Appendix C. **Source and Accuracy of the Estimates**

SOURCE OF DATA

The SIPP universe is the noninstitutionalized resident population living in the United States. This population includes persons living in group quarters, such as dormitories, rooming houses, and religious group dwellings. Crew members of merchant vessels, Armed Forces personnel living in military barracks, and institutionalized persons, such as correctional facility inmates and nursing home residents, were not eligible to be in the survey. Also, United States citizens residing abroad were not eligible to be in the survey. Foreign visitors who work or attend school in this country and their families were eligible; all others were not eligible. With the exceptions noted above, persons who were at least 15 years of age at the time of the interview were eligible to be interviewed in the survey.

The 1985, 1987, 1988, and 1990 panel SIPP samples are located in 230 Primary Sampling Units (PSUs) each consisting of a county or a group of contiguous counties. Within these PSUs, expected clusters of two living quarters (LQs) were systematically selected from lists of addresses prepared for the 1980 decennial census to form the bulk of the sample. To account for LQs built within each of the sample areas after the 1980 census, a sample containing clusters of four LQs was drawn from permits issued for construction of residential LQs up until shortly before the beginning of the panel.

In jurisdictions that don't issue building permits or have incomplete addresses, small land areas were sampled and expected clusters of four LQs within were listed by field personnel and then subsampled. In addition, sample LQs were selected from a supplemental frame that included LQs identified as missed in the 1980 census.

The first interviews were conducted during February, March, April, and May that particular year. Approximately one-fourth of the sample was interviewed in each of these months. Each sample person was visited every 4 months thereafter. At each interview the reference period was the 4 months preceding the interview month.

Occupants of about 93 percent of all eligible living quarters participated in the first interview of the panel. For subsequent interviews, only original sample persons (those in Wave 1 sample households and interviewed in Wave 1 and persons living with them were eligible to be interviewed. Original sample persons were followed if they moved to a new address, unless the new address was more than 100 miles from a SIPP sample area. Then, telephone interviews were attempted. All first wave noninterviewed households were automatically designated as noninterviews for all subsequent interviews. When original sample persons moved to remote parts of the country and couldn't be reached by telephoning, moved without leaving a forwarding address; or refused to be interviewed, additional noninterviews resulted.

A person was classified as interviewed or noninterviewed for the entire panel based on the following definitions. Interviewed sample persons were defined to be 1) those for whom self or proxy responses were obtained for each reference month of all seven interviews or 2) those for whom self or proxy responses were obtained for the first reference month of the panel and for each subsequent reference month until they were known to have died or moved to an ineligible address (foreign living quarters, institutions, or military barracks). Noninterviewed persons were defined to be those for whom neither self nor proxy responses were obtained for one or more reference months of the seven interviews (but not because they were deceased or moved to an ineligible address). Details on classification are found in "Weighting of Persons for SIPP Longitudinal Tabulations" (paper by Judkins, Hubble, Dorsch, McMillen and Ernst in the *1984 Proceedings of the Survey Research Methods Section, American Statistical Association*). Details on patterns of nonresponse can be found in "Weighting Adjustment for Partial Nonresponse in the 1984 SIPP Panel" (paper by Lepkowski, Kalton and Kasprzyk in the *1989 Proceedings of the Survey Research Methods Section, American Statistical Association*).

Table C-1. **Person Statistics for Longitudinal Panel Years**

Panel	Initially eligible	Classified as Interviewed	Person nonresponse rate
85	32,000	23,000	28%
87	33,100	24,400	26%
87 CY	33,100	26,400	20%

Some respondents did not respond to some of the questions; therefore, the overall nonresponse rate for some items, especially sensitive income and money related items, is higher than the person nonresponse rate. For more discussion of nonresponse see the *Quality Profile for the Survey of Income and Program Participation*, May 1990, by T. Jabine, K. King, and R. Petroni, available from Customer Services, Data Users Services Division (301-763-6100).

Some tabulations in this report were also drawn from cross-sectional files of 1988 panel and 1990 panel. Person nonresponse rates are not available for these cross-sectional files. Household sample size and nonresponse rates are shown in table C-2 below.

