Technical Paper 58

Estimates of Poverty Including the Value of Noncash Benefits: 1987

U.S. Department of Commerce
BUREAU OF THE CENSUS

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Estimates of Poverty Including the Value of Noncash Benefits: 1987

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Contents

	Page
Introduction	1
Growth of noncash benefits	2
Explanation of valuation techniques	2
Market value	2
Recipient or cash equivalent value	3
Illustration of valuation techniques	3
Food stamps	3
Medicaid	4
Revision of 1986 and earlier estimates	4
Official and experimental poverty estimates, 1979-87	4
Receipt of noncash benefits and average noncash benefit values	6
Poverty before and after cash and noncash benefits	7
Measurement issues	7
Research activity	10
User comments	10

TEXT TABLES

A.	Means-tested cash assistance, outlays on food stamp and medical care programs, and estimated market value of school lunch and housing subsidies: 1980-87	2
B.	Persons in poverty, by valuation technique and type of noncash benefits included: 1979-87	5
C.	Percent of persons in poverty, by valuation technique and selected characteristics: 1987 and 1986	5
D.	Receipt of noncash benefits by families and unrelated individuals in poverty: 1979-87	6
E.	Families and unrelated individuals receiving selected noncash benefits, by poverty status and mean value of benefits, by valuation method: 1987	7
F.	Poverty status of families and unrelated individuals before and after cash and selected noncash transfers: 1987 and 1986	8
G.	Examples of the relationship between market value of medical benefits and poverty thresholds, by family type in 10 largest States: 1987	8
H.	Market value of Medicaid, by risk class in 10 largest States: 1987 and 1986	9

DETAILED TABLES

1.	Persons below the poverty level and poverty rate—current poverty definition and alternative methods of valuing noncash benefits, by selected characteristics: 1979 to 1987	11
2.	Families and unrelated individuals in poverty before and after cash and noncash transfers: 1987	16

APPENDIXES

		Page
A.	**U.S. Senate Statement, "Data Collection and Poverty Level"**	19
B.	**Description of Noncash Valuation Techniques**	21
	Market value	21
	Recipient or cash equivalent value	25
C.	**Source and Reliability of Estimates**	31
	Source of data	31
	Reliability of estimates	32
	Standard error tables	33
D.	**Program Descriptions and Data Collection**	41
	Food stamps	41
	School lunches	41
	Public or other subsidized housing	42
	Medicaid	42
	Medicare	43
E.	**Definitions and Explanations**	45
F.	**Underreporting of Cash Income and Noncash Benefits**	47
G.	**Facsimiles of CPS Questionnaires**	49

APPENDIX TABLES

B-1.	Annual market value subsidies for the National School Lunch Program, by Cost Status of Lunch: 1979-87	21
B-2.	Mean annual market rent for public or other subsidized housing units, by total household money income and size of family unit	22
B-3.	Mean annual subsidized rent for public or other subsidized housing units, by total household money income and size of family unit	23
B-4.	Mean annual market value of housing subsidies for public or other subsidized housing units, by total household money income and size of family unit	23
B-5.	Annual market values for Medicare, by State and risk class: 1987	24
B-6.	Annual market values for Medicaid excluding expenditures for institutionalized persons, by State and risk class: 1987	25
B-7.	Mean annual normal expenditures for food, by total household money income and size of family unit	26
B-8.	Annual food expenditure to income ratios, by total household money income and size of family unit	26
B-9.	Mean annual normal expenditures for rental units in nonsubsidized housing, by total household money income and size of family unit	27
B-10.	Normal expenditure values for medical care, by age or disability status of the householder and size of household	28
C-1.	Standard errors of estimated number of households below the poverty level: 1979-87	34
C-2.	Standard errors of estimated numbers of persons below the poverty level: 1979-87	34
C-3.	Standard errors of estimated percentages of households below the poverty level: 1979-87	35
C-4.	Standard errors of estimated percentages of persons below the poverty level: 1979-87	35
C-5.	a and b parameters and factors for calculating approximate standard errors of estimated numbers and percentages of household and persons: 1979-87	36
C-6.	Parameters for estimated numbers and percentages of persons in poverty, by age, sex, race, and Hispanic origin: 1979-87	37
C-7.	Year-to-year correlation coefficients for poverty estimates of households and persons: 1979-87	38
E-1.	Weighted average poverty thresholds: 1979-87	45
E-2.	Annual average Consumer Price Index (CPI): 1979-87	46
F-1.	Comparisons of CPS aggregate money income in 1983 with independently derived estimates, by income type	48

Estimates of Poverty Including the Value of Noncash Benefits: 1987

INTRODUCTION

This report describes experimental procedures for valuing noncash benefits received by the low-income population and presents estimates of the effect of these benefits on the size and composition of the poverty population in 1987. It also updates estimates covering 1979 through 1986 which have been published in previous technical papers released by the Bureau of the Census.

The Bureau's research in the valuation of noncash benefits began in the fall of 1980, as a result of concerns expressed by Congress as outlined in appendix A. At that time Dr. Timothy Smeeding came to the Census Bureau as a visiting scholar under the American Statistical Association Fellowship Program. Dr. Smeeding worked closely with the Census Bureau staff to investigate various procedures that might be used to value noncash benefits for 1979. This investigation resulted in Technical Paper 50, issued in March 1982, which showed the effect of including the value of certain noncash benefits as income for purposes of measuring the poverty population.

That report, which was exploratory in nature, examined three different valuation methods: the market value, the cash equivalent value, and the poverty budget share value. Five different noncash benefits were valued. These included food stamps, free or reduced-price school lunches, public or other subsidized rental housing, Medicaid, and Medicare. A significant portion of Technical Paper 50 focused on conceptual and empirical problems associated with each of the three valuation techniques.

Since the publication of Technical Paper 50, the Census Bureau has published updates of these experimental poverty estimates. The updated estimates have been based on the original methodology except that last year the Census Bureau decided to drop estimates based on the poverty budget share approach and estimates that counted the value of Medicaid benefits received by persons in institutions as part of income received by the household population. The decision was consistent with the views expressed by the majority of participants at the Census Bureau's Conference on the Measurement of Noncash Benefits, held in December 1985.

During the past few years, there has been an intense discussion of the conceptual and measurement issues that should be considered when income is defined to include the value of noncash benefits. The Census Bureau's December 1985 conference featured four invited papers on important topics. The papers included (1) "Measuring Income: What Kind Should Be In?" by David T. Ellwood and Lawrence H. Summers; (2) "Evaluation of Census Bureau Procedures for the Measurement of Noncash Benefits and the Incidence of Poverty" by Barry R. Chiswick; (3) "The Statistical Measurement of Poverty" by Michael P. Ward, and (4) "Alternative Poverty Measures and the Allocation of Federal Benefits" by Eric A. Hanushek and Robert Williams. These papers and remarks by invited discussants have been published by the Census Bureau.[1]

In September 1987, the General Accounting Office (GAO) issued a report entitled, "Noncash Benefits: Methodological Review of Experimental Valuation Methods Indicates Many Problems Remain." The report identified a number of important measurement issues and emphasized the need to develop definitions of income that will be accepted by a wide range of users and the need to present data on the differential effects on poverty status of using alternative income definitions and alternative measurement techniques.

The Bureau of the Census has a continuing interest in developing improved estimates of the distribution of income. Late this year, the Census Bureau hopes to release a report on the results of the research activity that has occurred during the past few years. That research has been aimed toward improved measures of cash and noncash income and towards the development of a data base that will allow users to examine, for individual families, the receipt of cash income, the receipt and value of noncash benefits, and the amount of taxes paid. The planned report will contain estimates of the effect of noncash benefits on the entire distribution of income rather than only the low-income population, and will include employer-provided health benefits as one of the noncash benefits that will be valued.

The present report is organized into several sections. Following the introduction are sections covering

[1]Conference on the Measurement of Noncash Benefits, *Proceedings,* Vol. 1, U.S. Bureau of the Census, 1986.

the growth of noncash benefits programs and a description of the two valuation concepts used in this analysis. Succeeding those are sections on official and experimental estimates of the number of persons in poverty, changes in receipt and average values of noncash benefits, and estimates of poverty before and after inclusion of both cash and noncash benefits. Next is a discussion of measurement issues. A detailed table provides data on noncash benefits and their effect on poverty for various demographic and socioeconomic subgroups of the population. Technical appendixes are included after the detailed tables: appendix A is the statement of the U.S. Congress that initiated noncash benefit research at the Census Bureau; appendix B provides the technical details about the methods used to value noncash benefits under the two different approaches; appendix C provides information on the source and reliability of the estimates; appendix D describes each of the noncash benefit programs; appendix E is a glossary of standard statistical definitions and explanations; appendix F discusses problems of underreporting of recipiency and amounts in the March Current Population Survey (CPS), and appendix G contains facsimiles of the Current Population Survey questionnaires.

GROWTH OF NONCASH BENEFITS

Federal expenditures intended to assist the low-income population are now concentrated in programs that provide in-kind or noncash benefits. The market value of these means-tested noncash benefits surpassed that of means-tested cash assistance by 1970 and has continued to grow in importance. Trends in both cash and noncash benefit programs since 1980 are shown in table A.

In 1980, the market value of means-tested noncash benefits stood at about $55 billion (in 1987 dollars), compared with $35 billion for means-tested cash assistance programs. In 1987, the market value of means-tested noncash benefits was $64 billion. Means-tested cash benefits amounted to $35 billion in 1987. Medicaid, the largest means-tested noncash benefit program, had a market value of $44 billion in 1987, up from $34 billion in 1980.

The lower portion of table A shows the two nonmeans-tested benefits that were valued in this study. The market value of Medicare was $80 billion in 1987 and the market value of subsidies for full-price school lunches was $944 million.

EXPLANATION OF VALUATION TECHNIQUES

The valuation of noncash benefits in this report is based on two of the valuation methods presented in Technical Paper 50. Before examining the valuation techniques in detail, it is useful to understand the major conceptual differences between them and their relationship to one another. *Market value* (MV) is the estimated private market cost of the goods and services transferred to the recipient. *Recipient or cash equivalent value* (RV) is equal to the average dollar expenditure on the good or service by unsubsidized households with the same characteristics (including income) as the recipient (subsidized) household. The average expenditure is taken as an estimate of the value of the benefit to the recipient. The value assigned by the RV approach cannot exceed the value assigned by the MV approach.

Market Value

The market value of an in-kind transfer is equal to the private market value of the benefits received by the individual. In the case of food stamps, the market value is directly measurable as the dollar value of food coupons. In other cases, MV is not so easily determined.

Table A. Means-Tested Cash Assistance, Outlays on Food Stamp and Medical Care Programs, and Estimated Market Value of School Lunch and Housing Subsidies: 1980-87

(Figures in millions of 1987 dollars)

Type of benefit	1980	1981	1982	1983	1984	1985	1986	1987
Means-tested cash assistance[1]	$ 35,154	$ 33,593	$ 32,025	$ 31,476	$ 31,541	$ 31,867	$ 33,248	$ 35,027
Noncash benefits, total	105,726	112,734	116,775	123,801	126,868	134,651	141,238	145,619
Means-tested, total	55,139	57,521	55,984	57,596	57,310	59,441	61,563	64,228
Food stamps	11,982	13,268	12,018	12,684	11,679	11,293	10,972	10,591
Free or reduced-price school lunches	3,372	2,999	2,843	2,997	2,982	2,922	3,158	3,169
Public and subsidized housing[2]	6,213	5,749	5,905	5,959	6,226	6,506	6,293	6,468
Medicaid[3]	33,571	35,505	35,218	35,957	36,423	38,721	41,139	44,000
Nonmeans-tested, total	50,587	55,212	60,791	66,204	69,557	75,211	79,676	81,391
Medicare	49,243	54,296	60,109	65,524	68,845	74,490	78,771	80,447
Regular-price school lunches	1,344	916	682	680	712	720	905	944

[1]Includes Aid to Families with Dependent Children, general assistance, Supplemental Security Income, and means-tested veteran's pensions.

[2]Estimates derived directly from the noncash valuation techniques presented in this report.

[3]Includes the value of medical care services provided to persons in institutions.

The market values of Medicaid and Medicare benefits were estimated by dividing the total noninstitutional medical benefits the programs paid by the number of noninstitutionalized persons covered. The calculation is intended to provide an insurance value of the benefit. The calculations were carried out after persons were placed in various risk categories. For Medicare, the risk classes were (1) age 65 and over and (2) blind and disabled. For Medicaid, the risk classes were (1) age 65 and over, (2) blind and disabled, (3) age 21 to 64, nondisabled, and (4) age less than 21, nondisabled. The market value assigned varied by risk class and by State of residence.

In the case of public housing, the conceptual measure of MV was defined as the difference between the private market rental value of the unit and the rent paid by the tenants. Estimating MV for public housing is difficult because the private market rental value of public housing units is not available directly from surveys or other sources. Complex statistical procedures were used to link data from the Annual Housing Survey and the March CPS in order to arrive at estimates of MV for this benefit. (See appendix B for additional information.)

