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PROGRAM PARTICIPATION

MEASURING POVERTY WITH THE SIPP AND THE CPS

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Measuring Poverty with the SIPP and the CPS

Official poverty statistics estimated by the Bureau of the Census are widely used to gauge the well-being of low-income families. These statistics are obtained by comparing cash income received by a family--as reported on the March supplement to the Current Population Survey (CPS)--against poverty thresholds designed to denote the amount of money required over a year to keep families out of poverty. In recent months, data from an alternative source, the Survey of Income and Program Participation (SIPP), have become available that allow the calculation of alternative measures of poverty. This paper uses these new data to obtain a variety of poverty rate estimates for 1984, and compares those estimates with the official poverty statistics derived from the CPS.

The analysis examines two basic questions. First, how do poverty rates differ across alternative definitions? The SIPP data allow estimation of both monthly and annual poverty rates, as well as different formulations of annual rates. Second, and perhaps more important for policy purposes, how different are annual poverty statistics calculated from CPS and SIPP data?

Measuring Poverty

The official definition of poverty determines whether a person is poor during a given year by comparing the total cash income of all family members living together with a poverty threshold based primarily on family size.1/ All members of the family are labeled "poor" if cash income is below the threshold, and "nonpoor" otherwise. Income is measured before taxes, no account is taken of income received in kind rather than as cash, and wealth is considered only to the extent that it produces cash income.2/

The Census Bureau estimates poverty rates each year using data obtained in an income supplement to the March CPS, which asks respondents their incomes from various sources during the previous calendar year. This income information is obtained only for people living in sample households at the time of the survey, and families are defined as those surveyed people who are related and living together at that time. Combining annual income with family composition in one month masks any month-to-month variations in either available resources or needs.

1/ Thresholds also vary by whether the householder is age 65 or older (in the case of one- and two-person families) and by the number of children under age 18 (in families with two or more members). A family consists of all people related by blood or marriage living together in the same household.

2/ These and other limitations of the official poverty measure are discussed in "Measuring Poverty," Appendix A of Congressional Budget Office, Reducing Poverty Among Children, May 1985.

Poverty Rates from SIPP Data

Alternative income data from the SIPP first became available in 1984.3/ While these new data are much more detailed in terms of sources of income, more important are the facts that data are reported for each month rather than for an entire year and that data collection occurs every four months rather than annually.

Because the SIPP data are monthly, they can be used to calculate a variety of poverty rates. On one dimension--the relevant time period--the poverty status of individuals can be based on either monthly or annual income. On another dimension--family membership--poverty rates can be estimated either using a fixed family composition, like the official measure, or allowing family make-up to vary over the year. Both kinds of alternatives are discussed below.

Monthly versus Annual Poverty. In general, monthly poverty rates would be expected to exceed annual rates because of the distribution of family incomes around the poverty level. During a given time period, members of a family are in poverty if family income is less than the relevant poverty threshold. Over time, a family's income will vary, sometimes rising above its average and sometimes falling below. For families with annual incomes that are below the

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3/ For a detailed discussion of the SIPP, see Dawn Nelson, David McMillen, and Daniel Kasprzyk, "An Overview of the Survey of Income and Program Participation," Bureau of the Census SIPP Working Paper, No. 8401, June 1984.

poverty level, monthly variations may occasionally cause their income to climb above poverty during a month; the reverse will be the case for families with annual incomes above poverty. Because more families have annual incomes in the range immediately above the poverty line than in the range just below, such monthly fluctuations in income might be expected to cause monthly poverty rates to exceed annual poverty rates. The number of families not poor on an annual basis but who experience an income decrease that drops them below the poverty line for a given month will likely be greater than the number of families that are poor for the year but whose incomes rise above the poverty line for that month. The number of poor families in a given month would thus be expected to exceed the number of families that are poor over a full year, and monthly poverty rates would be greater than annual poverty rates.4/

Neither monthly nor annual poverty rates are necessarily superior as indicators of need. Monthly rates are more closely related to the eligibility criteria for transfer programs, but do not take account of the fact that families may well be able to defer expenditures during months with low incomes until incomes are higher in the future. Annual poverty rates, on the other hand, give less recognition to the fact that some needs--such as those for food, shelter, and medical care--simply cannot be postponed for

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4/ This is consistent with the finding from the Panel Study of Income Dynamics (PSID) that more families are poor in a year than are poor over a series of consecutive years.

long without potentially severe consequences.

