THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

Program Participation and Attrition: The Empirical Evidence

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PROGRAM PARTICIPATION AND ATTRITION: THE EMPIRICAL EVIDENCE

by

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I. Introduction

One of the primary goals of the Survey of Income and Program Participation (SIPP) is to provide policy makers, researchers, and others with detailed information on the participation in government assistance programs by persons and households in the United States. Given the importance of the means-tested program or welfare statistics, it is important to examine the effects of attrition on program participation estimates from SIPP. In this paper, we use well-established attrition models (e.g. Hauseman and Wise, 1979; Heckman, 1976; Ridder, 1990) to examine the effects of attrition on program participation and benefits received.[1]

SIPP is a longitudinal survey where individuals are interviewed at relatively frequent intervals (every four months) for a period of two and two-thirds years. As with other longitudinal surveys, attrition is a concern in the SIPP. Several studies have extensively examined the characteristics of attritors and nonattritors (Short and McArthur, 1986) and the cumulative sample loss rates in various SIPP panels (Jabine, 1990). Recently, some studies have directly examined the relation between attrition and SIPP estimates. Among these studies, labor income has not been found to contain attrition biases in the 1990 SIPP panel (Lamas, Tin, and Eargle, 1993). Zabel (1993) shows that attrition has no effect on labor force participation and real wages but has an effect on hourly supply of labor. Klerman (1990) indicates that there are some evidence of attrition effects on health insurance coverage for black males.

This paper attempts to bridge this gap by directly examining the effects of attrition on the estimates of determinants of major means-tested government assistance programs--namely, AFDC, food stamps, General Assistance, SSI, WIC, and Medicaid. Specifically, this study uses a model of attrition and program participation to examine the effects of attrition on the benefit estimates and the program participation status of those who are covered by these means-tested programs. This paper also compares the cumulative nonresponse rates of these programs and the characteristics of attritors and nonattritors.

This paper is organized as follows. Section II presents the model used in this study. Section III discusses regression results for food stamps, AFDC, General Assistance, SSI, WIC, and Medicaid. A brief conclusion is given at the end.

II. The Model

The attrition model (e.g., Hausman and Wise, 1979; Tin, 1995) used in this study can be stated as

$$y_t = \beta' x_t + \varepsilon_t \qquad (1)$$

[1]There has been a serious effort to document the quality of SIPP data by Census Bureau and other researchers to ensure the efficiency and reliability of SIPP estimates.

and

$$a_t^* = \alpha_0' w_t + \alpha_1 y_t + \mu_t \qquad \textbf{(2)}$$

Equation (1) is a program participation equation where y_t is a program participation variable such as real benefits received by welfare participants or the program participation status of individuals. The socioeconomic variables affecting y_t are represented by x_t with a set of parameters ß. The symbol ϵ_t represents an error term with zero mean and constant variance. Equation (2) is an attrition equation where a_t^* is the tendency to attrit of at time t and is assumed to be a function of y_t and a set of exogenous variables w_t with parameters, α_o. The error term, μ_t, is also assumed to have zero mean and constant variance. The tendency to attrit, a^*_t, cannot be observed. However, actual attrition, a_t is observable and is a proxy for the tendency to attrit. We assume that

$$a_t = 1 \quad if \quad \alpha_0' w_t + \alpha_1 y_t + \mu_t > 0 \qquad \textbf{(3)}$$

and

$$a_t = 0 \quad if \quad \alpha_0' w_t + \alpha_1 y_t + \mu_t \leq 0 \qquad \textbf{(4)}$$

Equations (1) and (2) are simultaneously determined. A change in the explanatory variables in the program participation equation indirectly influences the tendency to attrit. Econometrically, consistent estimates of the coefficients of the program participation equation can be obtained by using a two-step estimation procedure (Heckman, 1976). First, substituting equation (1) into equation (2) to get the reduced-form attrition equation

$$a_t = \phi_0' z_t + \alpha_1 \epsilon_t + \mu_t \qquad \textbf{(5)}$$

where ϕ_o' is a vector of reduced form parameters and z_t is a set
of exogenous variables at time t. The coefficient estimates of equation (5) can be obtained by applying a maximum likelihood probit procedure which also yields an estimate of lambda,

which is the attrition correction variable or the inverse of Mill's ratio (see Heckman, 1979),

$$\lambda_t = \frac{f(\phi_o' z_t / \delta_\epsilon)}{F(\phi_o' z_t / \delta_\epsilon)} \qquad (6)$$

defined as the ratio between the probability and cumulative distribution functions, f and F, respectively. The symbol δ is the standard error of the error term.

In the second step, the estimate of the attrition correction variable is used as an independent variable in the program participation equation. The final form of the program participation equation to be estimated is

$$y_t = \beta' x_t + \delta \hat{\lambda}_t + \varepsilon_t \qquad (7)$$

where lambda hat is the estimate of the attrition correction variable. For a dependent variable like the quantity of real benefits received by welfare participants, consistent estimates can be obtained by applying ordinary least squares (OLS).

III. Empirical Results

The primary source of data is the 1990 SIPP panel which contains 32 months of data on individuals in the United States. The 1990 panel collects monthly data on approximately 58,300 persons based on interviews conducted from February 1990 to September 1992. The civilian noninstitutional population of the United States and members of the Armed Forces living off post or with their families on post are covered by the SIPP. The primary focus of SIPP is persons 15 years old and over who are interviewed in the first wave of the panel. These "original sample persons" are followed over the life of the panel. If original sample persons move during the life of the panel, they are followed to the new address and all persons residing with them are interviewed. Persons added to the sample because they live with original sample persons are followed until they no longer reside with original sample persons.

We define attrition to be original sample persons missing one or more interviews whether or not they return to the sample. Excluded from the definition of attritors are persons that have left the universe of the sample, primarily those who die or become institutionalized during the life of the panel. Persons who join the survey after the first wave of interviews are also excluded.

Several studies (Jabine, 1990) have shown that cumulative sample loss rates range from 18 percent to 22 percent in SIPP panels. Generally, cumulative sample loss rates increase with the number of waves. The overall cumulative sample loss rate in the 1990 panel is about 21 percent. However, the sample loss rates vary by characteristics of respondents such as type of income. Table 1 shows that the cumulative sample loss rates for food stamp, AFDC, General Assistance, WIC, and Medicaid participants who receive benefits are greater than the overall average, while the sample loss rate for SSI participants is somewhat lower. AFDC has a cumulative nonresponse rate of 27 percent, followed by General Assistance, Medicaid, food stamps, WIC, and SSI. The cumulative sample loss rates generally increase at a decreasing rate; about half of the cumulative sample loss occur in waves two and three and over seventy percent are lost by wave five.[2]

The behavior of the original sample persons can also be examined by a casual look at the nonresponse rates by waves. As shown in table 1, the nonresponse rates of most means-tested

[2]The pattern of these cumulative sample loss rates is consistent with what has been found in Jabine (1990).

programs initially rise from wave two to wave three, decline in wave four, peak in waves five or six, and decline again in the final two waves.[3]

The characteristics of attritors and nonattritors in SIPP panels have been well studied in the literature (e.g., Short and McArthur, 1986). The determinants of attrition are a set of socioeconomic variables such as age, educational attainment, marital status, race, disability status, mobility status, household relationship, region, type of residence, employment status, poverty status, and income.

Table 2 contains weighted percent distributions and Chi-square statistics of attritors and nonattritors among program participants during the first month of the 1990 panel. As can be seen from the Chi-square measures, the characteristics of the attritors and nonattritors who have participated in means-tested programs at the start of the panel differ significantly. The percent distributions show that in most cases persons 15 to 64 years old are more likely to attrit than those who are 65 years of age and over. Married persons are less likely to attrit than those who are separated, divorced, or widowed. Blacks attrit more than Whites. Persons with work disabilities attrit more than those without work disabilities in all programs. Movers are more likely to attrit than nonmovers. Nonrelatives of the householders attrit more than their relatives. Metropolitan residents are more likely to attrit than nonmetropolitan residents. The poor are less likely to attrit than the nonpoor.