Recipient or Cash Equivalent Value

The receipt of noncash benefits may distort consumption patterns and, therefore, add less to a recipient's economic well-being than an equal dollar value cash transfer. If so, the benefits should be discounted from their market value to their recipient value to reflect this lower value. Recipient value (RV) theoretically reflects the program beneficiary's own valuation of the benefit. Theoretically, it would be measured by the amount of cash that would make the recipient feel just as well off as the noncash benefit. Many economists feel that cash equivalent value is the proper measure for valuing noncash benefits to evaluate their effect on the economic well-being of the poor. Not all economists are in full agreement on this issue, however, since many earlier studies of the effect of noncash benefits on poverty have used MV.

In theory, the recipient or cash equivalent value can be estimated by assigning a utility function[2] to all recipients. The cash equivalent measure is the amount of cash transfer that leaves the recipient at the same level of well-being or utility as the noncash transfers. Accurate estimates of cash equivalent value require knowledge of all recipients' differing utility functions and the prices they pay. Because utility functions cannot be observed and measured with a high degree of accuracy, and because of difficulties with current consumption data, a simplified measure of recipient value was developed as a substitute.

The cash equivalent value estimates in this study are based on household survey data that allow the calculation of normal (average) expenditures at different income levels. These estimates were derived by assuming that the cash equivalent value of a noncash benefit is equal to the normal expenditure on that good or service by unsubsidized consumers with similar characteristics (e.g., income size, location, and age). For purposes of classifying consumers by income, income was defined to include both cash income plus the market value of noncash benefits. Calculating cash equivalent value in this manner implicitly assumes that there is no difference between the recipient family and the comparable nonrecipient family. However, if both units are eligible for a given benefit and only one actually participates in the program while the other (the comparison unit) does not, it may be incorrect to infer that the expenditures for the given good by the nonparticipant are equivalent to those of the participant if there was no program. This may result in selectivity bias, one of the principal limitations of the cash equivalent value approach.

If the recipient normally spends less than the MV of the noncash benefit on the subsidized good or service, the noncash benefit will cause a change in the expenditure pattern. This means that the noncash benefit is worth less to the individual than an equal amount of cash that would not lead to a change in spending habits. If the MV of the benefit exceeds the normal expenditure level, RV is set equal to the level of normal expenditures. If normal expenditures exceed the MV of the benefit, RV is set equal to MV. That is, because the noncash benefit recipient would normally spend at least as much as the MV on the good, it would not alter the normal expenditure pattern.

The estimates of RV's were based on data from several sources. The normal expenditures for food were computed using diary data from the 1980-82 Consumer Expenditure Surveys. Those for public housing were based on the complex linkage of March CPS and Annual Housing Survey data for 1979 and 1981. The data used to compute the RV's for medical benefits are especially weak. They were derived from the 1972-73 Consumer Expenditure Survey and required the inclusion of persons covered by Medicare and employer-provided health insurance. More details on the problems of calculating RV's can be found in appendix B and Technical Paper 50.

ILLUSTRATION OF VALUATION TECHNIQUES

Food Stamps

The market value has been defined as the price of the good or service provided for by the noncash

[2]A utility function is an economic construct that indicates consumer's relative preferences for various goods and services depending on how consumers substitute these goods and services for one another.

benefit. A four-person family with an annual cash income of $6,000 in 1987 and receiving an annual face value of $1,500 in food stamps would be assigned $1,500 as a market value. This value was assigned because the food stamps purchase that amount of the good, in this case food.

The recipient value assigned would, in most cases, be somewhat less than the market value because most recipients would prefer cash and would be willing to exchange the food stamps for an amount that is less than the face value of $1,500. The normal expenditure approach used in this study assigned recipient values for food stamps that averaged about 96 percent of the market value. Hence, this hypothetical family would have been assigned a value of $1,440 for the recipient value.

Medicaid

An insurance value approach was used to assign the market value of Medicaid benefits. Under this concept total medical benefits paid were divided by the number of persons enrolled in the program. Beneficiaries were grouped into four categories: aged, blind or disabled, nondisabled persons age 21 to 64 years, and nondisabled persons under age 21. Insurance values for persons in these four groups were computed by State of residence. For example, a person 65 years old living in New York would have been assigned additional income of $3,774 in 1987 if he or she were covered by Medicaid. The recipient value approach used data from the 1972-73 Consumer Expenditure Survey to assign a value that was a function of the person's income level. For example, the recipient value approach would have assigned additional income of approximately $500 to a New York unrelated individual who was 65 years old or over and who had an annual income of $5,000. Under the recipient value concept, the value of the benefit to a given recipient is limited to the amount spent for the good or service, on average, by unsubsidized persons with the same level of income.

REVISION OF 1986 AND EARLIER ESTIMATES

The estimates in this report of the number and percent of persons in poverty in 1986 and earlier years differ in some cases from those published previously. One reason for revisions to the 1986 estimates is the availability of State data on average Medicare expenditures. At the time the report for 1986 was prepared, only national estimates were available and a common adjustment factor was applied to the 1985 State data to arrive at the average expenditure data that were used in preparing the experimental poverty estimates for 1986. The 1986 estimates shown in this report are based on actual State data.

Poverty estimates for 1986 and earlier that count the value of medical benefits using the recipient value approach have been revised based on the correction of an error in the way in which selections were made from a matrix of medical care values. The error caused the processing system to select the value associated with the lowest category of household income rather than the income category that was appropriate for the given household. (See table B-10.) Revised estimates for 1986 were obtained by processing the 1986 file through a corrected system. Revised estimates for 1985 and earlier years were obtained by multiplying the originally published estimates by a set of factors. The factors were obtained by processing the 1987 file through the system containing the matrix error as well as through the corrected system. For persons classified by major characteristics, the ratio of the correct estimate to the incorrect estimate was taken as the adjustment factor. The problem existed only for the series of estimates that counted the value of medical benefits and used the recipient value approach to do so. Overall, the adjustment lowered the 1979-85 estimates of poverty for this series by approximately 4 percent.

OFFICIAL AND EXPERIMENTAL POVERTY ESTIMATES, 1979-87

(Figures in parentheses denote 90-percent confidence intervals.)

Table B shows the number and percent of persons in poverty for 1979 through 1987, according to the official poverty definition and four experimental definitions. The official estimate of the number of persons in poverty did not show a statistically significant change from 1986 to 1987. (The estimated number of persons in poverty was 32.4 (±.9) million in 1986 and 32.5 (±.9) million in 1987.) Similarly, none of the experimental approaches showed a statistically significant change from 1986 to 1987 in the number of persons below poverty.

The experimental approaches produced estimates of the number of persons in poverty in 1987 that ranged from about 20.4 (±.7) million to about 29.8 (±.8) million. When medical care benefits were not counted, the two valuation approaches produced similar estimates; 29.0 (±.8) million under the market value approach and 29.8 (±.8) under the recipient value approach. When medical care benefits were counted, the market value approach produced estimates that were far lower than the recipient value approach. (The market value approach estimate was 20.4 (±.7) million, compared to a recipient value approach estimate of 26.6 (±.8) million.)

Neither the official series nor any of the experimental series showed a significant change in the poverty rate between 1986 and 1987. The official rate was 13.5 (±.4) percent in 1987. The experimental rates ranged from 8.5 (±.3) to 12.4 (±.3) percent.

Table B. Persons in Poverty, by Valuation Technique and Type of Noncash Benefits Included: 1979-87

(Numbers in thousands. Persons as of March of the following year)

Type of measure	1987	1986	1985	1984	1983	1982	1981	1980	1979
NUMBER									
Official definition	32,546	32,370	33,064	33,700	35,515	34,398	31,822	29,272	26,072
Market value approach:									
Including food and housing	29,004	28,908	29,489	30,103	32,123	30,688	27,932	25,042	21,698
Including food, housing, and medical care for noninstitutionalized persons	20,440	20,983	21,941	23,019	24,512	23,563	21,046	18,221	15,696
Recipient value approach:									
Including food and housing	29,821	29,713	30,351	30,909	32,718	31,365	28,651	25,633	22,270
Including food, housing, and medical care for noninstitutionalized persons	26,575	26,579	27,206	27,818	29,553	28,290	25,766	22,987	19,700
PERCENT									
Official definition	13.5	13.6	14.0	14.4	15.3	15.0	14.0	13.0	11.7
Market value approach:									
Including food and housing only	12.0	12.1	12.5	12.9	13.9	13.4	12.3	11.1	9.7
Including food, housing, and medical care for noninstitutionalized persons	8.5	8.8	9.3	9.8	10.6	10.3	9.3	8.1	7.0
Recipient value approach:									
Including food and housing only	12.4	12.5	12.8	13.2	14.1	13.7	12.6	11.4	10.0
Including food, housing, and medical care for noninstitutionalized persons	11.0	11.1	11.5	11.9	12.8	12.3	11.4	10.2	8.9

Table C shows 1987 and 1986 official and experimental poverty estimates for selected population subgroups. As has been noted in earlier reports, the inclusion of medical care benefits and the use of the market value approach have a dramatic effect on the poverty rate of persons 65 years old and over. (Their

Table C. Percent of Persons in Poverty, by Valuation Technique and Selected Characteristics: 1987 and 1986

Characteristic	Official definition		Market value approach				Recipient value approach			
			Includes food and housing		Includes food, housing, and medical care		Includes food and housing		Includes food, housing, and medical care	
	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986
RACE AND HISPANIC ORIGIN										
White	10.5	11.0	9.5	9.9	6.9	7.2	9.7	10.1	8.7	9.0
Black	33.1	31.1	28.5	27.3	18.7	19.2	29.8	28.3	26.5	25.3
Hispanic origin[1]	28.2	27.3	25.3	24.3	18.4	18.6	25.6	25.0	23.8	22.9
AGE										
Under 6 years	22.8	22.1	20.8	20.1	15.7	16.0	21.2	20.6	19.8	19.5
6 to 17 years	19.4	19.6	16.8	17.1	12.1	12.4	17.2	17.5	15.9	15.9
18 to 24 years	15.3	15.6	14.2	14.4	11.9	12.4	14.5	14.8	13.7	14.0
25 to 44 years	10.2	10.2	9.2	9.2	7.1	7.4	9.4	9.4	8.7	8.8
45 to 64 years	9.1	9.1	8.4	8.4	6.1	6.3	8.7	8.6	7.8	7.7
65 years and over	12.2	12.4	10.2	10.7	2.1	2.4	10.7	11.1	6.4	6.9
RELATIONSHIP										
In families	12.1	12.0	10.7	10.7	7.6	7.8	11.0	11.0	9.9	9.9
Married-couple families	7.1	7.1	6.5	6.5	4.9	4.9	6.5	6.5	5.9	5.9
Families with female householder, no spouse present	38.3	38.3	32.8	33.0	21.6	23.3	34.2	34.6	30.9	30.9
Unrelated individuals	20.8	21.6	18.8	19.7	12.7	13.5	19.6	20.3	16.7	17.6

[1]Persons of Hispanic origin may be of any race.

1987 poverty rate was 12.2 percent according to the official definition and the lowest experimental estimate was 2.1 percent.) The significance of this result is discussed below in the section on "Measurement Issues." Over the 1979-87 period, the official and experimental series showed substantial increases in the number of persons in poverty. Each series showed a large increase in the number of poor between 1979 and 1983 and a decline in the poor between 1983 and 1987.

Change in Number of Poor
(In thousands)

Series	1979-83	1983-87	1979-87
Official	+ 9,443	-2,969	+6,474
Market value:			
Excluding medical	+10,425	-3,119	+7,306
Including medical	+ 8,816	-4,072	+4,744
Recipient value:			
Excluding medical	+10,448	-2,897	+7,551
Including medical	+ 9,853	-2,978	+6,875

RECEIPT OF NONCASH BENEFITS AND AVERAGE NONCASH BENEFIT VALUES

Approximately 69 percent of all families in poverty in 1987 received food stamps or school lunches (table D). About 20 percent received housing benefits and approximately 59 percent received medical benefits. For each of these types of benefits, poor families with a female householder, no husband present, were more likely than poor families in general to have been recipients.

Table E shows the receipt and value of noncash benefits by type among families and unrelated individuals by poverty status. Of the 7.1 million families in poverty, 4.9 million received food benefits and 1.4 million lived in public or subsidized housing. The number receiving medical care benefits, either Medicare (a nonmeans-tested benefit) or Medicaid (a means-tested benefit), was 4.2 million.

