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RECEIPT OF FOOD STAMPS BY LONGITUDINAL HOUSEHOLDS AND INDIVIDUALS IN THE SIPP

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The genesis of this paper is a pair of articles that appeared in The Journal of Economic and Social Measurement in December 1985. Although this journal issue was devoted to the design and development of the Survey of Income and Program Participation, or SIPP, most of the articles had broader implications for analysis of panel data in general.

The first of the two articles, by David Byron McMillen and Roger Herriott, was entitled, "Toward a Longitudinal Definition of Households." The authors distinguished among a static definition of a household--e.g., everyone living at a given address in December of 1980; a dynamic definition of a household--a potentially changing collection of individuals over the course of 1980; and an attribute-type definition of a household--the potentially changing set of people who shared an address at any time over the course of 1980 with a particular individual. These three approaches have very different implications of measurement of household-level phenomena such as poverty or welfare receipt. The authors concluded that both dynamic and attribute-type definitions were desirable, to answer different sorts of questions.

The second article, by Greg J. Duncan and Martha S. Hill, was entitled, "Conceptions of Longitudinal Households--Fertile or Futile?" These authors argued that there is no satisfactory way to define a longitudinal household, and that the only appropriate analysis was based on an attribute-type definition, or as they preferred to call it, on an "individual-based" approach. They claimed that in principle, use of a dynamic definition of households could give misleading results, because the events that move households in and out of poverty, or on and off welfare, often change the identity of the household beyond recognition. Whether that occurred in practice, however, was an open question. In this paper, I report results from the 1984 Survey of Income and Program Participation that indicate that the implications of choosing between an individual- or household-based approach for estimating the length of food stamp receipt are virtually nil.

The SIPP Data

The 1984 panel of the Survey of Income and Program Participation (SIPP) is a nationally representative survey of about 20,000 households, each of which was interviewed once every four months starting in October 1983. The sample is divided into four rotation groups which were interviewed on a staggered basis, with the last interviews occurring in July, 1986.

Several years ago the Bureau of the Census completed construction of the 1984 SIPP Full Panel Research File, a rearrangement of the SIPP data into longitudinal form. This file excluded information from the ninth interview, which had been administered to only two of the rotation groups. The time period covered for all individuals is therefore 32 months. Only a fraction of the variables from the questionnaire were included.

In 1989, Mathematica Policy Research created an extract of this file. All one-month gaps in reported receipt of food stamps and cash assistance were filled in, using the average value of the benefits received in the preceding and subsequent months. This extract is the data source for this paper.

The Census developed a set of longitudinal weights for individuals for whom there are 32 months of data, about 60 percent of the sample. These weights, which were used for the analysis presented here, are designed to render that subset of individuals nationally representative. Longitudinal household weights are based on the

individual weights of the head and spouse, if any.

Findings on Duration of Receipt

To estimate how long food stamp recipients tend to remain on the program, a survival analysis was performed for all non-left-censored spells of receipt. Exhibit 1 summarizes the frequency distribution of length of completed spells for all **individuals** covered by the Food Stamp Program and for selected subgroups, defined by three independent partitions of the recipient population. Membership in a subgroup is based on the characteristics of the household to which the individual belonged in the first month of the spell of receipt. For example, the category "earners" includes all individuals who, in their first month of receipt, lived in a household which contained an earner. This was done because welfare dynamics for individuals are driven by circumstances of their households. Likewise "high school graduates" includes all individuals living in households containing a non-elderly, able-bodied high school graduate. Thus, children as well as adults are included in most of the subgroups.

For the recipient population as a whole, the median length of receipt is 6 months. Over forty percent of all spells are 4 or fewer months long. About a third are over 12 months long, and about 20 percent last more than 2 years.

Recipients whose households contain earners at the time the spell begins clearly have much shorter spells on average than recipients whose households do not contain earners. The median completed spell lengths for these two groups are 5 and 10 months respectively. Members of households with earners are substantially more likely than members of households without earners to exit within four months (48 versus 31 percent), and substantially less likely to receive food stamps for more than two years (12 versus 31 percent).

