Review of Income and Wealth
Series 35, No. 3, September 1989

LONGITUDINAL MEASURES OF POVERTY: ACCOUNTING FOR INCOME AND ASSETS OVER TIME

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This paper uses data from the Survey of Income and Program Participation to estimate durations of poverty spells and to determine whether temporarily poor families have sufficient assets to cover the shortfall of their incomes below poverty—their personal poverty gaps. If poverty is measured using monthly rather than annual income data, four times as many persons enter poverty, but most spells are short: the median duration is between four and six months. More than one-third of all poverty spells are eliminated if financial assets are used to fill poverty gaps, but remaining poverty spells are longer. Separate estimates are made for the elderly and for families with children.

Most studies of the incidence and duration of poverty rely on annual income data, which are compared to a set of poverty thresholds adjusted for family size and composition to determine whether or not a given family is in poverty. Official U.S. poverty statistics on the percentage of the population in poverty, for example, are computed by the Bureau of the Census using data annual incomes as reported in the Current Population Survey (U.S. Bureau of the Census, 1987). Similarly, the well-known article by Mary Jo Bane and David Ellwood on the duration of poverty spells (Bane and Ellwood, 1986) uses annual income data from the University of Michigan's Panel Study of Income Dynamics. Indeed, until recently only annual income data were available on a regular basis for a large-scale, representative sample of the U.S. population.

With the advent of the Survey of Income and Program Participation (SIPP), however, longitudinal monthly data on personal and family incomes over a period of 32 months are now available for an initial sample of more than 60,000 persons.[1] These data reveal that incomes fluctuate widely during the year, particularly for the low income population (Ruggles, 1988). Since they are longitudinal, the SIPP data allow us to measure poverty in various ways over different periods of time;

Note: This paper is based in part on work supported by the National Science Foundation under grant Number SES-87-13643. The research was partially conducted at the U.S. Bureau of the Census while the first author was a participant in the ASA/NSF fellowship program, which is supported by the National Science Foundation and the Bureau of the Census. Any opinions expressed in this paper are those of the authors only, and do not necessarily reflect the view of The Urban Institute, The Congressional Budget Office, NSF, or the Bureau of the Census.

[1]See Nelson et al. (1984) for a general introduction to the SIPP.

because income fluctuations are so common for the low income population, these alternative poverty measures can be strikingly different. For example, for the population as a whole, the 1984 poverty rate based on annual income as measured in the SIPP is about 11 per cent.[2] However, only about 5 percent of the population were poor in every month—that is, in every month had monthly family income below one-twelfth of the appropriate annual poverty threshold. In contrast, a relatively large porportion of the population—over 26 percent—had at least one month in 1984 when their family incomes were below the monthly poverty threshold (Williams, 1986; Ruggles and Williams, 1986.)

As these figures imply, a large number of people who are not poor on the basis of their annual incomes do experience subannual spells of poverty. The incidence of these short-term spells may be of substantial interest for several policy-related purposes. For example, most means-tested assistance programs such as Aid to Families with Dependent Children (AFDC) and the Food Stamp Program (FSP) calculate eligibility on the basis of monthly rather than annual incomes, and these data imply that many more people may be eligible for such programs than would be estimated using annual income data alone. In addition, to the extent that such sub-annual poverty spells are experienced by families and individuals who typically have near-poverty incomes and thus have limited savings or other resources, even relatively short spells of very low income may represent substantial hardships. This is particularly true when families have little or nothing in the way of assets or credit to draw upon in periods of low income.

This paper estimates a distribution of the total duration of poverty spells, using a complete 32 month research file constructed from the 1984 panel of the SIPP. Within this context, the authors consider the impact of several different poverty definitions. In addition, because the impact of short spells of poverty on the family's stability to cope is likely to depend in large part on their access to other resources, we also expand our previous work by including a measure of financial assets in the family's total resource measure. The final section of the paper comments on the implications of our findings relative to those derived from more conventional cross-sectional poverty measures, or even from longitudinal data using an annual accounting period.

Before turning to a discussion of our results, a brief description of our data and of the methods we have used to calculate spell durations is given below.

Data and Methods

The Survey of Income and Program Participation is a panel survey that interviews participating households every four months, collecting information on monthly income, family composition, and other variables. The 1984 panel of the SIPP, which went into the field in mid-1983, contained about 60,000 people in the first set (or "wave") of interviews. Interviews were repeated for each household every four months for up to nine waves, collecting up to 36 months of data. For budget-related reasons, however, the survey underwent a "reduction in sample"

[2]Since more total income is collected in the SIPP than in the CPS, particularly for the low income population, its poverty rates tend to be lower. See Williams (1986) for further discussion.

in the fifth wave, in which about 20 percent of cases, randomly chosen, were dropped.

The data presented in this paper come from a longitudinally linked research file prepared from the SIPP by the Bureau of the Census.[3] This file contains up to 32 months of information on all persons ever interviewed during the 1984 SIPP panel.[4] Some longitudinal editing of this file has been performed by the Census Bureau—for example, imputed interviews for persons missing an interview in an otherwise interviewed household have been removed, in the interests of longitudinal consistency. The file contains a total of about 64,500 persons, interviewed over the period from September 1983 through April 1986. Records have been linked at the person level, i.e. each person is followed through time as an individual, regardless of changes in his or her family status. Income, however, has been coded as family income in each month, and the individual's poverty status has been derived by comparing that month's income with a needs threshold based on that month's family composition.