Monthly data can be used to construct alternative measures of poverty across a year that provide information about the movement of families into and out of poverty. The percentage of families with incomes below the poverty line in all 12 months of a year indicates how many families have consistently low incomes. This percentage of "always poor" can be no greater than the annual poverty rate discussed above, and will be as large as the latter rate only if no annually poor family receives income above the poverty threshold during any month of the year. Alternatively, the percentage of families with monthly income ever below poverty shows how many families experience some period of low income during a year. That percentage of "ever poor" is necessarily greater than the annual poverty rate if there is any movement of families into and out of poverty, and is almost certain to be greater than the percentage of families that are poor in any given month.

Fixed versus Variable Family Composition. Because of data limitations, the Bureau of the Census implicitly assumes a fixed family composition in its calculation of official poverty rates. Prior year incomes of all family members as of March are summed and compared against relevant poverty thresholds. This approach fails to recognize that family make-up, and hence both available income and resource needs, may well vary during the year. If these factors do vary, assuming a fixed composition may yield an inaccurate assess-

ment of the well-being of family members. In fact, SIPP data indicate that there is significant change in household composition over a year: about 17 percent of all households interviewed at the start of the SIPP changed in terms of either family type or size within a year.5/

An alternative approach that allows for family changes during the year would consider both income and needs over shorter time periods during which family composition stayed the same. For example, if a woman lived alone for six months and then married and lived with her husband for the remaining six months, her poverty status would be based on her income and the needs of one person for half the year, and then on both her and her husband's incomes and the needs of two people for the other half.

The difficulty in such an approach lies in combining two or more combinations of incomes and needs to obtain an annual measure of poverty. A variety of methods might be considered. A simple algorithm could determine an individual's poverty status for each period during which family composition did not change, and then label the individual poor or not poor for the year, depending on which status prevailed for a longer period of time. That approach would ignore differences in the degree of poverty or non-poverty

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5/ See Table 4 in Constance F. Citro, Donald Hernandez, and Roger Herriot, "Longitudinal Household Concepts in SIPP: Preliminary Results," presented at the Census Bureau Second Annual Research Conference, March 26, 1986.

during the different time periods.

Alternatively, ratios of income to poverty thresholds for periods of unchanging family composition could be averaged, using durations of each family grouping as weights, to get a measure that took into account the amount by which income exceeded or fell short of poverty thresholds. Such a measure would determine that a person whose family income was twice the poverty threshold for six months and half the threshold for six months would be non-poor for the year since on average family income was 25 percent above poverty.6/ This method may yield an inaccurate measure of poverty status because it fails to take account of absolute differences between incomes and needs that occur as family composition varies during the year; the dollar amount by which income exceeds the poverty level during some months may be less than the amount by which income falls short of the thresholds in the remaining months--in which case income over the entire year would be less than total need--even if the average ratio is greater than one.7/

6/ The ratio of income to poverty threshold would be 2.0 for half the year and 0.5 for the other half. The time-weighted average would be (0.5)*(2.0) + (0.5)*(0.5) = 1.25.

7/ Suppose, for example, that the person in the text example lived alone for the first half of the year and earned $5,000--twice the $2,500 needed to be nonpoor for half a year as a one-person family--and then lived with three relatives for the remainder of the year with income of the four family members totaling $3,000--half of the $6,000 required for four people to be above poverty in a six-month period. While the average of income-poverty ratios exceeds one, the $2,500 excess over the poverty level during the first six months would be less than the $3,000 shortfall of the last six months.

A third approach, and that used in the estimates offered below, would total both monthly family incomes and monthly poverty thresholds over the year--allowing both measures to change as family composition changes--and compare the two sums. This method implicitly assumes that incomes in excess of the poverty threshold during one period could have been used to make up any shortfall during another period. It does not, however, take into account the fact that such excesses or shortfalls may be shared by varying numbers of family members,8/ or that excess income from part of the year may no longer be available when needed. A similar assumption about the ability of people to spread their income across the year is also made by the official poverty measure, however.