The estimated value of the food benefits (food stamp and school lunches) received by families in poverty was approximately $1,500 (the choice of valuation method had little effect on the estimate). The

Table D. Receipt of Noncash Benefits by Families and Unrelated Individuals in Poverty: 1979-87
(Numbers in thousands)

Year	In poverty	Received food benefits		Received housing benefits		Received medical benefits	
		Number	Percent	Number	Percent	Number	Percent
FAMILIES							
1987	7,059	4,901	69.4	1,421	20.1	4,165	59.0
1986	7,023	4,894	69.7	1,337	19.0	4,034	57.4
1985	7,223	4,875	67.5	1,333	18.5	3,963	54.9
1984	7,277	5,074	69.7	1,259	17.3	4,109	56.5
1983	7,641	5,178	67.8	1,109	14.5	4,142	54.2
1982	7,512	5,146	68.5	1,105	14.7	4,119	54.8
1981	6,851	4,732	69.1	921	13.4	3,826	55.8
1980	6,217	4,353	70.0	863	13.9	3,557	57.2
1979	5,461	3,669	67.2	736	13.5	3,214	58.9
FAMILIES WITH FEMALE HOUSEHOLDER, NO HUSBAND PRESENT							
1987	3,636	2,889	79.5	1,097	30.2	2,385	65.6
1986	3,613	2,860	79.2	1,038	28.7	2,330	64.5
1985	3,474	2,718	78.2	1,023	29.4	2,227	64.1
1984	3,498	2,736	78.2	909	26.0	2,210	63.2
1983	3,557	2,699	75.9	805	22.6	2,206	62.0
1982	3,434	2,683	78.1	806	23.5	2,165	63.0
1981	3,252	2,541	78.1	673	20.7	2,036	62.6
1980	2,972	2,388	80.3	637	21.4	1,952	65.7
1979	2,645	2,118	80.1	542	20.5	1,697	64.2
UNRELATED INDIVIDUALS							
1987	6,843	1,414	20.7	906	13.2	3,388	49.5
1986	6,846	1,420	20.7	829	12.1	3,352	49.0
1985	6,725	1,441	21.4	832	12.4	3,274	48.7
1984	6,609	1,549	23.4	729	11.0	3,188	48.2
1983	6,832	1,570	23.0	669	9.8	3,222	47.2
1982	6,458	1,459	22.6	625	9.7	3,117	48.3
1981	6,490	1,497	23.1	644	9.9	3,377	52.0
1980	6,227	1,349	21.7	610	9.8	3,294	52.9
1979	5,743	1,196	20.8	509	8.9	3,107	54.1

Table E. Families and Unrelated Individuals Receiving Selected Noncash Benefits, by Poverty Status and Mean Value of Benefits, by Valuation Method: 1987

Recipiency status and valuation method	All families			Families with female householder, no husband present			Unrelated individuals		
	All income levels	In poverty	Not in poverty	All income levels	In poverty	Not in poverty	All income levels	In poverty	Not in poverty
Total (thousands)	65,133	7,059	58,074	10,608	3,636	6,972	32,860	6,843	26,017
Received one or more noncash benefits (thousands)	33,064	5,872	27,192	5,602	3,083	2,537	11,764	3,832	7,932
Mean value:									
Market	$2,426	$4,213	$2,040	$3,142	$4,640	$1,321	$2,660	$2,985	$2,502
Recipiency	$1,250	$2,214	$1,041	$1,813	$2,648	$799	$1,155	$1,030	$1,215
Received food benefits (thousands)	20,063	4,901	15,162	5,156	2,889	2,268	1,811	1,414	397
Mean value:									
Market	$554	$1,605	$215	$1,158	$1,808	$330	$452	$485	$336
Recipiency	$532	$1,519	$214	$1,098	$1,703	$327	$413	$438	$325
Received housing benefits (thousands)	2,286	1,421	866	1,394	1,097	298	1,842	906	936
Mean value:									
Market	$1,639	$1,786	$1,398	$1,734	$1,829	$1,384	$1,477	$1,629	$1,329
Recipiency	$922	$952	$873	$953	$964	$913	$964	$951	$976
Received medical benefits (thousands)	17,554	4,165	13,389	3,069	2,385	684	10,879	3,388	7,491
Mean value:									
Market	$3,722	$3,443	$3,810	$3,020	$2,968	$3,203	$2,551	$2,738	$2,466
Recipiency	$1,625	$1,010	$1,817	$1,044	$918	$1,481	$1,017	$727	$1,147

estimated value of housing benefits depended on the valuation method used. The mean value was approximately $1,800 using the market value and about $950 using the recipient value. The mean value of medical benefits varied substantially by valuation method; $3,400 if the market value was used and $1,000 if the recipient value was used.

Of the 58.1 million families not in poverty, 15.2 million received food benefits, 0.9 million received housing benefits, and 13.4 million received medical benefits. The mean value of the food benefits received by these households was approximately $200 (an indication that the benefits tended to be received in the form of school lunches rather than food stamps).

When examining recipiency status by poverty status, it should be noted that there is an imperfect alignment between the household as it existed at the time of the CPS interview in March 1988 and the household as it existed during the calendar year. The assumption is made, of necessity, that the composition in March was also the composition during the calendar year. It is possible to identify a family as "in poverty" when, in fact, the incomes of members no longer present in March would have raised the income of the family to "above poverty." The reverse could also be true: a family identified as "above poverty" in March could have, in fact, been below poverty if one or more of the March members with income was not with the family during the entire calendar year.

POVERTY BEFORE AND AFTER CASH AND NONCASH BENEFITS

Table F shows the effect of cash and noncash transfers on poverty status. The number of families in poverty in 1987 before transfers (cash and noncash) was 11.4 million. Adding in the income received from Social Security and Railroad Retirement reduced the total to 7.5 million, and adding in the remaining cash transfers brought the level to 7.1 million (the 7.1 million estimate is the official one because the official definition is based on money income from all sources). The addition of the value of noncash benefits brought the estimates to approximately 4.3 million or 5.7 million depending on the valuation method used.

MEASUREMENT ISSUES

There are a number of serious measurement issues that should be considered when interpreting the data presented in this report. These issues are being addressed in the Census Bureau's research program, and it is hoped that the research, combined with continuing advice from the user community, will allow the Census Bureau to improve its income and poverty estimates that incorporate the value of noncash benefits. Selected measurement issues are described below.

1. *Market values of medical benefits that are large relative to poverty thresholds.* Table G shows the relationship between the market value of medical

Table F. Poverty Status of Families and Unrelated Individuals Before and After Cash and Selected Noncash Transfers: 1987 and 1986

(Numbers in thousands. Cash transfers include Social Security and Railroad Retirement, SSI, AFDC, and other cash assistance)

Recipiency	Number in poverty			Percent in poverty		
	1987	1986	Difference	1987	1986	Difference
FAMILIES						
Before transfers	11,431	11,417	14	17.5	17.7	-0.2
After Social Security and Railroad Retirement	7,508	7,613	-105	11.5	11.8	-0.3
After all cash transfers[1]	7,059	7,023	36	10.8	10.9	-0.1
After all cash transfers and selected noncash transfers:						
Market value	4,334	4,469	-135	6.7	6.9	-0.2
Recipient value	5,707	5,706	1	8.8	8.8	-
UNRELATED INDIVIDUALS						
Before transfers	11,460	11,263	197	34.9	35.6	-0.7
After Social Security and Railroad Retirement	7,145	7,123	22	21.7	22.5	-0.8
After all cash transfers[1]	6,843	6,846	-3	20.8	21.6	-0.8
After all cash transfers and selected noncash transfers:						
Market value	4,179	4,290	-111	12.7	13.5	-0.8
Recipient value	5,495	5,588	-93	16.7	17.6	-0.9

[1]Income concept used in the official poverty definition.

care benefits and the poverty thresholds in the ten largest States for these situations: an elderly couple covered by Medicare, an elderly unrelated individual covered by both Medicare and Medicaid, and a family covered by Medicaid that includes a single parent with two children. The values assigned to medical care benefits are very large for the elderly. In each of the States, simply counting the value of Medicare received by an elderly couple results in the attribution of income that is more than half of the poverty threshold. In California, for example, the value of Medicare to an elderly couple is estimated to be $6,244 compared with their poverty threshold level of $6,865. The middle columns of the table compare the market value of medical benefits with the poverty threshold for an elderly unrelated individual covered by Medicare and Medicaid. The combined value of medical benefits for such an individual is more than 50 percent of the poverty threshold in all 10 States (and more than 100 percent in New York).

When the recipiency unit is nonelderly, the market values of medical benefits make up a smaller, though still sizable, proportion of the

Table G. Examples of the Relationship Between Market Value of Medical Benefits and Poverty Thresholds, by Family Type in 10 Largest States: 1987

State	Elderly couple covered by Medicare			Elderly unrelated individual covered by Medicare and Medicaid			Single parent with two children covered by Medicaid		
	Market value of Medicare coverage	Poverty threshold	Market value as a percent of poverty threshold	Market value of Medicare and Medicaid coverage	Poverty threshold	Market value as a percent of poverty threshold	Market value of Medicaid coverage	Poverty threshold	Market value as a percent of poverty threshold
California	6,224	6,865	90.7	3,766	5,447	69.1	1,919	9,151	21.0
New York	5,124	6,865	74.6	6,336	5,447	116.3	3,015	9,151	32.9
Texas	4,628	6,865	67.4	3,490	5,447	64.1	2,103	9,151	23.0
Pennsylvania	5,634	6,865	82.1	3,502	5,447	64.3	1,914	9,151	20.9
Florida	5,648	6,865	82.3	3,749	5,447	68.8	1,937	9,151	21.2
Illinois	5,066	6,865	73.8	3,566	5,447	65.5	1,665	9,151	18.2
Ohio	4,886	6,865	71.2	3,636	5,447	66.8	2,849	9,151	31.1
Michigan	5,974	6,865	87.0	3,923	5,447	72.0	1,956	9,151	21.4
New Jersey	4,814	6,865	70.1	3,776	5,447	69.3	2,340	9,151	25.6
North Carolina	3,512	6,865	51.2	2,969	5,447	54.5	2,157	9,151	23.6

poverty threshold In nine of the States, the value of Medicaid to a single parent family with two children is calculated to be more than 20 percent of the poverty threshold.

2. *Risk class differences in the value of Medicaid.* Most analysts would agree that benefits should not be measured in such a way that would produce a "the sicker you are, the richer you are" relationship. The Census Bureau methodology attempts to avoid this problem by assigning insurance values rather than counting the cost of medical care received; however, the use of risk classes in assigning insurance values means that the problem has not been totally eliminated. Table H shows the market value of Medicaid by risk class for the 10 largest States. A person may experience large changes in his or her income if he or she moves among States or among risk classes. For example, a nondisabled adult in California was assumed to have an income from Medicaid of $1,033 in 1987. But if that person had suffered a serious illness or injury and had become disabled, his or her income from Medicaid would have increased by $1,583 ($2,616-$1,033). A New York resident in a similar situation would have had an income increase of $6,419.

Table H. Market Value of Medicaid, by Risk Class in 10 Largest States: 1987 and 1986

(In 1987 dollars)

State and year	Nondisabled person 21-64 years	Disabled person 21-64 years	Person 65 and over
1987			
California	$1,033	$2,616	$654
New York	1,447	7,866	3,774
Texas	1,141	1,882	1,176
Pennsylvania	842	2,023	685
Florida	851	2,099	1,033
Illinois	933	4,209	925
Ohio	1,331	3,074	1,193
Michigan	1,064	3,441	936
New Jersey	1,296	3,224	1,369
North Carolina	1,011	3,944	1,213
1986			
California	981	2,653	717
New York	1,329	7,194	4,468
Texas	1,111	1,896	1,029
Pennsylvania	843	2,001	644
Florida	968	4,374	986
Illinois	779	1,998	983
Ohio	1,009	2,668	925
Michigan	1,098	3,473	940
New Jersey	1,250	3,235	1,413
North Carolina	1,040	3,828	1,043

3. *Difficulty in implementing the recipient value approach.* The methods used to implement the recipient value approach and certain of the difficulties involved in the implementation effort have been described in the section on "Explanation of Valuation Techniques." The method used to implement this approach, the "matched expenditure" approach, has been criticized on several grounds. In his paper at the December 1985 conference, Chiswick noted that the approach involves a selection bias. That is, it is not really possible to identify persons who are identical except that one of them is a program participant and one is not. Persons who choose to participate are not the same as those who choose not to (they may differ in terms of asset holdings or in terms of their demand for the benefit). Chiswick also noted that, for the purpose of measuring Medicare benefits, it is extremely difficult to find data on the "normal" medical expenditures of un subsidized persons 65 years and over. The "normal" expenditures used to calculate the recipient values shown in this report are subject to these problems and, in addition, are based on data sets that are relatively old (e.g. the 1972-73 Consumer Expenditure Survey).

4. *Consistency in the treatment of noncash benefits.* Conference participants were essentially unanimous in supporting the position that noncash benefits should be treated consistently. Because the early valuation work at the Census Bureau focused on benefits received by persons with low incomes, no methodology was developed for valuing employer-provided health benefits or other noncash benefits received by the middle and upper portions of the income distribution. The report planned for late this year will broaden the range of benefits for which values are estimated by including employer-provided health insurance.

5. *Comparing revised definitions of income against existing poverty thresholds.* The official poverty thresholds were defined on the basis of money income. For families of three or more, the poverty line was set equal to the cost of an economy food plan multiplied by a factor of three (the value of three was determined by survey data on the percent of money income that families spent on food). The implication of this procedure was that income in the amount of two-thirds of the poverty threshold was considered sufficient to cover nonfood requirements such as housing, clothing, transportation and medical care. The growth in noncash benefits has led to the current effort to develop income measures that include the value of noncash benefits. Most data users agree that such measures would add to our understanding of the distribution of income. There is considerable disagreement, however, about the appropriateness of using these revised income measures in the determination of poverty status. Most

participants at the noncash conference agreed that poverty thresholds would have to be changed if the value of medical care were to be included in the income definition. As revised income measures are proposed, it will be necessary to specifically address their appropriateness for use in the determination of poverty status.