The asset information presented in this paper comes from a special "topical module" of the SIPP that collected detailed information on each individual's assets and liabilities. This module was administered during the fourth set of SIPP interviews in the last four months of 1984, and reports total assets by type for all individuals present at that interview. Data from this topical module have been merged with the longitudinal file, so that asset holdings could be examined in conjunction with longitudinal data on income flows.

The estimates of the distribution of spell durations presented in this paper have been derived using a sample survival analysis technique. Spells are observed from their beginning either until they end or until the observation is right-censored. For each month t, the conditional probability of leaving poverty that month given that the case has remained in poverty up to month t is calculated. This probability is equal to

$$h(t, X) = \frac{f(t, X)}{(1 - F(t, X))},$$

where $f(t, X)$ is the probability density function for spell exits at t months for an individual with characteristics X, and $F(t, X)$ is the cummulative probability function for exits before time t for such an individual. The survival function, which is essentially the probability that an individual will still be in poverty at time t, is simply the denominator of the expression above:

$$S(t, X) = 1 - F(t, X).$$

In assessing the distributions of spell durations that result from this analysis, it is helpful to remember that the universe over which spells are examined includes spell entrants only. In other words, left-censored spells are excluded from the analysis. Estimated survival rates thus give the probability that a given *entrant*

[3]For more information on the preparation of this file, see Coder *et al.* (1987).

[4]The final wave was dropped from the panel file because only about half the remaining sample received the final interview. Additionally, persons not present for all 32 months do not have panel file weights. Since our analysis already adjusts for spell censoring through attrition, however, we include part-panel cases. Consequently, we have not used the panel weights—all results presented here are unweighted. Based on our preliminary analysis of the impacts of alternative weighting schemes that could be used to incorporate these part-panel cases, we believe that these alternatives would make little difference to the overall distributions of spell durations observed.

into poverty will still be poor t months later. This estimate does not align in a direct fasion with cross-sectional data on poverty, which tell us what proportion of people are poor at a given point in time. Since someone who is poor for a long period of time has a higher probability of being included in a randomly chosen cross-section of the poverty population than does someone who is poor for only a short period, cross-sectional analyses will include more people with long spell durations than will an analysis based on the population of all people entering poverty over a given period of time.

As discussed in the introduction to this paper, a longitudinal data file provides one the opportunity to construct a variety of measures for various analytic purposes. For this study, three alternative definitions of a poverty spell were used. The first and simplest definition is just monthly poverty—that is, family income in any month below one-twelfth of the appropriate annual income threshold (using the official poverty thresholds as defined by the Census Bureau).[5]

Measuring poverty by comparing monthly income to a monthly poverty threshold has been widely criticized, however, because many people may have little or no income in a given month, for example, when changing jobs, without being in any real sense poor. Further, even very small changes in income, for example, an extra pay period falling into some months but not others, could put some borderline cases on one side of the line or the other, resulting in apparent short poverty spells with very little real change in income.

To address these objections, we also used two more stringent poverty definitions. The first (referred to as alternative criterion one) attempts to eliminate short spells that result from very small fluctuations in income, by requiring a fairly large change before an entry or exit is recorded. Thus, for a spell entry to occur under this criterion, income must decline by at least one-third (and the poverty line must be crossed). For an exit to be recorded, income must increase by a similar dollar amount (resulting in a percentage increase of at least 50 percent), and the poverty line must be crossed again. To terminate poverty spells for cases that eventually reach fairly high incomes but do so by small increments, we also considered a poverty spell to be ended if total income reached 125 percent of the poverty line.

The second alternative poverty criterion is designed to eliminate short spells resulting from very temporary income fluctuations caused by, for example, temporary changes in employment status, such as taking two weeks off between jobs. It uses the same definition as the first alternative, but in addition the person must maintain the new status for at least two months for an entry or exit to be coded. In the next section we examine the durations of poverty spells under each of the three definitions.

Estimated Durations of Poverty Spells

Table 1 shows survival rates for poverty spells under the alternative definitions discussed above. Although the estimated durations of poverty spells do vary

[5]See U.S. Bureau of the Census (1986) for a table of these thresholds for 1984. SIPP monthly poverty thresholds are adjusted on a monthly basis for changes in price levels (i.e., the annual adjustment to the thresholds is allocated evenly across the months).

TABLE 1

SPELLS OF MONTHLY POVERTY UNDER THREE POVERTY CRITERIA

	Monthly Income Less Than Monthly Poverty Threshold	Alternative Criterion One[1]	Alternative Criterion Two[2]
Number of cases with a poverty entrance	14,951	12,475	9,383
Percent with a poverty entrance	25.1	20.9	15.7
Survival rate for poverty spells after:			
1 month	1.00	1.00	1.00
4 months	0.427	0.516	0.746
8 months	0.198	0.249	0.412
12 months	0.126	0.159	0.287
16 months	0.092	0.120	0.226
20 months	0.077	0.096	0.188
24 months	0.066	0.083	0.173
28 months	0.054	0.070	0.143
Percentage of spells censored	19.7	24.8	38.7

Source: Computed from a 32 month file drawn from the 1984 panel of the Survey of Income and Program Participation. These data cover the period from September 1983–June 1986.

[1]Monthly income below monthly poverty threshold *and* income decline of at least one-third for entry; for exit, increase to above monthly threshold *and* by at least one half *or* increase to 125 percent of monthly poverty threshold.