Both the fixed and variable family composition approaches have their shortcomings, and neither is clearly superior in terms of ability to assess the well-being of individuals over a year. If there is a greater tendency for families to break up into smaller units that are more likely to be poor--as might be the case if divorces tend to leave women with children in poverty--then fixing family composition at the end of a period would generate higher

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8/ Under this approach, for example, an excess of $1,000 during a period in which a person lived with three relatives would be viewed as available to offset a $900 shortfall incurred during the rest of the year when the person lived alone. This ignores the fact that the $1,000 excess was for four people, while the $900 shortfall was for one. The problem becomes clearer if we assume that all four people live alone and have $900 shortfalls for part of the year: this approach would designate each of the four as nonpoor, even though the total shortfall of $3,600 far exceeds the $1,000 excess.

poverty rates than allowing compositions to vary. Conversely, if it is more likely that the creation of larger families and combining of incomes move people out of poverty during the year, the reverse would be true. In short, while allowing for changes in family composition would be more accurate in comparing resources to needs, what is missing is a "best" method for aggregating such comparisons meaningfully over time.

Poverty Estimates. SIPP poverty rate estimates are based on Waves 2 through 5 of data from the 1984 SIPP panel, covering the period from October 1983 through March 1985.9/ Because data from each wave were released separately, individual records for each of the five waves had to be linked together to create files that spanned the entire calendar year. In order to allow comparisons with CPS data for 1984, poverty statistics are generally reported only for those people who were in the sample for all of 1984; only in the case of the annual poverty rate using fixed family composition was this limitation not imposed.10/ Restricting the data to full-year people required discarding about one-third of the more than 60,000 records in the matched file. The remaining records are referred to below as the full-year SIPP file.

9/ Data for the complete sample are available only for the twelve months of 1984, however. The analysis was therefore limited to that period.

10/ See the appendices for discussions of the effects of these restrictions.

One potential problem with using the file of linked wave records involves continuity of the data across waves. In processing the raw SIPP data for release as public use files, the Bureau of the Census performed a wide range of editing and imputation activities to ensure that the data within each wave are complete and internally consistent. Because all edits and imputations were done without reference to data from other waves, however, there is no guarantee of continuity across waves, either in terms of information reported by sample households or that imputed by the Census Bureau. Preliminary analysis of linked data files indicates that there is much greater variation in incomes across waves than within waves, in terms of both kinds and amounts of income received. This may arise from inaccurate reporting by respondents or from the fact that the imputation methods used by the Census Bureau do not look across data waves. Further work is needed to determine the cause of the uneven temporal variations in income data and to devise methods of correcting them.

Because the SIPP contains only a sample of the entire population, the Census assigns a weight to each sample person to allow estimates of national values.11/ In this analysis, these weights

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11/ The Census actually assigns a different weight to each sample person for each month. People in the full-year SIPP file thus have 12 weights for the year. This analysis used the average of the 12 weights in calculating the annual poverty rate based on variable family composition. The fixed composition estimates used weights for December 1984, while monthly rates were based on sample weights for the individual months.

were not adjusted to take account of the observations discarded in creating the full-year SIPP file. Therefore no absolute population counts are offered in the following; results are limited to percentages calculated for populations from the full-year SIPP file using the unadjusted weights. To the extent that attrition from or entry into the SIPP sample was not randomly distributed across demographic groups, this use of unadjusted weights will result in biased results not representative of the true population. Preliminary analysis indicates that people moving into and out of the SIPP sample tend to have lower incomes than those remaining in the sample.12/ If so, omitting those people not in the sample for all of 1984 would yield estimated poverty rates below the true rates.

Five sets of poverty rates were calculated using SIPP data. First, poverty rates for each of the 12 months of 1984 were estimated by comparing total family cash income for the month against the monthly poverty threshold, defined as one-twelfth of the annual poverty threshold applicable for that month's family composition.13/ Because family composition was assumed to be fixed

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12/ Averaged over all 12 months of 1984, the poverty rate of the part-year sample was 18.0 percent, over 4 percentage points higher than the 13.7 percent rate of the full-year sample. Because the part-year sample was less than one-fifth of the entire SIPP sample, however, the effect of the omission was much smaller: the average of monthly poverty rates for the entire sample was 14.5 percent, less than one percentage point higher than for the full-year sample. See Appendix A for more detail.

13/ Arguments could be made for using other thresholds to calculate monthly poverty rates. In particular, because some expenditures--such as for durables--can often be postponed from one

during a given month, there was no confusion in selecting thresholds for the appropriate family make-up. Table 1 shows estimates of monthly poverty rates for various population subgroups for 1984.