Table C-2. **Household Sample Size and Interview Status for Cross-Sectional Panel Files**

Panel/Wave	Eligible	Interviews obtained	Nonresponse rate
88/W4	13355	11224	15.96%
88/W5	13462	11123	17.37%
88/W6	13554	11175	17.55%
90/W1	23624	21907	12.44%
90/W2	24219	21206	12.44%
90/W3	24679	21221	14.01%

ESTIMATION

Several stages of weight adjustments were involved in the estimation procedure used to derive the SIPP longitudinal person weights. Each person received a base weight equal to the inverse of his/her probability of selection. Two noninterview adjustment factors were applied. One adjusted the weights of interviewed persons in interviewed households to account for households which were eligible for the sample but could not be interviewed at the first interview. The second was applied to compensate for person noninterviews occurring in subsequent interviews. The Bureau has used complex techniques to adjust the weights for nonresponse, but the success of these techniques in avoiding bias is unknown. For more detail on noninterview adjustment for longitudinal estimates see *Nonresponse Adjustment Methods for Demographic Surveys at the U.S. Bureau of the Census*, November 1988, Working paper 8823, by R. Singh and R. Petroni.

Another factor was applied to each interviewed person's weight to account for the SIPP sample areas not having the same population distribution as the strata from which they were selected.

An additional stage of adjustment to longitudinal person weights was performed to reduce the mean square error of the survey estimates. This was accomplished by ratio adjusting the sample estimates to agree with monthly Current Population Survey (CPS) type estimates of the civilian (and some military) noninstitutional population of the United States by demographic characteristics including age, sex, and race, as of the specified control date. The CPS estimates by age, race, and sex, were themselves brought into agreement with estimates from the 1980 decennial census which have been adjusted to reflect births, deaths, immigration, emigration, and changes in the Armed Forces since 1980. Also, SIPP estimates were controlled to independent Hispanic controls. In cross-sectional weighting only, an adjustment was made so that husbands and wives within the same household were assigned equal weights.

ACCURACY OF ESTIMATES

SIPP estimates are based on a sample; they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaire, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey: nonsampling and sampling. We are able to provide estimates of the magnitude of SIPP sampling error, but this is not true of nonsampling error. Found in the next sections are descriptions of sources of SIPP nonsampling error, followed by a discussion of sampling error, its estimation, and its use in data analysis.

Nonsampling Variability. Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all cases in the sample; definitional difficulties; differences in the interpretation of questions; inability or unwillingness on the part of the respondents to provide correct information; inability to recall information, errors made in the following: collection such as in recording or coding the data, processing the data, estimating values for missing data; biases resulting from the differing recall periods caused by the interviewing pattern used; and undercoverage. Quality control and edit procedures were used to reduce errors made by respondents, coders and interviewers. More detailed discussions of the existence and control of nonsampling errors in the SIPP can be found in the *SIPP Quality Profile*.

Undercoverage in SIPP results from missed living quarters and missed persons within sample households. It is known that undercoverage varies with age, race, and sex. Generally, undercoverage is larger for males than for females and larger for Blacks than for Nonblacks. Ratio estimation to independent age-race-sex population controls partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that persons in missed households or missed persons in interviewed households have characteristics different from those of interviewed persons in the same age-race-sex group. Further, the independent population controls used have not been adjusted for undercoverage in the Census.

Comparability with Other Estimates. Caution should be exercised when comparing data from this report with data from other SIPP publications or with data from other surveys. The comparability problems are caused by such sources as the seasonal patterns for many characteristics, different nonsampling errors, and different concepts and procedures. Refer to the SIPP Quality Profile for known differences with data from other sources and further discussion.

Sampling Variability. Standard errors indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in

the data. The standard errors for the most part measure the variations that occurred by chance because a sample rather than the entire population was surveyed.

USES AND COMPUTATION OF STANDARD ERRORS

Confidence Intervals. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these being surveyed under essentially the same conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.
2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval. However, for a particular sample, one can say with a specified confidence that the average estimate derived from all possible samples is included in the confidence interval.

Hypothesis Testing. Standard errors may also be used for hypothesis testing, a procedure for distinguishing between population characteristics using sample estimates. The most common types of hypotheses tested are 1) the population characteristics are identical versus 2) they are different. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

All statements of comparison in the report have passed a hypothesis test at the 0.10 level of significance or better. This means that, for differences cited in the report, the estimated absolute difference between parameters is greater than 1.6 times the standard error of the difference.