[2]As for criterion one, *and* must maintain new state for at least two months for entry or exit to be coded.

across the definitions, as expected, most entrants leave poverty within a surprisingly short time under all three.

Table 1 includes all cases with a poverty entrance under the appropriate definition at any time during the 32 months of the panel file. Under the least restrictive poverty definition, monthly income less than monthly poverty threshold, about 25 percent of the sample experienced an entrance. The addition of restrictions on the amount of change necessary to record an entrance or exit does eliminate a substantial number of these entrances. Under alternative criterion one, 21 percent of the sample had a poverty entrance over the 32 month period, and under criterion two less than 16 percent of the sample did so. Nevertheless, those cases that do remain still typically experience relatively short spells. Using the monthly income less than monthly poverty threshold criterion, median spell length is less than four months. Use of criterion one increases the median by about one month, while under criterion two the median is just over six months. At twelve months, the probability that an entrant will still be in poverty ranges from less than 13 percent under the least restrictive definition to nearly one-third under criterion two. By 24 months, more than 80 percent of entrants have left poverty under all three definitions.

Before turning to a discussion of the meaning of these estimates, we should point out that all of the duration estimates cited in this paper are subject to "seam bias"—the tendency of respondents to report more transitions in the interview month than in the other months of the wave. As a result, the hazard rate for spell

exits is two to three times as great at the wave "seams"—the fourth, eighth, twelfth, etc. months, when interviews are done—than in each of the within-wave months.[6] We believe that this phenomenon results primarily from faulty recall of the dates of income changes, rather than from mis-reporting of the existence of an income change. In other words, people are more likely to get confused about when a specific change occurred than they are to report a change that didn't actually occur at all. Consequently, this type of reporting error probably introduces only a small error into our duration estimates, since given the wave interviewing structure it would be difficult for respondents to err in their recall by more than four months (and most are probably off by only one or two months). Further, presumably some respondents recall shorter spells than actually occurred, while other recall longer spells, causing the errors in duration estimates to offset each other somewhat.[7] On the other hand, this problem may mean that some very short spells, of both poverty and nonpoverty, are missed because they occur entirely within interview waves. This would, however, only strengthen the finding that most spells are short.

The figures on spell durations cited above imply that estimates of poverty spell durations are indeed somewhat sensitive to the specific definition used. Even under a definition designed to eliminate very short spells or those arising from trivial income changes, however, very long spells, those lasting two years or more, appear to be relatively rare. Comparing across definitions, it also appears that restricting the minimum duration of spells has much more impact on both the number of spells observed and the durations of spells than does restricting the amount of income change needed. This in turn implies that accounting period issues are quite important in considering the extent and depth of poverty in a comparative context.

This point is reinforced by the results seen in Tables 2 and 3, which show survival rates for those who are and are not in poverty on the basis of their annual incomes. In each table, two sets of estimates are supplied, first, spell entries in 1984 classified by 1984 annual income, and second, spell entries in either 1984 or 1985, classified by poverty over the two-year period.[8] Under either definition, only about 20 to 25 percent of all those with spell entries would be counted as poor on the basis of annual income. Although there are some clear differences in spell durations for those who are poor on an annual basis and

[6]This seam effect is evident in appendix tables included on the diskette, which show hazard rates for spell exits and survival rates on a month-by-month basis.

[7]Further discussion of seam bias and its effects on estimates of various types can be found in Young (1989).

[8]An individual has been defined to have been in poverty on the basis of 1984 annual income if his or her family income, summed over all months of 1984, was less than the monthly poverty thresholds for his or her family in each month, summed over the same months. For individuals not in the sample for all months of 1984, this calculation was made including all months in which they were present. Poverty status based on average annual income over the 1984–85 period was computed similarly, by summing family income over all 24 months and comparing it to the sum of family poverty thresholds over the same months. For the purposes of this analysis, months 5 through 16 of the panel have been considered 1984, while months 17 through 28 have been considered 1985. These periods will include slightly different sets of calendar months for different sets of respondents, although in all cases at least nine of the twelve months included will fall in the designated calendar year. See Coder *et al.* (1987) for more detail.

TABLE 2

POVERTY ENTRANCES AND SPELL DURATIONS UNDER ALTERNATIVE POVERTY DEFINITION, FOR PERSONS WITH ANNUAL INCOME BELOW THE POVERTY LINE

	Cases with 1984 Annual Income Below Poverty Threshold and 1984 Poverty Entry[1]			Cases with Average Annual Income in 1984 and 1985 Below Average of 1984–1985 Thresholds, and Poverty Entry in Either 1984 or 1985[1]		
	Monthly Income Less than Monthly Poverty Threshold	Alternative Poverty Criterion One[2]	Alternative Poverty Criterion Two[3]	Monthly Income Less than Monthly Poverty Threshold	Alternative Poverty Criterion One[2]	Alternative Poverty Criterion Two[3]
Number of cases with poverty spell entrance	2,124	1,469	1,062	2,724	1,977	1,411
Percent of all entries under definition	26.7	22.3	24.1	23.5	19.9	20.3
Survival rate for poverty spells after:						
1 month	1.00	1.00	1.00	1.00	1.00	1.00
4 months	0.682	0.809	0.951	0.715	0.830	0.956
8 months	0.487	0.535	0.810	0.492	0.618	0.842
12 months	0.292	0.362	0.662	0.381	0.481	0.767
16 months	0.207	0.240	0.545	0.299	0.406	0.680
20 months	0.175	0.225	0.443	0.247	0.346	0.579
24 months	0.144	0.201	0.379	0.221	0.313	0.518
28 months	0.127	0.175	0.273	0.195	0.276	0.389
Percentage of spells censored	31.7	39.1	57.7	41.3	51.3	71.2

Source: Computed from a 32 month file drawn from the 1984 panel of the Survey of Income and Program Participation. These data cover the period from Sept. 1983–June 1986.