Second, an annual poverty rate based on variable family composition was estimated by comparing, for each person, the sum of family cash incomes for each of the 12 months of 1984 against the sum of the monthly poverty thresholds. Because family composition could, and often did, change over the year, neither the annual income nor the annual threshold need apply to any fixed group of people. Instead, the two sums represent aggregates of monthly incomes and needs across the different family groups with whom an individual lived. For families whose composition was constant, this was identical to the Census definition of poverty. For others, however, this approach assessed whether they were poor in terms of a weighted average of monthly incomes and needs.14/

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month to the next, but not for long periods of time, thresholds lower than one-twelfth of annual thresholds might be appropriate. At the same time, any monthly thresholds that do not sum to annual thresholds over a year would generate poverty estimates that would be inconsistent with those based on annual incomes.

14/ For a more detailed discussion, see footnote 9 in Roberton Williams, "Poverty Rates and Program Participation in the SIPP and the CPS," Social Statistics Section of the 1986 American Statistical Association Proceedings, forthcoming.

TABLE 1. MONTHLY POVERTY RATES OF INDIVIDUALS BY POPULATION SUBGROUP, 1984 a/ (in percent of all people in the subgroup)

	Population Subgroup				
Month	Married Couples w/Child	Single Parents w/Child	Unrelated Individuals	Other Persons b/	All
January	12.3	43.9	23.0	6.8	15.1
February	11.1	43.1	22.4	6.8	14.4
March	10.6	42.3	21.9	6.3	13.9
April	10.9	43.7	21.6	6.4	14.1
May	10.0	42.0	21.6	5.9	13.4
June	9.6	41.9	21.4	6.0	13.2
July	9.8	42.1	21.3	5.9	13.3
August	8.8	41.4	21.8	5.7	12.7
September	9.3	43.3	22.1	6.2	13.4
October	9.3	43.4	21.7	6.4	13.4
November	9.8	42.4	22.0	6.6	13.6
December	10.6	42.5	22.0	6.5	14.0
Simple Average of Monthly Poverty Rates	10.2	42.7	21.9	6.3	13.7

SOURCE: Roberton Williams, "Poverty Rates and Program Participation in the SIPP and the CPS," Social Statistics Section of the 1986 American Statistical Association Proceedings, forthcoming.

a. Poverty rates are calculated on the basis of total cash income; no adjustment has been made for in-kind income. See text for discussion of methodology.

b. Other Persons include married couples without children and other groups of related people living together without their own children.

The third poverty measure--an annual rate based on fixed family composition--was designed to simulate more closely the official poverty estimates which are based on family composition as of March of the following year. This measure was calculated by summing the 1984 incomes of all family members as of December 1984, and comparing the total against the 1984 poverty thresholds.15/ This poverty indicator thus includes only those people who were in the SIPP sample in December.16/

The final two poverty indicators offer information about the movement into and out of poverty. The first, termed "always poor," assesses the number of people with consistently low incomes by reporting the percentage of people poor on a monthly basis in all 12 months of 1984. This measure is a lower bound on the annual poverty rate, since all people who were poor in every month were

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15/ The calculations were based on December 1984 family composition rather than that for March 1985--as would be the case for a "true" CPS simulation--because SIPP data on the March composition for the complete SIPP sample are not yet available (see footnote 9 above.) Such data should be released in the near future, and will allow a more accurate comparison of SIPP and CPS estimates.

16/ This definition poses a problem for the use of SIPP data: because some people entered the SIPP sample during the year, complete income data for 1984 are not available for all people in the SIPP sample for December. Rather than omit all families that included people in the SIPP for only part of 1984, this analysis corrected for missing income by inflating the income reported for part-year people on the basis of the number of months they were in the sample. The income of each person in the sample for i months was multiplied by 12/i to estimate the income that would have been reported if the person had been in the sample every month. See Appendix B for a discussion of the effects of this adjustment.

necessarily poor on an annual basis. The second indicator, called "ever poor," is the percentage of people who were poor during any month in 1984, a measure of how many people were poor for at least one month during the year. This group obviously includes all people who were poor for the entire year, but may also include many who were not. The "ever poor" thus provide an upper bound on the annual poverty rate.

Poverty rates under these alternative definitions were estimated for each of four population subgroups and for the population as a whole. The subgroups were:17/

Married Couples with Children: all people living in families headed by married couples with own children under age 18 in the household.

Single Parents with Children: all people living in families headed by single parents with own children under age 18 in the household.