Although the cumulative nonresponse rates differ among various means-tested programs, means-tested programs with higher cumulative nonresponse rates do not necessarily imply biased benefit data. Similarly, a qualitative knowledge of the characteristics of attritors and nonattritors does not really say much about the relative impacts of these variables on attrition and program participation estimates. These issues can be addressed by obtaining the regression results for the attrition model already discussed.

Regression results for the benefit estimates of food stamps, AFDC, General Assistance, SSI, WIC, as well as their aggregates are presented in tables 3 through 9. In the program participation equation, the log of nominal benefit divided by the consumer price index (CPI) is used as the dependent variable. All explanatory variables except age and lambda are dichotomous binary variables with values zero or unity. Thus, the coefficient of an explanatory variable can be interpreted as an estimated percentage change in real benefits with respect to a unit change in the explanatory variable. Furthermore, the use of a logarithmic form includes only participants who have received positive amounts of benefits.

Food Stamps

The Food Stamp Act of 1977 defines this federally funded program as one intended to "permit low-income households to obtain a more nutritious diet." Food purchasing power is

[3]This Pattern may not hold in general.

increased by providing eligible households with coupons which can be used to purchase food. Food stamps are the most universally available form of non-cash federal transfer. With few categorical exceptions, any household that meets income and asset limitations, as well as work requirements, qualifies for benefits. All AFDC and SSI recipients are categorically eligible for food stamps regardless of household characteristics. The questions on participation in the Food Stamp Program in SIPP are designed to identify households in which one or more of the current members receive food stamps. Once a food stamp household is identified, a question is asked to determine the number of current household members covered by food stamps. Questions also are asked about the number of months food stamps are received and the total face value of all food stamps received during the period.

Weighted regression results for food stamp benefits are given in table 3. Columns 2 and 3 are results for the attrition and benefit equations for all food stamp recipients, respectively. Other columns contain results for the benefit regressions by education, sex, marital status, race, Hispanic origin, and disability status. T-statistics are given in parentheses.

It should be noted that the standard errors in the regressions for all participants are computed by using 100 sets of replicate weights and monthly nonreplicate weights. Specifically, the formula used to calculate the variance of a coefficient estimate, B, is

$$VAR(B) = (4/100)\sum_{i=1}^{100} (B_{rep_i} - B_{pnl})^2$$

where VAR is the variance of B, B_{rep} represents coefficient estimates generated by the replicate weights, and B_{pnl} represents the coefficient estimate generated by the nonreplicate weight.[4]

Generally, attrition and food stamp benefits are related for the participants as a whole as well as for most subgroups. As can be easily seen, the coefficient of lambda is negative and significant in the regression for all participants.[5]

The coefficients of other variables in the benefit regression for all participants make intuitive sense. For example, Blacks receive 57 percent more benefits than Whites. Hispanics receive 34 percent more benefits than non-Hispanics. Married people, the disabled, and movers

[4]The authors are grateful to the Survey of Income and Program Participation Branch, Demographic Statistical Methods Division (DSMD), U.S. Bureau of the Census, for providing this information.

[5]It should be noted that attrition and food stamp benefits are also significantly related when unweighted regressions are run, suggesting that the use of weights has not reduced attrition effects on food stamp benefit estimates. Additionally, the benefit estimates are also affected by attrition when the standard error of the bias-correcting coefficient is directly multiplied by a design effect of 2.29.

also receive more benefits than their counterparts.[6]

Disaggregation by education, sex, marital status, race, Hispanic origin, and disability status reveals similar results for most regressions. The coefficients of lambda are significant in the regressions for persons who have not graduated from high school, males, females, persons who are separated, divorced, widowed, or never married, Whites, Blacks, Hispanics, non-Hispanics, and persons with and without work disabilities. However, attrition has no effect on the benefit data of those who have graduated from high school, those who have at least a year of college, and those who are married, with or without the presence of their spouses.

Aids to Families with Dependent Children

AFDC is a joint program of the federal and state governments that provides cash assistance to families with children. Title VII of the Social Security Act permits States to give cash assistance to needy children who lack financial support of one parent because a parent is continuously absent from home, incapacitated, dead, or unemployed. The Federal and State government share in the cost benefit payments an administrative outlays and some States require local governments to share costs. Able-bodied AFDC recipients are required by federal law to register for training and employment services. Mothers receiving AFDC payments are required to assign their child support rights to the State and to cooperate in establishing paternity of a child born out of wedlock.

Weighted regression results for AFDC benefits are given in table 4. Although the cumulative sample loss rate of AFDC is higher than that of food stamps, there is no evidence to suggest that attrition biases exist in the benefit estimates of the participants as a whole or most of the subgroups.

General Assistance

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[6]Tin (1995) has shown that including the lagged dependent variables as an explanatory variable is more appropriate for monthly data. The regression for the overall benefit equation with lagged benefit is

y_t=0.192-0.003AGE+0.025NOHIGH+0.008HIGH-0.018FEMALE
(2.83) (4.78) (1.66) (0.56) (1.22)

+0.002MARRIED+0.0070BLACK+0.021HISPANIC+0.037DISABLED
(0.14) (3.28) (1.20) (1.20)

+0.048MOEVER+0.035NONRELATIVE+0.031NORTH-0.002METRO
(3.37) (1.24) (2.50) (0.17)

+0.009JOB-0.045POVERTY+0.91y_{t-1}-0.330LAMBDA
(0.70) (1.64) (155.89) (2.54)

R square=0.946 Sample size=2306.
The explanatory power has increased dramatically.

General Assistance consists of a host of State and local programs to provide cash assistance to needy persons not qualifying for AFDC or SSI. Eligibility rules vary from State to State, ranging from aid to mostly unemployable single adults (District of Columbia) to workfare programs, where recipients work in exchange for the assistance (New York). Persons are considered participants in General Assistance if they are identified as primary recipients or if they are covered under other persons' allotment.

Table 5 shows that attrition has no effect on the benefit data of all participants. Disaggregation shows that out of the 13 regressions only the regression for females has a significant attrition coefficient.[7]

Supplemental Security Income

Authorized as Title XVI of the Social Security Act by the Social Security Amendments of 1972 and implemented in 1974, the SSI program provides cash benefits, paid monthly, to aged, blind, and disabled persons who are financially needy according to criteria governing both income and assets. A person is considered a participant in the SSI program during a given month, if he/she receives payments from the U.S. Government or from a State or local welfare office during that month.

Although the cumulative sample loss rate of SSI is lowest among the means-tested programs, table 6 shows that attrition and SSI benefits are related. The coefficient of the bias-correcting variable in the benefit regression for all participants was significant.[8]

Additionally, 8 out of 13 regressions for persons of various socioeconomic backgrounds show that attrition has an effect on the SSI benefit data--regressions for persons who have not graduated from high schools, females, persons who are in the "other" marital status category, Blacks, Non-Hispanics, and those who have work disabilities.

Supplemental Food Program for Women, Infants, and Children

The Supplemental Food Program for Women, Infants, and Children (WIC) is a Federal nutrition program intended to improve the nourishment of pregnant and postpartum women, infants, and children under six years of age. Such persons are eligible to receive WIC if their household incomes fall between 100 and 185 percent of the poverty guidelines, and they have a medical, nutritional, or dietary disorder. The program is administered by the Food and Nutrition Service, U.S. Department of Agriculture.

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[7]The standard error of the coefficient of lambda in the regression for females has already been adjusted by using the 100 sets of replicate weights and the panel weights. Also, unweighted regressions show similar results.

[8]The standard errors of the regression for those who are separated, divorced, widowed, or single have been modified by using the replicate weights.