[1]"1984" income includes months 5–16 of the panel; "1985" includes months 17–28. These months correspond to slightly different sets of calendar months for interviewees in different rotation groups. See Coder *et al.* (1987) for further discussion.

[2]Monthly income below monthly poverty threshold *and* income decline of at least one-third for entry; for exit, increase to above monthly threshold *and* by at least one half *or* increase to 125 percent of monthly poverty threshold.

[3]As for criterion one, *and* must maintain new state for at least two months for entry or exit to be coded.

TABLE 3

POVERTY ETRANCES AND SPELL DURATIONS UNDER ALTERANTIVE POVERTY DEFINITION, FOR PERSONS WITH ANNUAL INCOME ABOVE THE POVERTY LINE

	Cases with 1984 Annual Income Above Poverty Threshold and 1984 Poverty Entry[1]			Cases with Average Annual Income in 1984 and 1985 Above Average of 1984–1985 Thresholds, and Poverty Entry in Either 1984 or 1985[1]		
	Monthly Income Less Than Monthly Poverty Threshold	Alternative Poverty Criterion One[2]	Alternative Poverty Criterion Two[3]	Monthly Income Less than Monthly Poverty Threshold	Alternative Poverty Criterion One[2]	Alternative Poverty Criterion Two[3]
Number of cases with poverty spell entrance	5,833	5,127	3,352	8,874	7,951	5,538
Percent of all entries under definition	73.3	77.7	75.9	76.5	80.1	79.9
Survival rate for poverty spells after:						
1 month	1.00	1.00	1.00	1.00	1.00	1.00
4 months	0.329	0.408	0.671	0.301	0.428	0.681
8 months	0.083	0.120	0.287	0.092	0.137	0.315
12 months	0.053	0.078	0.203	0.050	0.080	0.220
16 months	0.033	0.053	0.150	0.027	0.047	0.151
20 months	0.027	0.043	0.119	0.017	0.036	0.113
24 months	0.026	0.038	0.112	0.016	0.031	0.098
28 months	0.026	0.035	0.107	0.016	0.027	0.088
Percentage of spells censored	10.7	13.5	23.5	11.5	15.3	27.8

Source: Computed from a 32 month file drawn from the 1984 panel of the Survey of Income and Program participation. These data cover the period from September 1983–June 1986.

[1]"1984" income includes months 5–16 of the panel; "1985" includes months 17–28. These months correspond to slightly different sets of calendar months for interviewees in different rotation groups. See Coder *et al.* (1987) for further discussion.

[2]Monthly income below monthly poverty threshold *and* income decline of at least one-third for entry; for exit, increases to above monthly threshold *and* by at least one-half *or* increase to 125 percent of monthly poverty threshold.

[3]As for criterion one, *and* must maintain new state for it at least two months for entry or exit to be coded.

those who are not, over half of those poor on an annual basis still leave poverty within twelve months of entry under two of the three poverty definitions. For alternative criterion two, spells for those poor on the basis of their 1984 annual incomes are somewhat longer. Only about one-third leave poverty in the first 12 months, and the median spell length is just under 18 months. Nevertheless, even these spells are short compared to the median poverty spell length of two years or more found in studies using annual income data from the PSID. Of course, spell lengths for poverty entrants who are *not* in poverty on the basis of their annual incomes are much shorter, as shown in Table 3; the median is just under three months for the monthly income less than monthly poverty threshold definition, about four months for criterion one, and just under six months for criterion two.

Since those entrants who stay in poverty longer are more heavily represented in the cross-sectional statistics than are those with short stays, however, these findings should not be interpreted to mean that most of those seen to be in annual poverty at a given point in time are actually in short spells. Again, the statistics presented here refer to expected spell durations for a sample of entrants, not for a representative sample of those in poverty at a given point in time. Less than 40 percent of those in poverty on an annual basis over the 1984 calendar year also have an observed entry during our sample period, and of course those without an observed entry, i.e. those already in poverty at the start of the survey, are likely to include a higher proportion of longer spell cases.

Nevertheless, the results shown in Tables 2 and 3 have important implications for the way that we think about poverty. Specifically, they imply that a very large proportion of those who spend some time in poverty are *not* poor on the basis of their annual incomes, and are consequently not picked up in our official poverty statistics. This finding is particularly important in considering issues such as the estimates size of the population eligible for means-tested programs. Since typically only one or two months of low income are needed to qualify for benefits, the population eligible for AFDC or the Food Stamp Program, for example, may be much larger than would be estimated using annual income data alone.

To some extent, the importance that we attach to short spells of poverty depends on the longer term income levels attained by those who experience such spells. If, as one observer suggested, these people are all "college professors taking the summer off", that is, cases with reasonably substantial resources over the longer period, who experience short spells with low incomes, there may be less call for any policy response to these spells than there might be if those experiencing them also had relatively low annual incomes.