RESEARCH ACTIVITY

The Bureau of the Census is continuing to examine the conceptual and empirical issues first outlined in Technical Paper 50 and discussed in detail at the December 1985 conference. Among the conceptual issues that are being examined are the definition of income, the appropriate methods to value noncash benefits, the integration of tax and transfer effects, and the appropriateness of determining poverty status by comparing modified definitions of income against existing poverty thresholds. Empirical research has focused on data sources for measuring expenditures on medical care, sources for measuring housing subsidies, sources for measuring the imputed rental value of own homes, sources of data on the receipt and value of employer-provided benefits, and methods of measuring and adjusting for income underreporting. A progress report on research results is expected to be published late this year.

USER COMMENTS

We are interested in your reaction to the usefulness of this information and to the content of the questions used to provide these results. Appendix G contains a facsimile of the questionnaire. We welcome your recommendations for improving our survey work. If you have suggestions or comments, please send them to:

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U.S. Bureau of the Census
Washington, D.C. 20233

Table 1. Persons Below the Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979 to 1987

(Numbers in thousands. Persons as of March of the following year)

Year and characteristic	Number below the poverty level					Poverty rate				
	Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
ALL PERSONS										
1987	32,546	29,004	29,821	20,440	26,575	13.5	12.0	12.4	8.5	11.0
1986	32,370	28,908	29,713	20,983	26,579	13.6	12.1	12.5	8.8	11.1
1985	33,064	29,489	30,351	21,941	27,206	14.0	12.5	12.8	9.3	11.5
1984	33,700	30,103	30,909	23,019	27,818	14.4	12.9	13.2	9.8	11.9
1983	35,303	32,123	32,718	24,512	29,553	15.2	13.9	14.1	10.6	12.8
1982	34,398	30,688	31,365	23,563	28,290	15.0	13.4	13.7	10.3	12.3
1981	31,822	27,932	28,651	21,046	25,766	14.0	12.3	12.6	9.3	11.4
1980	29,372	25,042	25,633	18,221	22,987	13.0	11.1	11.4	8.1	10.2
1979	26,072	21,698	22,270	15,696	19,700	11.7	9.7	10.0	7.0	8.9
RACE AND HISPANIC ORIGIN										
White										
1987	21,409	19,336	19,757	14,086	17,664	10.5	9.5	9.7	6.9	8.7
1986	22,183	19,965	20,467	14,656	18,281	11.0	9.9	10.1	7.2	9.0
1985	22,860	20,525	21,063	15,598	18,883	11.4	10.2	10.5	7.8	9.4
1984	22,955	20,881	21,279	16,136	19,064	11.5	10.5	10.7	8.1	9.6
1983	23,984	22,299	22,569	17,464	20,451	12.1	11.3	11.4	8.8	10.3
1982	23,517	21,280	21,665	16,653	19,650	12.0	10.9	11.1	8.5	10.0
1981	21,553	19,219	19,632	14,767	17,646	11.1	9.9	10.1	7.6	9.1
1980	19,699	17,381	17,727	12,997	15,925	10.2	9.0	9.2	6.7	8.3
1979	17,214	14,897	15,135	10,965	13,402	9.0	7.8	7.9	5.7	6.9
Black										
1987	9,683	8,349	8,713	5,475	7,768	33.1	28.5	29.8	18.7	26.5
1986	8,983	7,877	8,165	5,554	7,302	31.1	27.3	28.3	19.2	25.3
1985	8,926	7,843	8,135	5,539	7,341	31.3	27.5	28.6	19.4	25.8
1984	9,490	8,084	8,464	5,976	7,746	33.8	28.8	30.1	21.3	27.6
1983	9,882	8,479	8,786	6,091	7,924	35.7	30.6	31.7	22.0	28.6
1982	9,697	8,347	8,633	6,126	7,753	35.6	30.7	31.7	22.5	28.4
1981	9,173	7,764	8,060	5,536	7,283	34.2	28.9	30.0	20.6	27.1
1980	8,579	6,767	7,006	4,525	6,274	32.5	25.6	26.5	17.1	23.7
1979	8,050	6,088	6,407	4,126	5,655	31.0	23.5	24.7	15.9	21.8
Hispanic Origin[1]										
1987	5,470	4,904	4,974	3,565	4,620	28.2	25.3	25.6	18.4	23.8
1986	5,117	4,561	4,680	3,489	4,295	27.3	24.3	25.0	18.6	22.9
1985	5,236	4,614	4,737	3,456	4,315	29.0	25.5	26.2	19.1	23.9
1984	4,806	4,315	4,394	3,413	4,075	28.4	25.5	26.0	20.2	24.1
1983	4,633	4,228	4,292	3,343	3,985	28.0	25.6	25.9	20.2	24.1
1982	4,301	3,806	3,917	3,029	3,670	29.9	26.5	27.2	21.1	25.5
1981	3,713	3,201	3,307	2,401	3,046	26.5	22.8	23.6	17.1	21.8
1980	3,491	2,923	3,014	2,111	2,747	25.7	21.5	22.2	15.5	20.2
1979	2,921	2,328	2,398	1,668	2,169	21.8	17.4	17.9	12.5	16.2
AGE										
Under 6 Years										
1987	4,983	4,546	4,640	3,436	4,324	22.8	20.8	21.2	15.7	19.8
1986	4,796	4,346	4,465	3,465	4,215	22.1	20.1	20.6	16.0	19.5
1985	4,972	4,503	4,633	3,551	4,348	23.0	20.8	21.4	16.4	20.1
1984	5,115	4,627	4,734	3,778	4,462	24.0	21.7	22.2	17.7	20.9
1983	5,256	4,791	4,904	3,913	4,613	25.0	22.8	23.3	18.6	22.0
1982	4,977	4,472	4,597	3,649	4,307	23.8	21.4	22.0	17.5	20.6
1981	4,555	3,964	4,113	3,160	3,838	22.4	19.5	20.3	15.6	18.9
1980	4,107	3,502	3,602	2,722	3,385	20.7	17.6	18.1	13.7	17.0
1979	3,521	2,870	2,973	2,253	2,736	18.2	14.8	15.4	11.6	14.1

Table 1. Persons Below the Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979 to 1987—Continued

(Numbers in thousands. Persons as of March of the following year)

Year and characteristic	Number below the poverty level					Poverty rate				
	Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
AGE—Continued										
6 to 17 Years										
1987	8,032	6,947	7,131	5,010	6,561	19.4	16.8	17.2	12.1	15.9
1986	8,080	7,013	7,212	5,128	6,566	19.6	17.0	17.5	12.4	15.9
1985	8,038	6,978	7,225	5,240	6,664	19.5	16.9	17.5	12.7	16.2
1984	8,305	7,193	7,404	5,701	6,879	20.2	17.5	18.0	13.9	16.8
1983	8,505	7,693	7,826	6,050	7,238	20.8	18.6	18.9	14.6	17.5
1982	8,670	7,514	7,663	5,982	7,093	20.9	18.1	18.5	14.4	17.2
1981	7,950	6,732	6,930	5,314	6,455	18.9	16.0	16.4	12.6	15.3
1980	7,436	6,032	6,239	4,452	5,756	17.3	14.0	14.5	10.3	13.4
1979	6,856	5,298	5,550	3,934	5,088	15.6	12.0	12.6	8.9	11.5
18 to 24 Years										
1987	3,993	3,710	3,774	3,092	3,571	15.3	14.2	14.5	11.9	13.7
1986	4,133	3,814	3,912	3,274	3,692	15.6	14.4	14.8	12.4	14.0
1985	4,463	4,148	4,222	3,585	4,010	16.5	15.3	15.6	13.2	14.8
1984	4,616	4,317	4,384	3,717	4,139	16.6	15.5	15.7	13.4	14.9
1983	4,925	4,570	4,627	3,924	4,376	17.3	16.1	16.3	13.8	15.3
1982	4,546	4,182	4,259	3,613	4,048	15.7	14.4	14.7	12.4	14.0
1981	4,329	3,932	4,015	3,407	3,795	14.8	13.5	13.8	11.7	13.0
1980	3,818	3,429	3,482	2,902	3,308	13.1	11.7	11.9	9.9	11.3
1979	3,366	2,883	2,925	2,433	2,751	11.6	9.9	10.0	8.4	9.5
25 to 44 Years										
1987	7,901	7,106	7,295	5,532	6,745	10.2	9.2	9.4	7.1	8.7
1986	7,815	6,991	7,169	5,606	6,699	10.2	9.2	9.4	7.4	8.8
1985	7,899	7,042	7,248	5,700	6,750	10.6	9.4	9.7	7.6	9.0
1984	7,938	7,140	7,318	5,924	6,810	11.0	9.9	10.1	8.2	9.4
1983	8,403	7,669	7,791	6,431	7,310	12.0	10.9	11.1	9.2	10.4
1982	8,031	7,178	7,344	6,124	6,864	11.8	10.5	10.8	9.0	10.1
1981	7,010	6,170	6,304	5,236	5,899	10.6	9.3	9.5	7.9	8.9
1980	6,242	5,319	5,456	4,365	5,104	9.8	8.3	8.5	6.8	8.0
1979	4,949	4,106	4,227	3,348	3,906	8.0	6.6	6.8	5.4	6.3
45 to 64 Years										
1987	4,145	3,795	3,936	2,777	3,534	9.1	8.4	8.7	6.1	7.8
1986	4,070	3,757	3,860	2,831	3,472	9.1	8.4	8.6	6.3	7.7
1985	4,236	3,892	4,000	2,989	3,600	9.5	8.7	8.9	6.7	8.1
1984	4,397	4,020	4,162	3,098	3,755	9.9	9.0	9.3	7.0	8.5
1983	4,439	4,144	4,254	3,223	3,887	10.0	9.3	9.6	7.3	8.7
1982	4,423	4,048	4,133	3,153	3,768	10.0	9.2	9.4	7.1	8.6
1981	4,125	3,787	3,859	2,870	3,522	9.3	8.6	8.7	6.5	8.0
1980	3,799	3,405	3,460	2,611	3,142	8.6	7.7	7.8	5.9	7.1
1979	3,697	3,304	3,353	2,527	3,010	8.4	7.5	7.6	5.7	6.8
65 Years and Over										
1987	3,491	2,899	3,044	592	1,839	12.2	10.2	10.7	2.1	6.4
1986	3,477	2,987	3,095	679	1,936	12.4	10.7	11.1	2.4	6.9
1985	3,456	2,927	3,023	876	1,842	12.6	10.7	11.1	3.2	6.7
1984	3,330	2,806	2,907	801	1,795	12.4	10.5	10.8	3.0	6.7
1983	3,625	3,257	3,317	973	2,121	13.8	12.4	12.6	3.7	8.1
1982	3,751	3,294	3,368	1,043	2,179	14.6	12.8	13.1	4.1	8.5
1981	3,853	3,347	3,430	1,059	2,200	15.3	13.3	13.6	4.2	8.7
1980	3,871	3,355	3,395	1,169	2,207	15.7	13.6	13.8	4.7	8.9
1979	3,682	3,237	3,242	1,200	2,102	15.2	13.4	13.4	5.0	8.7

Table 1. Persons Below the Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979 to 1987—Continued

(Numbers in thousands. Persons as of March of the following year)

