are households which include elderly and disabled members, non-citizens, and categorically eligible members. Assumptions were made regarding these populations, as well as other assumptions discussed below, primarily due to limitations in the SIPP data.

1. Identifying Elderly and Disabled Members

Households with elderly and disabled members have less restrictive eligibility requirements, when compared to households without such members as discussed in the text box. For all analysis, we define elderly and disabled in a manner that is similar to FNS's definition. A person is elderly if he or she is 60 years of age or older. A person is considered to be disabled for food stamp eligibility purposes if he or she meets any if the following criteria:

- Receives Federal disability or blindness payments under the Social Security Act, including Supplemental Security Income (SSI) or Social Security disability or blindness payments; or
- Receives state disability or blindness payments based on SSI rules; or
- Receives a disability retirement benefit from a governmental agency because of a disability considered permanent under the Social Security Act; or
- Receives an annuity under the Railroad Retirement Act and is eligible for Medicare or is considered to be disabled based on the SSI rules; or
- Is a veteran who is totally disabled, permanently housebound, or in need of regular aid and attendance; or
- Is a surviving spouse or child of a veteran who is receiving VA benefits and is considered to be permanently disabled." [20]

An additional requirement that we cannot observe is the clause in the food stamp regulation stating that an eligibility worker can make the determination of disability if the applicant is visibly disabled, and not receiving income from any of the above sources. Because we cannot make that determination, we also define persons as disabled if they state on the SIPP that they have a physical or mental limitation that prevented them from working in the month.

2. The Categorically Eligible

If a household is comprised entirely of TANF and/or SSI recipients (i.e., every individual in the household is receiving either TANF or SSI), then the household is considered to be "categorically eligible" for food stamps and the income and asset tests are not conducted. In most cases, it is the asset determination that might make someone eligible for TANF, but ineligible for food stamps, if the tests were applied. The SIPP identifies the household members who are on each grant. From this information, we determined households that were categorically eligible and included them in the sample, regardless of the value of their income and assets.

[20] For more information, please see: http://www.fns.usda.gov/fsp/rules/Elderly_Disabled.htm.

3. Aliens

The criteria for assessing eligibility of immigrants is complicated and changed over the period covered by this period. Certain non-citizen groups are eligible for food stamps (e.g., members of Hmong or Highland Laotian tribes, Haitian refugees, those claiming political asylum and other refugees). In addition, Lawful Permanent Residents (LPRs) are qualified after they have earned, or could be credited with, 40 quarters of work; for LPRs who might have less than 40 quarters of work, they are eligible after being in qualified status for 5 years. Also, children less than age 18 are eligible, assuming they were living lawfully in the U.S. in August 1996. Public Law 105-185 restored benefits to some of these immigrants in 1998 (including child, disabled, and elderly immigrants).

Due to limitations of the SIPP data and because the rules changed over time, we included in our sample only those households that had at least one U.S. citizen. For families consisting of food stamp aliens and U.S. citizens, we simply pro-rated the total household income to all members of the household, and included only the prorated income of the citizens' income to determine eligibility for the new food stamp household (consisting only of U.S. citizens). We made these simplifications so that we could examine participation over time for a group of households that faced the same eligibility criteria over the four-year follow-up period.

4. Assumptions Made in Estimating Eligibility

Given the limitations of the SIPP, we had to make additional assumptions to construct a population of food stamp eligible households.

- **The SIPP household was the same as a food stamp household.** The SIPP defines the household as a collection of people who live *or* eat together, whereas the food stamp household includes people who live *and* eat together. Therefore, our population may not reflect the actual number of food stamp households because multiple food stamp households may exist in one SIPP household.
- **Household composition, household expenditures, and citizenship status did not change much over time.** We estimated eligibility at two points in time: Wave 3, Month 4 (sample members were interviewed between November 1996 and February 1997) and Wave 9, Month 4 (sample members were interviewed between November 1998 and February 1999). Some information was only available from topical modules in other waves, although generally, in the same year. This included information on child care expenses, medical expenses, and citizenship.
- **The head of the SIPP household was the head of the food stamp household.** If the SIPP household had multiple families, or food stamp households, our assumption may mischaracterize the attributes of the head of the household. The attributes include sex, race, ethnicity, age, marital status and education levels.
- **If there is only one car per person, the household was using that car to go to work or school.** As discussed in the text box, cars are valued differently depending on the purpose for which they are used. We assumed that one car per person was being used for work or training. If used for other purposes, the car could have been assigned a greater asset value. Using this assumption, we might have underestimated the resources of some households.

- **When computing child care deductions, simplifying assumptions were made.** The food stamp program allows families to deduct child care costs for each child in the household up to a maximum deduction, with the allowable deduction based on the age of the child. We deducted the entire child care costs for the household, as long as this total cost was under the maximum deduction allowed, assuming all children in the household received care.

D. Samples

The samples used for this report cover two types of households: (1) low-income households (LIHH) reporting income less than 130 percent of poverty, and (2) households meeting the food stamp eligibility (FSE) criteria, as discussed above.[21] In addition, we defined these two households at two different points in time: month 12 (wave 3, month 4) and month 36 (wave 9, month 4). These two months were picked because detailed information about a household's assets is reported in the topical modules associated with waves 3 and 9. These households are denoted as LIHH-12, LIHH-36, FSE-12, and FSE-36.

For some analysis, we also consider three additional samples with very low income, defined as being food stamp eligible and having gross income less than 75% of the FPL: 1) those with very low income in month 12 (poor-12); 2) those reporting very low income in month 36 (poor-36); and 3) those with very low incomes in both months 12 and 36. The latter sample, referred to as "persistently very poor households" (PPoor-12 and -36), represents the most disadvantaged households among our samples.

Exhibit III.2 presents selected characteristics of sample members in each of the nine samples, in the month when their low-income or eligibility status was assessed. For the samples consisting of households meeting the criteria in both months 12 and 36, we examined their characteristics at the two points in time and any differences are due to changes they experienced between 1996 and 1998. [22]

[21] Throughout this report, we use the term "income" to include all cash income. Food stamp benefits and other in-kind assistance are not included.

[22] Note that while the persistently very poor household samples consist of the same households for month 12 and 36, the characteristics reflect those in the respective month. Because we defined the household head as either the SIPP reference person or, if this person is not between the ages of 18 and 50 in the given month, the oldest person within this age group, the household head might have changed from month 12 and 36. This results in slight differences in the static characteristics of the household head. Differences in the dynamic characteristics reflect changes over time, as well.

Exhibit III.2: Characteristics of Research Samples
(Percent of Household Group, Unless Otherwise Noted)

Head of Household Characteristics	Low-Income Households		Food Stamp Eligible Households		Very Poor Households		Persistently Very Poor Households	
	LIHH-12	LIHH-36	FSE-12	FSE-36	Poor-12	Poor-36	PPoor-12	PPoor-36
Sex								
Male	42.7	43.9	38.5	39.5	33.1	37.5	29.4	29.1
Female	57.3	56.1	61.5	60.5	66.9	62.5	70.5	70.9
Race								
White	74.9	73.1	68.8	67.9	64.6	65.4	58.1	58.1
Black	20.7	21.9	26.8	27.2	30.6	39.9	37.2	37.2
Native American	2.0	2.1	2.1	2.5	2.1	2.2	2.4	2.4
Asian	2.3	2.8	2.3	2.4	2.6	2.5	2.3	2.3
Ethnicity								
Hispanic	14.6	15.3	17.1	17.8	18.9	20.1	22.9	22.9
Age								
18-24	10.4	5.5	10.6	6.1	10.3	5.6	9.8	6.0
25-34	29.1	26.3	30.7	27.6	31.4	26.0	28.0	25.4
35-44	31.7	34.0	32.5	34.2	33.1	34.1	33.0	34.0
45-88	28.8	34.2	26.1	32.0	25.1	34.3	29.1	34.5
Marital Status								
Never married	29.6	27.2	32.8	30.8	35.9	33.9	38.8	38.2
Married	40.9	40.0	35.6	33.3	30.6	28.5	23.4	23.5
Divorced/separated	26.3	28.8	28.6	32.3	30.6	33.2	34.5	34.7
Widowed	3.2	3.9	3.0	3.7	2.9	4.3	3.3	3.6
Education Levels								
Less than high school	28.3	28.7	34.9	35.9	37.9	39.1	45.7	44.8
High school graduate/GED	36.4	34.7	35.9	35.7	35.7	34.1	33.9	34.1
Trade/vocational school	4.3	4.2	3.7	3.7	3.4	2.9	2.8	3.0
Some college	17.1	17.0	15.8	15.5	15.6	14.9	12.4	12.5
College graduate	13.9	15.4	9.6	9.1	7.4	9.0	5.1	5.6

Exhibit III.2: Characteristics of Research Samples (continued)

Household Characteristics	Low-Income Households		Food Stamp Eligible Households		Very Poor Households		Persistently Very Poor Households	
	LIHH-12	LIHH-36	FSE-12	FSE-36	Poor-12	Poor-36	PPoor-12	PPoor-36
Household Composition								
Average adults (#)	1.7	1.8	1.7	1.8	1.5	1.6	1.4	1.5
Average children (#)	1.4	1.4	1.5	1.5	1.6	1.5	1.6	1.6
Person with disability	15.0	15.2	24.4	21.2	24.5	23.9	33.0	33.5
Elderly member	10.9	12.1	14.1	13.7	8.4	9.3	9.1	9.7
ABAWDs only	17.7	15.9	12.9	14.4	13.2	15.6	10.8	9.4
Number of Children								
No children	38.2	39.9	35.5	38.2	34.2	41.7	38.0	39.5
One child	19.1	16.5	19.1	17.5	17.5	15.2	15.6	16.1
Two or three children	34.2	34.6	34.6	34.0	36.4	31.7	34.1	31.5
Four or more children	8.5	9.0	10.8	10.2	11.9	11.3	12.2	12.7
Youngest Child's Age								
1 year and under	14.2	11.1	15.1	12.4	15.6	12.1	15.0	11.7
2 to 4	15.8	15.0	17.2	15.6	18.2	14.3	19.5	15.7
5 and over	31.8	34.0	32.8	33.8	31.9	31.9	27.5	33.0
Benefits								
Cash Assistance								
SSI	24.4	27.2	32.2	32.7	30.2	34.7	40.2	43.3
TANF	14.5	9.4	23.4	12.9	31.9	17.9	38.8	24.5
General assistance	2.9	1.1	3.8	1.5	4.3	1.9	5.2	2.6
Other assistance	0.6	0.3	0.9	0.4	0.9	0.1	1.1	0.0
TANF in past 12 months	15.8	16.3	24.7	21.6	32.5	28.0	39.4	38.0
Other Benefits								
Housing assistance	15.2	14.2	21.1	19.3	28.6	25.5	36.1	35.7
WIC	15.2	13.1	19.1	15.6	20.8	16.3	23.2	18.6
Medicaid	43.9	41.0	59.1	53.2	68.1	62.6	79.9	76.8
Medicare	13.4	15.6	16.9	18.0	12.5	16.1	14.0	16.6
Sample Size	**3387**	**3111**	**1994**	**2182**	**1085**	**1079**	**544**	**544**

NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month; Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month; PPoor-12 and -36 meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those for month 12 or 36).

The numbers of SIPP households with complete data for 48 months and with reported income below 130 percent of FPL or categorically eligible in months 12 and 36, respectively, are 3,387 and 3,111. Of these, 1,994 and 2,182, respectively, passed the simulated eligibility test. Of the households that passed the eligibility test, 1,085 and 1,079, respectively, had reported income that fell below 75 percent of FPL. Finally, among the latter households, 544 were poor in both months 12 and 36.

The first group of characteristics pertains to the heads of the households. Compared with the low-income households, the food-stamp eligible and very poor household heads are more likely to be female, black, Hispanic, and not married. Also, they have lower levels of education. These more disadvantaged households are more likely to have a household member with a disability.

For each type of household, characteristics for samples defined in month 12 and 36 are very similar. Because of the points in time in which the samples were surveyed, the mean age for the month-36 samples is about two years higher than for the month-12 samples. However, the month-12 samples differ from the month-36 samples in one important way: the month 36 samples had lower rates of participation in TANF in the reference month than the month 12 samples, but similar rates of TANF participation in the past year. This implies that the month-36 samples had higher shares of households that were on TANF, but left the program within the past 12 months. This corresponds to a decline in TANF caseloads nationally – between January 1997 and January 1999, TANF caseloads decreased by 34 percent.

IV. PARTICIPATION STATUS AMONG LOW-INCOME AND FOOD STAMP ELIGIBLE POPULATIONS

This chapter examines the participation rates of the low-income households and food stamp eligible households in our research sample and compares the characteristics of the participants to those of non-participants.

A. Participation Rates

As ***Exhibit IV.1*** shows, about half of all low-income households (LIHH) in either month 12 or month 36 received food stamps at some point during the 48-month panel. Of those who participated, over half received food stamps for at least 24 of the 48 months. Not surprisingly, participation rates are substantially higher for the food stamp eligible households. More than two-thirds of the sample eligible in either month 12 or month 36 received food stamps at some point during the panel period.

Exhibit IV.1: Percent Participating in FSP

	Low-income Households		Food Stamp Eligible Households	
	LIHH-12	LIHH-36	FSE-12	FSE-36
Participation in 48-Month Panel				
No participation	49.1	49.8	35.9	36.6
1 to 11 months	12.0	11.1	12.2	12.4
12 to 23 months	10.5	9.6	13.1	11.7
24 to 35 months	7.9	7.5	9.7	9.3
36 to 47 months	10.9	11.4	14.6	15.6
All 48 months	9.6	10.6	14.6	14.4
Participated in Month 12	34.3	33.0	46.5	42.9
Participated in Month 36	25.5	28.9	35.2	38.8

NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

Examining the participation rates in a given month (month 12 or 36), we find that rates are substantially lower. For example, while 50 percent of households with low income in month 12 participated at some point during the 48-month period, only one-third participated in month 12.

We had expected households meeting the food stamp eligibility criteria in a given month to have the highest participation rate in the eligibility determination month than in another month. This is true for those who met the criteria for sample inclusion in month 12, but not true for those meeting the criteria in month 36. That is, households that met the low income or food stamp eligibility criteria in month 36 actually had higher participation rates in month 12 than in month 36, even though their income and earnings were lower in month 36, on average. This counterintuitive result is likely explained by the drop in food stamp participation rates that occurred in the late 1990s (see Exhibit I.1). Month 12 interviews were conducted between November 1996 and February 1997, shortly after PRWORA was enacted but before states had

an opportunity to implement many of the welfare reform provisions that might have affected food stamp participation. Month 36 interviews were conducted between November 1998 and February 1999, after most provisions had been implemented. TANF caseload reductions during this period caused in part by PRWORA policy changes (e.g., work requirements and mandatory sanctions for noncompliance) may have reduced food stamp participation rates since many who left TANF also left the food stamp program. The improvement in the economy over this period might also have contributed to the decline in the later years.

B. Characteristics of Participants and Non-Participants

This section examines the differences in characteristics between households participating in the FSP and those not participating. ***Exhibit IV.2*** presents selected characteristics of the participants and non-participants in both the LIHH and FSE groups. As expected, participant households are more disadvantaged than non-participant households. The heads of these households were more likely to be female, black, and divorced, separated, or never married. They also tended to be younger, had more children, lacked a high school diploma or GED, and had at least one member of the household who was disabled. Additionally, between 32 and 49 percent of all participant households were receiving TANF, depending on the sample, compared with 1 to 3 percent of non-participant households. Finally, participant households were substantially more likely to be receiving SSI, housing assistance, general assistance, WIC, and Medicaid, compared with non-participant households.

In comparing the characteristics of the participants of both household groups in month 36 with those samples defined in month 12, it is important to distinguish between characteristics that are static (e.g., sex, race, and ethnicity) and characteristics that might change due to the two-year difference (e.g., age, marital status, education levels, and size of household). Any differences in the former are due to differences in the sample; any differences in the latter are due both to differences in the sample and changes that occur within a household over time.

There are only slight differences in the static characteristics between the two points in time. Among the dynamic characteristics, food stamp participants and non-participants in month 36 tend to be older, as expected. Interestingly, the participants in the low-income and food stamp eligible households in month 36 were less likely to be receiving TANF, general assistance, or WIC, but were more likely to be receiving SSI. Also, among participants in month 36, about 13 percent had been on TANF in the past year, but left before month 36 (the difference between households who received TANF at some point in the past 12 months and those currently receiving TANF). This compares with under 1 percent of the group participating in month 12.

Another interesting finding is that 25 to 40 percent of the households that were not participating in the reference month actually participated in the FSP in at least one of the other months of the 48-month SIPP panel. Thus, many of the non-participants were familiar with the FSP.