Weighted regression results for WIC are presented in table 7. Most of the benefit regressions have no significant attrition coefficients.

The Aggregate

On a priori grounds, the net effect of attrition on the aggregate of AFDC, General Assistance, food stamps, SSI, and WIC benefit data is ambiguous due to the fact that most food stamps and SSI benefit estimates are affected by attrition while most AFDC, General Assistance, and WIC estimates are not. Thus, attrition effects are likely to exist in the aggregates if food stamps and SSI estimates overwhelm those of AFDC, General Assistance, and WIC. On the other hand, attrition effects are not likely to exist in the aggregates if AFDC, General Assistance, and WIC estimates overcome those of food stamps and SSI.

Statistically, there is at least one major advantage in using the aggregate rather than the components. Past studies (Coder and Ruggles, 1990) have shown that welfare recipients often misreport one type of program benefits in other categories. For those who participate in multiple programs, the increase in the benefit of one program would likely be offset by the decrease in another as a result of the misreportings. Since the majority of the recipients are covered by multiple programs, the misreported values among various programs should not affect the aggregate as much as they affect the individual components.

The empirical results for the aggregate of AFDC, General Assistance, food stamps, SSI, and WIC by selected characteristics are given in table 8. No attrition effects have been detected in almost all of the weighted regressions.[9]

Regressions for Other SIPP Panels

It should be noted that the behavior pattern found in one SIPP panel may or may not be the same as those of other SIPP panels. In order for a similar pattern to exist, the behavior of attritors and nonattritors in different SIPP panels should remain more or less similar over time. In the long run, this may not hold since socioeconomic variables are not stationary over time. Table 9 contains a summary of attrition biases by assistance programs in the 1985-1990 panels. Among the aggregates, attrition effects exist only in the 1988 panel. By program types, there is evidence of the effect of attrition on the food stamp data. There is also an effect of attrition on the SSI data. No attrition effects have been found in AFDC, General Assistance, or WIC data in any panel.

Attrition and Program Participation Status

In addition to the benefit statistics, the SIPP also collects information on the monthly

[9]The standard errors of the regressions for all participants are computed with the replicate weights. Again, when unweighted regressions are run, the results are similar.

program participation status of all respondents. During the interviews, respondents are asked whether they are covered by Medicaid, AFDC, General Assistance, food stamps, and WIC. A 'yes' is recorded for those who are covered by a program and a 'no' is given to those who are not covered.

Table 10 contains empirical results for Medicaid, food stamps, AFDC, General Assistance, SSI, and WIC. The results for the attrition equation are given in column two, while the probit regression results for program participation status are given in other columns. There is some evidence of the effect of attrition on program participation status for Medicaid, food stamps, AFDC, SSI, and WIC.

IV. Summaries and Conclusions

This study has found some evidence that food stamp data in SIPP are affected by attrition in various panels and among participants with various socioeconomic backgrounds. Many SSI benefit data are also affected by attrition. However, there is little or no evidence that the benefit data of AFDC, General Assistance, and WIC are affected by attrition. Nonetheless, the findings of this study are preliminary and they do not consider the panel weighting adjustment to reduce nonresponse effects. Caution should therefore be exercised when interpreting these findings, especially concerning the poverty statistics.

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Table 1. Cumulative and Noncumulative Nonresponse Rates by Means-Tested Programs and Waves

1990 SIPP Panel

Assistance Programs	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8
CUMULATIVE SAMPLE LOSS RATES							
Food Stamps	6.0	11.9	15.1	18.3	21.0	22.4	22.3
AFDC	6.8	13.7	17.6	21.1	24.5	26.2	26.9
General Assistance	5.9	11.9	14.6	19.8	23.6	24.8	25.5
SSI	4.6	9.0	11.9	13.8	16.6	17.9	18.4
WIC	4.8	9.2	12.7	16.6	19.4	20.2	22.2
Medicaid	7.6	13.0	16.1	18.5	21.5	23.2	23.9
NONRESPONSE RATES							
Food Stamps	6.0	7.9	6.0	7.8	7.7	6.6	4.8
AFDC	6.8	9.8	7.4	8.9	10.1	6.5	5.4
General Assistance	5.9	8.0	5.2	9.4	7.7	3.9	5.0
SSI	4.6	5.5	4.3	4.0	5.7	3.0	1.6
WIC	4.8	6.1	5.9	8.1	8.0	5.9	5.5
Medicaid	7.6	8.1	6.6	7.8	8.5	7.0	7.2

Table 2. Distribution of Attrtitors and Nonattritors by Selected Characteristics and Assistance Programs (Numbers in percent)

Characteristic	Food stamps		AFDC		General Assistance		SSI		WIC		Medicaid	
	Attritor	Non-Attritor	Attritor	Non-Attritor	Attritor	Non-Attritor	Attritor	Non-Attritor	Attritor	Non-Attritor	Attritor	Non-Attritor
AGE												
Under 15 years	1.1	1.5	0.7	2.2	3.0	0.3	0.5	0.7	3.4	0.3	43.6	42.6
15 to 64 years	94.9	86.5	99.2	95.6	97.0	94.5	80.2	63.2	95.8	99.5	49.8	44.5
65 years and over	4.0	12.0	0.2	2.2	0.0	5.2	19.3	36.1	0.2	0.2	6.6	12.9
Chi-square statistics	188.6*		51.8*		56.1*		156.7*		85.2*		150.5*	
EDUCATIONAL ATTAINMENT												
Under 4 years of high school	47.0	50.3	46.7	46.5	43.2	48.2	44.6	63.1	49.7	41.2	73.5	76.5
High school graduate, no college	37.3	36.9	36.9	41.4	36.9	34.9	35.6	26.3	36.2	43.5	17.5	17.8
1 or more years of college	15.6	12.8	16.5	12.1	20.0	16.9	19.8	10.5	14.0	15.4	9.0	5.7
Chi-square statistics	20.5*		22.9*		4.9*		190.7*		26.1*		62.2*	
SEX												
Male	27.9	24.0	10.9	10.2	42.0	35.0	43.1	31.2	10.6	10.5	37.4	35.0
Female	72.1	76.0	89.1	89.8	36.5	65.0	56.9	68.7	89.4	89.5	62.6	64.9
Chi-square statistics	20.6*		0.6		8.5*		70.5*		0.004		8.4*	
MARITAL STATUS												
Married	23.7	33.9	20.2	29.9	12.4	24.4	20.6	25.4	38.1	45.3	10.7	13.2
Separated, divorced, widowed	37.2	37.2	33.5	30.3	32.8	31.7	37.2	44.3	13.8	13.6	19.4	21.4
Never married	39.1	28.9	46.3	39.8	54.9	44.0	42.2	30.4	48.0	41.2	69.9	65.4
Chi-square statistics	161.3*		57.0*		7.7*		73.5*		19.3*		36.1*	
RACE												
White	57.8	68.2	51.5	61.2	48.8	69.1	61.6	68.1	61.4	70.7	55.2	59.4
Black	38.9	28.0	43.5	33.1	46.7	28.3	32.0	26.4	32.7	27.1	39.7	34.0
Other	3.3	3.8	5.0	5.7	4.5	2.6	6.0	5.5	5.9	2.3	5.2	6.5
Chi-square statistics	134.6*		53.8*		70.7*		23.4*		54.3*		53.8*	
HISPANIC ORIGIN												
Hispanic origin	15.9	14.9	18.0	15.4	11.3	15.0	9.8	14.5	20.3	17.6	17.5	17.1
Not of Hispanic origin	84.1	85.1	82.0	84.6	88.7	85.0	90.2	85.5	79.7	82.4	82.5	82.9
Chi-square statistics	2.0		5.6*		4.9*		22.3*		4.3*		0.4	
DISABILITY STATUS												
With work disability	41.6	34.1	26.3	23.1	59.5	45.3	72.6	61.1	16.7	13.5	23.0	25.5
With no work disability	58.4	65.9	73.7	76.9	40.6	54.7	27.4	38.9	83.3	86.5	77.0	74.5
Chi-square statistics	58.4*		6.6*		32.7*		69.0*		7.2*		11.7*	
MOBILITY STATUS												