17/ Family types were determined for each month based on the individual's living arrangements. Over a year, however, these characteristics can change. Therefore, for the variable family composition statistics, an individual's family type on an annual basis was defined to be that family type in which he or she lived for the most months during the year. Individuals who spent the same number of months in two different family types were arbitrarily assigned to that type in which they lived later in the year. Thus, for example, a person who was in a "married couple with children" family for the first six months and in a "single parent with children" family the last six months would be considered to be in the latter family type for the year as a whole. Note that this affects only the assignment of people to family types for the reporting of poverty rates, and has no effect on either the calculation of individual poverty status or the fixed family composition poverty rates.

Unrelated Individuals: all people not living with relatives.

Other: all people living in families not headed by parents of children under age 18 living in the household. This group is comprised of all people not part of the first three subgroups described above, and includes married couples without children and other groups of related people living together without their own children.

Table 2 compares the average of monthly poverty rates with the two annual measures and with estimates of the percentage of people who were "ever poor" and "always poor" during 1984. Three observations are worth noting:

- As predicted, the monthly poverty rates are generally greater than the annual rates; in only one case--the fixed family composition estimate for single parent families with children--is the annual rate higher.

- The annual poverty rates using the December family definition are always greater than those in which the family composition was allowed to vary during the year. In part this may be due to excluding the part-year sample from the latter estimates, since that exclusion is likely to leave out people with higher poverty rates (see Appendix A.)

- There is marked movement into and out of poverty from month to month. While the SIPP data show an annual poverty rate of 11 percent and monthly poverty rates averaging about 14 percent over the year, only 6 percent of people were poor in every month and over one-fourth were poor in at least one month. There appears to be a significant degree of monthly variation in income, at least for people in families with incomes near the poverty line.

Annual Poverty Rates in the SIPP and the CPS

Poverty rates estimated using SIPP data are likely to differ from those derived from the CPS for two main reasons. First, as discussed in detail above, the SIPP reports family composition monthly; thus, poverty statistics can be estimated with either

TABLE 2. ALTERNATIVE SIPP POVERTY RATES BY FAMILY TYPE, 1984 (in percent)

Family Type	Annual Poverty Rates: Fixed Family Composition a/	Annual Poverty Rates: Variable Family Composition b/	Average of Monthly Rates c/	Poor All 12 Months	Poor In Any Month
All Persons	12.3	11.0	13.7	5.9	26.2
Married Couples with Children	8.1	7.4	10.2	2.8	24.3
Single Parents with Children	45.8	39.9	42.7	25.8	60.8
Unrelated Individuals	19.8	17.7	21.9	11.0	35.9
Other Persons d/	5.2	4.5	6.3	2.0	14.3

SOURCE: Tabulations of data from the Survey of Income and Program Participation.

a. Poverty rate based on family composition as of December 1984. Incomes for people missing income information for part of 1984 were increased to correct for months out of sample. See text for full discussion.

b. Poverty rates calculated by comparing the sum of family incomes for the 12 months of 1984 against the sum of monthly poverty thresholds over the same period. For any individual, family composition was thus allowed to vary across time. Individuals were assigned to that family type in which they lived for the most months during 1984.

c. The averages of monthly poverty rates are taken from Table 1.

d. Other families include married couples without children and other groups of related people living together without their own children.

fixed or variable family make-up. This means that both incomes and needs can be determined more precisely, without the disparities of timing in the CPS data.

Second, the SIPP may be subject to smaller recall error because there is a shorter time period between income and program events and the collection of data. This type of error may involve either simply forgetting about the receipt of income or benefits, or being mistaken in the timing of receipt. Because the CPS recall period ranges from three months to fifteen months, compared to between one month and four months for the SIPP, the CPS may be more prone to such errors than the SIPP. Underreporting of income due to forgetting its receipt would lead to higher poverty rate estimates in the CPS relative to the SIPP, while errors concerning the timing of receipt could move poverty rates in either direction or could be essentially offsetting. To the extent that shorter recall periods result in less of either type of error, data from the SIPP should be more accurate than those from the CPS.18/ The two annual SIPP poverty measures are compared with the CPS poverty rates in Table 3. In general, the SIPP poverty rates are below

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18/ Analysis by the Bureau of the Census indicates that the SIPP identifies a greater fraction of income as reported on independent sources than does the CPS. See, for example, Appendix C of Bureau of the Census, Characteristics of Households and Persons Receiving Selected Noncash Benefits: 1984, Current Population Reports, Series P-60, No. 150, November 1985, and Appendix D of Bureau of the Census, Economic Characteristics of Households in the United States: Third Quarter 1984, Current Population Reports, Series P-70, No. 5, October 1985.