Exhibit IV.2: Characteristics of Participants and Non-participants
(Percent of Household Participation Group, Unless Otherwise Noted)

Head of Household Characteristics	Low-Income Households						Food Stamp Eligible Households					
	LIHH-12			LIHH-36			FSE-12			FSE-36		
	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Sex												
Male	29.1	49.2	-20.1 ***	28.9	49.4	-20.5 ***	26.6	48.2	-21.6 ***	28.3	46.1	-17.8 ***
Female	70.9	50.8	20.1 ***	71.1	50.6	20.5 ***	73.4	51.8	21.6 ***	71.7	53.9	17.8 ***
Race												
White	64.8	79.8	-15.0 ***	61.9	77.3	-15.4 ***	62.1	74.2	-12.1 ***	60.6	72.2	-11.6 ***
Black	30.9	15.9	15.0 ***	31.7	18.4	13.3 ***	33.1	21.8	11.3 ***	32.9	23.9	9.0 ***
Native American	1.9	2.1	-0.2	3.4	1.6	1.8 ***	1.9	2.3	-0.4	3.4	1.9	1.5 ***
Asian	2.5	2.2	0.3	3.0	2.8	0.2	2.9	1.7	1.2 *	3.1	2.0	1.1
Ethnicity												
Hispanic	18.8	12.6	6.1 ***	19.0	13.9	5.1 ***	19.6	15.0	4.6	18.8	17.2	1.6
Age												
18-25	10.8	10.2	0.6	6.4	5.2	1.3	10.5	10.7	-0.2	6.5	5.9	0.6
25-35	31.9	27.7	4.1 **	29.3	25.2	4.1 **	31.9	39.8	1.9	29.1	26.8	2.3
35-45	32.6	31.4	1.3	34.8	33.7	1.1	33.6	31.7	1.9	35.1	33.7	1.4
45-88	24.7	30.7	-6.1 ***	29.5	36.0	-6.5 ***	24.0	27.8	-3.8 *	29.3	33.6	-4.3
Marital Status												
Never married	32.9	28.0	4.9 ***	32.8	25.1	7.7 ***	34.3	31.5	2.8 *	33.8	29.0	4.8 **
Married	28.7	46.7	-18.0 ***	27.1	44.8	-17.7 ***	25.9	43.4	-17.5 ***	26.3	37.4	-11.1 ***
Divorced/separated	34.4	22.5	11.9 ***	35.3	26.5	8.8 ***	36.2	22.5	13.7 ***	35.1	30.6	4.5 ***
Widowed	4.0	2.8	1.2 *	4.8	3.6	1.2	3.5	2.6	0.9 *	4.8	3.0	1.8 **
Education Levels												
Less than high school	39.7	22.8	16.9 ***	41.3	24.0	17.3 ***	42.1	29.0	13.1 ***	42.2	32.2	10.0 ***
High school graduate/ GED	37.2	36.0	1.1	38.2	33.4	4.8 **	35.6	36.3	-0.7	38.5	34.2	4.3 *
Trade/vocational school	3.5	4.7	-1.2 *	3.7	4.4	-0.7	3.5	3.9	-0.4	3.8	3.7	0.1
Some college	13.8	18.7	-4.9 ***	12.0	18.9	-6.9 ***	12.8	18.3	-5.5 ***	11.3	18.0	-6.7 ***
College graduate	5.9	17.8	-11.9 ***	4.8	19.3	-14.5 ***	6.0	12.6	-6.6 ***	4.2	12.0	-7.8 ***

Exhibit IV.2: Characteristics of Participants and Non-participants (continued)

Household Characteristics	Low-Income Households						Food Stamp Eligible Households					
	LIHH-12			LIHH-36			FSE-12			FSE-36		
	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Household Composition												
Average adults (#)	1.66	1.78	-0.13 ***	1.78	1.83	-0.05	1.6	1.7	-0.1 ***	1.7	1.8	-0.1
Average children (#)	1.86	1.19	0.67 ***	1.88	1.25	0.63 ***	1.9	1.2	0.7 ***	1.9	1.2	0.7***
Member with disability	28.8	8.5	20.3 ***	32.5	8.9	23.6 ***	33.5	16.9	16.6 ***	33.3	14.3	19.0***
Elderly member	11.9	10.4	1.5	13.4	11.6	1.8	12.5	15.4	-2.9	13.8	13.7	0.1
ABAWDs only	6.0	23.3	-17.2 ***	5.8	19.6	-13.8 ***	4.1	19.9	-15.8 ***	5.8	19.4	-13.6***
Number of Children												
No children	25.0	44.5	-19.5 ***	27.2	44.6	-17.4 ***	24.1	44.6	-20.5 ***	27.0	44.8	-17.8 ***
One child	19.6	18.8	0.8	19.0	15.6	3.3 **	19.7	18.6	1.1	19.0	16.7	2.3
Two or three children	41.7	30.5	11.2 ***	38.8	33.0	5.8 ***	41.5	29.2	12.3 ***	38.5	31.3	7.2 ***
Four or more children	13.6	6.2	7.4 ***	15.1	6.7	8.3 ***	14.7	7.5	7.2 ***	15.5	7.2	8.3 ***
Youngest Child's Age												
1 year and under	18.0	12.4	5.7 ***	16.7	9.1	7.7 ***	17.4	13.3	4.1 **	16.8	9.8	7 ***
2 to 4	21.9	12.9	9.1 ***	18.2	13.7	4.5 ***	23.1	12.4	10.7 ***	18.4	13.9	4.5 **
5 and over	35.0	30.3	4.7 ***	37.9	32.6	5.3 ***	35.5	29.6	5.9 **	37.8	31.5	6.3 ***
Benefits												
Food Stamps												
Ever received (48 months)	100.0	25.2	74.8 ***	100.0	30.0	70.0 ***	100.0	32.9	67.1 ***	100.0	40.0	60.0 ***
Average months (#)	34.4	3.2	31.2 ***	38.8	4.4	34.5 ***	35.6	4.5	31.2 ***	39.3	5.9	33.4 ***
Cash Assistance												
SSI	36.8	18.5	18.3 ***	43.7	21.1	22.6 ***	38.7	24.4	14.3 ***	43.9	27.3	16.6 ***
TANF	40.9	1.9	39.0 ***	32.1	1.0	31.0 ***	48.7	2.9	45.8 ***	33.1	1.3	31.8 ***
General assistance	8.0	0.4	7.6 ***	3.6	0.2	3.4 ***	7.9	0.5	7.4 ***	3.6	0.3	3.3 ***
Other assistance	1.4	0.3	1.1 ***	0.7	0.2	0.5 *	1.5	0.4	1.1 *	0.3	0.3	0
TANF in past 12 months	41.7	2.3	39.4 ***	44.9	4.7	40.2 ***	49.3	4.2	45.1 ***	45.9	6.4	39.5 ***
Other Benefits												
Housing assistance	31.2	7.6	23.6 ***	32.1	7.6	24.6 ***	33.7	10.9	22.8 ***	33.1	11.1	22 ***
WIC	27.9	9.1	18.8 ***	24.1	9.1	14.9 ***	28.8	11.2	17.6 ***	24.3	10.6	13.7 ***
Medicaid	87.1	23.3	63.8 ***	87.8	23.8	64.0 ***	90.3	33.8	56.5 ***	87.9	33.3	54.6 ***
Medicare	16.4	12.0	4.4 ***	20.6	13.7	6.8 ***	14.9	16.7	-1.8	20.2	17.3	2.9 **
Sample Size	**1163**	**2224**		**900**	**2111**		**928**	**1066**		847	**1351**	

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level. LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

As discussed in Chapter I, the low participation rates in the FSP have raised concerns among policy makers. From Exhibit IV.2, it appears that those not participating in the program are less disadvantaged than participants and presumably have better employment prospects. A significant share of non-participants (19 to 23 percent, depending on the sample) are ABAWDs, meaning they are not disabled, have no children, and are between the ages of 18 and 50. A large share are also married (37 to 47 percent), and have at least some college education (30 to 38 percent).

C. Income and Earnings by Participation Status

This section examines participants' and non-participants' income and earnings outcomes. ***Exhibit IV.3*** lists income and earnings statistics by participation status for the low-income and food stamp eligible household groups. Not surprisingly, in all four samples (LIHH-12, LIHH-36, FSE-12, and FSE-36), means of the income measures for participants are substantially below those for non-participants. Differences are less pronounced in the month when the income or food stamp eligibility status is determined.

Differences in mean earnings mirror those for income, although they are slightly larger. This is because participants' earnings comprise a smaller share of total income than non-participants'. As discussed in Section IV.B, participants were more likely to have received means-tested cash assistance, such as TANF, SSI, and general assistance, which is included in income, but not in earnings.

Variability in monthly income and earnings, as measured by the standard deviation over 48 months, is higher in each of the non-participant samples than in each of the participant samples. This is a clear indication that the temporary nature of low-income status is an important reason for non-participation. Similarly, in all of the samples, participant households have mean income and earnings below 130% of FPL in a higher number of months than non-participants, and the share with income below that standard in all 48 months is also larger.

Mean monthly income and earnings, as a percent of poverty, over the 48-month panel period, is lower for the samples defined in month 36 than for those defined in month 12. Those with low-income during the later years, when the economy was stronger, were less likely to be employed over the 48-month period and slightly more disadvantaged than those with low-income during the earlier years. The strong economy during the late 1990s likely pushed many of the low-income families from the 12-month sample out of the low-income sample by month 36, keeping only the more disadvantaged.

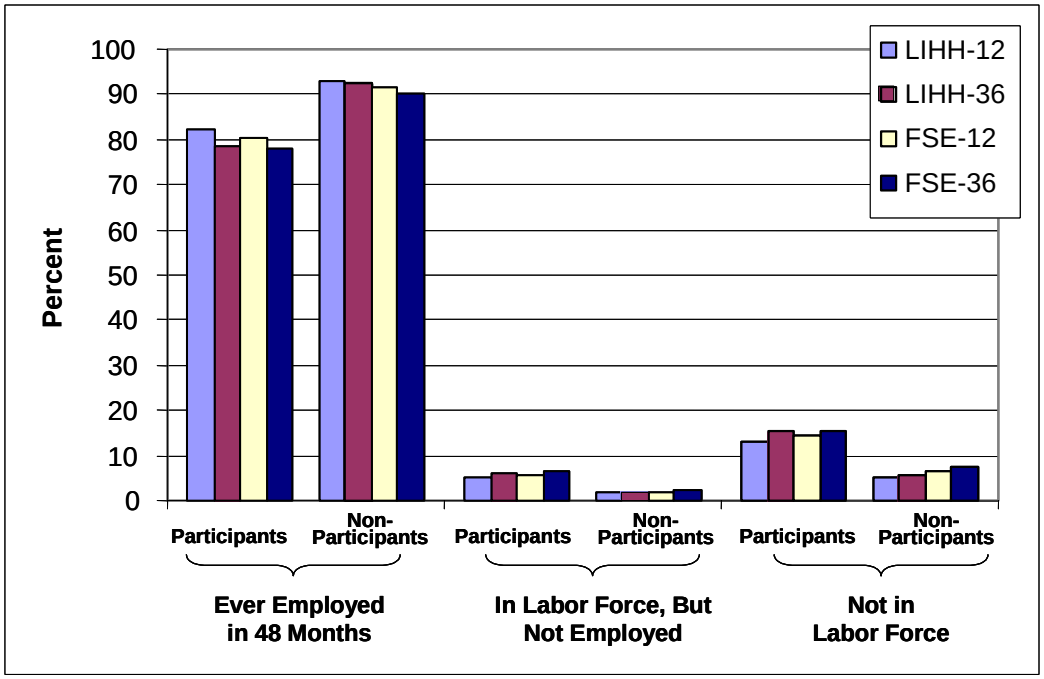
Exhibit IV.3: Income and Earnings Statistics, by Participation Status
(Percent of Household Participation Group, Unless Otherwise Noted)

	Low-income households						Food Stamp Eligible Households					
	LIHH-12			LIHH-36			FSE-12			FSE-36		
	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Mean Income As Percent of Poverty												
Month 12	68.7	84.5	-15.8 ***	85.0	163.7	-78.7 ***	62.6	82.7	-20.1 ***	83.0	126.7	-43.7 ***
Month 36	101.9	180.6	-78.7 ***	67.4	92.6	-25.2 ***	95.6	159.3	-63.7 ***	63.8	89.4	-25.6 ***
Months 6-17	75.2	128	-52.8 ***	82.3	169.2	-86.9 ***	69.9	113.1	-43.2 ***	80.5	128.5	-48.0 ***
Months 30-41	104.8	183	-78.2 ***	78.3	135	-56.7 ***	103.5	164.4	-60.9 ***	75.5	116.7	-41.2 ***
Months 1-48	93.2	164.1	-70.9 ***	82.3	159	-76.7 ***	89.4	146.8	-57.4 ***	79.9	127.3	-47.4 ***
Standard dev. over 48 months	1.7	2.6	-0.9 ***	1.7	3.1	-1.4 ***	2.1	3.1	-1.0 ***	1.7	2.3	-0.6 ***
# Months below 130% FPL	38.9	26.3	12.6 ***	41.2	28.2	13.0 ***	39.8	28.6	11.2 ***	41.7	31.8	9.9 ***
% below 130% of FPL for 48 months	32.7	9.9	22.8 ***	39.1	11.5	27.6 ***	35.4	13.0	22.4 ***	40.6	16.7	23.9 ***
Mean Earnings As Percent of Poverty												
Month 12	30.9	64.5	-33.6 ***	45.4	137	-91.6 ***	25.6	60.0	-34.4 ***	44.4	100.8	-56.4 ***
Month 36	67.8	150.6	-82.8 ***	32.9	70.1	-37.2 ***	61.4	127.3	-65.9 ***	31.1	66.2	-35.1 ***
Months 6-17	37.2	109.1	-71.9 ***	42.9	141.9	-99.0 ***	31.7	87.3	-55.6 ***	42	101.9	-59.9 ***
Months 30-41	69.2	153.8	-84.6 ***	41.9	109.7	-67.8 ***	64.1	133.2	-69.1 ***	40.3	90.5	-50.2 ***
Months 1-48	56.6	136.9	-80.3 ***	44.3	131.8	-87.5 ***	51.2	117.3	-66.1 ***	41.8	100.6	-58.8 ***
Standard dev. over 48 months	1.8	2.7	-0.9 ***	1.7	3.1	-1.4 ***	1.9	3.3	-1.4 ***	1.8	2.4	-0.6 ***
# Months below 130% FPL	41.9	30.0	11.9 ***	43.9	31.6	12.3 ***	42.6	32.5	10.1 ***	44.1	34.9	9.2 ***
% below 130% of FPL for 48 months	48.5	17.5	31.0 ***	55.8	19.7	36.1 ***	51.6	21.8	29.8 ***	56.6	26.1	30.5 ***
Labor Force Statistics												
% with no earnings over 48 months	17.9	7.1	10.8 ***	21.4	7.6	13.8 ***	19.8	9.0	10.8 ***	21.9	9.9	12.0 ***
Mean % of months with earnings	56.8	80.3	-23.5 ***	51.3	77.9	-26.6 ***	53.1	76.9	-23.8 ***	50.1	75.3	-25.2 ***
% with no LFP over 48 months	12.9	5.3	7.6 ***	15.2	5.8	9.4 ***	14.3	6.6	7.7 ***	15.6	7.6	8.0 ***
Mean % of months with labor force participation	69.2	87.7	-18.5 ***	64.9	85.9	-21.0 ***	66.5	84.3	-17.8 ***	64.1	83.2	-19.1 ***
Sample Size	**1163**	**2224**		**900**	**2111**		**928**	**1066**		**847**	**1335**	

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level.
LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month

Exhibit IV.4 presents statistics on household labor force status over the 48-month period. The first set of bars shows the percent that was ever employed during the 48 months by household group and participation status. As this exhibit shows, the vast majority of households were employed at some point over the four years. However, non-participants had higher employment rates than participants. While differences were not large, the low-income household groups had higher employment rates than the food stamp eligible groups, and the groups defined in month 12 had higher rates than the groups defined in month 36. Interestingly, between 13 and 16 percent of participants were never in the labor force during the 48 months. This means that they reported either not seeking work or were unable to work due to an injury, illness, or disability in all 48 months.

Exhibit IV.4: Labor Force Status over 48-Month Panel
Percent Distribution



NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

Exhibit IV.5 presents historical and future reported income of in the months before and after the months when we used our model to determine food stamp eligibility, months 12 and 36. For the group assessed to have low income at month 12, the SIPP contains 11 months of pre earnings and income information and 36 months of post information. For the group assessed to have low income at month 36, the SIPP contains 35 months of pre information and 12 months of post information. Putting both groups together, we have 35 months of pre data and 36 months of post data for both participants and non-participants for the low-income households (Graph A) and food stamp eligible households (Graph B).

In the 24 months around the reference month for which the monthly income lines from the two samples overlap (-11 to +12), average incomes of the month 12 groups are very similar to those of the month 36 groups. While the mean monthly income for participant households in the FSE-12 sample is somewhat lower than mean monthly income for the corresponding group in the FSE-36 sample in the 12 months prior to the reference month, it seems that these relationships are reasonably stable over this period, and we can roughly view the entire graphic as representing the monthly income series for the six-year period beginning three years before the reference month and ending three years later.