As demonstrated in Table 4, however, this scenario is not typical. The two panels of Table 4 show the distribution of annual incomes for poverty entrants under each of the two annual income measures examined in Tables 2 and 3. Under all three poverty definitions and both annual income measures, almost 90 percent of poverty entrants have an annual income at or below 300 percent of the poverty line, a level approximately equal to the median income for the population as a whole. Under the annual income definition based on 1984 incomes, over half of all entrants have incomes below 150 percent of poverty, and about three-fourths are below 200 percent. Even when annual incomes are

TABLE 4

PERCENTAGE DISTRIBUTION OF POVERTY ENTRIES BY ANNUAL INCOME AS A PERCENTAGE OF ANNUAL POVERTY THRESHOLDS

	Monthly Income Less than Monthly Poverty Threshold	Alternative Criterion One[2]	Alternative Criterion Two[3]
1984 Annual Income Level For Cases with 1984 Spell Entries[1]			
Number of entries:	7,957	6,596	4,414
Percent with annual income:			
Less than 50 percent of threshold	2.8	3.2	3.1
50–100 percent	23.9	19.1	21.0
100–150 percent	32.6	31.1	35.1
150–200 percent	16.2	18.3	17.4
200–250 percent	9.2	10.2	8.4
250–300 percent	5.2	6.0	4.3
Over 300 percent	10.1	12.0	10.7
Average Annual Income, 1984–1985, Relative to Average Poverty Threshold, for Cases with Spell Entries in 1984 or 1985[1]			
Number of Entries:	11,598	9,928	6,949
Percent with annual income:			
Less than 50 percent of threshold	2.2	2.5	2.1
50–100 percent	21.3	17.4	18.2
100–150 percent	28.5	27.4	30.8
150–200 percent	17.5	18.9	18.8
200–250 percent	12.1	13.0	11.9
250–300 percent	6.5	7.4	6.2
Over 300 percent	11.8	13.4	11.9

Source: Computed from a 32 month file drawn from the 1984 panel of the Survey of Income and Program Participation. These data cover the period from September 1983–June 1986.

[1]"1984" income includes months 5–16 of the panel; "1985" includes months 17–28. These months correspond to slightly different sets of calender months for interviewees in different rotation groups. See Coder *et al.* (1987) for further discussion.

[2]Monthly income below monthly poverty threshold *and* income decline of at least one-third for entry; for exit, increase to above monthly threshold *and* by at least one half *or* increase to 125 percent of monthly poverty threshold.

[3]As for criterion one, *and* must maintain new state for at least two months for entry or exit to be coded.

averaged over a two-year period, the distribution of annual incomes edges up only slightly. Most entrants, in other words, still have quite low incomes, even over a fairly long accounting period. Thus, while there are a few cases of relatively high income individuals who experience short spells of low income, the typical case is someone with a low annual income who probably does not have enormous resources to call upon in withstanding even a short poverty spell.

Impacts of Including Assets in the Resource Measure

Traditionally, economists have been relatively unconcerned about short spells of poverty because they have believed that individuals are likely to have some ability to "smooth" their consumption over time, even if income streams vary considerably. Thus, people with short spells of poverty may not be forced to reduce their total consumption if they have some other resources, either accumulated asset holdings or borrowed funds, they can use in the short run. As demonstrated in the last section, however, most of those with poverty spells also have relatively low incomes over longer periods, making it unlikely that they would be able to borrow much without collateral.

As a practical matter, therefore, most of those with short spells of poverty will be forced to rely on their own asset holdings to maintain their consumption levels during their poverty spells. In Table 5, in which we show the distribution of financial assets across income categories, it is clear that most poor individuals have few financial assets.[9] More than half of those with below-poverty incomes report no financial assets at all, and over half of the remainder report less than $1,000 in assets. Only 20 percent of the poor have as much as $1,000 in assets, and one-third of them have less than $3,000. Even at slightly higher levels of monthly income, up to 200 percent of the poverty line, more than half of all respondents report less than $1,000 in financial assets.

The bottom panel of Table 5 shows that the elderly are particularly likely to have higher amounts of financial assets, even when their incomes are very low. About 65 percent of the elderly in poverty hold more than $3,000 in assets, and half have more than $10,000. In contrast, about 95 percent of poor children are in families with less than $3,000 in total financial assets, and more than 70 percent are in families that report having no financial assets at all.

Asset holdings at these levels imply that, with the exception of the elderly, most people with low incomes will be unable to offset completely the consumption impacts of even fairly short poverty spells by spending down their assets. In Table 6 we test this hypothesis directly, by examining simulated poverty entries and spell durations if assets are used to bring the consumption levels of those with below-poverty incomes to the poverty line for as long as possible. For example, if an individual is in a family whose total income falls $500 short of the poverty line for each of two months, family assets of $1,000 or more would fill the poverty gap entirely and eliminate the recorded poverty spell. If the family had only $500 in assets, the recorded spell length would be reduced by one month, but an entry into poverty would still be recorded. If the family had less than $500 in assets, there would be no effect on either poverty entry or spell duration.[10]

[9]The SIPP also collects information on accumulated liabilities; as would be expected, the liabilities of those with low incomes also tend to be small. See tables on the distribution of net worth on the diskette.