To perform the most common test, compute the difference $X_A - X_B$, where X_A and X_B are sample estimates of the characteristics of interest. A later section explains how to derive an estimate of the standard error of the difference $X_A - X_B$. Let that standard error be s_{DIFF}. If $X_A - X_B$ is between -1.6 times s_{DIFF} and +1.6 times s_{DIFF}, no conclusion about the characteristics is justified at the 10 percent significance level. If, on the other hand, $X_A - X_B$ is smaller than -1.6 times s_{DIFF} or larger than +1.6 times s_{DIFF}, the observed difference is significant at the 10 percent level. In this event, it is commonly accepted practice to say that the characteristics are different. Of course, sometimes this conclusion will be wrong. When the characteristics are, in fact, the same, there is a 10 percent chance of concluding that they are different.

Note that as more tests are performed, more erroneous significant differences will occur. For example, at the 10 percent significance level, if 100 independent hypothesis tests are performed in which there are no real differences, it is likely that about 10 erroneous differences will occur. Therefore, the significance of any single test should be interpreted cautiously.

Note Concerning Small Estimates and Small Differences. Summary measures are shown in the report only when the base is 200,000 or greater. Because of the large standard errors involved, there is little chance that estimates will reveal useful information when computed on a base smaller than 200,000. Also, nonsampling error in one or more of the small number of cases providing the estimate can cause large relative error in that particular estimate. Estimated numbers are shown, however, even though the relative standard errors of these numbers are larger than those for the corresponding percentages. These smaller estimates are provided primarily to permit such combinations of the categories as serve each user's needs. Therefore, care must be taken in the interpretation of small differences since even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Standard Error Parameters and Tables and Their Use. Most SIPP estimates have greater standard errors than those obtained through a simple random sample because clusters of living quarters are sampled for the SIPP. To derive standard errors that would be applicable to a wide variety of estimates and could be prepared at a moderate cost, a number of approximations were required. Estimates with similar standard error behavior were grouped together and two parameters (denoted "a" and "b") were developed to approximate the standard error behavior of each group of estimates. Because the actual standard error behavior was not identical for all estimates within a group, the standard errors computed from these parameters provide an indication of the order of magnitude of the standard error for any specific estimate. These "a" and "b" parameters vary by characteristic and by demographic subgroup to which the estimate applies. These tables provide the "a" and "b" parameters which are used for the following panel estimates:

- Table C-3 1985 Longitudinal
- Table C-6 1987 Longitudinal
- Table C-9 Calendar Year 1987 Longitudinal
- Table C-12 1988 Cross-Sectional
- Table C-15 1990 Cross-Sectional

For those users who wish further simplification, we have also provided general standard errors in tables C-4, C-5, C-7, C-8, C-10, C-11, C-13, C-14, C-16, and C-17. Note that these standard errors must be adjusted by a factor from tables C-3, C-6, C-9, C-12, and C-15. *The standard errors resulting from this simplified approach are less accurate.* Methods for using these parameters and tables for computation of standard errors are given in the following sections.

Standard Errors of Estimated Numbers. There are two ways to compute the approximate standard error, s_x, of an estimated number shown in this report. The first uses the formula

$$s_x = fs \qquad (1)$$

where f is a factor from tables C-3, C-6, C-9, C-12, or C-15, and s is the standard error of the estimate obtained by interpolation from tables C-4, C-7, C-10, C-13, or C-16. Alternatively, s_x may be approximated by the formula,

$$s_x = \sqrt{ax^2 + bx} \qquad (2)$$

from which the standard errors in tables C-4, C-7, C-10, C-13, or C-16 were calculated. Here x is the size of the estimate and a and b are the parameters in tables C-3, C-6, C-9, C-12, or C-15 associated with the particular type of characteristic. Use of formula 2 will provide more accurate results than the use of formula 1. When calculating standard errors for numbers from cross-tabulations involving different characteristics, use the factor or set of parameters for the characteristic which will give the largest standard error.

Illustration. Suppose that we have a SIPP estimate of total number of persons lacking health insurance coverage for the entire 1987 Longitudinal panel is 9,009,000 as in Table C of the report. The appropriate "a" and "b" parameters are obtained from table C-6. They are a = -0.0001654 and b = 38,147, respectively. Using formula (2), the approximated standard error is

$$\sqrt{(-0.0001654)(9{,}009{,}000)^2 + (38{,}147)(9{,}009{,}000)} = 575{,}000$$

The 90-percent confidence interval as shown by the data is from 8,089,000 to 9,929,000. Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all samples.