From this exhibit, several findings emerge:

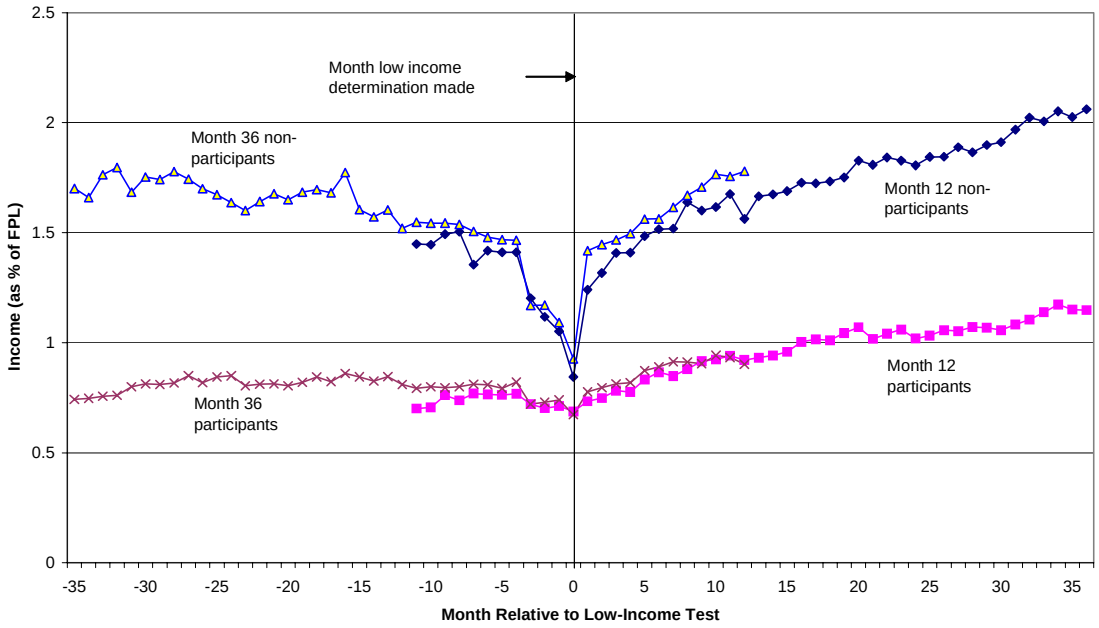
- Non-participant household income, while chronically low, is substantially higher than mean participant income, and then drops by considerably more over the four months or so leading up to the reference month.
- After the reference month, growth is substantially greater for non-participants than for participants (represented by the steeper slope for non-participants). From month zero to month 36, mean non-participant household income increases by 122 percentage points of FPL for the LIHH-12 sample and 104 percentage points for FSE-12, while mean participant household income increases by 46 and 44 percentage points for the LIHH-12 and FSE-12 samples, respectively.

- The growth in income for non-participants is consistent with the idea that expectations of higher future income explain why some eligible non-participant households do not participate. While these expectations might partly be based on higher past income, non-participants likely have other information that is relevant to their expectations about future income.

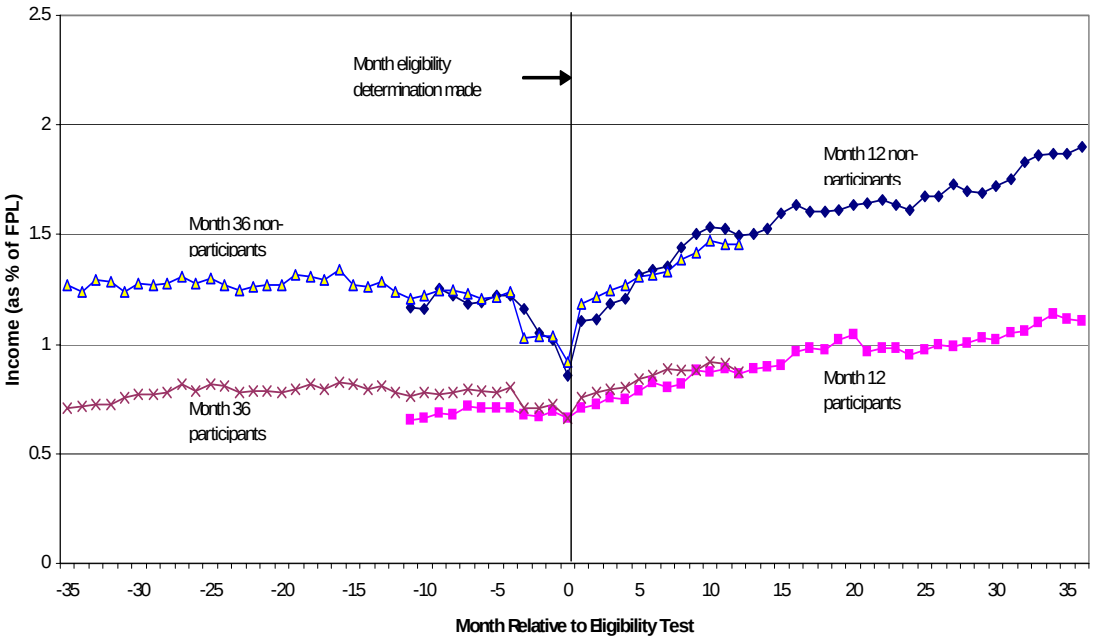
Overall, the series for both participants and non-participants show that mean income in the reference month is lower than in all other months (the "V" at month zero), but this feature is much more pronounced for non-participants than for participants. This visually illustrates the temporary nature of low-income for many non-participants in these two samples.

Exhibit IV.5: Monthly Household Income for Current Month Participants and Non-participants

A) LIHH Sample



B) FSE Sample



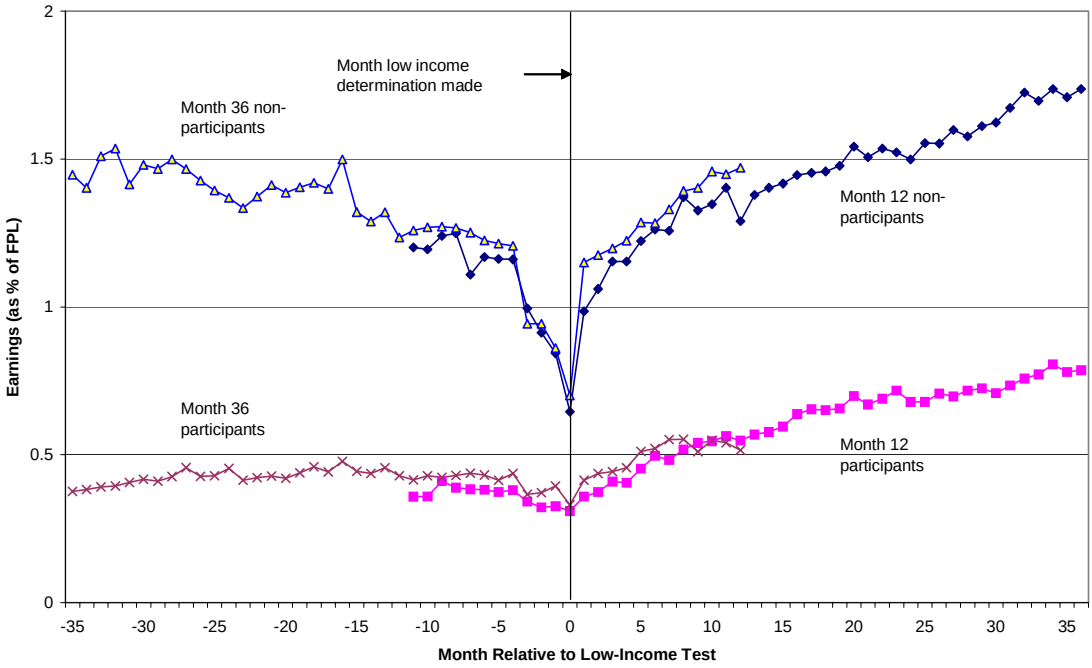
NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

The next set of graphs (***Exhibit IV.6, A*** and ***B***) show the historical and future earnings relative to the reference month for the low-income and food stamp eligible households. The patterns for earnings are almost identical to those presented in Exhibit IV.5, although mean earnings are, of course, lower for both participants and non-participants.

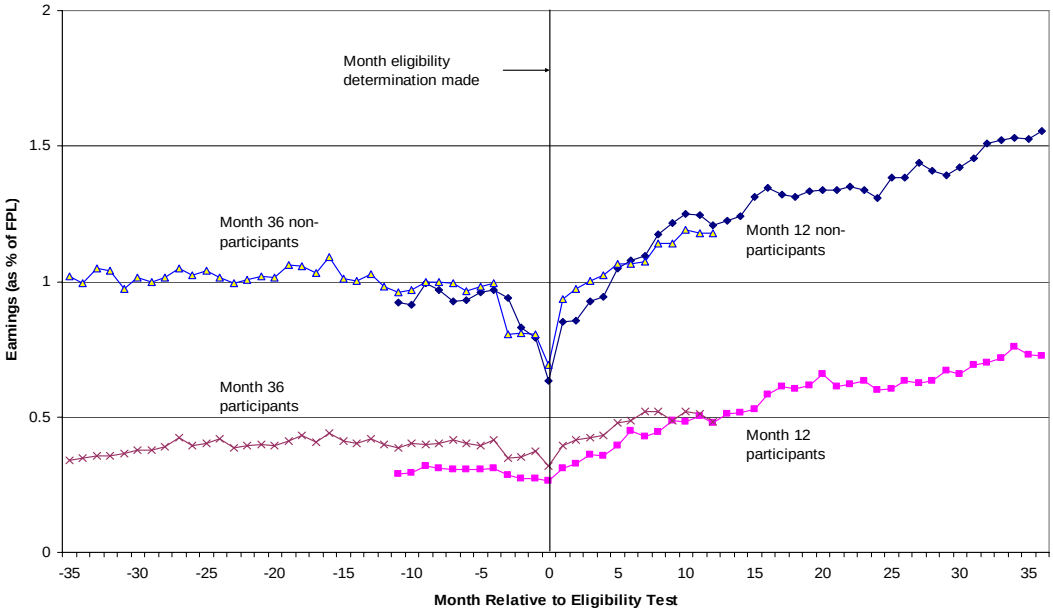
After the reference month, growth in earnings as a percent of FPL (109 percentage points for LIHH-12 and 92 percentage points for FSE-12 from month 0 to month 36) is lower than growth of income for the non-participant households (122 and 104 percentage points, respectively), suggesting that some non-participant households might receive increases in unearned income. It is likely that later mean income growth for non-participants includes growth in public income support, and that some of these households become participant households in later months. Growth in earnings for participant households is about the same as growth in income (47 percentage points for LIHH-12 and 40 to 41 percentage points for FSE-12).

Exhibit IV.6: Monthly Household Earnings for Current Month Participants and Non-participants

A) LIHH Sample



B) FSE Sample



NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

D. Possible Reasons for Non-Participation

In this section, we focus on the non-participating food-stamp eligible households to understand better why they might not be participating in the FSP. In ***Exhibit IV.7***, we classified all non-participant households into six mutually exclusive categories, with households placed in the first category that describes their situation, in the order presented. As the graphs presented in Section IV.D illustrated, it appears that reported gross income in many non-participant households falls briefly under 130 percent of FPL. The time required to apply for food stamps may discourage households eligible for only a few months from applying. Also, these households are likely to be less aware of their eligibility, if they are eligible for only a short time. In Exhibit IV.7, we classify households as being "temporarily below 130% FPL" if their reported income fell below 130 percent of FPL at any time during the SIPP reference wave (wave 3 for the FSE-12 households and wave 9 for the FSE-36 households), but their reported income was above 130 percent at any point in both the prior SIPP wave (wave 2 and 8 for the respective FSE samples) and the subsequent SIPP wave (wave 4 and 10, respectively). About 23 percent of all non-participants fell into this category.

Another possible reason might be that households had been participating in the program, but stopped receiving the benefits temporarily, perhaps due to administrative issues that arose (e.g., they failed to report their income or failed to show up for their recertification appointment). We defined households as being "temporarily off food stamps" if they did not report food stamp receipt in the reference wave, but reported receipt in the prior and subsequent SIPP waves. We found that only 2 to 4 percent of non-participant households (who were not temporarily below 130% FPL) were in this temporarily non-recipient category.

Between 14 and 16 percent of the non-participating FSE households (who did not fall in the first two categories) were ABAWDs. Possibly, they were not eligible due to the three-month time limit, but more likely were not participating because ABAWDs have historically had low participation rates, relative to other groups.[23]

Exhibit IV.7: Non-Participant Households Status

Category	FSE-12	FSE-36
1. Temporarily Below 130% FPL	22.8%	23.5%
2. Temporarily Off Food Stamps	3.8%	2.3%
3. ABAWD	15.8%	13.9%
4. Receiving Other Means-Tested Benefits	35.4%	36.0%
SSI	*19.7%*	*24.2%*
Medicaid	*18.1%*	*17.4%*
WIC	*6.3%*	*5.9%*
Housing Assistance	*5.5%*	*5.5%*
AFDC/TANF	*1.8%*	*0.7%*
5. Income Less Than 130% FPL for 48 Months	2.2%	3.48%
6. Other	20.2%	20.69%
Total Non-Participants	100.0%	100.0%

NOTE: FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

[23] In 1995, 42 percent of ABAWDs participated in the FSP, compared with 85 percent of individuals in households with children (Rosso 2001)

These three possible explanations account for 40 to 42 percent of all non-participants, leaving 58 to 60 percent still "unexplained." Somewhat surprisingly, 35 to 36 percent of all non-participants did not fall into one of the three previous categories, yet were receiving another means-tested benefit (i.e., SSI, Medicaid, WIC, housing assistance, and/or TANF). This is a group that USDA might be able to reach with more extensive outreach efforts and increased coordination with other agencies and offices. Among the means-tested programs, the SSI and Medicaid programs had the highest levels of enrollment, followed by WIC and housing assistance (only a small percentage of households receiving TANF were not participating in the FSP). Interestingly, the vast majority (about 96 percent) of the SSI households were comprised of adults on SSI; about 29 percent were adults living alone.

A small share – 2 to 3 percent – were not receiving any means-tested benefits, but had income below 130% FPL in all 48 months. While this group appears to be eligible for food stamps in all months and in need of food stamp benefits, they were not receiving any means-tested assistance. Another 20 to 21 percent did not fall into one of the five preceding categories. Perhaps this group's expected long-term income, discussed in the next section, is higher than reflected in their current income and affected their participation.

V. THE RELATIONSHIP BETWEEN PARTICIPATION STATUS AND INCOME

Exhibits IV.5 and IV.6 suggest that household income and earnings in months other than the current month are important determinants of FSP participation. In this chapter, we further examine the relationship between participation in a single month and income over a longer period. What we would like to do is observe the relationship between participation and the income concept that is relevant for the household's participation decision, which we refer to as expected long-term income. We cannot observe expected long-term income directly, because it is a value that exists only in the minds of households' decision makers. Nonetheless, we might be able to make inferences about the nature of the relationship between expected long-term income and participation, through the use of various proxy measures and other techniques.

To further motivate the analysis, we first describe the relationship between participation rates and observed current month income. We then consider the same relationship for what might be a better proxy for expected long-term income – annual income. After this, we present findings from a series of econometric models aimed at revealing more about the relationship between participation rates and expected long-term income.

A. Participation Status versus Current Income

We begin by examining the relationship between participation status in the current month and current month income. Although we expect to see a negative relationship between participation and current income, as discussed in Chapter III, that relationship might not be as strong as one might expect because current income as measured in SIPP might not reflect the concept of income that is relevant for the household's participation decision.

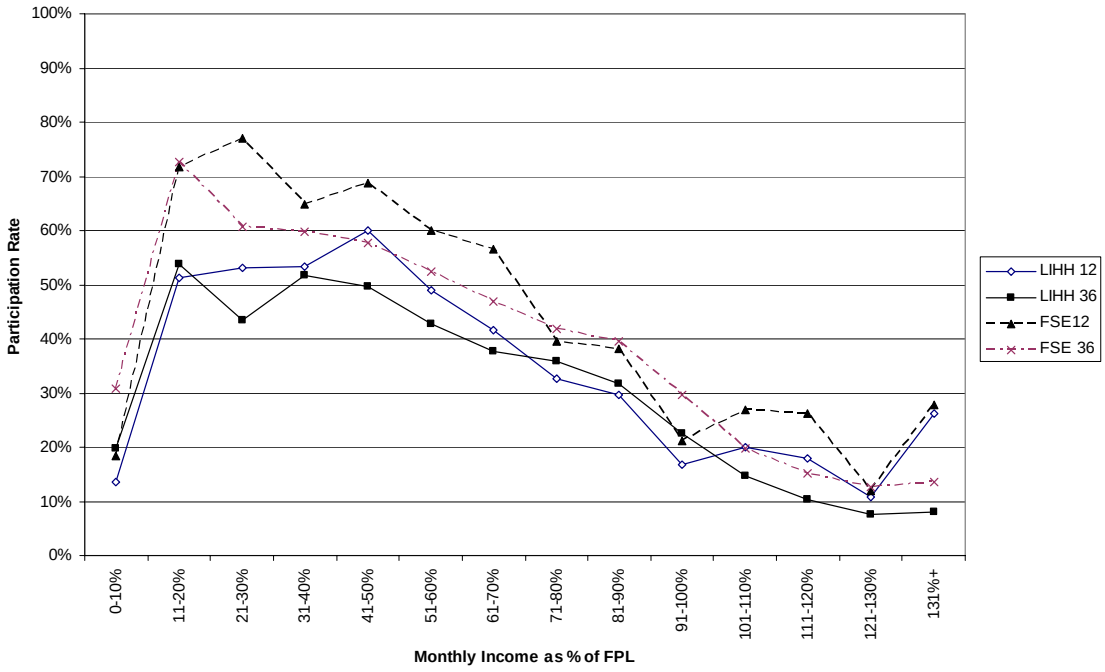
In ***Exhibit V.1***, we plot the relationship between participation rates and household income for each of our four samples. To construct these plots, we first divided each sample into current income subgroups: 0 – 10% FPL, 11 – 20% FPL, 21 – 30% FPL, etc. We then computed the participation rate for each subgroup and plotted it against the mid-point of the subgroup's income range.