Movers	73.2	40.8	78.3	48.8	63.4	42.7	59.5	22.2	78.1	52.8	83.7	36.4
Nonmovers	26.8	59.2	21.7	81.4	36.6	57.3	40.5	77.8	21.9	47.2	16.2	63.6
Chi-square statistics	1030.3*		442.7*		69.5*		725.6*		226.2*		3201.5*	
HOUSEHOLD RELATIONSHIP												
Nonrelatives	90.4	95.1	92.8	95.3	86.7	90.2	89.3	95.7	91.2	93.4	91.7	94.7
Relatives	9.6	4.9	7.2	4.7	13.3	9.8	10.7	4.3	8.8	6.6	8.3	5.3
Chi-square statistics	91.9*		14.7*		5.2*		16.5*		1.1		57.9*	
REGION												
Northeast	20.2	18.3	38.9	61.1	32.4	35.7	20.8	17.8	16.7	13.3	23.5	20.2
Midwest	22.4	27.4	30.5	69.5	30.4	36.4	19.8	18.4	22.2	27.1	21.0	24.1
South	35.5	38.6	32.6	67.4	17.7	13.9	34.6	42.4	35.4	41.9	26.6	33.9
West	22.0	15.7	41.9	58.2	19.5	14.0	24.8	21.5	25.7	17.7	28.9	21.9
Chi-square statistics	90.2*		12.5*		16.9*		30.7*		51.6*		167.4*	
METROPOLITAN RESIDENCE												
Metropolitan	80.3	70.6	83.2	75.4	0.5	0.7	82.0	70.8	75.5	64.2	82.6	73.7
Nonmetropolitan	19.7	29.4	16.8	24.6	80.2	63.2	18.0	29.2	24.5	35.8	17.4	26.3
Chi-square statistics	118.4*		41.4*		30.5*		77.4*		49.6*		155.8*	
Employed full-time	33.7	29.4	26.3	24.3	38.5	25.2	26.1	14.0	32.5	39.2	10.0	10.4
Employed part-time	2.4	3.4	2.0	3.8	2.5	5.0	2.3	0.7	2.1	4.6	1.3	1.3
Unemployed	14.4	11.2	14.7	11.8	20.2	17.8	7.0	3.2	11.5	11.0	10.1	7.5
Out of labor force	49.64	56.0	57.1	60.1	38.8	52.0	64.6	82.2	53.9	45.2	78.5	80.8
Chi-square statistics	61.1*		23.8*		46.9*		10.2*		36.4*		18.4*	
POVERTY STATUS												
Poor	49.5	59.8	56.3	63.6	38.0	52.8	27.1	47.2	45.1	48.1	67.1	68.4
Nonpoor	50.5	40.2	43.7	36.4	62.0	47.2	72.9	52.8	54.9	51.9	33.0	31.7
Chi-square statistics	106.6*		25.8*		35.9*		95.7*		3.0		2.8	
INCOME												
Zero or negative	5.9	5.7	3.2	4.4	6.8	4.6	0.5	1.2	4.5	3.4	3.8	2.8
$1-$999	48.1	58.5	54.1	58.3	39.2	53.9	36.8	60.1	39.9	42.3	62.5	65.1
$1000-$1999	21.3	19.8	20.2	18.5	19.9	20.5	25.2	19.1	26.3	29.6	7.5	18.8
$2000 and over	24.7	16.0	22.5	18.8	34.1	21.1	37.5	19.6	29.3	24.8	26.3	13.3
Chi-square statistics	189.6*		84.2*		15.6*		93.9*		13.6*		98.1*	

Note: '*' denotes that the statistic is significant at the five percent level.

Table 3. Regression Results for Food Stamp Benefits: 1990 SIPP Panel

	All participants		Education			Sex		Marital status		Race		Hispanic origin		Disability status	
Explanatory variables	Attrition	Benefits	Under 12 years	12 years	13 years or more	Male	Female	Married	other	White	Black	Hispanic	Non-Hispanic	Disabled	Not disabled
Constant	-0.634 5.21	1.836 7.82	1.903 5.50	0.924 2.75	0.301 0.67	0.247 1.03	2.754 8.61	1.149 5.34	1.805 6.13	0.953 3.42	1.981 4.58	1.713 4.07	1.685 6.28	2.109 3.59	1.285 5.23
Age	0.014 12.37	-0.041 9.31	-0.042 12.92	-0.038 10.18	-0.021 3.49	-0.024 6.91	-0.051 15.11	-0.025 9.64	-0.045 14.99	-0.029 11.58	-0.044 10.21	-0.035 7.16	-0.039 15.55	-0.041 7.76	-0.036 14.05
No high school	0.141 3.37	0.196 1.28	---	---	---	0.049 0.47	0.264 4.32	-0.031 0.30	0.303 4.41	0.057 0.66	-0.013 0.15	0.176 1.47	0.148 2.61	-0.121 1.47	0.259 3.08
High school	0.138 3.42	0.225 1.71	---	---	---	0.198 1.67	0.116 0.05	0.018 0.16	0.314 4.84	0.055 0.88	0.115 1.53	-0.204 1.82	0.255 4.28	0.225 2.32	0.089 1.71
Female	-0.016 4.62	-0.082 0.64	0.049 0.77	-0.032 0.34	0.186 1.97	---	---	-0.048 0.66	0.075 1.05	-0.001 0.18	-0.173 1.20	-0.249 2.07	-0.029 0.54	-0.101 0.92	0.257 0.52
Married	-0.139 3.87	0.269 2.34	0.239 2.97	0.317 4.67	0.534 5.08	0.663 7.13	0.162 3.54	---	---	0.337 5.33	0.404 5.10	0.065 0.70	0.344 6.95	0.769 11.51	0.110 1.55
Black	0.350 11.05	0.574 3.57	0.372 5.60	0.336 2.38	0.109 0.37	0.150 1.13	0.728 7.94	0.298 2.17	0.351 6.28	---	---	0.625 3.96	0.483 6.21	0.514 4.23	0.403 4.11
Hispanic	0.241 6.00	0.342 2.25	0.411 4.64	-0.072 0.94	0.249 0.92	0.179 1.42	0.389 5.66	0.012 0.15	0.193 3.18	0.166 2.58	0.516 3.22	---	---	0.281 3.19	0.229 2.64
Disabled	0.408 12.69	0.351 2.27	0.015 0.23	0.122 0.76	-0.083 0.33	0.158 0.99	0.331 4.41	0.275 1.38	0.139 2.08	0.006 0.07	0.229 2.07	0.082 0.95	0.319 3.22	---	---
Mover	0.196 6.16	0.251 2.24	0.331 3.79	0.162 1.72	-0.017 0.21	0.164 1.78	0.418 5.64	0.003 0.05	0.179 3.43	0.144 1.92	0.128 1.79	0.397 3.83	0.218 3.74	0.047 0.72	0.316 3.43
Nonrelative	0.249 3.46	0.417 1.35	0.694 4.38	0.331 1.31	-0.589 3.09	0.471 3.31	0.321 2.63	6.420 1.55	0.599 5.30	0.214 1.38	0.059 0.41	-0.100 0.39	0.453 3.95	0.607 4.19	0.135 1.00
Northeast	0.065 1.73	0.116 0.95	0.160 2.42	0.053 0.65	0.074 0.67	0.056 0.63	0.125 2.66	0.146 1.36	-0.017 0.04	0.096 1.90	0.215 2.11	0.080 0.97	0.117 2.28	0.073 0.96	0.106 2.07
Metropolitan residence	0.038 1.08	0.115 0.91	-0.096 1.58	0.140 1.69	0.119 1.01	0.059 0.74	0.228 4.78	-0.073 0.65	0.296 5.24	0.001 0.02	0.504 4.53	0.308 2.78	0.092 2.34	-0.045 0.60	0.167 3.19
Employment status	0.093 2.68	0.175 1.41	0.523 5.19	-0.086 1.29	0.085 0.89	0.274 2.35	0.001 0.02	0.109 1.22	0.131 2.37	0.141 2.24	0.084 1.17	0.124 1.24	0.137 3.12	0.439 3.64	0.043 1.02
Poverty status	-0.457 14.21	-0.243 1.32	-0.161 1.47	0.168 0.97	0.138 0.74	0.058 0.47	-0.494 3.92	0.217 1.78	-0.292 2.53	0.024 0.18	0.194 2.29	-0.181 1.52	-0.185 1.65	-0.222 1.45	-0.029 0.25
Lambda		-3.182 3.57	-2.381 4.74	-1.151 1.66	-0.484 0.49	-0.984 2.21	-4.995 6.79	-0.968 1.45	-2.820 6.03	-1.054 1.95	-2.600 4.26	-1.980 4.60	-2.897 5.17	-2.450 3.86	-2.183 3.41
Observations	2375	2375	994	861	368	571	1803	523	1510	1537	750	469	1905	879	1495