Only minor variations are seen when recipients in households that contain a prime aged, able-bodied adult are classified by whether any such adult is a high school graduate. The household composition subgroups show a wide variety of patterns, however. Recipients were classified according to whether their household consisted of one adult plus children, multiple adults plus children, able-bodied adults only, or aged and disabled adults only.

Of these four subgroups, able-bodied childless adults have the shortest spells: nearly 50 percent leave the Food Stamp Program within four months of entry, and only 13 percent remain on the program for over two years. Members of one-adult households with children have the longest spells, with barely half leaving the program within a year of entry.

We may now examine the corresponding distributions for **longitudinal households**. In the SIPP data, households are classified each month according to whether they contain a family--i.e., two or more individuals related by blood or marriage--and whether they are headed by an unmarried man, an unmarried woman, or a married couple. Both the identity and marital status of the head are recorded as reported by the interviewer. The five household types are thus:

- married-couple household;
- other family household, female head;
- other family household, male head;
- nonfamily household, female head; and
- nonfamily household, male head.

According to the Bureau of the Census, a longitudinal household is said to continue from one month to the next if it remains the same household type, if it retains the same reference person or householder, and if it retains the same householder's spouse (if any). Many events can therefore lead to a discontinuity: for example, death or departure of householder, death or departure of householder's spouse, marriage of householder, or birth of a child to a woman living alone. In the sample of original interviewees, one out of six experienced a change in household reference person or spouse over the 32 months of observation.

The logic behind the SIPP household definition is that after a major change in composition, the household is so altered that it cannot legitimately be called the same household as before. This implies that the clock of food stamp receipt

Exhibit 1

LENGTH OF FOOD STAMP SPELLS FOR INDIVIDUALS

	Unweighted sample size	Median	Percent receiving food stamps ≤ 4 months	Percent receiving food stamps ≤ 12 months	Percent receiving food stamps > 24 months
Earners	1,556	5	47.8%	76.8%	12.1%
Nonearners	1,067	10	31.3	55.6	31.3
High school graduates	1,688	6	43.8	69.8	18.3
High school dropouts	772	7	37.1	67.1	21.4
Able-bodied, childless	218	5	48.1	78.2	12.6
Aged and disabled	205	8	42.2	62.8	24.2
One adult and children	505	11	25.2	52.2	37.2
Multiple adults and children	1,624	6	44.1	72.0	14.0
ALL INDIVIDUALS	2,623	6	41.1	68.1	19.7

Exhibit 2

LENGTH OF FOOD STAMP SPELLS FOR SUBGROUPS OF HOUSEHOLDS

	Unweighted sample size	Median	Percent receiving food stamps ≤ 4 months	Percent receiving food stamps ≤ 12 months	Percent receiving food stamps > 24 months
Earners	481	4	50.7%	76.7%	9.8%
Non-earners	482	10	30.5	57.1	30.4
High school graduates	544	6	44.2	72.0	14.5
High school dropouts	284	6	41.2	64.8	23.8
Able-bodied, childless	158	5	47.1	78.1	13.9
Aged and disabled	158	11	29.4	54.9	31.8
One adult and children	212	10	27.2	54.1	36.5
Multiple adults and children	414	5	48.2	42.9	9.4
ALL HOUSEHOLDS	963	6	40.8	67.0	20.0

is reset to zero for a group of individuals whenever the household type changes, but not otherwise. As a consequence, the distribution of spell lengths for households may be misleadingly low, if many groups of individuals continue to receive food stamps despite changes in household type. Conversely, it could be misleadingly high, if many individuals leave and enter households that receive food stamps. Suppose, for example, a married couple household that was receiving food stamps for a year splits into two households, and both individuals continue to receive food stamps for another year. Then the household level data will show three spells of receipt of one year each, although at the individual level there were two individuals receiving food stamps for two years each.