We do, in fact, find a negative relationship between reported current month income and participation rates over most of the income range. Surprisingly, however, in each sample, the relationship between participation rates and income has, roughly, an inverted-U shape. That is, participation rates in the lowest income subgroups are actually *lower* than in somewhat higher income subgroups. For instance, in the LIHH-12 sample, the participation rate in the 0-10% FPL subgroup is only 14 percent, then increases with income to a maximum of 60 percent for the 41 – 50% FPL subgroup, before declining.[24]

[24] Other studies have found zero income households have substantially lower participation rates than those with low, but positive income (see Cunnyngham 2002). Wemmerus and Porter (1996) examined the group of zero-income households on the 1990 SIPP longitudinal file and found that many were financially viable, but a clear event or condition (e.g., a job loss, household dissolution, enrollment in school or loss of cash benefits) precipitated the zero-income period.

Participation rates are uniformly higher in the samples that include only those who meet the program's eligibility requirements than in the larger sample of low-income households, but are still well below 100 percent in each income subgroup, and the relationship for this sample also has the inverted-U shape. For FSE-12, the participation rate for the lowest income subgroup is only 18 percent, and rises to a maximum of 77 percent for those in the 21 – 30% FPL subgroup, before declining.

Exhibit V.1: Current Month Participation versus Current Month Income



NOTE: LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

This finding is not simply due to a few outliers in a small sample or some other artifact of the data or methodology. Cunnyngham (2002) reports a similar result in her estimates of individual participation rates by household income category based on FSP administrative data (for the numerator) and the CPS (for the denominator). She finds that the participation rate for individuals in eligible households with no reported income was only 28 percent in 1997.[25]

This raises the question of why there are so many non-participants in very poor households – including very poor households that appear to meet all program eligibility criteria. We posit four explanations:

- Many of these households really are very poor, and need food stamps, but are not receiving them – perhaps because the same conditions that limit their income (e.g., low literacy,

[25] Cunnyngham (2002), Table 5.

psychiatric disorders, cognitive disorders, or communication disorders) also limit their ability to participate in FSP as the program is currently implemented.

- Many households with very low incomes have actual incomes that are higher than those reported; i.e., many have negative reporting errors.[26] These could be systematic omissions of perhaps informal, or even illegal, income, or more random errors in reporting and recording. If the errors are systematic, they are also likely to exist in longer-term measures of income, such as annual income, so use of longer-term income measures might not eliminate the upward sloping portion of the inverted-U. If the errors are predominantly random, however, use of longer-term income measures should reduce or eliminate the upward sloping portion of the inverted-U.

- Many of these households really have low current income, but their expected long-term incomes are considerably higher. If this is the explanation, we might observe characteristics for these households that are indicative of higher expected long-term incomes. In the LIHH samples, this would include high assets. In all samples, this could include households including adults who are between jobs. If we control for such characteristics, the upward sloping portion of the inverted-U shape might be eliminated. Comparison of participation-income relationships for the LIHH and FSE samples suggests that this is an important part of the explanation for the inverted U. In the latter samples, we have eliminated households with substantial assets, which presumably are reflective of higher long-term incomes. In these samples the inverted-U appears only between the two lowest income categories. Nonetheless, it remains.

- These households might fail to report FSP participation more frequently than households with higher incomes (see Bollinger and David, 1997, 2001).

These possible explanations have very different policy implications. If the first explanation is right, there would appear to be a need for policies to address the low participation rates of these very low-income, non-participant households. If the finding is only due to the other three explanations, then it could be that the program is successfully meeting the food needs of all very low-income households that really have such needs. Most likely, the inverted-U shape is explained by some combination of these possible reasons.

In the remainder of this chapter, we employ various methods to better describe the relationship between participation and the inherently unobserved concept of expected long-term income, primarily to assess the extent to which the large gap between actual participation and 100 percent participation that we see for very low income households remains when we replace the monthly income measure by expected long-term income. We do find evidence that the gap is considerably smaller when we replace monthly income with expected long-term income, but it also appears that the remaining gap is substantial. The analysis leaves open three possibilities: 1) income is systematically underreported in SIPP for substantial numbers of very low income,

[26] Of course, reported current income in households with higher current incomes might also deviate from actual current income, either randomly or systematically. What is different about the households with the lowest incomes is that any large deviations must be negative; households with large positive deviations cannot have low *reported* income.

non-participant households, and the techniques we use cannot adjust for that; 2) under-reporting of FSP participation is especially substantial in households with very low expected long-term income; and 3) some households with very low expected long-term incomes are not participating in FSP despite substantial need. In the next chapter, we take a closer look at the observed characteristics of non-participant households in the lowest income subgroups, to assess the extent to which they have significant unmet need for food stamps, assuming that they have accurately reported income and participation.

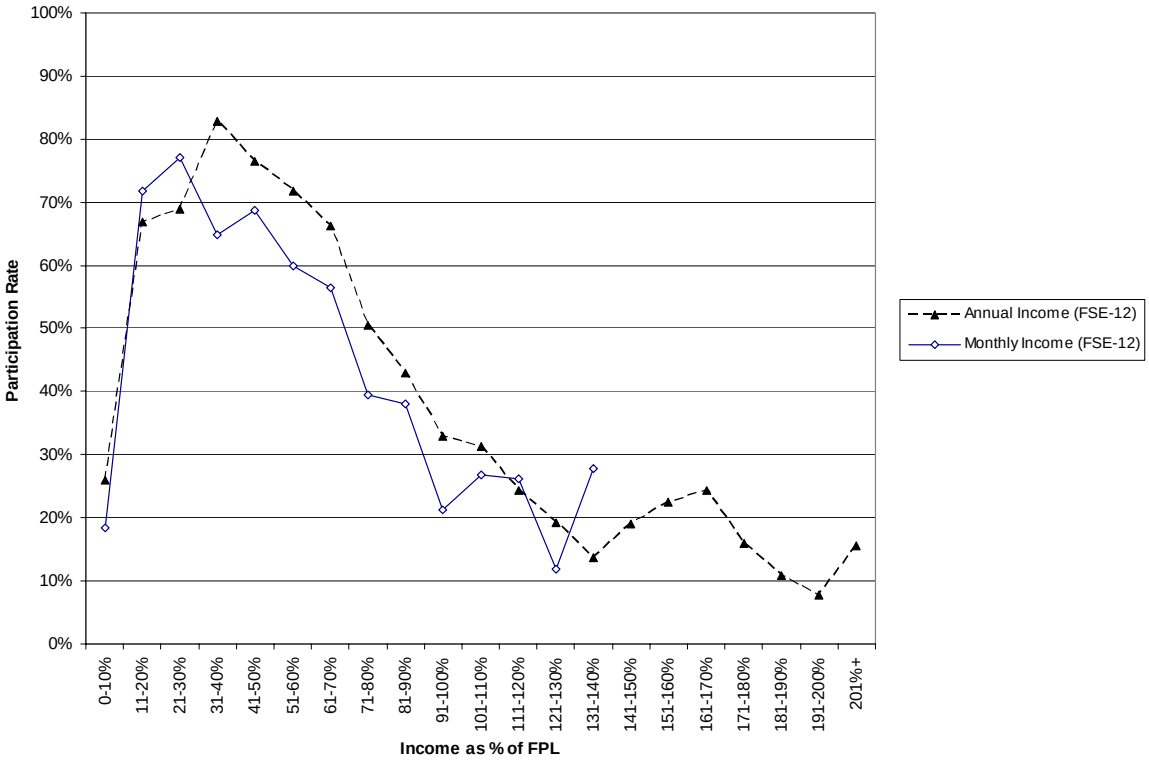
B. Participation Status Versus Annual Income

The simplest way to assess whether the relationship between participation and expected long-term income is closer to the relationship represented by Exhibit III.1 than the observed relationship between participation and current month income is to use a longer-term income measure than reported current month income. Presumably income measured over a moderately longer period will be a better proxy for expected long-term income than current income.

To illustrate, we examine the relationship between participation rates and household subgroups defined by annual income (i.e., income over the 12-month period beginning six months before the current month and ending five months after it) and compare it to the relationship using current income (see ***Exhibit V.2***).[27] Annual income is frequently used in the research literature using survey data, so it is important to investigate the participation rate as a function of low annual income. For this analysis, we focus on the FSE-12 sample only. For most subgroups with incomes below 130% FPL, participation rates are higher when we use annual income than when we use current income. However, the upward sloping section of the inverted-U is just as substantial as when we use monthly income. The participation rate for the lowest income group defined by annual income is only not substantially higher than the rate for the lowest group defined by monthly income (26 versus 18 percent).

[27] This figure was constructed in exactly the same way as Exhibit V.1, except for the use of the annual income measure.

Exhibit V.2: Participation Rate versus Annual and Monthly Income (FSE-12 Sample)



NOTE: FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

One other feature of the relationship using annual data is that the participation rate is above zero for households with annual incomes as high as 200% FPL. Similar findings emerge from analyses of the other three samples (not shown).

Although this analysis does suggest that the gap between 100 percent participation and actual participation is smaller when expected long-term income, rather than current income, is used, it still appears to be very large, especially for the lowest income groups. The maximum participation rate observed is 83 percent for households with incomes between 31% FPL and 40% FPL. While annual income appears to be a better proxy for expected long-term income than current income, it might still be very imperfect. One possible reason is systematic misreporting of income over much or all of the year. A second possible reason is that the relevant time period is different than a year – most likely longer. A third possible reason is that annual income implicitly weights monthly income in each of the 12 months equal, but perhaps the weights should be different. Finally, and most importantly, no variable we could construct from survey responses can exactly represent the relevant concept of expected long-term income for each household; for any measure we construct, there will always be idiosyncratic differences between the measure for a household and what the household's decision makers consider to be the household's expected long-term income.

C. Participation Status versus Annual Income after Controlling for Other Variables

The relationships between participation rates and both current month and annual incomes presented in the two previous sections are not adjusted for other observed differences between households across the income subgroups. That is, as we move from the lowest income subgroups to the highest income subgroups, other characteristics of the households change along with their incomes. The observed relationship between participation and the relevant income measure is the relationship allowing these other characteristics to change. Changes in these characteristics might help explain the inverted-U shape of the participation-income relationships, and controlling for these characteristics might change the shapes of these relationships in substantial ways.

One of the most important characteristics to consider is ABAWD status, as we expect much lower participation rates for ABAWD households, and some such households might have very low temporary incomes and very high expected long-term incomes.

We used logit analysis to control for other characteristics and to produce participation rate/income relationships that are adjusted for these characteristics. For the results presented in this section, the log odds ratios are specified to be a fifth order polynomial in annual income[28] and linear in selected characteristics (***Exhibit V.3***). The fifth-order polynomial specification was chosen after we determined that fifth-order polynomials could be used to closely approximate the shapes of the unadjusted participation rate/income relationships.

[28] That is, we included income, income^2, income^3, income^4, and income^5 as explanatory variables.

Exhibit V.3: Logistic Regressions for the Probability of Participation, Food Stamp Eligible Samples

Explanatory Variable	FSE-12 Coefficient		FSE-12 Marginal Effect	FSE-36 Coefficient		FSE-36 Marginal Effect
Annual Household Income (% FPL)						
1st Power	5.427	***	n.a.	1.648		n.a.
2nd Power	-12.555	***	n.a.	-5.595	***	n.a.
3rd Power	7.668	***	n.a.	3.112	***	n.a.
4th Power	-1.716	***	n.a.	-0.602	**	n.a.
5th Power	0.115	***	n.a.	0.034	**	n.a.
Sex of Head (base = Female)						
				-0.354		-0.073
Male	-0.417	***	-0.094			
Race of Head (base = White)						
Black	0.112		0.026	0.109		0.023
Native American	-0.036		-0.008	0.523		0.119
Asian	0.635		0.155	0.684		0.159
Ethnicity (base = non-Hispanic)						
				-0.204		-0.042
Hispanic	-0.077		-0.017			
Age of Head (base = 18 - 25)						
26-35	-0.224		-0.051	-0.115		-0.024
36-45	0.011		0.003	-0.012		-0.002
45+	-0.177		-0.040	-0.269		-0.055
Household Members (base = one child, no elderly or disabled members)						
At least one disabled member	0.917	***	0.219	0.936	***	0.213
At least one elderly member	0.021		0.004	0.250		0.054
Two or three children	0.485	***	0.113	0.428	***	0.092
Four or more children	0.609	***	0.147	0.789	***	0.182
ABAWDs	-1.198	***	-0.230	-0.800	***	0.147
Age of Youngest Child (base = under age 2)						
2 to 4	0.442	**	0.105	0.647	***	0.147
5 and over	0.604	***	0.145	0.397	**	0.088
Marital Status of Head (base = never married)						
Married	-0.583	***	-0.130	-0.387		-0.079
Divorced	0.522	***	0.123	0.216	*	0.046
Widowed	0.172		0.040	0.202		0.044
Education of Head (base = less than high school)						
High school graduate/GED	-0.176		-0.040	0.085		0.018
Trade/vocational school	-0.051		-0.012	0.244		0.054
Some college	-0.400		-0.088	-0.398	**	-0.079
College graduate or higher	-0.283		-0.063	-0.819	***	-0.147
Intercept	**0.246**			0.351		

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level
LIHH-12 and -36 samples have gross income less than 130% FPL in month 12 and month 36, respectively; FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

We found that many of the characteristics were significant predictors of participation in all samples, whether we used annual income or current month income, but others were not. As discussed in Chapter III, the significance of individual characteristics could be either because the characteristic has some direct effect on participation, or because the characteristic captures part of the effect of expected long-term income (even after controlling for annual income).

The "marginal effect" for each characteristic reported in Exhibit V.3 represents the estimated effect of a change in a characteristic from the base (omitted) category to the category indicated on the probability of participation, holding other characteristics and the annual income variables constant at their means.

We consistently found that ABAWD households were much less likely to participate than others. Holding annual income and other characteristics constant at their means, we estimate that the probability of an ABAWD household's participation in month 12 was 23 percentage points lower than that of a non-ABAWD household with one child and no disabled or elderly adults. As will be seen below, this understates the difference between participation rates of ABAWD and non-ABAWD households holding annual income constant because mean values of other characteristics for these two types of households are quite different.

We also found the following significant differences (values in parentheses are estimated percentage point differences in participation rates for the FSE-12 and FSE-36 samples, respectively, holding annual income and other characteristics constant at the mean):

- Male-headed households are less likely to participate than female-headed households (9.4 and 7.3);
- Households with at least one disabled member were much more likely to participate (21.9 and 21.3) than households without a disabled member;
- Households in which the youngest child is at least two years old are more likely to participate than households with the youngest child under two (10.5 and 14.7 for households with the youngest child aged 2 to 4, and 14.5 and 8.8 for households with the youngest child aged 5 or older);
- Households in which the head is married are much less likely to participate than households in which the head has never been married (-13.0 and –7.9), while households in which the head is divorced are much more likely to participate (12.3 and 4.6) than never-married heads; and
- There is a negative relationship between level of education completed by the household head and participation, although estimates for individual categories of education at the level of high school graduation or above are not always significantly different from estimates for those with less than a high school education, holding other things constant. Households headed by a person with a college degree are least likely to participate,

holding other things constant (-6.3 and –14.7 compared to those in which the head has less than a high school education).

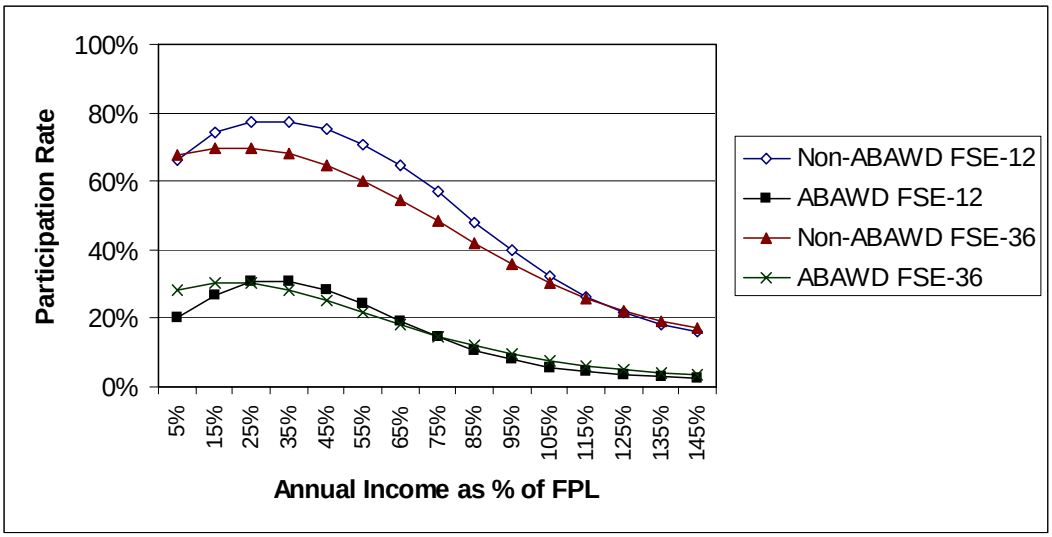
- We did not consistently find significant differences in participation by age, race or ethnicity after controlling for annual income and other characteristics.

We suspect that the findings with respect to disability, education, marital status, and sex are related to differences in expected long-term income that are not captured in annual income. This is perhaps most apparent for disability status. It also seems especially likely for marital status and education as, holding other things constant, we would expect to find households with married, well-educated heads to participate at a rate that is at least as high as households with never married and less educated heads if their long-term income prospects were truly the same; they are more likely to contain two adults, instead of one, and a well educated head is presumably more capable of accessing the program than the less educated head. Instead we find the opposite relationship, after holding annual income and other characteristics constant (i.e., households with a well-educated, married head are less likely to participate than those headed by a less-educated, never married head).