Table 4. Regression Results for AFDC Benefits: 1990 SIPP PANEL

	All participants		Education			Sex		Marital status		Race		Hispanic origin		Disability status	

Independent variables	Attrition	Benefit	12 years	Under 12 years	13 years or more	Male	Female	Married	other	White	Black	Hispanic	Non-Hispanic	Not Disabled	disabled
Constant	-0.845	0.575	1.041	0.738	0.948	0.406	0.755	1.569	0.644	0.379	1.371	2.050	0.779	1.675	0.376
	4.32	1.44	3.25	1.62	2.63	0.67	2.41	4.17	0.73	0.89	3.51	3.25	1.96	2.64	1.29
Age	0.007	-0.001	-0.004	-0.001	-0.010	0.002	-0.004	-0.010	-0.004	-0.001	-0.013	0.015	-0.004	-0.013	0.003
	3.21	0.15	0.67	0.29	1.16	0.26	1.27	1.72	0.52	0.19	2.34	1.44	1.53	2.13	0.87
No high school	-0.026	-0.182	---	---	---	-0.088	-0.193	-0.231	-0.239	-0.209	-0.571	-0.042	-0.221	-0.537	-0.269
	0.43	2.91				0.31	3.03	0.87	3.39	2.32	2.53	0.26	3.05	1.64	2.54
High school	0.008	-0.079	---	---	---	0.028	-0.073	-0.453	-0.133	-0.132	-0.379	-0.215	-0.131	-0.196	-0.059
	0.14	1.36				0.07	1.19	2.10	1.85	1.66	1.67	0.96	1.70	1.39	0.93
Female	-0.171	-0.158	-0.269	-0.258	0.052	---	---	-0.355	-0.067	0.051	0.172	-0.498	-0.209	-0.249	-0.184
	2.34	1.53	1.04	1.95	0.24			2.37	0.38	0.43	0.39	2.03	2.09	1.75	1.84
Married	-0.036	0.080	-0.027	0.055	0.307	0.345	0.027	---	---	0.143	-0.083	-0.119	0.103	0.149	0.184
	0.66	1.40	0.28	0.58	1.64	1.28	0.46			1.72	0.76	0.94	1.59	0.75	2.05
Black	0.337	-0.327	-0.279	-0.166	-0.144	-0.031	-0.244	-0.486	-0.186	---	---	-0.078	-0.273	-0.039	-0.339
	7.54	2.38	2.20	0.89	0.58	0.10	1.62	2.51	1.07			0.57	1.69	0.19	3.29
Hispanic	0.305	-0.029	0.129	0.092	-0.103	0.162	0.072	0.057	0.106	0.026	0.684	---	---	0.248	-0.056
	5.56	0.22	0.88	0.81	0.28	0.61	0.56	0.30	0.79	0.19	1.87			1.11	0.59
Disabled	0.281	-0.233	-0.235	-0.190	0.126	-0.101	-0.121	-0.607	-0.074	-0.165	0.538	0.064	-0.178	---	---
	5.71	1.89	2.30	0.50	0.65	0.21	0.56	1.88	0.54	1.89	1.45	0.38	1.36		
Mover	0.371	-0.112	0.018	0.005	0.009	0.368	-0.030	-0.097	0.013	-0.147	0.368	0.355	-0.055	-0.127	-0.202
	8.36	0.77	0.13	0.02	0.07	1.56	0.19	0.61	0.08	0.98	1.72	1.91	0.37	1.21	1.24
Nonrelative	0.638	-0.336	-0.045	-0.115	-3.320	0.391	-0.217	-9.957	-0.013	-0.199	0.579	0.011	-0.293	0.256	-0.324
	5.11	1.05	0.15	0.23	0.75	0.86	0.56	2.17	0.02	0.72	1.21	0.03	0.63	0.47	1.45
Northeast	0.090	0.144	0.241	0.103	0.222	0.167	0.171	0.188	0.155	0.198	0.541	0.078	0.126	0.106	0.257
	1.65	2.21	1.71	0.78	1.39	0.54	2.81	0.83	1.83	2.54	2.63	0.63	1.04	0.59	3.95
Metropolitan residence	0.154	0.121	0.211	0.173	0.037	0.176	0.144	0.227	0.303	0.063	1.280	0.427	0.191	0.176	0.050
	2.88	1.59	1.72	1.04	0.23	0.45	1.45	1.28	4.26	0.86	2.45	1.72	3.25	1.45	0.55
Employment status	0.095	-0.262	-0.199	-0.204	-0.257	-0.221	-0.210	-0.568	-0.167	-0.178	-0.204	-0.099	-0.247	-0.249	-0.189
	1.86	4.08	0.79	1.72	1.68	0.45	3.82	3.32	1.48	2.35	2.27	0.63	3.81	1.47	3.26
Poverty status	-0.441	0.211	-0.077	0.057	0.114	0.062	0.057	0.092	0.087	0.266	-0.001	-0.464	0.212	-0.050	0.317
	9.46	1.17	0.63	0.17	0.46	0.28	0.30	0.54	0.28	1.23	0.01	3.33	0.94	0.32	1.88
Lambda		1.266	0.175	0.647	0.280	-0.048	0.539	1.428	0.475	1.191	-3.740	-0.629	0.869	-0.094	1.610
		1.39	0.33	0.45	0.39	0.04	0.58	1.92	0.29	1.79	1.54	1.20	0.81	0.12	2.19
Observations	1102	1102	400	432	174	102	999	175	753	649	394	227	874	287	814

Table 5. Regression Results for General Assistance Benefits: 1990 SIPP Panel

	All participants			Education		Sex		Marital status		Race		Hispanic origin		Disability status	
Independent variables	Attrition	Benefit	12 years	Under 12 years	13 years or more	Male	Female	Married	other	White	Black	Hispanic	Non-Hispanic	Not Disabled	disabled