Year and characteristic	Number below the poverty level					Poverty rate				
	Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
FAMILY STATUS										
In Families, Total[2]										
1987	24,979	22,129	22,674	15,667	20,436	12.1	10.7	11.0	7.6	9.9
1986	24,754	21,922	22,530	15,999	20,269	12.0	10.7	11.0	7.8	9.9
1985	25,729	22,779	23,447	17,092	21,252	12.6	11.2	11.5	8.4	10.4
1984	26,458	23,483	24,092	18,179	21,889	13.1	11.6	11.9	9.0	10.8
1983	27,933	25,173	25,614	19,467	23,318	13.9	12.5	12.7	9.7	11.6
1982	27,349	24,144	24,665	18,809	22,430	13.6	12.0	12.3	9.4	11.2
1981	24,850	21,491	22,074	16,500	20,013	12.5	10.8	11.1	8.3	10.0
1980	22,601	18,968	19,477	13,914	17,659	11.5	9.6	9.9	7.1	9.0
1979	19,964	16,070	16,604	11,696	14,755	10.2	8.2	8.5	6.0	7.5
In Married-Couple Families										
1987	11,903	10,873	10,962	8,180	9,915	7.1	6.5	6.5	4.9	5.9
1986	11,963	10,878	10,972	8,199	9,914	7.1	6.5	6.5	4.9	5.9
1985	13,213	11,886	12,014	9,491	11,066	7.9	7.1	7.2	5.7	6.6
1984	13,717	12,529	12,643	10,032	11,523	8.3	7.6	7.6	6.1	7.0
1983	15,111	13,923	13,983	11,230	12,825	9.1	8.4	8.4	6.8	7.7
1982	14,839	13,342	13,478	10,762	12,318	8.9	8.0	8.1	6.5	7.4
1981	13,177	11,722	11,807	9,372	10,797	8.0	7.1	7.2	5.7	6.5
1980	11,861	10,264	10,377	7,946	9,492	7.2	6.2	6.3	4.8	5.7
1979	10,074	8,644	8,743	6,613	7,802	6.1	5.3	5.3	4.0	4.8
In Families With A Female Householder, No Husband Present										
1987	12,076	10,354	10,786	6,822	9,743	38.3	32.8	34.2	21.6	30.9
1986	11,944	10,277	10,775	7,246	9,635	38.3	33.0	34.6	23.3	30.9
1985	11,600	10,013	10,548	6,977	9,490	37.6	32.4	34.2	22.6	30.8
1984	11,831	10,117	10,602	7,500	9,661	38.4	32.8	34.4	24.3	31.3
1983	12,072	10,496	10,885	7,615	9,905	40.2	34.9	36.2	25.3	33.0
1982	11,701	10,064	10,437	7,438	9,515	40.6	34.9	36.2	25.8	33.0
1981	11,051	9,214	9,710	6,716	8,794	38.7	32.2	34.0	23.5	30.8
1980	10,120	8,183	8,572	5,535	7,750	36.7	29.7	31.1	20.1	28.1
1979	9,400	6,988	7,425	4,741	6,614	34.9	26.0	27.6	17.6	24.6
All Unrelated Individuals										
1987	6,843	6,176	6,444	4,179	5,495	20.8	18.8	19.6	12.7	16.7
1986	6,846	6,241	6,437	4,290	5,588	21.6	19.7	20.3	13.5	17.6
1985	6,725	6,116	6,310	4,302	5,398	21.5	19.5	20.1	13.7	17.2
1984	6,609	6,001	6,197	4,284	5,359	21.8	19.8	20.5	14.2	17.7
1983	6,740	6,339	6,493	4,510	5,671	23.1	21.7	22.3	15.5	19.5
1982	6,458	5,958	6,115	4,228	5,317	23.1	21.4	21.9	15.2	19.1
1981	6,490	5,981	6,116	4,119	5,331	23.4	21.6	22.1	14.9	19.3
1980	6,227	5,669	5,741	3,946	4,937	22.9	20.9	21.2	14.5	18.2
1979	5,743	5,280	5,314	3,696	4,605	21.9	20.2	20.3	14.1	17.6
Male Unrelated Individuals										
1987	2,677	2,535	2,603	2,008	2,397	17.5	16.6	17.1	13.2	15.7
1986	2,536	2,403	2,451	1,958	2,280	17.5	16.6	16.9	13.5	15.7
1985	2,499	2,393	2,439	1,996	2,266	17.4	16.7	17.0	13.9	15.8
1984	2,575	2,455	2,496	2,047	2,322	18.7	17.9	18.2	14.9	16.9
1983	2,641	2,547	2,580	2,105	2,419	20.1	19.4	19.6	16.0	18.4
1982	2,347	2,231	2,269	1,908	2,120	18.8	17.9	18.2	15.3	17.0
1981	2,239	2,150	2,181	1,779	2,034	18.1	17.4	17.6	14.4	16.5
1980	2,109	2,010	2,025	1,623	1,866	17.4	16.6	16.7	13.4	15.4
1979	1,972	1,875	1,885	1,542	1,735	16.9	16.1	16.2	13.2	15.4

Table 1. Persons Below the Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979 to 1987—Continued

(Numbers in thousands. Persons as of March of the following year)

Year and characteristic	Number below the poverty level					Poverty rate				
	Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
FAMILY STATUS—Continued										
Female Unrelated Individuals										
1987	4,167	3,641	3,841	2,171	3,098	23.7	20.7	21.8	12.3	17.6
1986	4,311	3,837	3,986	2,333	3,308	25.1	22.3	23.2	13.6	19.2
1985	4,226	3,722	3,871	2,306	3,129	24.8	21.9	22.8	13.6	18.4
1984	4,035	3,546	3,702	2,238	3,036	24.4	21.5	22.4	13.5	18.4
1983	4,099	3,792	3,914	2,405	3,250	25.6	23.7	24.4	15.0	20.3
1982	4,110	3,728	3,847	2,320	3,189	26.6	24.2	24.9	15.0	20.6
1981	4,251	3,831	3,935	2,340	3,285	27.7	24.9	25.6	15.2	21.4
1980	4,118	3,659	3,716	2,323	3,058	27.4	24.4	24.7	15.5	20.4
1979	3,771	3,405	3,429	2,154	2,859	26.0	23.5	23.6	14.8	19.7
REGION										
Northeast										
1987	5,476	4,748	4,938	2,771	4,261	11.0	9.6	9.9	5.6	8.6
1986	5,211	4,437	4,696	2,665	3,977	10.5	9.0	9.5	5.4	8.0
1985	5,751	4,952	5,194	2,961	4,443	11.6	10.0	10.5	6.0	9.0
1984	6,531	5,587	5,832	3,819	5,105	13.2	11.3	11.8	7.7	10.3
1983	6,605	5,936	6,056	3,930	5,288	13.4	12.1	12.3	8.0	10.8
1982	6,364	5,451	5,631	3,685	4,951	13.0	11.1	11.5	7.5	10.1
1981	5,815	5,049	5,212	3,442	4,628	11.9	10.3	10.6	7.0	9.5
1980	5,369	4,456	4,613	2,683	4,002	11.1	9.2	9.5	5.5	8.2
1979	5,058	3,932	4,095	2,443	3,489	10.4	8.1	8.4	5.0	7.2
Midwest										
1987	7,499	6,698	6,924	4,560	6,082	12.7	11.3	11.7	7.7	10.3
1986	7,641	6,842	7,027	4,790	6,251	13.0	11.7	12.0	8.2	10.6
1985	8,191	7,460	7,665	5,497	6,966	13.9	12.7	13.0	9.4	11.9
1984	8,303	7,490	7,670	5,510	6,952	14.1	12.7	13.1	9.4	11.9
1983	8,511	7,771	7,923	5,812	7,203	14.6	13.3	13.6	10.0	12.3
1982	7,772	7,113	7,278	5,343	6,547	13.3	12.2	12.5	9.2	11.3
1981	7,142	6,277	6,477	4,632	5,832	12.3	10.8	11.1	8.0	10.0
1980	6,592	5,698	5,893	4,114	5,334	11.4	9.8	10.2	7.1	9.2
1979	5,639	4,753	4,901	3,329	4,295	9.7	8.2	8.5	5.7	7.4
South										
1987	13,287	11,891	12,205	8,893	11,073	16.1	14.4	14.8	10.8	13.4
1986	13,106	11,859	12,072	9,062	10,984	16.1	14.5	14.8	11.1	13.5
1985	12,921	11,586	11,832	9,158	10,712	16.0	14.4	14.7	11.4	13.3
1984	12,792	11,454	11,754	9,186	10,658	16.2	14.5	14.8	11.6	13.5
1983	13,504	12,218	12,435	9,852	11,330	17.2	15.5	15.8	12.5	14.4
1982	13,967	12,507	12,705	9,967	11,578	18.1	16.2	16.4	12.9	15.0
1981	13,256	11,675	11,893	9,247	10,767	17.4	15.4	15.6	12.2	14.1
1980	12,353	10,498	10,693	8,058	9,716	16.5	14.0	14.3	10.7	13.0
1979	11,098	9,248	9,467	7,073	8,532	15.0	12.5	12.8	9.6	11.5
West										
1987	6,285	5,667	5,754	4,216	5,158	12.6	11.4	11.6	8.5	10.4
1986	6,412	5,770	5,918	4,466	5,368	13.2	11.9	12.2	9.2	11.0
1985	6,201	5,492	5,660	4,325	5,084	13.0	11.5	11.8	9.0	10.7
1984	6,074	5,572	5,654	4,504	5,091	13.1	12.0	12.2	9.7	10.9
1983	6,682	6,197	6,303	4,917	5,721	14.6	13.6	13.8	10.8	12.6
1982	6,296	5,617	5,752	4,569	5,209	14.1	12.5	12.9	10.2	11.6
1981	5,609	4,931	5,069	3,725	4,535	12.7	11.2	11.5	8.5	10.3
1980	4,958	4,391	4,434	3,366	3,936	11.4	10.1	10.2	7.7	9.0
1979	4,276	3,765	3,808	2,851	3,383	10.1	8.9	9.0	6.7	8.0

Table 1. Persons Below the Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979 to 1987—Continued

(Numbers in thousands. Persons as of March of the following year)

Year and characteristic	Number below the poverty level					Poverty rate				
	Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excl. institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
METROPOLITAN-NONMETROPOLITAN RESIDENCE										
Inside Metropolitan Areas, Total										
1987	23,423	20,797	21,393	14,612	19,078	12.5	11.1	11.4	7.8	10.2
1986	22,657	20,102	20,722	14,510	18,525	12.3	10.9	11.2	7.8	10.0
1985	23,275	20,609	21,317	15,068	19,099	12.7	11.3	11.6	8.2	10.4
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	21,826	19,835	20,256	14,749	18,252	13.8	12.6	12.8	9.3	11.5
1982	21,247	18,763	19,275	14,187	17,376	13.7	12.1	12.4	9.1	11.2
1981	19,347	16,776	17,346	12,338	15,549	12.6	10.9	11.3	8.0	10.1
1980	18,021	15,287	15,763	10,892	14,111	11.9	10.1	10.4	7.2	9.3
1979	16,134	13,196	13,636	9,513	12,095	10.7	8.7	9.0	6.3	8.0
Inside Central Cities										
1987	13,893	12,123	12,565	8,196	11,133	18.6	16.2	16.8	11.0	14.9
1986	13,295	11,693	12,141	8,238	10,841	18.0	15.9	16.5	11.2	14.7
1985	14,177	12,320	12,822	8,644	11,410	19.0	16.5	17.2	11.6	15.3
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	12,989	11,604	11,925	8,275	10,688	19.9	17.8	18.3	12.7	16.4
1982	12,696	11,073	11,447	8,026	10,282	19.9	17.4	18.0	12.6	16.2
1981	11,231	9,593	9,981	6,834	8,941	18.0	15.4	16.0	11.0	14.4
1980	10,644	8,795	9,167	6,005	8,175	17.2	14.2	14.8	9.7	13.2
1979	9,720	7,609	7,924	5,223	6,939	15.7	12.3	12.8	8.4	11.2
Outside Central Cities										
1987	9,530	8,674	8,828	6,416	7,945	8.5	7.7	7.9	5.7	7.1
1986	9,362	8,409	8,582	6,273	7,684	8.4	7.6	7.7	5.6	6.9
1985	9,097	8,289	8,495	6,424	7,676	8.4	7.6	7.8	5.9	7.1
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	8,837	8,231	8,332	6,474	7,555	9.6	8.9	9.0	7.0	8.1
1982	8,551	7,691	7,828	6,161	7,084	9.3	8.4	8.5	6.7	7.7
1981	8,116	7,183	7,365	5,505	6,602	8.9	7.9	8.1	6.0	7.3
1980	7,377	6,492	6,596	4,887	5,929	8.2	7.2	7.3	5.4	6.6
1979	6,415	5,587	5,712	4,290	5,152	7.2	6.3	6.4	4.8	5.8
Outside Metropolitan Areas										
1987	9,123	8,208	8,427	5,828	7,496	16.9	15.2	15.6	10.8	13.9
1986	9,712	8,806	8,991	6,473	8,054	18.1	16.4	16.7	12.1	15.0
1985	9,789	8,880	9,034	6,873	8,116	18.3	16.6	16.9	12.8	15.2
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	13,477	12,287	12,461	9,763	11,312	18.3	16.6	16.9	13.2	15.3
1982	13,152	11,925	12,091	9,376	10,925	17.8	16.2	16.4	12.7	14.8
1981	12,475	11,156	11,305	8,708	10,228	17.0	15.2	15.4	11.8	13.9
1980	11,251	9,755	9,870	7,329	8,887	15.4	13.4	13.5	10.0	12.1
1979	9,937	8,502	8,634	6,182	7,612	13.8	11.8	12.0	8.6	10.6

NA Not available.
[1]Persons of Hispanic origin may be of any race.
[2]Includes families with a male householder, no wife present, not shown separately.