The relationships between participation rates and annual income implied by these estimates are shown in ***Exhibit V.4***, separately for ABAWD and non-ABAWD households. Each plot shows the fitted value for the participation rate at each annual income level indicated, holding all characteristics constant at the means for the relevant group (ABAWD or non-ABAWD). For both the FSE-12 and FSE-36 samples, we used the means from the FSE-12 samples so that differences in the plots for the two samples would not reflect differences in the means. As noted in Chapter III, however, the only substantial difference between the means for the two samples is that the heads of households in the FSE-36 sample are, on average, approximately 24 months older than those in the FSE-12 sample.

These plots show that the relationships between participation rates and annual income for both ABAWD and non-ABAWD households, after holding other characteristics constant (within each group) are very similar in the two sample periods for the FSE samples. They also show that the difference between participation rates for ABAWD and non-ABAWD households, holding annual income constant, but not holding the means of characteristics constant, are much larger than differences when the means of characteristics are held constant for income levels below approximately 100% FPL. The difference is greatest for households with annual income at approximately 35% FPL – 46 percentage points in the FSE-12 sample and 40 percentage points in the FSE-36 sample.

Exhibit V.4: Participation Rate versus Annual Income by ABAWD Status (FSE-12 means for characteristics)



NOTE: FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

For both types of households, participation rates peak at approximately 35% FPL, but this simply reflects the fact that the logit specification implicitly constrains the income coefficients to be the same for the two types of households. Of greater interest is the finding that, after controlling for other characteristics, the inverted-U shape remains.[29] That is, at least some of the low participation rates of the very low-income households are accounted for by their observed characteristics. As indicated above, that might be because the characteristics partially reflect differences in expected long-term income after controlling for annual income.

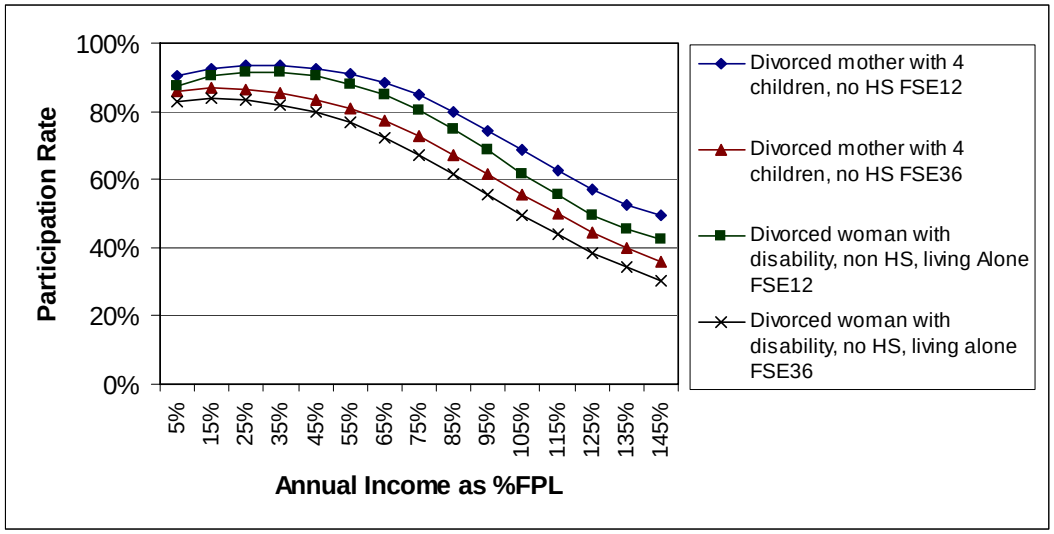
As in the earlier analysis, substantial shares of very low-income households do not participate, even among non-ABAWD households. The highest estimated participation rate for the latter, at annual income of 35% FPL, is 78 percent in the FSE-12 sample and 68 percent in the FSE-36 sample.

We can also use the model to look at participation rates of more specific groups. For instance, based on the model, estimated participation rates for households with four children over age five, headed by a divorced woman who had not completed high school, are in the 88 – 95 percent range if household income is below 65% FPL, in both samples (***Exhibit V.5***). Similarly, estimated participation rates for households headed by a divorced woman with a disability, who has not completed high school and who is living alone are in the 77 – 87 percent range if household income is below 65% FPL. Most would consider these two types of households to be

[29] The lines for the FSE-12 date in this figure differ from those in Figure V.1 in three respects. First, we smoothed the lines by use of the fifth-order polynomial in the logit model. Second, we controlled for other characteristics, including ABAWD status, through their inclusion as independent variables in the logit model. Third, we show separate lines for ABAWD and non-ABAWD groups. We obtained very similar lines when we did not include characteristics other than ABAWD status in the model. When we do not control for ABAWD status, either, the smoothed lines are very similar to those reported in Exhibit V.1.

extremely disadvantaged, with poor long-term income prospects. While the estimates indicate that the vast majority of such households do participate, the share not participating appears to be substantial.

Exhibit V.5: Participation Rate versus Annual Income by ABAWD Status for Selected Groups (1997 means for characteristics)



NOTE: FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

In summary, when we consider the effects of various household characteristics on participation, we continue to find evidence that substantial numbers of very low income households do not participate, even when their characteristics suggest that their current income is indicative of their expected long-term income. It appears that, after controlling for household characteristics and annual income, many very low income households either: a) did not report all of their annual income; b) had higher expected long-term income than their annual income and other characteristics indicate; c) did not take advantage of the FSP for some other reason, and/or d) participated in FSP but failed to report it.

D. Current, Past and Future Income as Predictors of Current Participation

In using annual income as a proxy for expected long-term income, we implicitly made arbitrary choices about weighting income in each month; that is, we placed a weight of one twelfth on income in each of the 12 months from the sixth month before the current month to the fifth month after, and a zero on income in every other past and future month. To explore whether use of alternative weights, determined by the data rather than arbitrary decisions, would perhaps better reflect expected long-term income, and better predict participation, we estimated logit specifications in which we included the fifth-order polynomial in current income and

separate variables for mean monthly income in half-year intervals before and after the current month.[30] We included the same characteristics variables as in other specifications.
We estimated different variants of this model for months 12 and 36 because the number of prior and future months observed differs for the two samples. We can include reported income for the two prior half-years and for the following six half-years when using the 12-month samples, and vice versa when using the 36-month samples. Initial estimates for the 12-month samples showed that coefficients on income more than three half-years after the current month were never significant, so in the estimates we report for the 12-month samples we have dropped incomes in half-years four through six after month 12. Initial estimates for the 36-month samples showed that income in the sixth half-year before month 36 had a significant coefficient in several samples, so we retained all of the variables for all of the half-years available for that sample. In each model we included the fifth-order polynomial in current income as well, so that we could assess the extent to which inclusion of variables for income in earlier and later periods affects the shape of the relationship between current income and participation.

With one exception, the coefficients of all the half-year income variables are negative, and the one that is positive is very close to zero (see ***Exhibit V.6***). In the 12-month sample, the largest coefficient is for the previous half-year, and the second largest is for the second previous half-year, and both are significant. The coefficient for the first half-year after the current month is also negative, large and significant, while the coefficient for the second half-year later is negative, but not as large and only significant at the 0.10 level.

In the 36-month sample, the coefficients for the first half-year before and the first half-year after the current month are both significant, but are much smaller than for the 12-month sample. The coefficients for the second, third and fourth half-years before the current month are all negative and decline in value moving away from the current month, but none are significant at even the 0.10 level. The coefficient for the sixth half-year before the current month is also negative, is larger than the coefficients in all other months, and is quite significant. When we estimated this model using only five half-years before the current month (not reported), we found that the coefficient for the fifth half-year earlier was negative, large and statistically significant.

This evidence suggests that: a) past income is a stronger predictor of participation than future income; b) the predictive power of past or future income deteriorates as one moves away in either direction from the current period; and c) earnings in the more distant past (three or more years earlier) might have substantial predictive power.

[30] Because the current month is included as a separate variable, we define the first half-year interval after the current month as the five months after the current month. Also, we only observe five months of the second half-year before the 12th month and the sixth half-year before the 36th month, so means for those two half-year periods are based on just the five observed months. All other half-year means are based on a full six months.

Exhibit V.6: Logit Results with Leads and Lags of Mean Monthly Income for Half-year Periods, Food Stamp Eligible Samples

Explanatory Variable	FSE-12 Leads & Lags? No		FSE-12 Leads & Lags? Yes		FSE-36 Leads & Lags? No		FSE-36 Leads & Lags? Yes	
Current Month Household Income (% of FPL)								
1st Power	5.4684	***	5.8894	***	3.8408	***	3.9332	***
2nd Power	-11.6192	***	-10.3592	***	-9.8387	***	-9.0567	***
3rd Power	6.8710	***	6.2022	***	5.9488	***	5.6237	***
4th Power	-1.5443	**	-1.3981	***	-1.3378	***	-1.2843	***
5th Power	0.1168	***	0.1051	***	0.0989	***	0.0957	***
Mean Monthly Income in Prior Half-year Periods								
6th half-year earlier[b]	-		-		-		-0.3757	***
5th half-year earlier	-		-		-		0.0497	
4th half-year earlier	-		-		-		-0.0997	
3rd half-year earlier	-		-		-		-0.1271	
2nd half-year earlier[b]	-		-0.3703	**	-		-0.1805	
1st half-year earlier	-		-1.0003	***	-		-0.3115	**
Mean Monthly Income in Later Half-year Periods								
1st half-year later[a]	-		-0.2652	**	-		-0.1195	*
2nd half-year later	-		-0.3153	*	-		-0.0647	
3rd half-year later	-		0.0544		-		-	
Sex of head (base = Female)								
Male	-0.4771	***	-0.3601	***	-0.4485	***	-0.3944	***
Race of head (base = White)								
Black	0.1832		0.0987		0.1307		0.0680	
Native American	-0.0336		0.0728		0.4065		0.4750	
Asian	0.4966		0.5473		0.6719	*	0.8051	*
Ethnicity (base = non-Hispanic)								
Hispanic	0.0802		0.0302		-0.1830	*	-0.2918	**
Age of head (base = 18 - 25)								
26-35	-0.1223		-0.1529		-0.0242		-0.0577	
36-45	0.0209		0.0559		0.0415		0.0279	
45+	-0.0855		-0.1457		-0.1604		-0.2218	
Household members (base = one child, no elderly or disabled members)								
At least one disabled member	0.9896	***	0.8459	***	1.0327	***	0.9001	***
At least one elderly member	-0.0606		0.1327		0.2294		0.4522	***
Two or three children	0.5452	***	0.4865	***	0.5131	***	0.4245	***
Four or more children	0.7766	***	0.6028	***	0.9241	***	0.7571	***
Able-bodied adults only	-1.0209	***	-1.0348	***	-0.8253	***	-0.7242	***
Age of youngest child (base = under age 2)								
2 to 4	0.4969	**	0.4424	**	0.6330	***	0.6954	***
5 and over	0.7047	***	0.5999	***	0.3834	**	0.3936	**
Marital status of head (base = never married)								
Married	-0.7069	***	-0.5257	***	-0.5324	***	-0.3342	*
Divorced	0.5061	***	0.5566	***	0.1372		0.2229	*
Widowed	0.1188		0.2436		0.2174		0.3446	*

Exhibit V.6: Logit Results with Leads and Lags of Mean Monthly Income by Half-year Periods, Food Stamp Eligible Samples (continued)

Explanatory Variable	FSE-12 Leads & Lags? No		FSE-12 Leads & Lags? Yes		FSE-36 Leads & Lags? No		FSE-36 Leads & Lags? Yes	
Education of head (base = less than high school)								
High school graduate/GED	-0.2992		-0.1910		0.0427		0.1164	
Trade/vocational school	-0.2082		-0.0059		0.1747		0.2687	
Some college	-0.5810		-0.4294		-0.4852	***	-0.3609	*
College graduate or higher	-0.5277	**	-0.2185		-0.9575	***	-0.7540	**
Intercept	-0.313		0.593		-0.119		0.622	

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level.

FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

a/ Based on the first five months after the current month only.

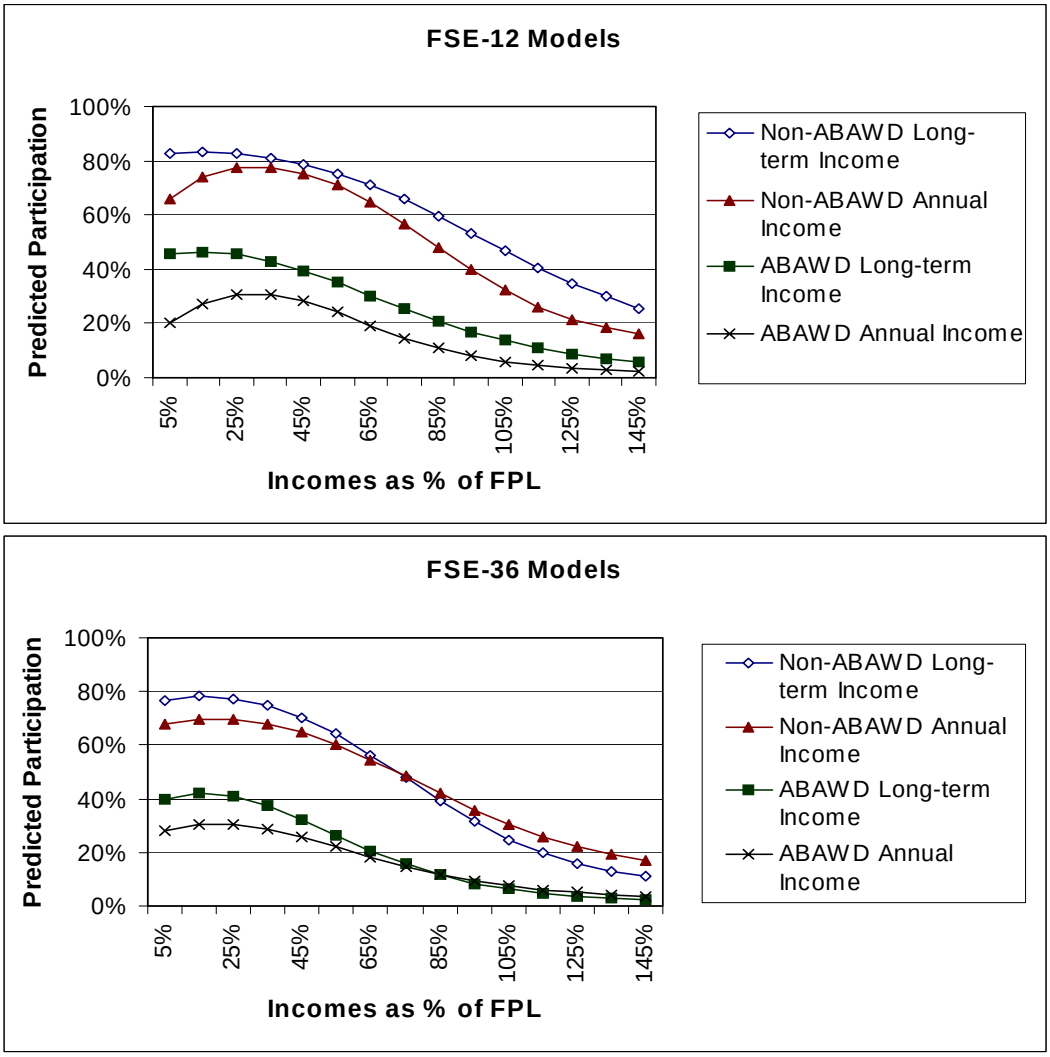
b/ The mean for the second half-year before the current month in the month 12 sample and the sixth half-year before the current month in the month 36 sample are based on the last five months of the half-year only -- the first five months of the survey period.

To illustrate the implications of this specification for the relationship between participation and expected long-term income, we consider how the participation rate varies across households with constant income over the relevant period. More specifically, we substitute the same income value into the equation for each income variable, and trace how the predicted participation rate changes with the value substituted, holding the characteristic variables constant at the means for non-ABAWD households, then repeat the exercise for ABAWD households. We would expect households with constant income over long periods to have expected long-term incomes that are very close to current incomes, so the resulting relationship might be fairly close to the relationship between participation and expected long-term income.

We compare the relationships based on long-term constant incomes to the relationships based on annual income from Exhibit V.4 by ABAWD status (***Exhibit V.7***). The top half of the panel is based on the long-term model for FSE-12 and the bottom half is based on the long-term model for FSE-36. As the two models are different, the long-term constant income lines in the two panels are not comparable to each other.

Both long-term income models produce estimated participation rates that are above the corresponding rates for the annual income models in the lower income range (below 75% FPL), but a surprising finding is that the model for the FSE-12 sample also produces higher estimated participation rates at 75% FPL and above. The model for the FSE-36 sample produces lower participation rates above 75% FPL. We would expect the long-term income models to produce lower participation rates than the annual income model in the highest income range (e.g., above 100% of poverty), because the long-term model implies that income has been at that relatively high level for a longer period than the annual model does. The main difference between the models for the two periods is the inclusion of income six half-years earlier in the FSE-36 model, with a large and significant coefficient, and the exclusion of that term from the FSE-12 model. Thus, it might be that income from that far in the past adds important information to our knowledge of expected long-term income.