Constant		-1.878	0.419	-0.435	2.555	-0.537	-0.565	2.209	1.394	0.541	0.627	0.738	-3.274	0.289		0.492	0.271		6.46	1.16
0.94	2.29	1.19	1.72	4.78	1.16	1.86	1.75	0.75	1.77	0.77		0.65	0.63							
Age		0.033	-0.016	-0.009	-0.046	-0.001	-0.001	-0.032	-0.012	-0.019	-0.019	-0.019	0.029	-0.014		-0.008	-0.017			
		9.45	2.90	1.55	2.91	0.10	0.04	3.56	0.87	4.09	3.82	1.29	1.52	2.44		0.80	2.56			
No high school		0.306	0.011	---	---	---	-0.200	0.174	-0.229	0.004	0.101	-0.332	-0.231	-0.081		-0.028	0.099			
		2.72	0.09				0.91	0.75	0.29	0.03	0.53	1.07	0.57	0.61		0.18	0.49			
High school		0.360	0.003	---	---	---	-0.051	-0.021	-0.008	0.019	0.075	-0.222	-0.053	-0.065		-0.199	0.149			
		3.41	0.02				0.18	0.11	0.01	0.15	0.41	0.90	0.15	0.45		1.23	0.69			
Female		-0.211	0.373	0.612	-0.074	0.621	---	---	0.784	0.378	0.478	0.159	1.423	0.317		0.320	0.571			
		2.63	3.81	1.55	0.32	2.79			0.84	3.49	4.09	0.80	4.66	3.01		1.39	3.32			
Married		-0.042	0.165	0.247	-0.173	0.553	0.493	0.127	---	---	0.208	-0.274	1.183	0.066		0.461	0.091			
		0.43	1.43	1.26	0.72	1.76	2.16	0.43			1.39	1.16	3.42	0.52		2.35	0.55			
Black		0.576	0.201	0.179	0.384	-0.369	-0.027	0.368	-1.180	0.395	---	---	0.109	0.179		0.031	0.251			
		6.96	1.53	1.07	1.67	0.91	0.11	1.90	1.59	2.87			0.57	1.17		0.13	1.36			
Hispanic		0.237	0.324	0.450	0.184	-0.190	-0.278	0.588	0.362	0.214	0.484	0.204	---	---		0.093	0.438			
		2.10	2.49	2.20	0.69	0.55	1.04	2.73	0.81	1.46	2.91	0.99				0.33	2.37			
Disabled		0.646	0.368	0.196	0.433	0.295	0.021	0.436	0.519	0.439	0.475	0.472	-0.699	0.348		---	---			
		7.25	2.71	0.95	2.33	1.16	0.07	1.96	4.58	3.14	2.93	1.46	1.59	2.60						
Mover		-0.215	-0.060	0.150	-0.180	0.056	-0.004	-0.372	0.118	-0.069	-0.089	0.067	0.451	-0.001		-0.081	0.052			
		2.62	0.59	1.01	0.99	0.23	0.02	1.71	0.33	0.66	0.76	0.33	1.38	0.01		0.57	0.35			
Nonrelative		0.299	0.035	0.347	-0.274	-0.161	0.199	0.353	---	-0.027	-0.029	0.149	1.566	-0.071		-0.038	-0.065			
		1.97	0.20	1.01	0.66	0.29	0.67	1.08		0.15	0.13	0.49	1.52	0.38		0.21	0.19			
Northeast		0.225	0.184	0.229	-0.058	0.152	-0.096	0.321	-0.720	0.309	0.137	0.419	0.926	0.177		-0.005	0.208			
		2.77	1.93	1.41	0.32	0.65	0.63	1.90	0.68	2.86	1.22	2.01	3.12	1.61		0.03	1.51			
Metropolitan residence		0.089	0.129	0.333	0.430	-0.061	0.407	-0.164	0.907	-0.111	-0.112	0.670	0.481	0.151		0.002	0.170			
		0.85	1.14	1.49	1.43	0.24	2.14	0.64	2.63	0.85	0.79	1.83	0.69	1.25		0.01	1.03			
Employment status		0.329	-0.254	-0.021	-0.504	-0.319	-0.632	-0.051	-0.945	-0.015	-0.289	0.119	-0.191	-0.249		-0.210	-0.296			
		3.27	1.94	0.84	2.53	0.99	2.06	0.21	2.79	0.10	1.74	0.54	0.66	1.69		0.67	1.80			
Poverty status		-0.773	-0.153	-0.095	-0.571	0.183	0.020	-0.674	-0.512	-0.129	-0.176	-0.418	0.113	-0.056		-0.025	-0.296			
		8.95	0.92	0.49	1.86	0.73	0.12	1.97	0.69	0.89	0.85	1.45	0.34	0.31		0.18	1.00			
Lambda			-0.406	-0.150	-1.515	0.585	0.566	-1.540	-1.520	-0.453	-0.712	-0.652	1.056	-0.166		0.072	-0.544			
			1.03	0.50	1.80	1.69	1.23	2.03	0.71	1.59	1.57	1.05	1.69	0.37		0.11	1.24			
Observations		346	346	124	135	63	128	217	50	253	217	114	55	290		160	185			

Table 6. Regression Results for SSI Benefits: 1990 SIPP Panel

	All participants		Education			Sex		Marital status		Race		Hispanic origin		Disability status	
Explanatory variables	Attrition	Benefits	Under 12 years	12 years	13 years or more	Male	Female	Married	other	White	Black	Hispanic	Non-Hiispanic	Disabled	Not disabled

Constant	-0.732 4.57	1.819 5.43	1.487 3.17	0.837 2.06	1.203 2.39	0.922 2.48	2.630 4.09	1.235 3.19	2.368 3.94	1.304 3.48	1.911 3.71	2.109 3.94	1.719 4.50	1.925 3.78	1.305 2.44				
Age	0.006 4.70	-0.016 7.28	-0.021 4.82	-0.008 2.10	-0.014 2.03	-0.014 2.60	-0.016 5.92	-0.013 2.83	-0.019 5.28	-0.013 5.54	-0.022 4.89	-0.014 3.20	-0.158 6.70	-0.015 3.92	-0.017 4.40				
No high school	-0.311 4.97	-0.423 3.39	---	---	---	-0.266 1.78	-0.691 2.80	-0.376 1.89	-0.619 3.31	-0.163 1.09	-0.801 3.03	-0.439 1.76	-0.428 2.72	-0.324 2.25	-0.297 1.19				
High school	-0.101 1.72	-0.123 1.31	---	---	---	0.010 0.07	-0.247 1.76	-0.070 0.38	-0.261 2.07	-0.013 0.11	-0.699 2.64	-0.272 1.09	-0.095 0.94	-0.140 1.25	-0.019 0.10				
Female	-0.090 1.97	-0.023 0.32	0.193 1.84	-0.128 1.05	-0.069 0.42	---	---	0.140 0.97	0.053 0.68	-0.017 0.19	0.148 1.08	0.090 0.80	-0.024 0.30	-0.027 0.35	0.181 1.40				
Married	0.020 0.37	0.177 2.45	0.152 1.39	0.254 1.92	0.171 0.69	0.197 1.13	0.036 0.32	---	---	0.107 1.12	0.342 1.95	0.229 1.52	0.189 2.25	0.381 2.96	0.066 0.39				
Black	0.298 6.40	0.368 3.53	0.123 1.32	-0.037 0.22	1.132 1.89	0.042 0.20	0.439 3.92	-0.154 0.57	0.363 3.38	---	---	0.598 3.31	0.322 2.74	0.369 2.59	0.062 0.41				
Hispanic	-0.031 0.48	0.193 2.29	0.213 1.93	0.208 0.96	0.353 0.95	0.083 0.60	0.249 2.30	0.119 0.70	0.143 1.27	0.217 2.01	0.215 1.32	---	---	-0.034 0.30	0.476 3.27				
Disabled	0.258 5.11	0.367 3.98	0.251 2.47	-0.027 0.11	0.356 1.65	0.353 2.45	0.354 3.32	0.253 1.18	0.186 2.29	0.193 1.37	0.346 3.00	-0.183 1.42	0.439 3.71	---	---				
Mover	0.132 2.73	0.317 4.06	0.166 1.60	0.328 0.95	0.012 0.06	0.199 1.36	0.285 3.34	-0.150 1.00	0.453 4.73	0.229 2.02	0.252 2.16	0.549 3.52	0.269 3.14	0.298 3.04	0.215 1.47				
Non-relative	0.720 8.37	0.993 3.62	1.504 2.56	0.092 0.21	0.388 0.93	0.235 0.82	1.500 3.20	-0.218 0.06	1.108 3.23	0.569 1.35	0.698 2.32	0.793 2.38	0.931 2.85	0.716 2.34	0.841 1.28				
Northeast	0.222 4.17	0.286 2.96	0.243 1.94	-0.077 0.30	0.280 1.33	0.078 0.44	0.252 2.59	-0.845 4.64	0.585 4.31	0.217 2.24	0.397 2.06	0.308 1.99	0.273 2.51	0.297 2.49	-0.015 0.11				
Metro-politan residence	0.060 1.14	0.208 2.96	0.259 2.51	0.156 1.17	0.242 0.66	0.432 3.45	-0.006 0.05	0.410 2.83	0.070 0.82	0.088 1.01	0.402 2.85	0.144 0.98	0.203 2.59	0.034 0.34	0.368 1.73				
Employ-ment status	0.609 10.51	0.692 2.89	0.751 1.67	-0.005 0.01	0.508 0.95	0.369 1.04	0.628 2.53	-0.093 0.31	0.750 2.41	0.368 1.24	0.159 0.62	1.308 2.32	0.573 2.31	0.728 1.76	0.009 0.05				
Poverty status	-0.400 8.25	-0.499 4.19	-0.387 2.78	-0.019 0.06	-0.382 1.41	-0.074 0.55	-0.797 3.77	-0.114 0.44	-0.519 3.56	-0.398 1.95	-0.027 0.25	-0.747 4.12	-0.427 3.15	-0.414 2.85	-0.264 1.62				
Lambda 1.56	3.05	-2.432 0.10	-1.832 3.15	-0.011 1.31	-1.479 2.69	-0.951 2.91	-3.520 2.89	-0.059 2.27	-2.808 1.09	-1.210	-1.178	2.189	-2.280	-1.712	-1.121	3.65	2.10	0.08	1.61
Observs.	1132	1132	580	346	167	356	775	220	841	726	348	201	930	711	420				