TABLE 3. ALTERNATIVE ANNUAL POVERTY RATES BY FAMILY TYPE, 1984 (percent of people with family income below poverty)

Family Type	SIPP Annual Poverty Rate Based on: Fixed Family Composition a/	Variable Family Composition b/	CPS Poverty Rate c/
All Family Types	12.3	11.0	14.4
Married Couple with Children	8.1	7.4	10.5
Single Parent with Children	45.8	39.9	44.7
Unrelated Individual	19.8	17.7	21.8
Other d/	5.2	4.5	5.3

SOURCE: Tabulations of 1984 data from the Survey of Income and Program Participation and the March 1985 Current Population Survey.

a. Taken from Table 1. The fixed family composition poverty rate was obtained by comparing the sum of 1984 incomes for all family members as of December 1984 against the appropriate 1984 poverty threshold. For those people only in the sample for part of the year, income was increased to represent a full year's income by multiplying by 12 and dividing by the number of months in the sample. All people in the SIPP sample during December 1984 were included in the estimates.

b. Taken from Table 1. The variable family composition poverty rate was obtained by comparing the sum of monthly family incomes against the sum of monthly poverty thresholds, with the sums taken over the 12 months of 1984. This definition allows household composition to change from month to month. Only people in the SIPP sample for all 12 months of 1984 were included in the estimate.

c. The CPS poverty rate is the official poverty rate published by the Bureau of the Census.

d. Other families include married couples without children and other groups of related people living together without their own children.

those obtained from CPS data: only in the case of single parent families with children is the CPS value lower, and that is true only when comparison is with the fixed family composition SIPP estimate.

The three-way comparison in Table 3 provides some information about the relative importance of changing family composition and income reporting in explaining the differences between SIPP and CPS poverty rates. Subject to the qualifications offered below, the fixed composition SIPP poverty estimates should differ from the CPS values only because of differences in the reporting of income. The variable composition estimates should diverge from those obtained from the CPS data both because of income reporting and family changes. Of the 3.4 percentage point difference between the latter two estimates for all people, just over 2 percentage points--or three-fifths of the difference--seem to be due to income reporting and just over 1 percentage point to family composition variations.

It is important to qualify these conclusions. First, differences between the SIPP and the CPS are due not only to income reporting, but also to sampling variation. Even if all people interviewed in both surveys reported their incomes correctly, estimates would vary because different people are surveyed. Second, in the case of the variable family composition SIPP estimate, the sample was limited to people for whom income information was available for all of 1984. As discussed in Appendix A, this probably means that

the estimate is too low. Third, the fixed family composition SIPP estimates are based on family make-up as of December 1984, while CPS poverty rates use March 1985 composition. It is unclear how this would affect the values reported. Finally, the fixed composition SIPP estimates required inflating the incomes reported for people not in the SIPP sample for all of 1984. This might have affected the estimates in either direction.

Conclusions and Future Work

Provisional answers can be offered to the questions posed in this analysis, but further work is needed before firm conclusions can be drawn. The provisional answers are:

- Monthly poverty rates are greater than annual poverty rates. In other words, temporary income fluctuations cause more people who are nonpoor on an annual basis to fall below the poverty line in one or more months than people who are poor based on annual income to move above the line in some months.

- Annual poverty rates are lower when family composition is allowed to vary than when family composition is fixed at the end of the year. This finding may be inaccurate, however, because variable composition poverty rates were based only on those people who were in the SIPP sample for all of 1984.

- Annual poverty rates are lower when measured with SIPP data than when CPS data are used, whether or not family composition is allowed to vary in deriving the SIPP estimates. The difference between the CPS values and the fixed composition SIPP values is most likely due to more complete reporting of income in the SIPP. A large part of the difference between the CPS poverty rates and the variable composition SIPP statistics has a similar cause; the remaining divergence must be attributed to allowing family composition to change in the SIPP estimates.

Because of limits of this analysis and because of potential problems with the SIPP data, these conclusions can only be considered provisional until further work is done. Concerns about these results and the additional work needed to resolve them include the following:

- Most of the SIPP poverty estimates were based only on those people who were surveyed in all twelve months of 1984. Preliminary analysis indicates that this limitation excluded people with higher than average monthly poverty rates (see Appendix A.) Further work is needed to determine how to take such differences into account when calculating SIPP values.