Exhibit V.7: Participation Rate versus Annual and Long-term Constant Income[31]



NOTE: FSE-12 and -36 samples meet the FSP eligibility criteria in the respective month.

For both long-term income models, the positively sloped section of the inverted-U is substantially less pronounced than in the corresponding annual income model. This suggests that high income from periods further away from the current month than six months does help explain why some very low-income households do not participate, but there remains substantial room for competing explanations – namely systematic under reporting of income, relatively high underreporting of FSP participation, and/or the difficulties such very low income households might face in participating in the program.

[31] The long-term constant income relationship for FSE-12 is based on an assumption of constant income from two half-years before the current month through three half-years after the current month. The long-term constant income relationship for FSE-36 is based on an assumption of constant income from six half-years before the current month through two half-years after the current month. For both samples, values for other characteristics in the non-ABAWD and ABAWD relationships are fixed at FSE-12 means for non-ABAWDs or ABAWDs, respectively.

E. Instrumental Variables Estimates for the Expected Long-term Income Model

One classic approach to estimation of expected long-term income models in the consumption function literature is to use past or future income as an instrumental variable (IV) for current income. In this approach, income in any period is viewed as an imperfect measure of expected long-term income (the variable we would like to include in the regression), including a transitory measurement error. When income is observed for multiple periods, each period's income can be viewed as a separate measure of the household's expected long-term income. Income in the current period is included as an explanatory variable in the regression, but income values for other periods are used as IVs. This approach should work well if deviations of observed income around expected long-term income are independent from month to month after controlling for other explanatory variables.

In this section, we present results from an initial effort to apply this method to FSP participation. To apply it in a straightforward fashion, we first switch from the logit model to the "linear probability model;" that is we specify that the probability of participation is a linear function of the explanatory variables, rather than specify that the log odds of participation is a linear function of the same variables. Although the linear probability model has the undesirable property of not confining probability predictions to the zero-one interval, it is more amenable to application of IV estimators than non-linear models such as logit and probit.[32]

We specify a polynomial in current income, and also include the characteristics variables. Initially we tried a fifth-order polynomial, reflecting our experience with the logit models, but found that a third-order polynomial fit the data essentially as well. We treat all orders of current income as endogenous. For IVs, we use mean monthly income in months four through six and seven through nine before the current month and months four through six and seven through nine after the current month, each raised to the same powers as are represented in the polynomial.[33] Thus, for the third-order estimates reported, we used a total of 12 instruments. We interpret IV estimates of the coefficients on the current income variables as the coefficients for the unobserved expected long-term income variable. We do not use income in the three months before or after the current month as instruments because the four-month interview cycle makes it likely that current-month deviations from expected long-term income are likely to be reflected in income for at least some of these months, violating the independence assumption.

We present estimated participation rate/income relationships for the FSE-12 and FSE-36 samples in ***Exhibit V.8.*** Characteristics for all relationships depicted are fixed at the means for non-ABAWD observations from the FSE-12 sample. The "OLS" lines are based on ordinary least squares estimates of exactly the same linear probability model. These lines are quite similar to

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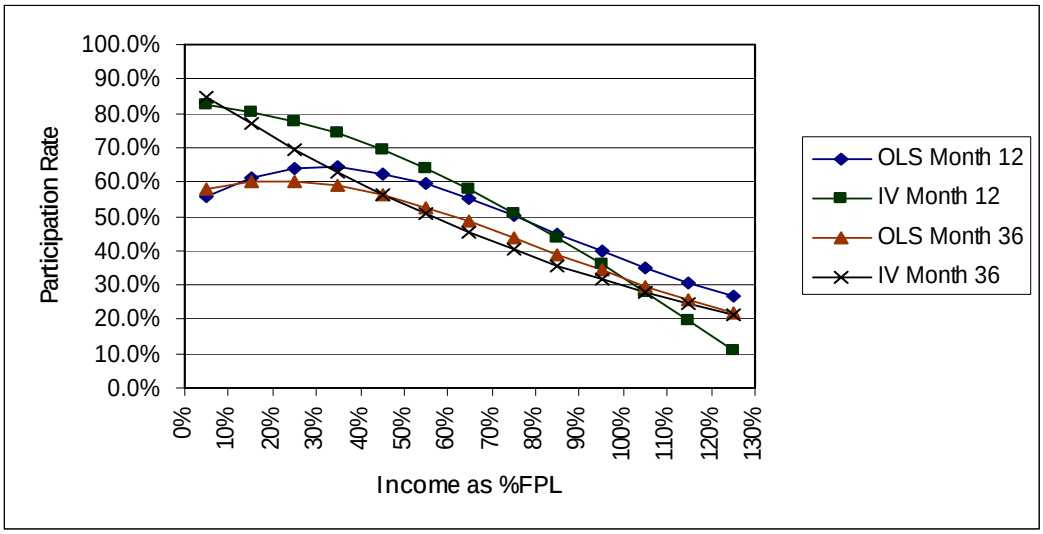
[32] Another well-known problem with the linear probability model is that the model's disturbance is necessarily heteroskedastic. In the presence of heteroskedasticity, the usual OLS and IV formulas for standard errors are biased downward. We have addressed this issue by using robust standard errors (White, 1980).

[33] Technically, the other explanatory variables in the model are also used as IVs, but they essentially serve as IVs for themselves.

the lines derived from the logit models using current month income as the only income variable (not shown).

For both samples, the IV line declines monotonically, and the highest estimated participation rate is for the lowest income level. This is consistent with what we would expect if the lines truly reflected the relationship between participation and expected long-term income. The shape of the IV line for the FSE-12 sample and its location relative to the OLS line for that sample is also consistent with expectations; at the lowest income level, the IV line is well above the OLS line (82 percent participation versus 56 percent), then declines at an increasingly rapid rate as income increases, eventually crossing the OLS line at about 75% FPL, and falling to just 11 percent at 125% of poverty. The shape of the IV line for FSE-36, however, is not fully consistent with expectations. The estimated participation rate declines linearly with income, and the line drops below the OLS line at about 35% FPL, remains below the OLS line until about 105% FPL, then is again above the OLS line.[34]

Exhibit V.8: OLS and IV Estimates of the Relationship Between the Participation Rate and Current Income*



* Household characteristics held constant at the means for non-ABAWD households in the FSE-12 sample.

F. Under-Reporting of Participation

As indicated above, one reason for the gap between participation reported in SIPP and 100 percent participation is under-reporting of participation. It is likely that under-reporting affects both the height and slope of the relationship between expected long-term income and reported participation. As discussed in Chapter II, Bollinger and David (2001) were able to use 1984 SIPP

[34] We estimated the same models using just six instruments, based on mean income in months four to six before and after the current month. Results were quite similar, but participation rates for the lowest income groups were somewhat lower in both samples. This suggests that the instruments based on months that are further away convey important information about permanent income.

data matched to administrative records in several states to show that the negative relationships between participation and their measures of household earnings potential and assets were stronger after correcting for under-reporting than in the absence of a correction. They also found that actual participation of households based on matched administrative records in three states from the first two waves of the 1984 SIPP was 13.8 percent higher than reported (see their Table 4).

Unfortunately, we do not have FSP administrative records, so we can only speculate about the possible effect of under-reporting on the estimated relationship. It is clear that under-reporting is substantial in the SIPP, as estimates derived from SIPP are always lower than those based on administrative data. We do not know the extent of under-reporting for the households in our sample, because estimates based on administrative data for a comparable set of households are not available.

Cunnyngham (2002) reports a participation rate of 57.5 percent for all eligible households in September 1997, based on administrative quality control records (numerator) and the Current Population Survey (CPS). This is 26 percent higher than our estimate of 45.5 percent in the FSE-12 sample. For September 1999 she reports an estimate of 53.0 percent, 38 percent higher than our estimate of 38.5 percent for our FSE-36 sample. Her households include households in which all adults are elderly, which historically have had lower participation rates than others, so a rate for a set of households that is comparable to ours might be even higher than her overall estimate. However, the denominator for her estimate is based on the Current Population Survey (CPS), and she reports evidence that the participation rate would be lower if the denominator were based on the SIPP.[35] The fact that some of her estimates for subgroups are in excess of 100 percent also suggests that her estimates are too high. Also, our use of a sample for which we had 48 complete months of data should reduce the extent of under-reporting based on the Bollinger and David (2001) finding that those who fail to report participation are also more likely than others to attrite from the sample.

This information suggests to us that actual participation for households in our FSE samples is on the order of 10 to 20 percent higher than our estimates indicate. To illustrate how this might affect our results, consider the IV estimate of the relationships between participation and expected long-term income in the FSE-12 sample (Exhibit V.8). If participation is higher by 10 to 20 percent at every income level, then our estimate of the participation rate for households with income at five percent of FPL would increase from 81 percent to 90 - 98 percent, and our estimate at 125 percent of FPL would increase from 11 percent to 12 - 14 percent. While these figures are hypothetical, they do indicate that under-reporting could explain a substantial share of the gap between 100 percent participation and observed participation for low-income households. They also suggest that the estimated relationship between participation and expected long-term income might be substantially stronger than we report.

[35] For 1996, Cunnyngham reports an estimate for the individual participation rate (rather than the household rate) based on a SIPP denominator and an estimate based on a CPS denominator (Figure C.1). The SIPP-based estimate is about six percentage points lower.

VI. PARTICIPATION STATUS AMONG VERY POOR FOOD STAMP ELIGIBLE HOUSEHOLDS

As established in the previous chapter, while non-participants might not be participating because they are only temporarily poor, it appears that many are not participating for some other reason. This chapter examines the subgroup of our research sample that is considered to be "very poor," denoting families with reported income below 75 percent of poverty that are food stamp eligible (i.e., pass the asset test). We also examine the group of households within this population considered "persistently very poor," defined as having reported income below 75 percent in both months 12 and 36 of the 48-month panel period.

A. Participation Rates

As ***Exhibit VI.1*** shows, 73 percent of all very-poor households received food stamps at some point during the 48-month panel. Of those who participated, 70 to 71 percent received food stamps for at least 24 of the 48 months. About 59 percent of households whose income fell below 75 percent of FPL in month 12 received benefits in that month; this rate declines to 54 percent of very poor households in month 36 who received benefits in month 36.

The persistently very poor have substantially higher participation rates. About 85 percent participated at some point during the 48-month period. Of those who participated, the vast majority (81 percent) received food stamps for at least 24 months. Most were receiving food stamps in both months 12 and 36.

Exhibit VI.1: Percent Participating in FSP

	Very Poor-12	Very Poor-36	Persistently Very Poor
Participation in 48-Month Panel			
No participation	26.8	27.4	15.3
1 to 11 months	8.6	9.9	6.4
12 to 23 months	13.7	10.8	9.4
24 to 35 months	11.2	9.8	9.0
36 to 47 months	18.5	20.1	25.0
All 48 months	21.1	22.0	35.0
Participated in Month 12	58.8	54.1	71.5
Participated in Month 36	45.2	52.4	66.4

NOTE: Very Poor-12 and -36 samples meet the FSP eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those in month 12).

B. Characteristics of Participants and Non-Participants

Exhibit VI.2 shows the same characteristics, but by participation status among all three very poor groups. Similar to the findings presented in Chapter IV, participant households are more disadvantaged than non-participant households. The heads of these households were more likely to be female, black, and not currently married. They also had more children in the

household, more likely lacked a high school diploma or GED, and more likely had at least one member of the household who was disabled. Non-participant households were substantially more likely to be ABAWD households. Between 34 and 54 percent of all participant households were receiving TANF, depending on the sample, compared with 1 to 4 percent of non-participant households. Finally, participant households were substantially more likely to be receiving SSI, housing assistance, general assistance, WIC, and Medicaid, compared with non-participant households.

As shown above, the persistently very poor, the most disadvantaged sample considered, are substantially more likely to participate in the FSP than other groups. Still, it is somewhat puzzling why the remaining 29 to 34 percent were not receiving benefits in the reference month given that they appeared to be eligible in two different months, two years apart. Examining this group in more detail, we observe that a substantial share have low levels of education (42 to 43 percent never completed high school), were never married (from 42 to 44 percent), had no children (56 percent), and were receiving SSI (38 to 44 percent) and Medicaid (49 to 52 percent).

Interestingly, from 25 to 30 percent of the very poor non-participants and about 33 to 40 percent of the persistently very poor non-participants had received food stamp benefits at some point during the 48-month panel period. As noted in Chapter IV, some of the non-participant households likely experienced a temporary loss of benefits because they missed a recertification appointment. The households defined in reference month 36 experienced a precipitous drop in their participation beginning in month 12. In addition to changes in the economy, the enactment of PRWORA in 1996 had several provisions that likely affected food stamp participation. Some of this decline is likely due to PRWORA provisions discussed in Chapter I, as well as improvements in the economy.

The next section examines the employment and income trends for this group and the other research samples.

Exhibit VI.2: Characteristics of Very Poor Participants and Non-participants
(Percent of Household Participation Group, Unless Otherwise Noted)

Head of Household Characteristics	Very Poor Households						Persistently Very Poor Households					
	Month12			Month 36			Month12			Month 36		
	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Sex												
Male	22.3	47.8	-25.5 ***	27.9	47.4	-19.5 ***	22.6	46.2	-23.6 ***	22.1	42.8	-20.7 ***
Female	77.6	52.2	25.4 ***	72.1	52.6	19.5 ***	77.4	53.9	23.5 ***	77.9	57.2	20.7 ***
Race												
			-14.1.1									
White	58.7	72.8	***	58.8	77.3	-18.5 ***	55.9	63.5	-7.6 ***	54.8	64.5	-9.7 ***
Black	36.3	22.8	13.5 ***	35.3	24.4	10.9 ***	39.5	31.5	8.0 ***	39.7	32.4	7.3 ***
Native American	1.9	2.5	-0.	2.6	1.7	0.9 ***	1.9	3.7	-1.8	2.7	2.0	0.7 ***
Asian	3.1	1.9	1.2	3.3	1.6	1.7	2.7	1.3	1.4 *	2.8	1.1	1.7
Ethnicity												
Hispanic	20.4	16.8	3.6 ***	21.3	18.9	2.4 ***	23.7	20.8	2.9	22.9	22.9	0.0
Age												
18-25	10.3	10.4	-0.1	5.5	5.7	-0.2	10.1	9.2	0.9	5.9	6.3	-0.4
25-35	32.4	30.2	2.2 **	28.8	23.2	5.6 **	29.3	24.9	4.4	27.0	22.3	4.7
35-45	32.9	33.4	-0.5	34.7	33.4	1.3	32.9	33.5	-0.6	34.6	33.0	1.6
45-88	24.4	26.0	-1.6 ***	31.0	37.7	-6.7 ***	27.7	32.4	-4.7 *	32.6	38.3	-5.7
Marital Status												
Never married	36.4	35.2	1.2 ***	31.5	36.5	-5.0 ***	37.4	42.2	-4.8 *	35.5	43.5	-8.0 **
Married	23.8	40.0	-16.2 ***	26.6	30.4	-3.8 ***	20.5	30.7	-10.2 ***	22.7	25.2	-2.5 ***
Divorced/separated	36.1	23.0	13.1 ***	37.1	29.3	7.8 ***	38.3	25.2	13.1 ***	37.8	28.6	9.2 ***
Widowed	3.7	1.8	1.9 *	4.8	3.8	1.0	3.8	1.9	1.9 *	4.0	2.8	1.2 **
Education Levels												
Less than high school	43.5	30.1	13.4 ***	44.4	33.6	10.8 ***	47.2	42.0	5.2 ***	45.9	42.6	3.3 ***
High school graduate/GED	34.0	38.0	-4.0	35.8	32.6	3.2 **	32.8	36.8	-4.0	35.0	32.4	2.6 *
Trade/vocational school	3.6	3.1	0.5 *	3.5	2.3	1.2	3.4	1.4	2.0	4.3	0.5	3.8
Some college	14.0	17.8	-3.8 ***	12.0	18.1	-6.1 ***	12.3	12.8	-0.5 ***	10.8	15.8	-5.0 ***

College graduate	4.8	10.9	-6.1 ***	4.6	13.5	-8.9 ***	4.4	7.0	-2.6 ***	4.0	8.7	-4.7 ***

Exhibit IV.2: Characteristics of Participants and Non-participants (continued)