[10]This method of examining the impacts of asset holdings was originally suggested to us by Harold Watts. Since we have only one observation of asset holdings, and the poverty entry we are observing may in fact start on a different date when true assets could be quite different, the simulation is less than perfect. However, the asset data are collected in month 12 of the 32 month panel, so the majority of observed entries will occur after the asset information has been collected. In addition, all assets are applied to the first poverty spell; we did not spread assets over all months of poverty for those with multiple spells. See Appendix A for a discussion of the frequency of multiple spells.

TABLE 5

PERCENTAGE DISTRIBUTION OF FINANCIAL ASSET HOLDINGS BY INCOME CATEGORY

Monthly Income as a Percent of Poverty	No Assets	$1 to $1,000	$1,000 to $3,000	$3,000 to $10,000	$10,000 to $100,000	Over $100,000	Total Cases Percent	Total Cases Number	Percent of Cases in this Category
				I. All People					
Under 100	60.9	21.9	6.2	4.9	5.8	0.3	100.0	7,321	14.4
100 to 150	38.1	32.1	10.1	9.9	9.4	0.4	100.0	4,927	9.7
150 to 200	24.4	35.2	12.3	12.9	14.7	0.5	100.0	5,572	11.0
200 to 300	15.1	32.1	16.3	15.2	20.4	0.9	100.0	11,028	21.7
300 or Over	6.2	17.8	15.5	22.0	33.2	5.3	100.0	22,013	43.3
Total cases	10,724	12,615	6,848	8,079	11,269	1,326	—	50,861	100.0
Percent of cases in this category	21.1	24.8	13.5	15.9	22.2	2.6	100.0		
				II. People Age 18 or Under					
Under 100	73.1	17.7	3.9	2.4	2.2	0.1	100.0	2,977	21.3
100 to 150	48.6	32.6	7.5	7.1	7.1	0.2	100.0	1,583	11.3
150 to 200	33.3	36.9	11.8	11.4	23.6	0.2	100.0	1,740	12.4
200 to 300	21.1	34.9	16.8	14.7	32.7	0.2	100.0	3,316	23.7
300 or Over	11.1	21.1	17.1	23.6	40.0	2.4	100.0	4,385	31.3
Total cases	4,710	3,766	1,747	1,902	1,756	120	—	14,001	100.0
Percent of cases in this category	33.6	26.9	12.5	13.6	12.5	0.9	100.0		
				III. People Age 65 or Over					
Under 100	43.5	25.7	10.2	9.9	10.5	0.1	100.0	724	12.5
100 to 150	23.6	22.0	13.3	17.7	22.9	0.4	100.0	899	15.5
150 to 200	10.9	17.0	10.0	17.9	42.4	1.8	100.0	828	14.3
200 to 300	6.0	10.4	9.3	13.9	57.4	3.1	100.0	1,362	23.6
300 or Over	1.9	5.1	5.5	10.1	57.9	19.4	100.0	1,970	34.1
Total cases	737	766	512	767	2,556	445	—	5,783	100.0
Percent of cases in this category	12.7	13.2	8.9	13.3	44.2	7.7	100.0		

Source: Computed from the 1984 panel of the Survey of Income and Program Participation.

Note: Total financial assets includes cash, securities and other fungible assets held by the individual or by other co-resident members of the individual's family, *gross* of any liabilities. Income levels shown refer to *monthly* family income in the month when the asset information was collected.

Using this method, we simulated poverty entries and spell durations with and without asset "spend-downs" under each of our three poverty criteria. In Table 6 note that asset holdings are sufficient to eliminate nearly 40 percent of all poverty entries.[11] At the same time, this means that over 60 percent of observed poverty entries remain even when asset holdings are taken into account; that is, about three-fifths of those entering poverty have too few assets to eliminate their entire "poverty gap" over the duration of their poverty spell.

In addition, although the percentage distribution of durations is similar for any given poverty criterion whether or not assets are considered, the definitions that include the asset spend-down uniformly result in slightly longer average spell durations. This occurs because very short spells are, not surprisingly, those most likely to be eliminated as the result of counting assets, and this impact more than offsets the small reductions in spell length that occur for some remaining poverty entrants when their assets are taken into account.

The bottom two panels of Table 6 show the impacts of asset spend-downs separately for children and the elderly.[12] Overall, trends in poverty entries and durations are quite similar for children and for the population in general. Children are slightly more likely to experience an entry under any given definition, and their spells last slightly longer on average, but the effects are not large. Similarly, counting assets is slightly less likely to eliminate a spell for those under age 18, but again the effect is not large.

Poverty entries and spells for the elderly, on the other hand, are quite different from those for the population as a whole, and counting assets has a substantial impact on their incidence. Overall, the elderly are much less likely to enter poverty under any given definition, even if asset holdings are not taken into account. Using a spell definition based on income alone, the elderly have a probability of entry into poverty that is less than half that for the non-elderly population. Those who do enter poverty are significantly more likely to remain poor, however, with a median spell duration (based on income only) ranging from about six months under the monthly income definition to about eight months under criterion two. (This contrasts with medians of about three and a half months and six months, respectively, for the population as a whole.) In large part, these observations result from the fact that incomes of the elderly fluctuate less than incomes of younger families, who are more dependent on earnings.