Table 7. Regression Results for WIC Benefits: 1990 SIPP Panel

	All participants			Education		Sex		Marital status		Race		Hispanic origin		Disability status	
Explanatory variables	Attrition	Benefits	Under 12 years	12 years	13 years or more	Male	Female	Married	other	White	Black	Hispanic	Non-Hispanic	Disabled	Not disabled
Constant	-0.233 0.94	-0.883 5.13	-0.886 3.32	-1.260 5.20	-0.949 4.45	-1.555 4.87	-0.960 7.46	-1.093 7.39	-1.042 3.63	-1.051 4.77	-0.331 0.92	-1.119 3.75	-0.831 4.39	-1.709 2.93	-0.976 6.23
Age	0.010	-0.008	-0.011	-0.007	-0.006	-0.005	-0.008	-0.009	-0.006	-0.006	-0.019	-0.006	-0.010	0.001	-0.007

	2.74	3.67	2.63	2.06	1.56	0.96	3.37	2.56	1.65	2.38	1.73	0.15	3.82	0.03	2.98
No high school	0.307 4.40	0.093 1.75	---	---	---	0.047 0.42	0.117 1.89	-0.105 1.32	0.099 0.85	0.053 0.88	0.160 0.80	0.009 0.13	0.102 1.87	0.187 1.36	0.117 1.71
High school	0.121 1.84	0.045 1.31	---	---	---	-0.133 1.11	0.026 0.75	-0.206 2.17	-0.017 0.35	0.020 0.53	0.067 0.46	-0.046 0.32	0.056 1.22	0.009 0.09	0.027 0.75
Female	-0.387 4.40	-0.107 1.67	0.054 0.63	0.043 0.41	-0.056 0.62	---	---	0.016 0.29	0.038 0.11	-0.011 0.14	-0.313 0.66	-0.056 0.44	-0.103 1.52	0.122 0.54	-0.052 0.88
Married	-0.405 7.06	0.014 0.26	-0.011 0.10	0.112 1.75	0.042 0.74	0.554 2.24	0.009 0.17	---	---	0.026 0.32	0.089 0.58	0.027 0.45	0.018 0.03	0.319 2.30	0.012 0.22
Black	0.265 4.84	0.078 1.68	0.052 0.83	0.019 0.25	0.064 0.64	0.025 0.18	0.081 1.64	-0.309 1.93	-0.006 0.16	---	---	0.189 1.47	0.064 1.37	-0.039 0.40	0.066 1.36
Hispanic	0.230 3.85	-0.008 0.18	-0.016 0.16	0.082 1.27	-0.007 0.05	-0.273 1.79	-0.009 0.23	-0.149 2.32	-0.082 1.51	-0.028 0.57	0.197 0.58	---	---	-0.309 1.60	-0.013 0.30
Disabled	0.397 6.10	0.100 1.58	-0.054 0.86	0.027 0.20	0.074 0.87	-0.198 1.32	0.075 1.28	-0.161 1.75	-0.043 0.49	0.073 1.01	0.149 0.74	0.036 0.37	0.113 1.63	---	---
Mover	0.385 7.40	0.095 1.79	0.098 1.38	-0.003 0.06	0.078 1.03	-0.126 1.13	0.096 1.76	-0.025 0.53	0.053 0.58	0.040 0.76	0.289 1.47	0.149 2.27	0.077 1.36	-0.081 0.58	0.073 1.37
Nonrelative	0.143 0.93	-0.150 1.72	-0.027 0.20	-0.184 1.23	--	0.263 0.65	-0.125 1.35	0.113 0.48	-0.127 1.10	-0.174 1.93	0.807 0.71	-0.301 1.76	-0.093 0.75	-0.628 1.59	-0.193 2.08
Northeast	0.181 2.89	0.059 1.41	0.087 1.37	-0.031 0.46	0.085 0.09	0.007 0.06	0.101 2.01	0.123 2.08	0.001 0.01	0.019 0.39	0.107 0.69	0.046 0.52	0.056 1.31	-0.056 0.38	0.021 0.51
Metropolitan residence	0.291 5.15	0.069 1.59	0.031 0.59	-0.070 0.79	0.068 1.17	0.007 0.07	0.077 1.59	-0.059 1.28	0.081 1.32	0.001 0.03	0.409 1.29	0.015 0.13	0.082 2.01	-0.177 1.49	0.081 1.69
Employment status	-0.234 3.91	-0.116 2.81	0.026 0.42	0.007 0.08	-0.242 3.11	-0.231 1.87	-0.134 2.78	0.027 0.45	-0.133 1.45	-0.058 1.38	-0.128 1.06	-0.054 0.96	-0.126 2.57	-0.174 1.65	-0.113 2.41
Poverty status	-0.393 7.15	-0.064 1.15	0.009 0.12	0.065 0.59	-0.033 0.45	0.020 0.18	-0.079 1.32	0.100 1.35	-0.033 0.24	-0.034 0.62	-0.205 0.87	-0.021 0.39	-0.077 1.13	0.009 0.09	-0.049 0.85
Lambda		-0.063 1.87	-0.595 1.67	0.301 0.64	-0.552 1.67	0.802 2.92	-0.758 2.04	1.410 2.58	-0.537 0.91	-0.325 0.89	-1.480 1.15	-0.066 1.33	0.062 1.87	0.853 1.27	-0.575 1.72
Observations	871	871	280	343	165	80	790	312	407	597	246	206	664	137	733