Table 2. Families and Unrelated Individuals in Poverty Before and After Cash and Noncash Transfers: 1987

(Families and unrelated individuals as of March 1988)

Characteristic	Before cash transfers			Before noncash transfers: After Social Security benefits					Before noncash transfers: After all cash transfers				
				In poverty			No longer in poverty		In poverty			No longer in poverty	
	Number in poverty (thous.)	Poverty rate	Mean deficit	Number (thous.)	Poverty rate	Mean deficit	Number (thous.)	Mean surplus	Number (thous.)	Poverty rate	Mean deficit	Number (thous.)	Mean surplus
FAMILIES													
Total	11,431	17.5	$6,048	7,508	11.5	$6,114	3,923	$5,638	7,059	10.8	$4,629	4,372	$5,445
Two persons	5,810	21.6	4,766	2,542	9.5	4,247	3,268	5,709	2,346	8.7	3,334	3,464	5,589
Under 65 years	2,390	13.0	5,100	1,917	10.5	4,817	473	4,362	1,807	9.9	3,691	583	4,057
65 years and over	3,421	40.1	4,534	626	7.3	2,503	2,795	5,937	540	6.3	2,139	2,881	5,899
Three persons	2,117	13.7	6,107	1,726	11.2	5,828	391	5,656	1,622	10.5	4,172	495	5,279
Four persons	1,646	12.0	6,973	1,480	10.8	6,626	166	4,403	1,414	10.3	4,882	232	4,331
Five persons	955	16.3	7,864	898	15.4	7,426	57	(B)	864	14.8	5,638	91	4,648
Six persons	498	24.2	9,430	478	23.2	8,915	20	(B)	453	22.0	6,980	45	(B)
Seven persons or more	405	33.2	11,931	384	31.5	11,233	21	(B)	360	29.5	8,756	45	(B)
Type of Family													
Married-couple families	6,466	12.5	5,215	3,268	6.3	5,053	3,198	5,970	3,085	6.0	4,305	3,381	5,867
With related children under 18 years	2,250	8.8	6,507	2,083	8.2	5,975	167	5,150	1,998	7.8	4,980	252	4,397
Without related children under 18 years	4,216	16.0	4,525	1,185	4.5	3,434	3,031	6,016	1,087	4.1	3,063	3,129	5,985
Female household, no husband present	4,477	42.2	7,279	3,872	36.5	7,097	605	4,223	3,636	34.3	4,934	841	4,015
With related children under 18 years	3,653	51.1	7,807	3,468	48.5	7,489	185	3,888	3,296	46.1	5,141	357	3,352
Without related children under 18 years	824	23.8	4,937	404	11.7	3,727	420	4,371	340	9.8	2,934	484	4,505
Male householder, no wife present	487	17.9	5,790	369	13.6	5,195	118	3,889	338	12.5	4,309	149	3,995
With related children under 18 years	260	20.5	6,434	230	18.1	6,304	30	(B)	223	17.6	5,062	37	(B)
Without related children under 18 years	228	15.7	5,055	139	9.6	3,363	89	3,948	115	8.0	2,851	113	4,066
Recipiency of Benefits													
Neither cash nor noncash benefits	1,094	3.6	4,509	1,094	3.6	4,509	-	(B)	1,094	3.6	4,509	-	(B)
Cash benefits only	279	16.5	4,261	96	5.6	2,598	183	4,753	93	5.5	2,335	186	4,712
Noncash benefits only	1,957	12.4	4,957	1,957	12.4	4.957	-	(B)	1,957	12.4	4,957	-	(B)
Both cash and noncash benefits	8,101	46.7	6,581	4,362	25.2	7,113	3,739	5,681	3,916	22.6	4,553	4,185	5,478
UNRELATED INDIVIDUALS													
Total	11,460	34.9	4,082	7,145	21.7	3,034	4,315	2,717	6,843	20.8	2,575	4,617	2,662
Under 65 years	5,239	22.3	3,994	4,770	20.3	3,578	469	2,436	4,602	19.6	3,126	637	2,266
65 years and over	6,221	66.7	4,156	2,374	25.4	1,941	3,847	2,751	2,241	24.0	1,444	3,980	2,726
Males	3,846	25.2	3,967	2,793	18.3	3,297	1,053	3,029	2,677	17.5	2,909	1,169	2,940
Under 65 years	2,536	19.4	3,925	2,342	17.9	3,540	194	2,542	2,260	17.3	3,166	276	2,366
65 years and over	1,310	60.7	4,048	451	20.9	2,033	859	3,139	416	19.3	1,513	894	3,117
Females	7,614	43.2	4,140	4,351	24.7	2,865	3,263	2,616	4,167	23.7	2,361	3,447	2,568
Under 65 years	2,703	25.9	4,059	2,428	23.3	3,614	275	2,361	2,342	22.4	3,088	361	2,190
65 years and over	4,911	68.5	4,185	1,923	26.8	1,920	2,988	2,640	1,825	25.4	1,429	3,086	2,612
Recipiency of Benefits													
Neither cash nor noncash benefits	2,849	14.0	3,354	2,849	14.0	3,354	-	(B)	2,849	14.0	3,354	-	(B)
Cash benefits only	383	53.8	4,257	162	22.8	2,290	221	2,767	162	22.8	2,126	221	2,767
Noncash benefits only	706	53.9	3,991	706	53.9	3,991	-	(B)	706	53.9	3,991	-	(B)
Both cash and noncash benefits	7,523	72.0	4,357	3,428	32.8	2,606	4,095	2,714	3,127	29.9	1,570	4,396	2,657

Table 2. Families and Unrelated Individuals in Poverty Before and After Cash and Noncash Transfers 1987—Continued

(Families and unrelated individuals as of March 1988)

Characteristic	After cash and noncash transfers									
	Market value of noncash transfers					Recipient value of noncash transfers				
	In poverty			No longer in poverty		In poverty			No longer in poverty	
	Number (thous.)	Poverty rate	Mean deficit	Number (thous.)	Mean surplus	Number (thous.)	Poverty rate	Mean deficit	Number (thous.)	Mean surplus
FAMILIES										
Total	4,334	6.7	$3,616	7,097	$2,826	5,707	8.8	$3,704	5,724	$1,068
Two persons	1,375	5.1	3,143	4,435	2,844	1,828	6.8	3,035	3,982	869
Under 65 years	1,268	6.9	3,255	1,122	2,403	1,552	8.5	3,179	838	780
65 years and over	107	1.3	1,820	3,314	3,394	276	3.2	2,222	3,145	955
Three persons	931	6.0	3,328	1,186	2,623	1,277	8.3	3,313	840	1,087
Four persons	914	6.7	3,459	732	2,585	1,177	8.6	3,750	469	1,190
Five persons	580	9.9	4,010	375	2,818	741	12.7	4,184	214	1,200
Six persons	293	14.3	5,081	205	3,094	389	18.9	5,115	109	(B)
Seven persons or more	240	19.7	5,288	165	4,524	295	24.2	6,303	110	(B)
Type of Family										
Married-couple families	2,037	3.9	3,972	4,429	3,207	2,526	4.9	3,909	3,940	1,015
With related children under 18 years	1,437	5.6	4,201	813	3,079	1,706	6.7	4,237	544	1,098
Without related children under 18 years	600	2.3	3,425	3,616	3,354	820	3.1	3,227	3,396	925
Female householder, no husband present	2,069	19.5	3,226	2,408	2,599	2,913	27.5	3,497	1,564	1,144
With related children under 18 years	1,895	26.5	3,242	1,758	2,502	2,671	37.3	3,559	982	1,165
Without related children under 18 years	174	5.0	3,056	650	3,416	242	7.0	2,806	582	1,004
Male householder, no wife present	229	8.4	3,959	258	2,434	268	9.9	4,032	219	(B)
With related children under 18 years	171	13.5	4,165	89	(B)	190	15.0	4,425	70	(B)
Without related children under 18 years	58	4.0	(B)	170	(B)	78	5.4	3,082	150	(B)
Recipiency of Benefits										
Neither cash nor noncash benefits	1,094	3.6	4,509	-	(B)	1,094	3.6	4,509	-	(B)
Cash benefits only	93	5.5	2,335	186	(B)	93	5.5	2,335	186	(B)
Noncash benefits only	1,608	10.2	4,261	349	1,277	1,705	10.8	4,466	252	695
Both cash and noncash benefits	1,539	8.9	2,383	6,562	3,054	2,815	16.2	2,975	5,286	1,154
UNRELATED INDIVIDUALS										
Total	4,179	12.7	3,054	7,281	2,466	5,495	16.7	2,669	5,965	732
Under 65 years	3,856	16.4	3,156	1,383	2,887	4,324	18.4	3,016	915	653
65 years and over	323	3.5	1,831	5,898	2,302	1,171	12.6	1,387	5,050	752
Males	2,008	13.2	3,115	1,838	2,353	2,397	15.7	2,881	1,449	627
Under 65 years	1,945	14.9	3,157	591	2,615	2,170	16.6	3,028	366	636
65 years and over	62	2.9	(B)	1,248	2,119	227	10.5	1,481	1,083	622
Females	2,171	12.3	2,997	5,443	2,503	3,098	17.6	2,505	4,516	759
Under 65 years	1,911	18.3	3,155	792	3,085	2,154	20.6	3,005	549	662
65 years and over	261	3.6	1,838	4,650	2,343	944	13.2	1,365	3,967	780
Recipiency of Benefits										
Neither cash nor noncash benefits	2,849	14.0	3,354	-	(B)	2,849	14.0	3,354	-	(B)
Cash benefits only	162	22.8	2,126	221	(B)	162	22.8	2,126	221	(B)
Noncash benefits only	609	46.5	3,237	97	1,048	666	50.9	3,591	40	(B)
Both cash and noncash benefits	559	5.3	1,596	6,964	2,519	1,818	17.4	1,307	5,705	739

- Represents zero. B Base is less than 75,000.

Appendix A. U.S. Senate Statement, "Data Collection and Poverty Level"

Official poverty statistics published by the Bureau of the Census currently ignore billions of dollars of Government in-kind benefits, such as food stamps, public housing rental subsidies, and medical care. The Congresssional Budget Office has estimated that including in-kind benefits in the income statistics would cause the number of people in poverty to decline to about 9 million as compared with official statistics showing nearly 25 million people in poverty. The official statistics show no significant reduction in recent years in the incidence of poverty, although in-kind benefit programs have expanded greatly.

The Committee considers it essential that official poverty statistics reflect, at the earliest possible date, the effects of in-kind benefits. Without such information, Congress and the Executive Branch cannot be certain that Government transfer programs are properly targeted.

The Census Bureau has recognized the need for better data on in-kind benefits. The most recent March Current Population Survey has collected data on some types of in-kind program benefits. In addition, Census has under way an experimental survey—known as the Survey of Income and Program Participation— which collects more extensive data. However, Census has not yet published the data collected thus far and has no current plans for integrating such data with cash income data now reported routinely.

The Committee has inscribed language in the bill directing the Secretary of Commerce to expedite the program of collecting, through surveys, data on benefits received and data on participation in federally funded, in-kind benefit programs. Programs on which data are to be reported include, but are not necessarily limited to, food stamps, Medicaid, Medicare and subsidies in areas such as housing, nutrition, child care, and transportation. The Secretary of Commerce is further directed to continue research and testing of techniques for assigning monetary values to in-kind benefits and for calculating the impact of such benefits on income and poverty estimates. The Secretary of Commerce is also directed to include in survey reports, beginning no later than October 1, 1981, appropriate summaries of data on in-kind benefits and estimates of the effect of in-kind benefits on the number of families and individuals below the poverty level.[1]

Note: The above language was modified in conference but the substance of the new language was similar and included the statement "the Secretary should include in survey reports beginning no later than October 1, 1981, appropriate summaries of data on in-kind benefits and estimates of the effect of in-kind benefits on the number of families and individuals below the poverty level."[2]

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[1]Departments of State, Justice, and Commerce; The Judiciary and Related Agencies Appropriation Bill, 1981. U.S. Senate, 96th Congress, 2d Session, September 16, 1980: 30-34.

[2]Making Appropriations for the Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies; U.S. House of Representatives Report No. 96-1472, 96th Congress, 2d Session, November, 20, 1980: 8-9.

Appendix B. Description of Noncash Valuation Techniques

This appendix contains descriptions of the procedures used to develop and assign values to each of the five types of noncash benefits valued in this study. These benefits are (1) food stamps, (2) school lunches, (3) public or other subsidized rental housing, (4) Medicaid, and (5) Medicare. The first section describes procedures for the market value approach; the second, procedures for the recipient or cash equivalent approach.

MARKET VALUE

The market value concept values the noncash benefit at the cost of the specific goods or services in the private market place. The procedures used to assign market values to noncash benefits require the identification of analogous goods or services in the private market place and estimation of the cost of the goods or services. Because it is sometimes difficult to find and value goods or services in the private market place that are precisely the same as those provided by the noncash benefit program, various assumptions and compromises were made in the estimation process. Details of the market value estimation process are contained in the following subsections for each noncash benefit.

Food stamps. Valuing food stamps was the simplest and most straightforward of the market value procedures. The market value assigned was the annual face value as reported in the survey; i.e., the face value is equal to the purchasing power of the food stamps in the market place.

School lunches. All children eating lunches prepared in schools that participate in the National School Lunch Program receive a subsidy or benefit because the price paid by the student is less than the cost of the meal. The value of the benefit varies depending on how much the student pays for the lunch. In the case of school lunches, it is difficult to identify the analogous good in the private market place since such a large proportion of schools participate in the program. It was decided, therefore, to assign market values that were equal to the amount of money and value of commodities contributed by the Department of Agriculture and State governments (excluding contributions directly from student payments for lunches).