- Weights used in this analysis were not adjusted to account for the exclusion of the part-year population. Calculation of appropriate weights would not only allow estimation of population counts, but could also correct for any bias introduced by using only data for people in the SIPP sample for all of 1984.

- Data from individual waves of the SIPP were linked without any attempt to provide cross-wave editing or imputations. The fact that there is greater variation in incomes across waves than within waves makes it likely that errors are introduced if uncorrected data spanning waves are used.19/

Despite these needs for further analysis, it is clear that the SIPP data provide an alternative to the CPS as a means of measuring poverty. To the extent that they are more like program eligibility

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19/ It appears that respondents are more likely to report changes in income sources and amounts between four-month interview waves than during those periods. This probably means that within-wave variation is understated and between-wave variation is overstated, leading to incorrect measurement of income fluctuations, and thus to errors in assessing monthly poverty.

criteria, monthly poverty rates might be preferred over annual rates in assessing how well means-tested transfer programs are targeted. Use of the full range of poverty measures discussed here, however, gives a more complete picture of the low-income population.

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APPENDIX A

Effects of Using Full-Year SIPP Sample

Calculation of poverty rates from the SIPP allowing family composition to vary throughout the year required that the SIPP data be limited to people who were in sample during all 12 months of 1984. This restriction excluded roughly one-third of the 60,000 people who were in the SIPP sample for at least one month during the year. If the part-year sample--those excluded--were similar to the full-year sample in terms of their poverty rates, this would make little or no difference. As Table A indicates, however, monthly poverty rates for the part-year people are markedly higher than those of the full-year sample. This indicates that the full-year sample must be reweighted to represent more accurately the entire population. Such reweighting is beyond the scope of this paper. It is worth noting, however, that the part-year sample comprises less than one-fifth of the total sample, and therefore the effect of its exclusion is limited.

TABLE A. MONTHLY POVERTY RATES FOR PART-YEAR AND FULL-YEAR SIPP SAMPLES, 1984 (in percent)

Month	Full-Year Sample	Part-Year Sample	Total Sample	Part-Year Sample as Percent of Total Sample
January	15.1	19.3	16.0	22.3
February	14.4	17.8	15.1	21.8
March	13.9	17.9	14.7	21.8
April	14.1	18.1	14.9	20.6
May	13.4	17.2	14.1	19.6
June	13.2	17.7	14.0	19.0
July	13.3	18.4	14.2	18.5
August	12.7	17.1	13.5	18.0
September	13.4	18.3	14.3	17.5
October	13.4	17.5	14.1	17.3
November	13.6	18.0	14.2	13.2
December	14.0	19.0	14.5	9.3
Average	13.7	18.0	14.5	18.2

SOURCE: Tabulations of data from the Survey of Income and Program Participation.

APPENDIX B

Effects of Adjusting Incomes for Part-Year People in Calculating Fixed Family Composition Poverty Rates

Fixed family composition poverty rates based on SIPP data were calculated by summing the 1984 incomes of related people living together in December 1984 and comparing the totals against appropriate annual poverty thresholds. For about 17 percent of the people in the December SIPP sample, data on one or more months of 1984 income were missing. Rather than exclude those people from the sample entirely, the analysis inflated their part-year incomes to full-year estimates by multiplying by 12 and dividing by the number of months for which their income was reported. Part-year people were more likely to be poor--even after their incomes were adjusted--than the population as a whole. Therefore, unless their incomes were higher in the months when they were not in the SIPP sample, their exclusion would have resulted in lower poverty rate estimates than those reported in this paper. Table B compares the poverty rates of people in families with part-year members with those for families with complete income reporting.

TABLE B. ANNUAL POVERTY RATES BY WHETHER INCOME FULLY REPORTED AND BY FAMILY TYPE, 1984 (in percent)

Family Type	All Family Members in Sample All 12 Months	Some Family Members in Sample less Than 12 Months	All People	Part-Year People as Percent of All People
Married Couple with Children	7.0	12.5	8.1	18.9
Single Parent with Children	44.2	51.5	45.8	21.5
Unrelated Individuals	19.7	20.8	19.8	12.5
Other a/	5.0	6.1	5.2	14.4
All Family Types	11.4	16.3	12.3	16.8

SOURCE: Tabulations of 1984 data from the Survey of Income and Program Participation.

a. Other families include married couples without children and other groups of related people living together without their own children.