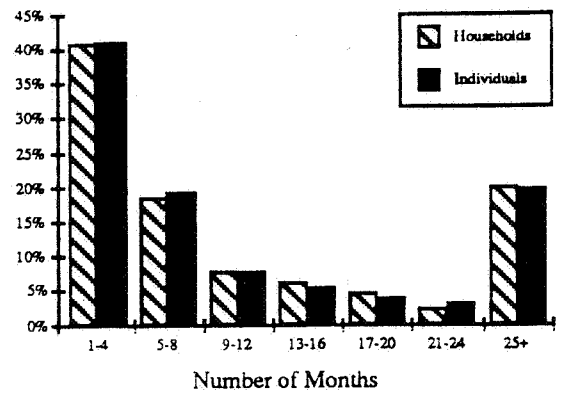
Situations like these suggest that analyzing spell lengths for individuals provides more useful information about how long people receive food stamps then analyzing spell lengths for households. Most earlier research on the Food Stamp Program, however, has focused on the household as the unit of analysis. For purposes of continuity and comparability, we therefore replicated the individual-level analyses presented above, using the definition of the household that is employed in SIPP.

Exhibit 2 summarizes the distribution of lengths of completed spells of food stamp receipt for longitudinal households. Despite the ambiguity in the definition of a longitudinal household and the potential for bias in estimated spell lengths, the distribution for all recipient households is practically identical to that for all recipient individuals. The median spell length is identical at 6 months and the proportions of spells ending within 4, 12, and 24 months are all very similar to the corresponding statistics in Exhibit 1. The great similarity between the two distributions is shown graphically in Exhibit 3.

Comparison of Exhibits 1 and 2 indicates that within subgroups as well, the distribution of length of completed spell is very similar for individuals and for households. The household-level data appear to yield somewhat longer spells for the aged and disabled. Subgroups for which the household data indicate shorter spells are those in which the adults are not high school graduates, and households containing children.

Exhibit 3

DISTRIBUTION OF LENGTHS OF COMPLETED SPELLS FOR HOUSEHOLDS AND INDIVIDUALS



Even these differences, however, are relatively small.

Sources of Differences Between Individual-Level and Household-Level Distributions

This great similarity between the individual- and household-level distributions--or in McMillen's and Herriott's terminology, between the dynamic and attribute-based definitions of households--raises the question of whether what we are observing is the net effects of several important forces operating in opposite directions. For some subgroups, the relative importance of these forces may vary. Consider an individual i, living in household h, who is receiving food stamps in a given month. In the following month, there are three possible outcomes for this person:

- continued receipt of food stamps;
- non-receipt; or
- death, institutionalization, or emigration.

(Note that attrition from the sample is not a possibility here because the longitudinal sample excludes attriters.)

Similarly, the possibilities for household h in the following month are:

- continued receipt of food stamps;
- non-receipt; or

- dissolution, due to death or departure of reference person or spouse, acquisition of a new spouse, etc.

There are thus nine possibilities for individual i and household h combined. Most of these would lead to no difference between spell length as measured for the individual or for the household.

Two combinations of events will lead household-level spells to be longer than individual-level spells. These are cases in which the household continues to exist and receive food stamps, while the individual either stops receiving food stamps (e.g., a non-key person such as a grown child who leaves the household), or else dies or is institutionalized (typically a non-key elderly or disabled person).

Conversely, two combinations lead to individual-level spells longer than household-level spells. These are cases in which the individual continues to receive food stamps, but the household either does not do so (suggesting that the individual in question is a non-key person who has split off), or has ceased to exist. Whether use of household-level data causes an upward or a downward bias depends on the relative frequencies of these types of events. It would seem likely, however, that household reorganization, leading to a downward bias in the length of household spells, is the most significant factor.

In addition, there is a compositional factor that could lead to a divergence in distributions, even without any split-offs or deaths. Suppose that members of large households have shorter spells than members of small households. The members of large households necessarily comprise a greater proportion of individuals than the large households comprise of households. Hence the average spell length for individuals, which is a weighted average of the spell length for individuals residing in large and small households, would be shorter than the spell length for households.

Because our interest is now focused on month-to-month changes, the contributions of each of these factors to differences in observed patterns of participation between individuals and households may be seen by analyzing impacts on the closure rate. The closure rate is measured based on all months of food stamp receipt except the last in the observation period. This is in contrast with the distribution of spell length, which is measured based on non-left censored spells only. Furthermore, the subgroups for this part of the analysis are defined as of the current month of receipt, rather than in the month the spell of receipt began.