Data from the Department of Agriculture allowed the calculation of the amount of contributions per meal served. These contributions differ for each of the three categories of lunches: (1) paid (full price), (2) reduced price, and (3) free. These figures were multiplied by 167 days to obtain an annual estimate per child (the estimates are shown in table B-1). This assumes an average school year of 180 days and 93 percent attendance. These amounts were multiplied by the number of children in each family reporting that they usually ate a hot lunch offered at school.

Public and other subsidized rental housing. The noncash benefit for public or other subsidized rental housing was defined as the difference between the market rent of the housing unit and the subsidized or lower rent paid by the participant. The market value of the benefit is equal to this difference. Data on the market rent of public housing units are not readily available. Since these data are the key to estimating market values, procedures were developed to estimate market rents.

The market rent estimation procedure was based on survey data from the 1979 and 1981 Annual Housing Survey (AHS) national samples conducted by the Bureau of the Census. The AHS was chosen for several reasons. First, it collected relatively current data on monthly amounts paid for rent and utilities.

Table B-1. Annual Market Value Subsidies for the National School Lunch Program, by Cost Status of Lunch: 1979-87

(Figures in 1987 dollars)

Cost status of lunch	1979	1980	1981	1982	1983	1984	1985	1986	1987
Full price	$81	$ 79	$ 66	$ 46	$ 46	$ 46	$ 45	$ 63	$ 60
Reduced price	220	219	206	165	171	173	187	223	223
Free	272	264	249	244	248	247	257	293	290

Second, it allowed identification of public or other subsidized housing units. Third, the AHS had a relatively large sample size, about 60,000 households. Finally, the survey can provide data needed for future updates.

The first step in the market rent estimation procedure was development of a method to "statistically" match public and private market rental units with similar housing characteristics. In this process, each sample public or subsidized housing unit was matched to two nonsubsidized units with similar housing unit characteristics. The average market rent for two matching private market units was assigned as the market rent for each matching public or other subsidized rental unit. The average market rent for two nonsubsidized units was assigned rather than a rental amount from only one unit in order to help stabilize the estimated market rents.

Once the assignment of a market rent had been made to each public or subsidized rental housing unit on the 1979 and 1981 AHS sample files, tabulations of average market rents and average subsidized rents paid were made. An examination of these data indicated that the data for both years should be combined in order to provide larger sample sizes and thus more stable estimates for the market and subsidized rents.

The tabulation and combination of the market rent and subsidized rent data for 1979 and 1981 were followed by the calculation of average market values for the rent subsidy. These averages were simply the difference between the average simulated market rents and the average reported subsidized rents paid. Tables B-2, B-3, and B-4 show the average market rents, average subsidized rents, and average market value subsidies used in the assignment of market values for public housing. The values in these tables are averages derived by combining the 1979 and 1981 data. The averages were replaced by rent-to-income ratios for purposes of making the actual calculation.

Market value estimates for public housing described here differ somewhat from those used in the original Technical Paper 50 work because slightly different procedures were used. The original work covering 1979 used data from the 1979 AHS; however, valuation techniques based on hedonic regression procedures yielded lower estimates of market rent for the public housing units and thus lower market values for the noncash housing benefit.

The rent-to-income ratios used in the assignment of the market value subsidy were held constant for all years. This meant that the market value subsidy for public housing was fixed as a function of income level based on the combined 1979 and 1981 data. This procedure yielded market value subsidies that changed only slightly over the period.

Medicare and Medicaid. Procedures used to assign the market value of Medicare and Medicaid coverage are based on an insurance value concept. A major

Table B-2. Mean Annual Market Rent for Public or Other Subsidized Housing Units, by Total Household Money Income and Size of Family Unit

(Figures in dollars. Combined data from the 1979 and 1981 Annual Housing Surveys)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder, 65 and over:								
One person	2,675	3,211	3,597	2,884	3,841	2,388	2,344	2,648
Two persons or more	3,049	3,208	3,158	3,728	3,472	3,604	3,627	5,068
Householder under 65 years:								
Married-couple family households:								
Two persons	2,894	3,203	3,583	3,432	3,995	4,009	3,822	3,924
Three persons	3,316	3,268	3,539	3,612	3,723	4,364	4,355	4,570
Four persons	3,450	3,470	3,680	4,047	3,858	3,623	4,313	3,922
Five persons	4,264	3,533	3,962	3,590	4,155	4,194	4,578	3,642
Six persons	3,924	3,699	4,004	3,388	3,001	4,313	3,764	5,129
Seven persons or more	4,025	3,009	4,720	3,110	4,809	3,685	4,290	5,880
Other family households:								
Two persons	3,185	3,500	3,297	3,831	3,831	4,424	4,418	4,284
Three persons	3,305	3,478	4,190	3,882	3,528	3,726	3,534	4,068
Four persons	3,386	3,450	3,691	4,319	4,527	4,192	6,994	4,498
Five persons	3,325	3,481	3,321	3,933	3,388	4,908	4,481	4,020
Six persons	3,111	3,298	4,381	4,122	5,658	4,826	3,389	3,414
Seven persons or more	3,341	3,712	4,980	3,994	5,278	5,748	4,294	2,646
Nonfamily households:								
One person	2,678	3,073	3,312	3,323	3,262	3,011	6,468	4,824
Two persons	3,489	4,378	4,183	4,440	3,498	3,407	9,120	3,490
Three persons or more	5,670	5,082	5,005	4,624	3,648	4,122	2,322	3,594

Table B-3. Mean Annual Subsidized Rent for Public or Other Subsidized Housing Units, by Total Household Money Income and Size of Family Unit

(Figures in dollars. Combined data from the 1979 and 1981 Annual Housing Surveys)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder 65 years and over:								
One person	1,058	1,541	2,217	1,942	3,145	1,632	1,631	1,885
Two persons or more	1,290	1,518	2,066	2,172	2,102	2,232	3,032	3,171
Householder under 65 years:								
Married-couple family households:								
Two persons	1,454	1,990	2,249	2,428	2,285	3,013	2,953	3,092
Three persons	2,111	1,933	2,433	2,549	2,869	2,984	3,333	2,928
Four persons	1,794	1,849	2,256	2,481	2,451	2,976	3,607	2,799
Five persons	1,945	1,859	2,081	2,243	2,469	2,642	3,358	2,538
Six persons	1,696	1,852	2,203	2,335	1,947	3,224	2,423	3,792
Seven persons or more	1,492	1,652	1,959	1,976	3,691	2,242	2,493	3,553
Other family households:								
Two persons	1,482	1,552	2,119	2,688	2,749	2,912	2,933	3,332
Three persons	1,344	1,863	2,150	2,265	2,394	3,157	2,331	2,297
Four persons	1,434	1,976	2,055	3,141	3,703	2,289	2,493	1,845
Five persons	1,352	1,903	1,869	2,832	1,728	2,400	2,756	3,494
Six persons	1,387	1,494	1,541	1,908	3,324	2,665	1,591	2,375
Seven persons or more	1,264	1,763	2,007	1,595	1,746	2,616	2,006	1,380
Nonfamily households:								
One person	1,232	1,618	2,237	2,286	2,620	2,219	5,784	3,142
Two persons	1,585	2,900	2,590	2,424	2,304	2,482	3,204	3,011
Three persons or more	2,820	1,464	1,794	2,239	2,808	3,480	708	2,640

Table B-4. Mean Annual Market Value of Housing Subsidies for Public or Other Subsidized Housing Units, by Total Household Money Income and Size of Family Unit

(Figures in dollars. Combined data from the 1979 and 1981 Annual Housing Surveys)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder 65 years and over:								
One person	1,617	1,670	1,380	942	696	756	713	763
Two persons or more	1,760	1,690	1,092	1,556	1,370	1,371	595	1,897
Householder under 65 years:								
Married-couple family households:								
Two persons	1,440	1,213	1,334	1,003	1,711	996	869	832
Three persons	1,205	1,335	1,106	1,063	853	1,380	1,023	1,642
Four persons	1,656	1,621	1,424	1,567	1,406	647	707	1,123
Five persons	2,318	1,675	1,881	1,347	1,686	1,553	1,220	1,105
Six persons	2,228	1,847	1,800	1,053	1,054	1,089	1,341	1,337
Seven persons or more	2,532	1,357	2,761	1,134	1,117	1,444	1,796	2,327
Other family households:								
Two persons	1,703	1,948	1,178	1,144	1,082	1,512	1,485	953
Three persons	1,961	1,615	2,040	1,618	1,134	569	1,203	1,771
Four persons	1,952	1,474	1,635	1,177	824	1,903	4,501	2,653
Five persons	1,972	1,578	1,452	1,101	1,660	2,508	1,706	526
Six persons	1,724	1,804	2,840	2,214	2,334	2,161	1,798	1,039
Seven persons or more	2,077	1,950	2,973	2,399	3,531	3,132	2,288	1,266
Nonfamily households:								
One person	1,446	1,455	1,074	1,037	642	792	684	1,683
Two persons	1,903	1,478	1,593	2,016	1,194	925	5,916	479
Three persons or more	2,850	3,618	3,211	2,385	840	642	1,614	954

problem in the assignment of market values is the identification of a comparable good in the private market and estimation of the cost of the comparable good. The comparable private market, in the case of Medicare and Medicaid, would be non profit insurance companies charging premium amounts that cover the cost of benefits and overhead.

In the absence of a similar private market, the market values of Medicare and Medicaid were determined using program data covering the total amount of medical vendor payments and numbers of persons covered or enrolled in the program, including those covered but not receiving medical care benefits from the program.

The market values for Medicare are shown in table B-5 for 1987. The values in the table were obtained by dividing medical benefits paid by the number of enrollees. All calculations of market value were made separately by State and risk class. As can be seen in the table, the Medicare risk classes were the aged (persons over age 65) and the disabled. Supplemental Medical Insurance (SMI) premiums were assumed to be paid by all enrollees and were, therefore, deducted in the market value calculation process. These amounts of SMI premiums have not been deducted from the values shown in table B-5. The values shown in the table include institutional expenditures. Such expenditures are estimated to be about 2 percent of the total even though this percentage differed slightly from State to State. To estimate the market values excluding institutional expenditures, the values in the table were multiplied by a factor of .98. Unlike the earlier study, no adjustment was made to the average value to account for small amounts of program administrative costs. All of the data used in the estimation of the market value of Medicare are available from the Health Care Financing Administration (HCFA), Department of Health and Human Services.

The market values for Medicaid are shown in table B-6. Four risk classes were defined for estimating the market value of Medicaid. These were aged, blind or disabled, nondisabled dependent children under age 21, and nondisabled adults aged 21 to 64. The calculations for the child and adult risk classes were restricted to expenditures and recipients in Aid to Families with Dependent Children (AFDC) units. Calculations excluded the "other title XIX" recipients and benefits as shown in the annual HCFA tabulation.

The computation of market values for Medicaid was not based on the "ever enrolled" population. Estimating ever enrolled populations within risk class and State for Medicaid is difficult. There are no administrative or survey data available that can be used to develop accurate ever enrolled figures and the figures on those receiving benefits are weak for some States, often requiring revision. An examination of estimates of market value based on recipients of Medicaid benefits with market value estimates based on the ever enrolled figures derived for the original Technical Paper 50 study covering 1979 showed relatively small differences for most States, but large differences for a few States. These apparent problems were traced to major revisions to the HCFA Medicaid data following completion of the original valuation work. Considering the relatively small differences for most States, the

Table B-5. Annual Market Values for Medicare, by State and Risk Class: 1987

State	Risk class	
	Age 65 and over	Blind and disabled
United States	$2,445	$3,090
Alabama	2,207	2,024
Alaska	2,384	2,339
Arizona	2,363	3,279
Arkansas	2,075	2,027
California	3,112	4,151
Colorado	2,200	3,022
Connecticut	2,343	3,922
Delaware	2,416	2,835
District of Columbia	3,678	4,921
Florida	2,533	4,278
Georgia	2,255	1,924
Hawaii	1,967	3,153
Idaho	1,745	2,711
Illinois	2,824	4,006
Indiana	2,116	2,470
Iowa	1,940	3,261
Kansas	2,236	3,989
Kentucky	1,887	1,572
Louisiana	2,514	2,206
Maine	1,980	2,317
Maryland	2,653	3,628
Massachusetts	2,597	3,880
Michigan	2,987	3,191
Minnesota	2,126	3,642
Mississippi	2,192	1,753
Missouri	2,644	3,304
Montana	1,725	2,266
Nebraska	1,794	3,315
Nevada	2,574	3,237
New Hampshire	1,895	2,752
New Jersey	2,407	3,485
New Mexico	2,029	2,277
New York	2,562	3,336
North Carolina	1,756	1,707
North Dakota	2,218	3,924
Ohio	2,443	2,801
Oklahoma	1,889	2,660
Oregon	2,074	3,113
Pennsylvania	2,817	3,972
Rhode Island	2,665	3,366
South Carolina	2,003	1,663
South Dakota	1,800	3,010
Tennessee	2,076	1,988
Texas	2,314	3,308
Utah	1,493	2,506
Vermont	1,857	2,275
Virginia	1,807	1,935
Washington	2,150	3,040
West Virginia	2,368	1,877
Wisconsin	2,126	2,935
Wyoming	1,860	3,089