Including assets in the resource measure makes this contrast even more dramatic for the elderly. As noted in Table 5, the low-income elderly are far more likely than other low-income people to have significant amounts of assets. As a result, the asset spend-down approach eliminates more than half of observed poverty spell entries for elderly persons, no matter which poverty definition is used. The elderly who do remain in poverty even when their assets are counted, however, are much more likely to have very long spells. The median spell duration

[11]As indicated in the notes for Table 6, the numbers of entries recorded under the "income only" definitions are slightly lower than those shown in earlier tables because this table includes only those cases present at the time asset data were collected. Additionally, these simulations consider only the effects of financial assets. The appendix tables included on the diskette provide similar information for gross assets and for net worth—assets net of liabilities.

[12]Similar data for other demographic groups are provided in the appendix tables on the diskette.

TABLE 6

EFFECTS OF ASSET SPEND-DOWN ON POVERTY ENTRIES AND SPELL DURATIONS UNDER THREE POVERTY CRITERIA

	Month Income Less Monthly Poverty Threshold		Alternative Criterion One		Alternative Criterion Two	
	Income Only	With Assets	Income Only	With Assets	Income Only	With Assets
			I. All Cases			
Number of entries	13,220	8,524	11,126	6,867	8,486	5,510
Percent with entry	26.0	16.8	21.9	13.5	16.7	10.8
Percent surviving after:						
month 1	100	100	100	100	100	100
month 4	42.3	47.9	51.1	57.2	74.3	78.7
month 8	19.5	24.6	24.3	29.9	40.8	47.5
month 12	12.4	16.2	15.5	20.1	28.4	34.8
month 16	9.0	12.4	11.7	15.9	22.4	28.8
month 20	7.5	10.5	9.3	12.9	18.6	24.7
month 24	6.5	9.1	8.1	10.9	17.1	22.7
month 28	5.3	7.5	6.8	9.4	14.1	19.2
Percent censored	16.4	20.7	21.1	26.5	34.8	41.6
Entries under asset spend-down as a percent of all entries		64.5		61.7		64.9
			II. Age 18 and Under			
Number of entries	4,547	3,415	3,726	2,687	2,857	2,142
Percent with entry	32.5	24.4	26.6	19.2	20.4	15.3
Percent surviving after:						
month 1	100	100	100	100	100	100
month 4	42.6	47.6	53.0	58.4	76.1	79.6
month 8	19.9	24.4	25.3	30.3	42.9	48.5
month 12	12.5	15.9	16.3	20.5	30.7	35.8
month 16	9.4	12.1	12.7	16.6	25.2	30.7
month 20	8.0	10.3	10.0	13.2	21.7	27.1
month 24	6.5	8.7	8.4	10.8	20.3	25.2
month 28	5.1	6.7	6.9	8.6	17.1	21.1

Percent censored	16.1	19.4	21.4	26.4	36.9	42.8
Entries under asset spend-down as a percent of all entries		75.1		72.1		75.0
		III. Age 65 and Over				
Number of entries	744	338	483	200	415	178
Percent with entry	12.9	5.8	8.4	3.5	7.2	3.1
Percent surviving after:						
month 1	100	100	100	100	100	100
month 4	65.9	68.9	71.5	76.1	86.6	87.2
month 8	39.5	44.9	45.3	52.5	54.3	61.3
month 12	29.6	36.0	36.6	43.6	44.3	52.8
month 16	23.7	30.5	29.2	37.6	36.6	45.3
month 20	18.9	24.8	25.4	32.6	32.1	39.4
month 24	16.7	21.2	24.6	30.6	31.1	36.9
month 28	15.1	19.7	20.9	30.6	26.7	36.9
Percent censored	29.2	36.1	36.9	44.0	46.0	53.4
Entries under asset spend-down as a percent of all entries		45.4		41.4		42.9

Source: Computed from the 1984 panel of the Survey of Income and Program Participation.

Note: Asset definitions as on Table 5. Poverty criterion defined as for Tables 1–4. Poverty entries and durations computed only for those present in the month when asset data were collected, so totals are slightly lower than shown in first four tables.

for elderly persons who are in poverty even when assets are included ranges from about nine months under the least stringent criterion to more than a year under criterion two, compared with about four months and eight months, respectively, for the entire population.

In summary, using assets to bring incomes up to the poverty line for as long as possible would eliminate nearly 40 percent of observed poverty entries for the population as a whole, but would slightly lengthen the average duration of poverty for those who remained poor. Further, even under our most stringent poverty criterion, more than 10 percent of the population would still experience a poverty entry during our observation period, while almost 16 percent of the population would experience at least one month when their incomes fell below their monthly poverty threshold by more than the value of their financial assets. For the elderly, including assets in determining poverty status sharply reduces the frequency of poverty entries (less than 6 percent would become poor for even one month) but markedly increases spell durations for those who become poor.

These estimates imply that the majority of those with sub-annual spells of poverty are in fact unlikely to be able to maintain their consumption levels, even though their poverty spells may be quite short. This finding undercuts the traditional justification for excluding sub-annual spells from our poverty measures; in fact, to the extent that poverty thresholds represent a subsistance level of consumption, even a few months below these thresholds may create substantial hardships if no other resources are available.[13] Nevertheless, most people with poverty entries, even using the asset spend-down approach, are not considered poor under the conventional annual measure. As demonstrated in Table 7, 70 percent of those with an observed entry even when assets are taken into account are not poor on the basis of their average annual income, and thus are not counted in official poverty measures.