Exhibit 4 brings together two measures of the closure rate, with information on the sources of differences. The first column of the table shows the closure rates for individuals. The second

Exhibit 4

SOURCES OF DIFFERENCE BETWEEN INDIVIDUAL AND HOUSEHOLD LEVEL SPELL LENGTHS

	Closure Rate		Sources of Difference			
			Individual Spell Longer		Household Spell Longer	
	Individual Level	Household Level	Departure	Household Dissolves	Departure	Individual dies, etc.
Earners	8.1%	8.4%	0.2%	1.0%	0.8%	0.0%
Nonearners	2.2	2.6	0.0	0.7	0.4	0.0
High school graduates	5.9	6.2	0.2	0.8	0.7	0.0
High school dropouts	3.5	4.0	0.1	1.0	0.5	0.0
Able-bodied, childless	7.6	8.3	0.1	1.6	1.0	0.0
Aged and disabled	3.2	3.4	0.0	0.5	0.3	0.0
Single adult and children	2.4	2.8	0.0	0.6	0.2	0.0
Multiple adults and children	6.0	6.3	0.2	1.0	0.8	0.0
ALL RECIPIENTS	4.5	4.9	0.1	0.8	0.6	0.0

column shows household-level closure rates measured for individuals. This is equivalent to measuring closure rates for households weighted by household size.

For each month in which an individual received food stamps, we can determine whether that individual--and the household of which that individual was a part--continued to exist in the sample and to receive food stamps in the following month. The final four columns of the exhibit show the relative frequencies of events that cause differences between individual- and household-level closure rates. These events are necessarily measured on the individual level.

For the recipient population as a whole, in any given month 0.1 percent of individuals continue to receive food stamps while their (former) households cease to do so, and 0.8 percent continue to receive food stamps while their households cease to exist. These events lead to longer individual- than household-level spells. On the other hand, 0.6 percent of individuals leave the food stamp program while members of their households continue to participate, and a negligible proportion of recipients die, are institutionalized, etc., while their households still receive benefits. These events lead to shorter individual- than household-level spells. The net effect (correcting for rounding) is that the closure rate for individuals is 0.4 percentage points lower than the closure rate for households, weighted by household size. The patterns vary somewhat among the subgroups, although none of the net effects are very large. Among able-bodied, childless recipients, for example, 1.6 percent continue to receive food stamps when their households dissolve, and another 0.1 percent exit from their households and continue to receive food stamps while their households cease to do so. These effects are countered, however, by the 1.0 percent of recipients in this subgroup who cease receiving food stamps while departing from households that continue to do so. The net effect of these movements is therefore only 0.7 percentage points. Net effects for the other subgroups are smaller.

To get an idea of the policy implications of the differences in closure rate, we may use the approximation that in a steady state, the average length of receipt is equal to the reciprocal of the closure (i.e., hazard) rate. (In fact, participation in the Food Stamp Program was growing during the observation period, suggesting that the true mean spell length was shorter than this.) For the recipient population as a whole, therefore, a difference in the closure rate between 4.5 and 4.9 percent would correspond approximately to a difference in mean spell length of 22 versus 20 months--that is, a 2 month difference.

Conclusions

The results presented in this paper may be of interest to both policymakers and methodologists. First, some summary statistics have been obtained on the length of food stamp spells as reported in the Survey of Income and Program Participation. The overall median is 6 months. About 20 percent of recipients receive benefits continuously for over two years--but over 30 percent of members of households with no earnings at the start of the spell and members of one-parent families do so, versus less than 13 percent of members of households that do have earnings or that consist entirely of able-bodied adults. These distributions have implications for such issues as employment and training requirements.

Second, it appears that the distribution of spell lengths is virtually identical at the individual and on the household level. The events associated with individuals continuing to receive food stamps, while the households to which they belonged no longer do so or have ceased to exist, are quite rare. Even rarer are events associated with individuals ceasing to receive food stamps, while their households (or former households) continue to do so. We conclude that the distributions of food stamp spell lengths based on household-level data, although potentially biased in theory, are not visibly biased in practice.