Using formula (1), the appropriate "f" factor (f=1.00) from table 6 and the standard error of the estimate by interpolation using table C-7, the approximate standard error is

$$s_x = (1.00)(573{,}000) = 573{,}000$$

The 90-percent confidence interval as shown by the data is from 8,092,000 to 9,926,000.

Standard Errors of Estimated Percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. When the numerator and denominator of the percentage have different parameters, use the parameter (or appropriate factor) from tables C-3, C-6, C-9, C-12, or C-15 indicated by the numerator.

The approximate standard error, s(x,p), of an estimated percentage p can be obtained by use of the formula

$$S_{(x,p)} = fs \qquad (3)$$

where p is the percentage of persons/families/households with a particular characteristic such as the percent of persons owning their own homes.

In this formula, f is the appropriate "f" factor from tables C-3, C-6, C-9, C-12, or C-15, and s is the standard error of the estimate obtained by interpolation from tables C-5, C-8, C-11, C-14 or C-17.
Alternatively, it may be approximated by the formula:

$$S_{(x,p)} = \sqrt{(b/x)(p)(100-p)} \qquad (4)$$

from which the standard errors in tables C-5, C-8, C-11, C-14, or C-17 were calculated. Here x is the total number of persons, families, households, or unrelated individuals in the base of the percentage, p is the percentage ($0 \leq p \leq 100$), and b is the "b" parameter in tables C-3, C-6, C-9, C-12, or C-15 associated with the characteristic in the numerator of the percentage. Use of this formula will give more accurate results than use of formula (3) above.

Illustration. Suppose that SIPP estimate for the number of persons in the second quarter of 1990 is 246,818,000 as indicated in table 2 of the report. Of these, 87.0 percent were covered by private or government health insurance. Using formula (4) and the "b" parameter of 17,784 (from table C-15), the approximate standard error is

$$\sqrt{(17{,}784/246{,}818{,}000)(.87)(1.00-.87)} = 0.3 \text{ percent}$$

Consequently, the 90-percent confidence interval as shown by this data is from 86.5 to 87.5 percent. Using formula (3), the appropriate "f" factor (f=1.00) from table C-15, the approximate standard error (from table C-17) is

$$S_{(x,p)} = (1.0)(.003) = 0.3 \text{ percent} \qquad (5)$$

The 90-percent confidence interval shown by these data is 86.5 to 87.5 percent.

Standard Error of a Difference. The standard error of a difference between two sample estimates, x and y, is approximately equal to

$$S_{(x-y)} = \sqrt{s_x^2 + s_y^2 - 2rs_xs_y} \qquad (6)$$

where s_x and s_y are the standard errors of the estimates x and y and r is the correlation coefficient between the characteristics estimated by x and y. The estimates can be numbers, averages, percents, ratios, etc. Underestimates or overestimates of standard error of differences result if the estimated correlation coefficient is overestimated or underestimated, respectively. In this report, r is assumed to be zero.

Illustration. Suppose that we are interested in the difference in the percentage of Blacks and Whites who did not receive health insurance coverage for at least 1 month during 1987-1989. Of the 27,807,000 Blacks and 195,633,000 Whites, 39.8 percent and 24.2 percent, respectively, did not receive health insurance coverage for at least 1 month (see table C of the report). Using parameters and factors from table C-6, the standard errors of these percentages are approximately 1.1 percent and 0.6 percent.

The standard error of the difference is computed using formula (5):

$$\sqrt{(.011)^2 + (.006)^2} = 1.3 \text{ percent}$$

Suppose that it is desired to test at the 10 percent significance level where the above two percentages differ significantly. To perform the test, compare the difference of 15.6 percent to the product 1.6 x 1.3 = 2.08 percent. Since the percent difference is larger than 1.6 times the standard error of the difference, the data does support the hypothesis that the two percentages are significantly different at the 10 percent level.