Table 8. Regression Results for Aggregate Benefits: 1990 SIPP Panel

	All participants		Education			Sex		Marital status		Race		Hispanic origin		Disability status	
Independent variables	Attrition	Benefit	Under 12 years	12 years	13 years or more	Male	Female	Married	other	White	Black	Non-Hispanic	Hispanic	Not Disabled	Disabled
Constant	7.136 0.01	1.320 8.23	1.191 5.53	1.200 4.97	0.771 2.06	1.687 4.30	1.414 9.15	0.735 2.22	1.311 6.71	1.336 5.87	1.239 5.46	1.370 4.64	1.300 7.68	1.33 6.19	1.731 7.68
Age	0.005 1.69	-0.021 10.50	-0.021 9.39	-0.019 6.16	-0.015 2.49	-0.023 4.96	-0.022 12.46	-0.004 0.90	-0.024 11.41	-0.020 9.18	-0.023 8.01	-0.014 3.98	-0.022 11.44	-0.021 7.19	-0.021 9.43

No high school	0.019 0.14	-0.098 1.48	---	---	---	-0.324 1.43	-0.021 0.22	0.031 0.19		-0.133 1.04	-0.111 0.88	0.072 0.05		0.155 1.40	-0.099 0.94	-0.155 1.18	-0.154 1.24
High school	0.358 2.76	-0.088 0.82	---	---	---	-0.194 0.90	0.018 0.17	---		-0.121 0.90	-0.112 0.84	-0.003 0.03		---	-0.002 0.01	-0.027 0.186	-0.256 2.01
Female	-0.222 1.96	0.031 0.41	0.199 1.85	-0.073 0.54	0.031 0.13	---	---	-0.409 2.59		0.309 3.04	0.055 0.54	0.362 2.81		---	0.057 0.62	0.272 2.65	-0.531 4.09
Married	-0.366 2.50	0.166 2.24	0.340 2.79	0.121 0.98	---	0.704 4.36	-0.143 1.36	---		---	---	0.102 0.68		-0.435 2.99	0.301 2.95	0.404 3.26	0.281 1.99
Black	0.305 3.55	0.141 2.24	0.239 2.77	0.070 0.57	0.076 0.41	0.106 0.64	0.247 2.09	-0.094 0.46		0.198 2.07	-0.084 0.69	---		0.019 0.14	0.188 2.05	0.228 2.18	-0.053 0.56
Hispanic	-0.332 2.42	0.191 2.30	0.278 2.53	0.028 0.16	0.292 1.01	0.264 1.49	0.154 1.64	---		0.342 2.95	0.308 3.06	0.145 0.98		---	---	0.161 1.19	0.249 2.54
Disabled	0.041 0.44	0.012 0.25	0.003 0.03	0.054 0.46	0.043 0.24	-0.258 1.50	0.082 1.21	---		0.030 0.42	0.020 0.22	0.105 0.88		---	0.054 0.79	---	---
Mover	0.250 2.80	0.224 3.50	0.285 2.88	0.164 1.05	0.168 0.92	0.220 1.08	0.200 2.63	-0.087 0.49		0.283 2.55	0.334 3.62	0.006 0.05		0.122 0.96	0.261 2.84	0.294 2.81	0.032 0.34
Nonrelative	-5.401 0.02	0.153 0.79	---	---	---	0.283 0.81	0.069 0.27	---		0.195 0.82	---	0.249 0.53		---	0.132 0.57	0.209 0.82	---
Northeast	0.107 1.06	0.144 2.82	0.371 3.41	0.046 0.37	-0.330 1.69	0.123 0.64	0.174 2.16	0.117 0.52		0.146 1.80	0.250 2.16	0.195 1.76		0.338 2.49	0.106 1.22	0.063 0.57	0.165 1.75
Metropolitan residence	0.376 3.08	0.174 2.56	0.131 1.35	0.163 1.09	0.406 1.92	0.167 1.09	0.197 1.99	0.161 1.30		0.192 1.94	0.049 0.52	0.237 1.90		0.095 0.57	0.224 2.53	0.174 1.67	0.081 0.82
Employment status	-0.069 0.50	-0.608 6.14	-0.617 2.54	-0.576 3.22	---	-0.360 1.49	-0.678 6.43	---		-0.587 5.28	-0.494 3.17	-0.694 4.21		---	-0.669 6.16	-0.610 3.17	-0.715 6.01
Poverty status	0.126 1.30	0.126 2.00	-0.122 1.34	0.412 3.72	0.447 2.35	-0.106 0.74	0.138 1.96		0.531 3.12	-0.006 0.08	0.151 1.56	0.027 0.18	-0.062 0.54		0.181 2.45	-0.061 0.68	0.234 2.63
Lambda		0.552 0.36	0.665 0.54	0.112 0.08	0.179 0.26	0.489 0.53	-0.963 0.50		0.943 0.93	-0.109 0.05	-0.952 0.44	0.506 0.29	-1.011 0.36		-0.531 0.35	-0.251 0.26	6.032 3.39
Observations	1135	1135	574	378	132	216	918		174	903	675	399	241		893	505	629

Table 9. Summary Effects of Attrition on Program Benefits in the 1985-1990 SIPP Panels

	Attrition Bias				
Real Benefits	1985	1986	1987	1988	1990
Aggregate	No	No	No	Yes	No
AFDC	No	No	No	No	No

General Assistance	No	No	No	No	No
Food stamps	Yes	Yes	Yes	Yes	Yes
SSI	No	No	No	Yes	Yes
WIC	No	No	nO	No	No

Table 10. Attrition and Program Participation Status: 1990 SIPP Panel

		Participation Status					
Independent variables	Attrition	Medicaid	Food stamps	AFDC	General Assistance	SSI	WIC
Constant	-1.159	-2.361	-1.919	-1.466	4.520	-0.337	-2.251
	15.00	5.04	3.74	2.23	4.08	0.51	1.83

Age	-0.002		0.001		0.007	0.017	0.006	-0.017	0.049	
	3.86		1.04		8.50	12.54	2.78		9.76	
No high school		0.004		0.408		0.396	0.171	-0.107	0.271	-0.408
	0.16		9.65		8.60	2.69	1.05	4.84	3.03	
High school	0.107		0.376		0.378	0.371	-0.134	0.222	0.179	
	4.76		7.90		7.40	5.20	1.18	3.96	1.95	
Female		-0.094		0.186		0.150	0.274	0.166	0.152	0.266
	5.31		6.08		4.58	6.53	2.15	3.63	3.48	
Married		-0.121		-0.542		-0.176	-0.318	-0.175	-0.641	0.373
	5.79		13.15		4.03	4.95	1.58	11.45	3.02	
Black	0.386		0.737		0.716	0.759	-0.189	0.589	0.636	
	16.01		10.80		9.79	8.15	1.15	6.01	3.59	
Hispanic	0.244		0.516		0.444	0.363	-0.145	0.369	0.455	
	8.95		9.96		8.03	5.21	1.13	5.27	3.55	
Disabled	0.261		0.871		0.585	0.327	0.204	1.244	0.421	
	9.78		16.17		9.77	3.89	1.56	22.21	2.32	
Mover	1.193		1.091		0.870	1.046	-1.098	0.816	1.351	
	65.57		5.73		4.27	4.05	2.49	3.07	2.86	
Nonrelative	0.408		-0.112		-0.713	-0.529	-0.525	0.347	0.243	
	8.36		1.03		5.72	3.42	2.14	2.07	0.88	
Northeast	0.113		0.210		0.160	0.219	0.351	0.007	0.182	
	5.22		5.74		4.02	4.45	4.26	0.13	2.00	
Metropolitan residence	0.113		0.028		-0.066	0.181	-0.263	-0.044	-0.206	
	4.86		0.77		1.70	3.46	2.87	0.79	2.43	
Employment status	0.069		-0.657		-0.412	-0.600	-1.518	-0.299	-0.387	
	3.23		16.13		9.85	9.23	4.47	5.34	3.15	

Poverty		-0.039		1.219		1.584	1.401	0.819		0.322	0.609	
status	1.52		42.97		53.17	36.98	10.71		5.75	9.06		
Lambda				1.522		1.202	1.422	-1.974		1.215	2.024	
			4.67		3.43	3.21	1.93		28.93	2.42		
Observations	56,413			56,413			56,413		56,413		56,413	56,413