	Very Poor Households						Persistently Very Poor Households					
	Month 12			Month 36			Month 12			Month 36		
Household Characteristics	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Household Composition												
Average adults (#)	1.66	1.61	.1 ***	1.58	1.52	-.1	1.38	1.4	-0.0 ***	1.5	1.48	0.0
Average children (#)	1.86	1.19	0.7 ***	1.86	1.05	0.8 ***	1.82	1.0	0.8 ***	1.9	1.04	0.9 ***
Member with disability	30.1	16.8	13.3 ***	32.1	15.4	16.7 ***	35.6	26.8	8.8 ***	36.0	28.8	7.2 ***
Elderly member	6.7	10.9	-4.2	8.7	9.9	-1.2	7.1	14.0	-6.9	9.0	11.1	-2.1
ABAWDs only	5.4	23.9	-18.5 ***	7.0	24.5	-17.5 ***	7.4	19.5	-12.1 ***	6.1	15.8	-9.7 ***
Number of Children												
No children	25.6	44.6	-19.5 ***	29.1	54.7	-25.6 ***	30.6	56.3	-25.7 ***	31.0	56.0	-25.0 ***
One child	18.7	15.7	3.0	17.2	13.2	4.0 **	17.2	11.4	5.8	17.1	14.4	2.7
Two or three children	41.8	30.0	11.8 ***	38.3	25.0	13.3 ***	38.1	24.4	13.7 ***	36.3	22.5	13.8 ***
Four or more children	14.9	7.7	7.2 ***	15.4	7.1	8.3 ***	14.1	7.8	6.3 ***	15.6	7.2	8.4 ***
Youngest Child's Age												
1 year and under	17.5	13.0	4.5 ***	16.7	7.3	9.4 ***	15.4	14.0	1.4 **	14.8	5.9	8.9 ***
2 to 4	23.0	11.8	11.2 ***	17.7	10.8	6.9 ***	22.3	12.4	9.9 ***	18.7	10.0	8.7 **
5 and over	35.0	27.7	7.3 ***	36.5	27.2	9.3 ***	31.7	17.2	14.5 **	35.6	28.1	7.5 ***
Benefits												
Food Stamps												
Ever received (48 months)	100.0	25.2	74.8 ***	100.0	30.0	70.0 ***	100.0	32.9	67.1 ***	100.0	40.0	60.0 ***
Average months (#)	34.4	3.2	31.2 ***	38.8	4.4	34.4 ***	35.6	4.5	31.1 ***	39.3	5.9	33.4 ***
Cash Assistance												
SSI	35.0	23.7	11.3 ***	41.5	27.9	13.6 ***	41.4	37.6	3.8 ***	43.3	43.5	-0.2 ***
TANF	52.4	3.7	48.7 ***	33.8	1.5	32.3 ***	53.5	2.9	50.6 ***	36.2	2.1	34.1 ***
General assistance	7.1	0.4	6.7 ***	3.1	0.7	2.4 ***	6.9	1.1	5.8 ***	3.2	1.3	1.9 ***
Other assistance	1.2	0.6	0.6 ***	0.0	0.2	-0.2 *	1.3	0.7	0.6 *	0.0	0.0	0.0
TANF in past 12 months	41.7	2.3	39.4 ***	44.9	4.7	40.2 ***	49.3	4.2	45.1 ***	45.9	6.4	39.5 ***
Other Benefits												
Housing assistance	39.5	13.5	26.0 ***	36.2	14.6	21.6 ***	41.8	21.9	19.9 ***	40.8	26.0	14.8 ***
WIC	28.7	10.1	18.6 ***	24.1	8.3	15.8 ***	28.0	11.8	16.2 ***	23.8	8.6	15.2 ***
Medicaid	91.9	35.3	56.6 ***	88.4	36.1	52.3 ***	92.4	49.1	43.3 ***	89.9	51.8	38.1 ***
Medicare	11.6	13.8	-2.2 ***	17.1	15.1	2.0 ***	12.8	17.0	-4.2	14.7	20.4	-5.7 **
Sample Size	**639**	**446**		**565**	**514**		**389**	**155**		**361**	**183**	

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level. Very Poor samples meet the FSP eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet eligibility criteria and have gross income less than 75% FPL in both months 12 and 36.

C. Income and Earnings By Participation Status

Exhibit VI.3 provides information on the reported income and earnings statistics for the very poor samples by participation status. The means of the income measures for participants are substantially below those for non-participants in the month, other than the month in which the poor status was determined. As was found in Chapter IV for the low-income and food stamp eligible households, differences in means for earnings statistics mirror those for income, although they are slightly larger.

Variability in monthly income and earnings, as measured by the standard deviation over 48 months, is also much higher in the non-participant samples than in each of the participant samples, mirroring another result from Chapter IV. The difference between non-participant and participant standard deviations is greater, both absolutely and relatively, in the 12th and 36th month very poor samples than in the full FSE samples for the corresponding months. For instance, in the 12th month very poor sample the ratio is 2.2, compared to 1.4 for the full 12th month FSE sample. A similar finding is observed for the 36th month sample. This suggests that greater variability in income is a relatively more important explanation of low participation in the very poor households than in the average FSE household, consistent with our interpretation of the evidence on the relationships between participation rates and various income measure presented above.

When we examine the non-participants among the persistently very poor group we find that over the 48-month period, their mean income is only 69 or 74 percent of poverty. In addition, in about 44 of the 48 months these households had income that fell below 130 percent of FPL. Also, almost half of this group had income that was below 130 percent of the FPL in all 48 months, meaning over four years they met the gross income test for FSP in every month but did not receive benefits in the reference month.

This group of non-participants was substantially less likely to report they were working during the panel period than other non-participant groups. About 28 percent of these households had no reported earnings over the 48-month panel period. On average, households had earnings in less than half of the months.

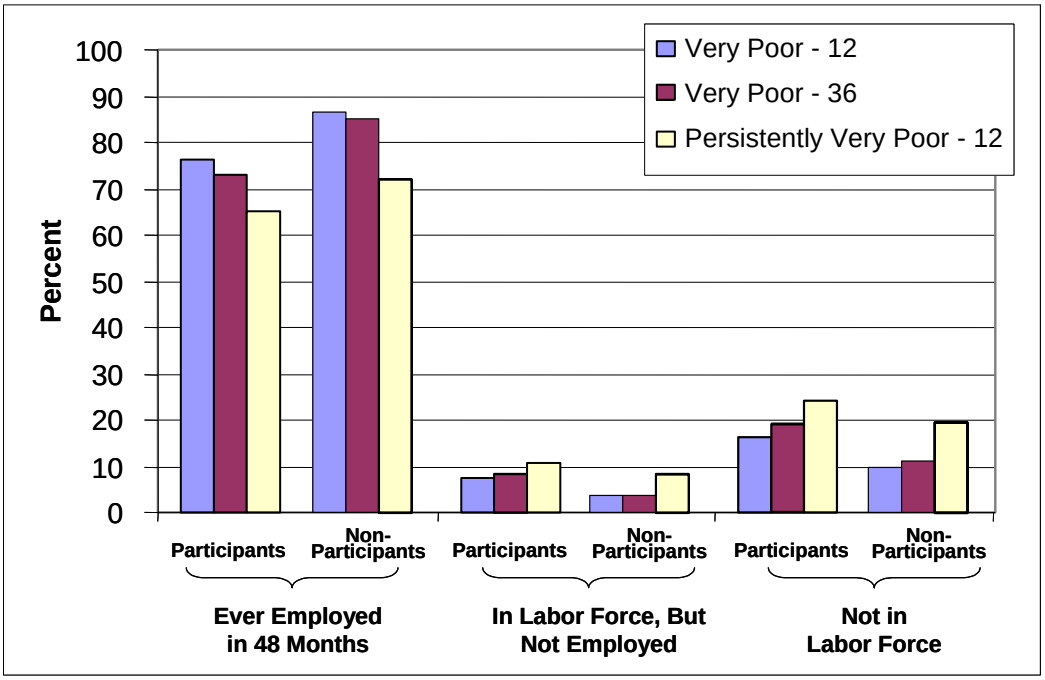
Exhibit VI.3: Income and Earnings Statistics for Very Poor Samples, by Participation Status

	Very Poor Households						Persistently Very Poor Households					
	Month 12			Month 36			Month 12			Month 36		
	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference	Participants	Non-Participants	Difference
Mean Income As Percent of Poverty												
Month 12	43.7	42.2	1.5 *	71.1	107.9	-36.8 ***	42.3	42.9	-0.6	42.0	43.3	-1.3
Month 36	81.1	144.1	-63 ***	43.5	42.0	1.5	43.7	41.1	2.6	42.1	44.5	-2.4
Months 6-17	54.2	84.1	-29.9 ***	68.4	108.6	-40.2 ***	49.1	59.0	-9.9 ***	49.2	56.9	-7.7 ***
Months 30-41	90.6	146.6	-56 ***	58.0	85.8	-27.8 ***	62.0	64.5	-2.5 **	53.5	80.4	-26.9 ***
Months 1-48	75.8	125.2	-49.4 ***	67.0	105.0	-38.0 ***	58.3	68.8	-10.5 ***	54.9	73.7	-18.8 ***
Standard Dev. Over 48 Months	2.5	4.7	-2.2 ***	1.7	4.6	-2.9 ***	3.1	3.8	-0.7 ***	1.4	6.6	-5.2 ***
# Months below 130% FPL	42.4	33.2	9.2 ***	44.1	36.9	7.2 ***	45.9	43.6	2.3 ***	45.9	43.9	2.0 ***
% below 130% of FPL for 48 months	44.4	21.0	23.4 ***	50.7	27.8	22.9 ***	62.6	46.7	15.9 ***	63.9	46.6	17.3 ***
Mean Earnings As Percent of Poverty												
Month 12	10.6	24.8	-14.2 ***	34.3	83.9	-49.6 ***	7.3	20.1	-12.8 ***	8.4	16.1	-7.7 ***
Month 36	50.0	116.4	-66.4 ***	14.5	23.8	-9.3 ***	13.3	17.2	-3.9 *	12.1	18.8	-6.7 ***
Months 6-17	18.7	61.7	-43 ***	31.5	84.7	-53.2 ***	11.8	33.2	-21.4 ***	13.3	26.9	-13.6 ***
Months 30-41	53.2	119.8	-66.6 ***	26.3	59.6	-33.3 ***	21.3	39.5	-18.2 ***	20.7	37.9	-17.2 ***
Months 1-48	39.6	99.1	-59.5 ***	31.2	79.4	-48.2 ***	19.4	41.1	-21.7 ***	19.8	36.8	-17 ***
Standard Dev. Over 48 Months	2.0	4.9	-2.9 ***	1.8	4.4	-2.6 ***	1.5	3.8	-2.3 ***	1.6	3.3	-1.7 ***
# Months below 130% FPL	28.7	14.4	14.3 ***	31.6	18.5	13.1 ***	37.2	26.8	10.4 ***	36.6	29.6	7.0 ***
% below 130% of FPL for 48 months	92.1	74.5	17.6 ***	94.8	80.8	14.0 ***	97.3	93.0	4.3 ***	97.3	93.9	3.4 ***
Labor Force Statistics												
% With No Earnings over 48 Months	23.9	13.4	10.5 ***	27.2	15.1	12.1 ***	35.1	28.1	7.0 ***	35.6	28.5	7.1 ***
Mean % of Months with Earnings	45.1	67.1	-22.0 ***	41.4	62.9	-21.5 ***	30.8	46.9	-16.1 ***	31.3	43.6	-12.3 ***
% with no LFP over 48 months	16.3	9.6	6.7 ***	18.9	11.2	7.7 ***	24.3	19.6	4.7 ***	24.2	20.5	3.7 ***
Mean % of Months with LFP	60.5	78.5	-18.0 ***	57.1	75.4	-18.3 ***	43.4	62.0	-18.6 ***	48.9	58.9	-10.0 ***
Sample Size	**639**	**446**		**565**	**514**		**389**	**155**		**361**	**183**	

NOTES: * Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.001 level. Very Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those in month 12 or 36).

Exhibit VI.4 presents the percent distribution information on households' labor force status over the 48-month period. The first set of bars shows the percent that was ever employed during the 48 months by household group and participation status. Not surprisingly, the non-participants had higher employment rates relative to the participants and the persistently very poor households had lower employment rates relative to the very poor households. Among the participants, a relatively high share (16 to 25 percent) were never in the labor force during the entire 48 months, meaning they were either not seeking work and/or were unable to work due to an injury, illness, or disability during all months. One-quarter of the persistently very poor participants were never in the labor force. Among the persistently very poor non-participants, 19 percent were never in the labor force during the 48-month period.

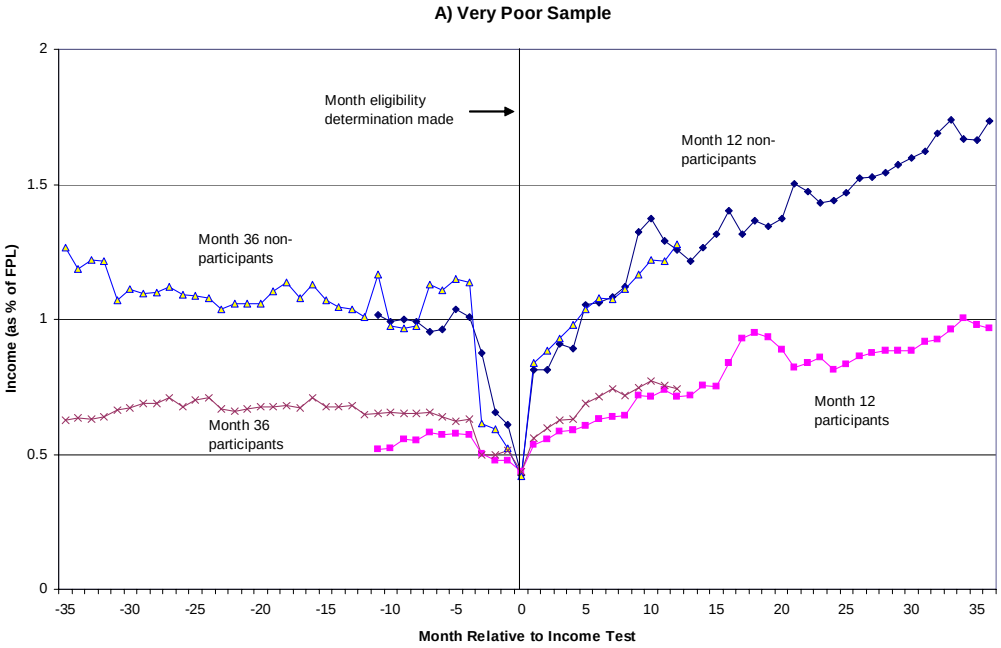
Exhibit VI.4: Labor Force Status Over 48-Month Panel
Percent Distribution

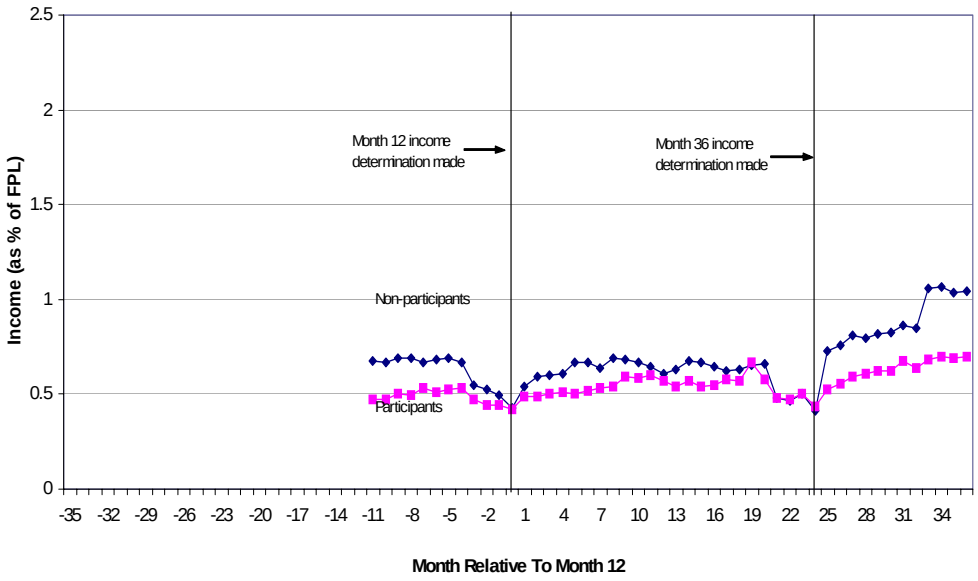


NOTE: Very Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those in month 12).

Exhibit VI.5 presents historical and future income before and after the month when the income status determination was made, similar to the graphs presented in Chapter IV. We have 35 months of pre data and 36 months of post data for both participants and non-participants of the very poor households (Graph A) and persistently very poor households (Graph B). The latter consists of households with low income in both months 12 and 36. For this graph, we show the income trends before and after month 12, based on participation status in month 12.

Exhibit VI.5: Monthly Household Income for Very Poor and Persistently Very Poor Participants and Non-participants





NOTE: Very Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those in month 12).

As Graph A shows, the very poor groups appear to come from populations with chronically low income prior to the month when the income determination was made. However, the non-participant household income, while chronically low, drops by considerably more over the four months or so leading up to the reference month. This is similar to the findings presented in Chapter IV. After the reference month, growth is substantially greater for non-participants than for participants (represented by the steeper slope). As discussed in Chapter IV, this is consistent with the idea that expectations of higher future income explain why some eligible non-participant households do not participate.