Table C-3. **SIPP Generalized Variance Parameters for Estimates Using Panel Weights from the 1985 Longitudinal Panel File**

Characteristics	a	b	f
Persons			
Total or White			
All characteristics			
Both sexes	-0.0001800	41,497	1.00
Male	-0.0003722	41,497	1.00
Female	-0.0003485	41,497	1.00
Black			
All characteristics			
Both sexes	-0.0005564	15,351	0.61
Male	-0.0011956	15,351	0.61
Female	-0.0010406	15,351	0.61

Table C-4. **Standard Errors of Estimated Numbers of Persons for 1985 Longitudinal Panel File**

(In thousands)

Size of estimate	Standard Error	Size of estimate	Standard error
200	91	50,000	1275
300	112	80,000	1472
600	158	100,000	1533
1,000	203	130,000	1534
2,000	287	135,000	1524
5,000	451	150,000	1475
8,000	566	200,000	1049
11,000	659	220,000	646
13,000	713	230,000	149
15,000	763		
17,000	808		
22,000	909		
26,000	978		
30,000	1041		

Table C-5. **Standard Errors of Estimated Percentages of Persons for 1985 Longitudinal Panel File**

Base of estimated percentage (thousands)	Estimated percentages					
	≤ 1 or ≥ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	4.5	6.4	9.9	13.7	19.7	22.8
300	3.7	5.2	8.1	11.2	16.1	18.6
600	2.6	3.7	5.7	7.9	11.4	13.1
1,000	2.0	2.9	4.4	6.1	8.8	10.2
2,000	1.4	2.0	3.1	4.3	6.2	7.2
5,000	0.9	1.3	2.0	2.7	3.9	4.2
8,000	0.7	1.0	1.6	2.2	3.1	3.6
11,000	0.6	0.9	1.3	1.8	2.7	3.1
13,000	0.6	0.8	1.2	1.7	2.4	2.8
17,000	0.5	0.7	1.1	1.5	2.1	2.5
22,000	0.4	0.6	0.9	1.3	1.9	2.2
26,000	0.4	0.6	0.9	1.2	1.7	2.0
30,000	0.4	0.5	0.8	1.1	1.6	1.9
50,000	0.3	0.4	0.6	0.9	1.2	1.4
80,000	0.2	0.3	0.5	0.7	1.0	1.1
100,000	0.2	0.3	0.4	0.6	0.9	1.0
130,000	0.2	0.3	0.4	0.5	0.8	0.9
180,000	0.2	0.2	0.3	0.5	0.7	0.8
200,000	0.1	0.2	0.3	0.4	0.6	0.7
225,000	0.1	0.2	0.3	0.4	0.6	0.7

Table C-6. **SIPP Generalized Variance Parameters for Estimates Using Panel Weights from the 1987 Longitudinal Estimates**

Characteristics	a	b	f
Persons			
Total or White			
All characteristics			
Both sexes	-0.0001654	38,147	1.00
Male	-0.0020159	38,147	1.00
Female	-0.0003203	38,147	1.00
Black			
All characteristics			
Both sexes	-0.0005115	14,113	0.61
Male	-0.0010991	14,113	0.61
Female	-0.0009565	14,113	0.61

Table C-7. **Standard Errors of Estimated Numbers of Persons for 1987 Longitudinal Panel File**

(In thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	87	50,000	1222
300	107	80,000	1412
600	151	100,000	1470
1,000	195	130,000	1471
2,000	275	135,000	1461
5,000	432	150,000	1414
8,000	543	200,000	1007
11,000	632	220,000	622
13,000	684	230,000	155
15,000	731		
17,000	775		
22,000	871		
26,000	938		
30,000	998		

Table C-8. **Standard Errors of Estimated Percentages of Persons for 1987 Longitudinal Panel File**

Base of estimated Percentage (thousands)	Estimated percentages					
	≤ 1 or ≤ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	4.3	6.1	9.5	13.1	18.9	21.8
300	3.5	5.0	7.8	10.7	15.4	17.8
600	2.5	3.5	5.5	7.6	10.9	12.6
1,000	1.9	2.7	4.3	5.9	2.5	9.8
2,000	1.4	1.9	3.0	4.1	6.0	6.9
5,000	0.9	1.2	1.9	2.6	3.8	4.4
8,000	0.7	1.0	1.5	2.1	3.0	3.5
11,000	0.6	0.8	1.3	1.8	2.5	2.9
13,000	0.5	0.8	1.2	1.6	2.3	2.7
17,000	0.5	0.7	1.0	1.4	2.1	2.4
22,000	0.4	0.6	0.9	1.2	1.8	2.1
26,000	0.4	0.5	0.8	1.1	1.7	1.9
30,000	0.3	0.5	0.8	1.1	1.5	1.8
50,000	0.3	0.4	0.6	0.8	1.2	1.4
80,000	0.2	0.3	0.5	0.7	0.9	1.1
100,000	0.2	0.3	0.4	0.6	0.8	1.0
130,000	0.2	0.2	0.4	0.5	0.7	0.9
180,000	0.1	0.2	0.3	0.4	0.6	0.7
200,000	0.1	0.2	0.3	0.4	0.6	0.7
230,000	0.1	0.2	0.3	0.4	0.6	0.6