Conclusions

In conclusion, the monthly income data available from the SIPP challenge our conventional assumptions about the poverty population in two important ways. On the one hand, we see many more poverty entries in the SIPP than in databases that collect only annual income information. Subannual spells of poverty are extremely common, and typically affect persons whose incomes are near but not necessarily below the poverty level when measured on an annual basis. In this sense, these findings are somewhat pessimistic, in that many more people seem to experience at least some period of poverty within the year than would ever be guessed using annual income data alone. Further, this finding remains even when asset holdings are taken into account in calculating total resources. Most of those who experience spells of poverty do not have enough assets to fill their personal poverty gaps, even though their poverty spells may be quite short.

[13]Whether or not our current thresholds represent a reasonable standard of subsistence is of course a debatable point. See Watts (1985) for more discussion of the construction and quality of these threshold estimates.

TABLE 7

IMPACT OF ASSET SPEND-DOWN ON ENTRIES INTO POVERTY, BY POVERTY STATUS BASED ON AVERAGE ANNUAL INCOME

I. No asset spend-down	50,861	11.4	88.6
With an entry into poverty	13,220	21.9	78.1
Percent	26.0		
No entry into poverty	37,641	7.9	92.1
Percent	74.5		
II. With asset spend-down	50,861	11.4	88.6
With an entry into poverty	8,524	30.1	69.9
Percent	16.8		
No entry into poverty	42,337	7.8	92.2
Percent	83.2		

Source: Computed from the 1984 panel of the Survey of Income and Program Participation.

Note: Poverty entry defined as monthly income less than monthly poverty threshold. Annual income is considered to be below poverty if average income in 1984 and 1985 was below the average of the 1984–85 thresholds. Estimates differ from those shown in Tables 2 and 3 because this table includes only cases present when the asset data were collected.

On the other hand, the SIPP data also indicate that the typical poverty spell is much shorter than would be anticipated using annual income data, even for those who are poor on an annual income basis. Overall, only about one-third of those who enter poverty are still poor twelve months later under even the most restrictive of the poverty definitions explored here. Poverty spells are longer for those incomes are below the poverty level on an annual basis, but among those in annual poverty who have an observed poverty entrance, over one-third end their spells within twelve months of that entry under any of our three definitions. Under the least restrictive poverty definition, over two-thirds have spells lasting less than one year. All of this implies that there is enormous flux in the poverty population, but that the typical person who falls into poverty manages to leave again in a fairly short time. Recall, however, that these observations exclude people who were poor when they entered the SIPP sample. Such individuals may have much longer poverty spells.

These data deserve further investigation, and we have several related projects currently underway. For example, we are exploring the relationship between events, e.g., marital disruption and job loss, and spell entries and durations. We are also considering the impacts of specific characteristics of individuals on their spell durations, given an entry. Work is also being undertaken on the implications of these findings for assistance program eligibility estimates, although these findings alone make it clear that many more people (especially among the non-elderly) are likely to be eligible for means-tested assistance than would be guessed based on annual income data. Each of these further estimates will strengthen our understanding of the processes and impacts of short-term income

fluctuations, but even the fairly preliminary findings presented here make clear the importance of these fluctuations in the lives of many individuals in the U.S. population as a whole.

Appendix: Impacts of Multiple Spell Entries on Estimated Durations in Poverty

One further issue to be considered in assessing the findings presented in this paper is the extent to which those experiencing short poverty spells tend to return to poverty fairly quickly. The spell durations examined in the body of the paper refer only to the first entry into poverty for any given individual. As demonstrated in the appendix table, some poverty entrants do indeed experience more than one spell of poverty within our observation period. The probability of multiple entries varies in a predictible manner across the poverty criteria examined. Under the monthly income less than monthly threshold criterion, about 60 percent of those with any entry over the 32 months enter only once. Under criterion one, this proportion rises to about 70 percent, and under criterion two, about 86 percent. Additionally, cases with more than two entries are quite rare under alternative criteria one and two. Less than 10 percent of all cases with entries under criterion one and less than 2 percent under criterion two have three or more entries. Thus, the poverty definitions designed to eliminate small fluctuations and very short spells also appear to eliminate a large proportion of multiple spells.

Even under criterion two, however, about 14 percent of cases with an entry (or 1.8 percent of all cases) experience more than one poverty entry over the 32 month period. This implies that if we were to examine the total time spent in poverty, rather than the duration of first spells, total durations in poverty would be somewhat greater. We hope to consider this issue in more detail in a further

APPENDIX TABLE A

Number of Poverty Entries Experienced Over 32 Months Under Three Poverty Definitions

	Monthly Income Less than Monthly Poverty Threshold	Alternative Criterion One[1]	Alternative Criterion Two[2]
Percentage of those with entries experiencing:			
One entry	59.1	70.0	86.0
Two entries	23.3	20.8	12.4
Three or more entries	17.7	9.4	1.6

Source: Computed from a 32 month file drawn from the 1984 panel of the Survey of Income and Program Participation. These data cover the period from September 1983–June 1986.

[1]Monthly income below monthly poverty threshold *and* income decline of at least one-third for entry; for exit, increase to above monthly threshold *and* by at least one half *or* increase to 125 percent of monthly poverty threshold.

[2]As for criterion one, *and* must maintain new state for at least two months for entry or exit to be coded.

study. In the meantime, the numbers presented here should be assessed as indicators of turnover in the poverty population, rather than as estimates of the proportion of the population that experience some substantial period of low income over an extended period of time.

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