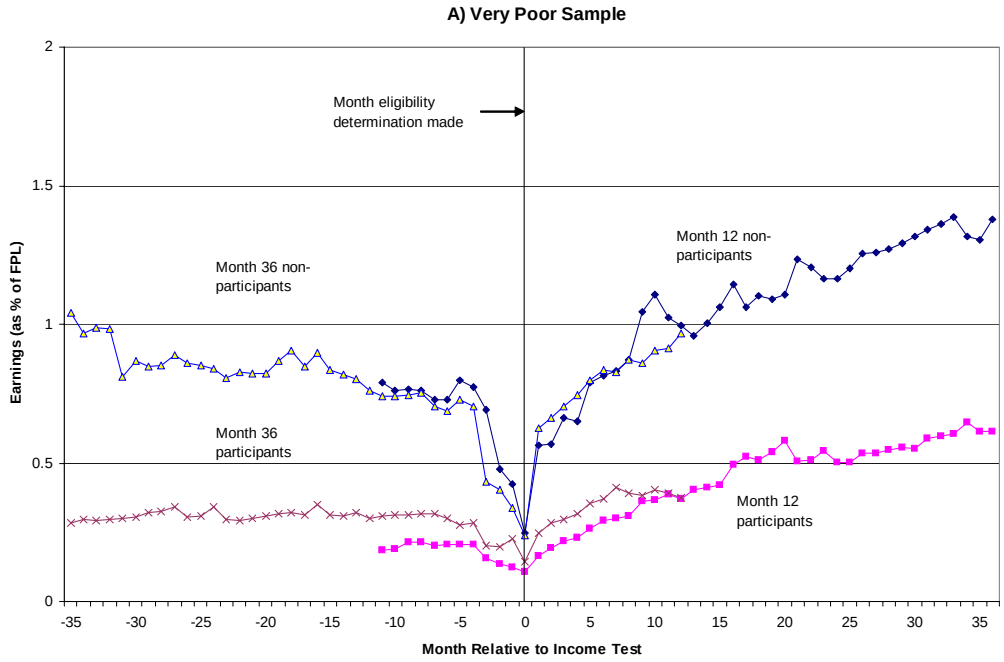
The non-participants in the persistently very poor households have income that is substantially lower than that for the larger very poor sample of non-participants and income that is just slightly above the participants' average income. While their income increases more steeply after month 36, when eligibility determination is made, the average income still falls below 130 percent of FPL. Thus, this group appears to be eligible over the 48-month panel, but for some reason, does not receive benefits in the current month.

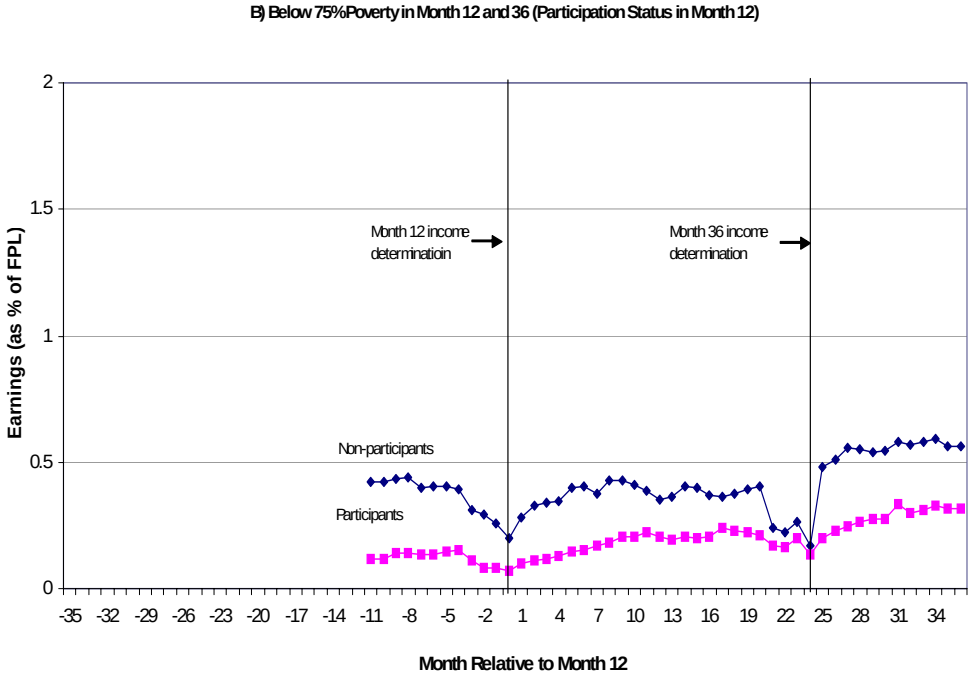
Exhibit VI.6, A and B show historical and future earnings relative to the reference month. The pattern for earnings is similar to those presented in Exhibit VI.5, although mean earnings are lower for both participants and non-participants.

While the persistently very poor non-participants' earnings are higher than participants' earnings, mean earnings never reach more than 51 percent of FPL. For this group, earnings appear to have plateaued during the last 12 months, after increasing in month 26. Overall, their earnings increased by 37 percentage points from month 0 to month 36, compared with an increase of 25 percentage points for participant households.

In summary, many persistently very poor non-participant households appear to be eligible in all months during the panel period. A relatively high share of this group received food stamps at some point during the 48-month panel period and also had another connection to the welfare system (i.e., received other means-tested benefits such as SSI, Medicaid, and/or housing assistance). They are relatively disadvantaged – they had low levels of education and were not currently married, but were caring for a child. A significant share (about 27 to 29 percent) had a disability or a household member with a disability. Perhaps related to this, one-fifth of the non-participants were never in the labor force during the 48-month period.

Exhibit VI.6: Monthly Household Earnings for Very Poor and Persistently Very Poor Participants and Non-participants





NOTE: Very Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month; Persistently Very Poor meet the eligibility criteria and have gross income less than 75% FPL in both months 12 and 36 (the statistics reflect those in month 12).

D. Possible Reasons for Non-Participation

In this section, we examine just the non-participating very poor households. As we described in Chapter IV, we classified all non-participant households into six mutually exclusive categories, with households placed in the first category that describes their situation, in the order presented (see ***Exhibit IV.7)***. Only about 12 or 14 percent of all non-participants are categorized as being temporarily below 130 percent of FPL, meaning their reported income fell below this threshold in the reference wave, but not in the waves conducted just prior and after the reference wave. For the food-stamp eligible households, about 23 percent were considered to be temporarily below 130 percent.

Another 3 to 6 percent had been participating in the program, but stopped receiving the benefits temporarily, perhaps because they failed to report their income or failed to show up for their recertification appointment. Another 20 percent were ABAWDs.

Exhibit VI.7: Non-Participant Households Status

Mutually Exclusive Category	Very Poor 12 % of Non-Participants	Very Poor 36 % of Non-Participants
1. Temporarily Below 130% FPL	13.6%	12.0%
2. Temporarily Off Food Stamps	6.0%	3.1%
3. ABAWD	20.0%	20.0%
4. Receiving Other Means-Tested Benefits	36.0%	41.2%
SSI	*19.6%*	*13.6%*
Medicaid	*18.3%*	*17.6%*
WIC	*5.6%*	*4.7%*
Housing Assistance	*5.5%*	*6.5%*
AFDC/TANF	*2.8%*	*1.0%*
5. Income Less Than 130% FPL for 48 Months	3.1%	6.2%
6. Other	21.3%	17.4%

NOTE: Very Poor-12 and -36 samples meet the eligibility criteria and have gross income less than 75% FPL in the respective month.

Again, a surprisingly large share – 36 to 41 percent – did not fall into one of these three previous categories, yet were receiving another means-tested benefit. A small share – 3 to 6 percent – were not receiving any means-tested benefits, but had income below 130% FPL in all 48 months. Another 17 to 21 percent did not fall into one of the five preceding categories.

VII. CONCLUSION

Participation in the Food Stamp Program among eligible households has declined considerably since 1994, raising some concern among program administrators and policy officials.

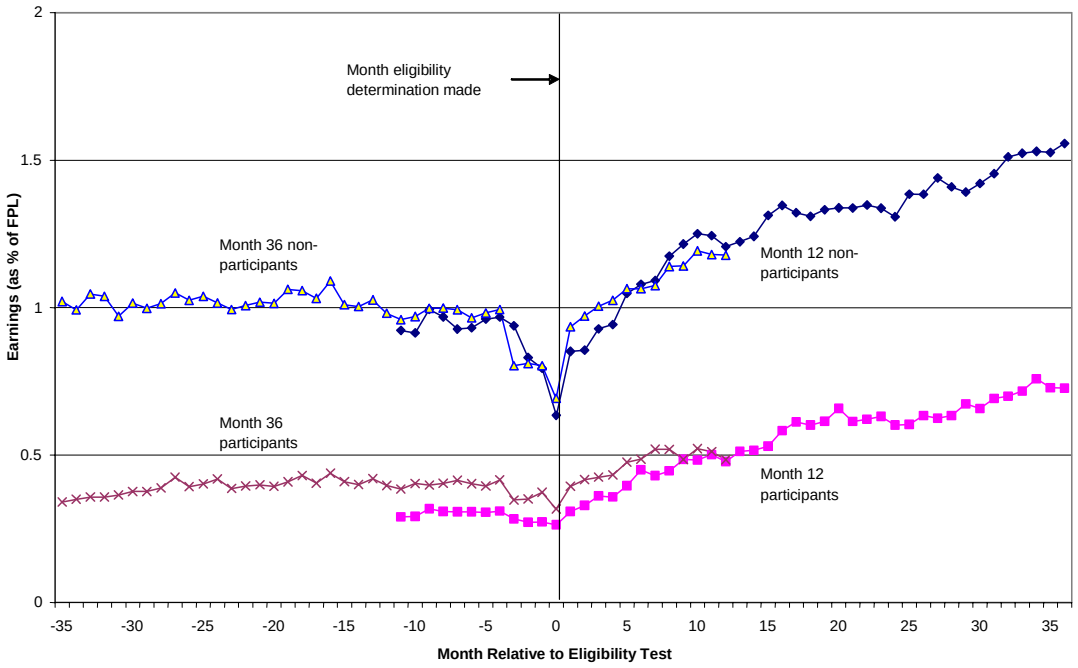
In this report, we examined the role that the dynamics of household income plays in determining FSP participation. One reason that some eligible households might not participate is that their current income is much lower than they expect it to be over a longer period. Such households might regard their current low income to be a temporary phenomenon, and decide that the short-term benefits of participation are less than the costs of learning about the program, applying for benefits, using the food stamps, and perhaps being stigmatized by participation. We also assessed why some households that appear to have low income for a long period do not participate.

A. Key Findings

This report presents the following key findings:

- **A substantial share of food-stamp eligible households are not participating in the FSP.** Just under half of eligible households received food stamps in the month when their eligibility determination was made (the "reference month"). This rate most likely underestimates the true participation in the FSP, because there is evidence from other studies that some individuals fail to report their food stamp receipt on the SIPP. As mentioned above, Cunnyngham (2002), which relied on food stamp administrative data to measure participation estimated household participation rates of 53 percent in 1999. Still, it appears that a considerable number of households are not receiving benefits for which they are eligible.
- **Food stamp participation declined from 1997 to 1999.** Food-stamp eligible households in 1999 were less likely to participate in 1999 than in 1997, even though these households had lower incomes in 1999. This is consistent with findings from other studies that show a decline in participation rates every year from 1994 to 1999.
- **Non-participant households experienced substantially more variability in their monthly income and earnings than participant households.** In particular, before the months leading up to the reference month, mean income of non-participating, food-stamp eligible households fell by much more than mean income of participant households; similarly, their mean income grew much more rapidly after the reference month (see ***Exhibit VII.1***). This is consistent with the premise that expectations of higher future income explain why some non-participant households do not participate.

Exhibit VII.1: Monthly Household Income for Current Month Participants and Non-participants: Food Stamp Eligible Households



- **Participant households' income tended to fall below the food stamp gross income threshold throughout most of the 48-month SIPP panel.** Specifically, participant households' income was under 130 percent of the federal poverty level (FPL) in about 41 of the 48 months; non-participant households' income averaged 30 months below the threshold.
- **We found an inverted-U relationship between current household income and participation rates, holding other household characteristics constant.** That is, participation rates increase with income over the lowest income range, reach a maximum, and then decline. This is a surprising finding. It could be explained by the presence of a relatively large number of households in the lowest income groups that either have temporary low income or higher income than reported. It could also be, however, that disadvantages leading to such low levels of income also lead to low participation. [36]
- **Models that reflect the potential importance of longer-term income demonstrate that part of the inverted-U shape and non-participation by some households with very low current income is due to the temporary nature of their low-reported income.** These

[36] Other studies have found zero income households have substantially lower participation rates than those with low, but positive income (see Cunnyngham 2002). Wemmerus and Porter (1996) examined the group of zero-income households on the 1990 SIPP longitudinal file and found that many were financially viable, but a clear event or condition (e.g., a job loss, household dissolution, enrollment in school, or loss of cash benefits) precipitated the zero-income period.

models also indicate, however, that many households with very low long-term reported income do not participate.

- **Overall, non-participants were less disadvantaged than participants after controlling for longer-term income.** Non-participation was associated with households whose heads were able-bodied and without dependents, male, married, and at least a high school graduate, holding longer-term income constant.

- **While some non-participant households might be considered "temporarily poor," a surprisingly large share report low income over a longer term and are receiving other means-tested benefits.** As ***Exhibit VII.2*** shows, almost one quarter of all non-participants had income that temporarily fell below the food stamp gross income threshold during the SIPP reference wave (four-month period). A smaller share (4 percent) were temporarily not receiving food stamps and about 16 percent were Able-bodied Adult Without Dependents (ABAWDs. A relatively large share (35 percent) were not captured in one of the three preceding categories yet were receiving other means-tested benefits. This is a group that USDA might be able to reach with more extensive outreach efforts and increased coordination with other agencies and offices. Among the means-tested programs, the SSI and Medicaid programs had the highest levels of enrollment, followed by WIC and housing assistance.

Exhibit VII.2: Non-Participating, Food Stamp Eligible Households (Eligible in Month 12 of SIPP Panel)

Mutually Exclusive Category	% of Non-Participants
1. Temporarily Below 130% FPL	22.8%
2. Temporarily Off Food Stamps	3.8%
3. ABAWD	15.8%
4. Receiving Other Means-Tested Benefits	35.4%
SSI	*19.7%*
Medicaid	*18.1%*
WIC	*6.3%*
Housing Assistance	*5.5%*
AFDC/TANF	*1.8%*
5. Income Less Than 130% FPL for 48 Months	2.2%
6. Other	20.2%
Total Non-Participants	100.0%

- **Many persistently poor households that do not participate appear to be very disadvantaged.** We examined a group that reported income below 75 percent of poverty and reported assets below the FSP resource limit in separate months two years apart and found that a substantial share of the household heads have less than a high school education, are not currently married, are caring for a child, and/or are disabled or have a disabled household member. One-fifth of the non-participants were never in the labor force during any month of the 48-month period.

- **Under-reporting of FSP participation in SIPP might account for a substantial share of non-participation in persistently very poor households, but far from all of it.** As indicated earlier, evidence from other sources suggests that under-reporting is substantial in SIPP. It is likely that participation in our household sample was as much as 10 to 20

percent higher than reported. If under reporting is proportional to estimated participation rates at each income level, it could explain a substantial share of non-participation in very poor households, but substantial non-participation would remain. The estimated relationship between actual participation and long-term income is likely stronger than our estimated relationships between reported participation and various measures of long-term income.

In summary, many of the households not participating in the program have experienced a short-term drop in income. While current reported household income is low enough to meet the income test in a given month, this is a transitory phenomenon. However, long-term income does not explain why all households with low current reported income are not participating in the program. Non-participant households with long-term periods of low reported income are substantially more disadvantaged than other non-participant households. Although non-participation by such households might partly reflect under-reporting of participation or income, it appears that many do not participate because the same conditions that limit their income (e.g., low literacy levels or physical or mental impairments) also limit their ability to participate in the FSP as the program is currently implemented.

B. Future Research

Questions still remain regarding why long-term poor households are not participating in the program, especially because so many are receiving other means-tested assistance. Studies have found that participation rates by states vary tremendously. Are some states and localities better in conducting outreach and coordinating with other state programs than others, which might explain some of the variation in participation? Could states increase their participation rates significantly by developing stronger linkages between the FSP and other programs providing means-tested benefits? High SSI participation among long-term poor households that do not receive FSP suggests that disability might limit FSP access for some.

Exhibit VII.1 illustrates visually what we learn from longitudinal data that cannot be learned from a cross-section. While participants and non-participants have somewhat different mean incomes in the current months, income differences are substantially larger in months before and after the current months. In a cross-section, those differences might be partially captured in differences in other characteristics (e.g., education), but, as our findings show, substantial differences remain even after controlling for such characteristics. Hence, the results demonstrate the value of using longitudinal income data in future analyses of food stamp participation.

As discussed further in this report, there is some evidence to suggest that earnings in the more distant past (three or more years earlier) might have substantial predictive power. Analysis using restricted research files of the SIPP that are matched to the Social Security Administration's Summary Earnings Records (SER), which span the entire household's earnings history, could test this hypothesis. In addition, analysis of this special dataset would

assess whether our findings are replicated using SER earnings data, which are not subject to the recall error found on national surveys.[37]

Another study could attempt to replicate these findings using other SIPP panels. The findings would provide information on whether the composition of participants and non-participants has changed over time – particularly with respect to income histories. We might find, for instance, that participants in the 1992 and 2001 SIPP panels experienced a drop in income more recently than those in the 1996 panel, because of the recession in the early nineties and in early 2000. Our findings concerning the role of long-term income suggest that, holding current income and other characteristics constant, participation will be lower for the 1992 and 2001 panels. Hence, the comparison offers another opportunity to test whether transitory income reductions are less likely than long-term ones to result in FSP participation.

The findings also underscore the value of matching FSP administrative data to the SIPP. Although this is difficult because administrative records are held by individual states, it would greatly help research efforts to understand the determinants of participation, and why some households that appear to be very disadvantaged do not report participation.[38]

[37] Originally, we had intended to analyze this matched file for this study but were not granted access to the data in time for inclusion in this report.

[38] A similar recommendation was made in Wittenburg et al. (2001), a report that presented 10 potential data development initiatives that would improve the quality or reduce the cost of data resources at the U.S. Department of Agriculture. Because the availability of FSP administrative records varies by state, the authors concluded that the linkage would likely be limited to a select number of states.

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