Table C-9. **SIPP Generalized Variance Parameters for Estimates Using 1987 Calendar Year Weights from the 1987 Longitudinal Panel File**

Characteristics	a	b	f
Persons			
Total or White			
All characteristics			
Both sexes	-0.0001543	35,577	1.00
Male	-0.0003191	35,577	1.00
Female	-0.0002987	35,577	1.00
Black			
All characteristics			
Both sexes	-0.0004770	13,162	0.61
Male	-0.0010250	13,162	0.61
Female	-0.0008921	13,162	0.61

Table C-10. **Standard Errors of Estimated Numbers of Persons for 1987 Calendar Year from the 1987 Longitudinal Panel File**

(In thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	84.3	50,000	1180.3
300	103.2	80,000	1363.3
600	145.9	100,000	1419.4
1,000	188.2	130,000	1420.3
2,000	265.6	135,000	1410.9
5,000	417.2	150,000	1365.6
8,000	524.2	200,000	971.3
11,000	610.5	220,000	599.0
13,000	660.6	230,000	142.3
15,000	706.4		
17,000	748.5		
22,000	841.4		
26,000	905.9		
30,000	963.6		

Table C-11. **Standard Errors of Estimated Percentages of Persons for 1987 Calendar Year from 1987 Longitudinal Panel File**

Base of estimated percentage (thousands)	Estimated percentages					
	≤ 1 or ≤ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	4.2	5.9	9.2	12.7	18.3	21.1
300	3.4	4.8	7.5	10.3	14.9	17.2
600	2.4	3.4	5.3	7.3	10.5	12.2
1,000	1.9	2.6	4.1	5.7	8.2	9.4
2,000	1.3	1.9	2.9	4.0	5.8	6.7
5,000	0.8	1.2	1.8	2.5	3.7	4.2
8,000	0.7	0.9	1.5	2.0	2.9	3.3
11,000	0.6	0.8	1.2	1.7	2.5	2.8
13,000	0.5	0.7	1.1	1.6	2.3	2.6
17,000	0.5	0.6	1.0	1.4	2.0	2.3
22,000	0.4	0.6	0.9	1.2	1.7	2.0
26,000	0.4	0.5	0.8	1.1	1.6	1.8
30,000	0.3	0.5	0.8	1.0	1.5	1.7
50,000	0.3	0.4	0.6	0.8	1.2	1.3
80,000	0.2	0.3	0.5	0.6	0.9	1.1
100,000	0.2	0.3	0.4	0.6	0.8	0.9
130,000	0.2	0.2	0.4	0.5	0.7	0.8
180,000	0.1	0.2	0.3	0.4	0.6	0.7
200,000	0.1	0.2	0.3	0.4	0.6	0.7
230,000	0.1	0.2	0.3	0.4	0.5	0.6

Table C-12. **SIPP Generalized Variance Parameters for Estimates Using Panel Weights from the 1988 Cross-Sectional Panel File**

Characteristics	a	b	f
Persons			
Total or White			
All characteristics			
Both Sexes	-0.0001297	31,260	1.00
Male	-0.0002670	31,260	1.00
Female	-0.0002521	31,260	1.00
Black			
All characteristics			
Both sexes	-0.0003936	11,565	0.61
Male	-0.0008408	11,565	0.61
Female	-0.0007399	11,565	0.61

Table C-13. **Standard Errors of Estimated Numbers of Persons for 1988 Cross-Sectional Panel File**

(In thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	79	50,000	1113
300	97	80,000	1293
600	137	100,000	1352
1,000	176	130,000	1368
2,000	249	135,000	1363
5,000	391	150,000	1331
8,000	492	200,000	1032
11,000	573	220,000	774
13,000	620	230,000	573
15,000	663		
17,000	703		
22,000	791		
26,000	852		
30,000	906		

Table C-14. **Standard Errors of Estimated Percentages of Persons for 1988 Cross-Sectional Panel File**

Base of estimated percentage (thousands)	Estimated percentages					
	≤ 1 or ≤ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	3.9	5.5	8.6	11.9	17.1	19.8
300	3.2	4.5	7.0	9.7	14.0	16.1
600	2.3	3.2	5.0	6.8	9.9	11.4
1,000	1.8	2.5	3.9	5.3	7.7	8.8
2,000	1.2	1.8	2.7	3.8	5.4	6.3
5,000	0.8	1.1	1.7	2.4	3.4	4.0
8,000	0.6	0.9	1.4	1.9	2.7	3.1
11,000	0.5	0.7	1.2	1.6	2.3	2.7
13,000	0.5	0.7	1.1	1.5	2.1	2.5
17,000	0.4	0.6	0.9	1.3	1.9	2.1
22,000	0.4	0.5	0.8	1.1	1.6	1.9
26,000	0.3	0.5	0.8	1.0	1.5	1.7
30,000	0.3	0.5	0.7	1.0	1.4	1.6
50,000	0.2	0.4	0.5	0.8	1.1	1.3
80,000	0.2	0.3	0.4	0.6	0.9	1.0
100,000	0.2	0.2	0.4	0.5	0.8	0.9
130,000	0.2	0.2	0.3	0.5	0.7	0.8
180,000	0.1	0.2	0.3	0.4	0.6	0.7
200,000	0.1	0.2	0.3	0.4	0.5	0.6
230,000	0.1	0.2	0.3	0.3	0.5	0.6
245,000	0.1	0.2	0.2	0.3	0.5	0.6

Table C-15. **SIPP Generalized Variance Parameters for Estimates Using Panel Weights from the 1990 Cross-Sectional Panel File**

Characteristics	a	b	f
Persons			
Total or White			
All characteristics			
Both sexes	-0.0000771	17,784	1.00
Male	-0.0001595	17,784	1.00
Female	-0.0001493	17,784	1.00
White			
All characteristics			
Both sexes	-0.0000855	19,710	1.05
Male	-0.0001768	19,710	1.05
Female	-0.0001655	19,710	1.05
Hispanic			
All characteristics			
Both sexes	-0.0001723	4755	0.52
Male	-0.0003704	4755	0.52
Female	-0.0003223	4755	0.52
Black			
All characteristics			
Both sexes	-0.0001723	4755	0.52
Male	-0.0003704	4755	0.52
Female	-0.0003222	4755	0.52

Table C-16. **Standard Errors of Estimated Numbers of Persons for 1990 Cross-Sectional Panel File**

(In thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	60	50,000	835
300	73	80,000	964
600	103	100,000	1004
1,000	133	130,000	1005
2,000	188	135,000	998
5,000	295	150,000	966
8,000	371	200,000	688
11,000	432	220,000	425
13,000	467	230,000	108
15,000	499		
17,000	529		
22,000	595		
26,000	641		
30,000	681		

Table C-17. **Standard Errors of Estimated Percentages of Persons for 1990 Cross-Sectional Panel File**

Base of estimated Percentage (thousands)	Estimated percentages					
	≤ 1 or ≤ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	3.0	4.2	6.5	8.9	12.9	14.9
300	2.4	3.4	5.3	7.3	10.5	12.2
600	1.7	2.4	3.8	5.2	7.5	8.6
1,000	1.3	1.9	2.9	4.0	5.8	6.7
2,000	0.9	1.3	2.1	2.8	4.1	4.7
5,000	0.6	0.8	1.3	1.8	2.6	3.0
8,000	0.5	0.6	1.0	1.4	2.0	2.4
11,000	0.4	0.6	0.9	1.2	1.7	2.0
13,000	0.4	0.5	0.8	1.1	1.6	1.8
17,000	0.3	0.5	0.7	1.0	1.4	1.6
22,000	0.3	0.4	0.6	0.9	1.2	1.4
26,000	0.3	0.4	0.6	0.8	1.1	1.3
30,000	0.2	0.3	0.5	0.7	1.1	1.2
50,000	0.2	0.3	0.4	0.6	0.8	0.9
80,000	0.1	0.2	0.3	0.4	0.6	0.7
100,000	0.1	0.2	0.3	0.4	0.6	0.7
130,000	0.1	0.2	0.3	0.4	0.5	0.6
180,000	0.1	0.1	0.2	0.3	0.4	0.5
200,000	0.1	0.1	0.2	0.3	0.4	0.5
230,000	0.1	0.1	0.2	0.3	0.4	0.4
245,000	0.1	0.1	0.2	0.3	0.4	0.4