Table B-6. Annual Market Values for Medicaid Excluding Expenditures for Institutionalized Persons, by State and Risk Class: 1987

State	Age 65 and over	Blind and disabled	Age 21-64, nondisabled	Less than age 21, nondisabled
United States	$1,312	$3,281	$1,080	$543
Alabama	430	982	754	281
Alaska	3,117	4,262	1,964	893
Arizona	1,312	3,281	1,080	543
Arkansas	932	1,688	837	519
California	654	2,616	1,033	443
Colorado	955	3,739	776	428
Connecticut	1,364	6,997	1,145	573
Delaware	1,219	3,100	1,013	560
District of Columbia	2,768	5,767	2,208	883
Florida	1,033	2,099	851	407
Georgia	1,188	2,171	1,327	486
Hawaii	1,128	2,816	960	450
Idaho	604	2,221	997	501
Illinois	925	4,209	933	502
Indiana	1,146	3,659	1,449	670
Iowa	906	2,397	1,099	533
Kansas	527	2,944	727	428
Kentucky	674	2,522	838	377
Louisiana	989	1,856	1,113	491
Maine	1,588	3,047	1,020	517
Maryland	1,363	5,148	1,361	833
Massachusetts	2,523	6,483	1,467	739
Michigan	936	3,441	1,064	446
Minnesota	1,601	5,010	1,150	486
Mississippi	721	1,197	842	323
Missouri	888	1,871	748	492
Montana	1,104	3,566	1,094	506
Nebraska	998	2,697	1,082	569
Nevada	979	3,766	1,240	585
New Hampshire	1,121	6,088	728	541
New Jersey	1,369	3,224	1,296	522
New Mexico	897	2,212	1,293	596
New York	3,774	7,866	1,447	784
North Carolina	1,213	3,944	1,011	573
North Dakota	1,186	10,966	1,304	679
Ohio	1,193	3,074	1,331	759
Oklahoma	1,021	1,777	1,202	819
Oregon	973	1,844	812	389
Pennsylvania	685	2,023	842	536
Rhode Island	2,413	3,075	905	445
South Carolina	859	1,527	875	367
South Dakota	848	3,839	1,072	636
Tennessee	821	1,878	1,279	711
Texas	1,176	1,882	1,141	481
Utah	1,131	3,287	1,292	505
Vermont	1,094	4,190	996	490
Virginia	1,475	2,476	1,037	403
Washington	891	2,866	1,145	580
West Virginia	914	1,851	759	313
Wisconsin	744	1,861	437	316
Wyoming	603	2,730	606	1,161

problems in obtaining an adequate ever enrolled estimate, and the major revisions made to the 1979 Medicaid data, it was decided to compute the market values for Medicaid based on estimated recipient counts readily available from HCFA. Use of this procedure may overstate the value somewhat but provides a more consistent and stable data base for the examination of the effect of noncash benefits on changes in poverty levels during the 1979 to 1987 period. Administrative costs were also excluded in the calculation of Medicaid benefits.

RECIPIENT OR CASH EQUIVALENT VALUE

The recipient or cash equivalent concept attempts to assign a value to the noncash benefit that would make the recipient feel just as well off as the noncash benefit itself. This concept reflects the value the recipient places on the benefit. The recipient or cash

Table B-7. Mean Annual Normal Expenditures for Food, by Total Household Money Income and Size of Family Unit

(Figures in dollars. Combined data from 1980, 1981, and 1982 Current Expenditure Survey Monthly Diaries)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder 65 years and over:								
One person	1,015	1,328	1,464	1,683	1,394	1,676	2,370	2,293
Two persons or more	1,414	1,806	2,143	2,536	2,556	2,383	2,810	3,577
Householder under 65 years:								
Married-couple family households:								
Two persons	648	1,916	2,103	2,465	2,369	2,842	2,921	3,293
Three persons	344	2,683	2,308	2,395	2,612	3,036	2,912	3,716
Four persons	621	2,774	2,521	2,902	2,791	3,278	3,334	4,352
Five persons	931	2,159	3,119	3,091	3,299	2,778	4,319	4,864
Six persons	1,000	2,188	2,517	3,582	3,710	4,226	4,058	5,303
Seven persons or more	1,250	2,938	3,914	4,642	4,291	5,191	4,563	5,570
Other family households:								
Two persons	991	1,472	1,769	1,782	2,539	2,732	2,468	2,938
Three persons	1,404	2,177	1,719	2,329	2,958	3,250	3,272	3,546
Four persons	1,125	2,203	2,009	2,958	3,491	2,913	2,316	4,772
Five persons	931	2,159	3,119	3,091	3,299	2,778	4,319	4,864
Six persons	1,000	2,188	2,517	3,582	3,710	4,226	4,058	5,303
Seven persons or more	1,250	2,938	3,914	4,642	4,291	5,191	4,563	5,570
Nonfamily households:								
One person	714	1,123	1,303	1,600	1,637	1,782	2,123	2,626
Two persons or more	999	1,799	2,265	2,386	2,097	2,052	2,339	3,561

Table B-8. Annual Food Expenditure to Income Ratios, by Total Household Money Income and Size of Family Unit

(Combined data from 1980, 1981, and 1982 Current Expenditure Survey Monthly Diaries)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder 65 years and over:								
One person	.286	.221	.170	.149	.102	.102	.128	.074
Two persons or more	.399	.284	.244	.228	.186	.148	.151	.103
Householder under 65 years:								
Married-couple family households:								
Two persons	.480	.286	.237	.222	.172	.177	.156	.093
Three persons	.391	.411	.274	.215	.190	.188	.155	.107
Four persons	.409	.419	.282	.256	.204	.202	.179	.123
Five persons	.378	.332	.365	.270	.241	.172	.232	.138
Six persons	.400	.350	.274	.327	.270	.262	.216	.142
Seven persons or more	.500	.470	.435	.417	.312	.315	.239	.160
Other family households:								
Two persons	.342	.244	.203	.160	.184	.170	.132	.098
Three persons	.490	.344	.200	.210	.213	.203	.176	.119
Four persons	.450	.374	.225	.263	.255	.179	.121	.147
Five persons	.378	.332	.365	.270	.241	.172	.232	.138
Six persons	.400	.350	.274	.327	.270	.262	.216	.142
Seven persons or more	.500	.470	.435	.417	.312	.315	.239	.160
Nonfamily households:								
One person	.266	.183	.152	.144	.120	.112	.115	.088
Two persons or more	.340	.280	.252	.209	.150	.126	.129	.103

equivalent concept assures that the value assigned never exceeds the market value and is, in most cases, less than the market value.

Two procedures have been used by researchers to estimate recipient values. These are the utility function approach and the normal expenditures approach. Both of these approaches have advantages and disadvantages. The major problem in either case, however, is a lack of data needed to estimate recipient value accurately. A more detailed discussion of the recipient value concept and problems of estimation is contained in Technical Paper 50.

The normal expenditure approach was used to estimate recipient values in this study. The first step in this technique is to obtain expenditure data for households purchasing the good or service in the private market. In this valuation effort, the general procedure was to tabulate an average annual household expenditure matrix defined by a set of cross-classifying variables. The next step was comparison of the previously assigned market value of the noncash benefit to the average (normal) expenditure in the appropriate cell of this matrix. The recipient value assigned was equal to the average value in the matrix unless this value is greater than the market value. In this situation, the recipient value is constrained, making it equal to the market value.

Food stamps. The recipient or cash equivalent values for food stamps were based on data from the Consumer Expenditure Survey (CES) diary sample. The CES is conducted by the Bureau of the Census under the sponsorship of the Bureau of Labor Statistics. Since this survey has a relatively small sample size, it was necessary to combine expenditure data for 1980, 1981, and 1982 in order to improve the stability of the normal expenditure matrix. Table B-7 shows the figures used in the assignment of recipient value for food stamps. These figures include both food consumed at home and away from home. In practice, the average subsidy amounts were replaced by subsidy-to-income ratios in order to compute recipient values. These ratios are shown in table B-8 and were used in the estimation process throughout the 1979-87 period.

Since food stamps may have been received for a specified number of months during the year, the calculation of recipient value should be based only on the months during which the stamps were received. Data collected in the March CPS on the number of months received were used to account for these part-year recipients. This was accomplished by transforming the average annual normal food expenditures and market value of food stamps to average monthly figures. In these cases, if the average monthly normal expenditure was less than the average monthly food stamp amount, the annual recipient value was made equal to the average monthly normal expenditure multiplied by the number of months in which food stamps were received. If the monthly normal expenditure was greater than the market value, the annual recipient value equaled the annual market value of food stamps.

Table B-9. Mean Annual Normal Expenditures for Rental Units in Nonsubsidized Housing, by Total Household Money Income and Size of Family Unit

(Figures in dollars. Combined data from 1979 and 1981 Annual Housing Surveys)

Size of family unit	Total household money income							
	Less than $5,000	$5,000 to $7,499	$7,500 to $9,999	$10,000 to $12,499	$12,500 to $14,999	$15,000 to $17,499	$17,500 to $19,999	$20,000 or more
Householder 65 years and over:								
One person	2,092	2,702	3,002	3,073	3,583	4,023	3,439	3,915
Two persons or more	2,396	2,805	3,223	3,546	3,356	3,690	3,798	4,674
Householder under 65 years:								
Married-couple family households:								
Two persons	2,680	2,821	2,864	3,181	3,140	3,165	3,316	4,441
Three persons	2,836	2,846	2,889	3,134	3,284	3,502	3,574	4,495
Four persons	3,115	3,042	3,247	3,207	3,422	3,387	3,647	4,789
Five persons	2,829	2,852	3,118	3,498	3,513	3,567	3,500	4,864
Six persons	3,799	2,973	2,927	3,201	3,618	2,806	4,024	4,106
Seven persons or more	3,307	2,094	2,965	3,405	3,511	3,870	4,161	4,701
Other family households:								
Two persons	2,721	3,032	2,991	3,197	3,479	3,574	3,733	4,485
Three persons	2,819	2,930	3,317	3,274	3,572	3,520	3,515	4,759
Four persons	2,971	3,027	3,324	3,680	3,209	3,873	3,514	4,678
Five persons	2,773	3,414	3,616	3,214	3,065	3,803	4,046	4,163
Six persons	2,614	3,346	3,358	3,042	3,566	2,498	3,468	4,188
Seven persons or more	3,209	3,204	3,204	3,467	3,332	2,383	3,594	4,602
Nonfamily households:								
One person	2,306	2,480	2,632	2,858	3,012	3,205	3,352	4,204
Two persons	2,934	3,082	3,264	3,436	3,449	3,595	3,451	4,635
Three persons or more	3,061	3,238	3,870	3,902	4,703	3,975	4,623	6,203

School lunches. Estimating normal expenditures for school lunches is difficult since virtually all school children eating lunches prepared at school are participating in the program; i.e., there is no private market from which to estimate normal expenditures. Given this problem and the relatively small size of the benefits, a decision was made to assign recipient values to school lunch benefits that were equal to the market value of these benefits.

Public or other subsidized rental housing. Estimates of recipient value for public housing tenants were based on data from the 1979 and 1981 Annual Housing Surveys as were the estimates of market value. The first step in the procedure was tabulation of average or normal annual rental expenditures in the private market place—in this case, rental units in nonpublic housing. Data for 1979 and 1981 were combined to increase the sample size in order to stabilize the average rental amounts. The normal expenditure estimates tabulated for the recipient value calculations are shown in table B-9.

The second step, calculation of recipient value for public housing, is somewhat more complicated than for food stamps because the recipients pay a reduced price rather than obtaining the goods at no cost. First, the market rent established as part of the market value procedures (table B-2) was compared to the appropriate normal expenditures figure in table B-9. If the market rent figure was less than the normal expenditure, the recipient value was assigned to be equal to the market value of the benefit. If the market rent figure was greater than the normal expenditure, the recipient value was determined as the difference between the normal expenditure and the subsidized rental payment (table B-4). In practice, the average figures shown in these tables were replaced by expenditure to income ratios. These ratios were then used in the calculations for each year.

Medical care benefits. The procedures used to estimate recipient value of medical care benefits were based on simple updates of the original 1979 techniques. For the purpose of estimating normal expenditures for medical care, a nonsubsidized population is, for all practical purposes, nonexistent. The aged population is almost totally covered by the Medicare program and the population under 65 years of age receives widespread coverage from employer-provided group health insurance.

The estimates of normal expenditures for medical care were made using data from the 1972-73 Consumer Expenditure Survey (CES) in spite of the major problems cited above. The normal expenditure tabulation used as the basis for this study is shown in table B-10. The data for the under-age-65 population were derived from CES survey cases reporting partial employer-provided coverage. The expenditure data do not include the amount of the employer's contribution, and therefore, the normal expenditures for this group are probably underestimated. The sample group used to derive the normal expenditures for the 65-and-over population included persons with Medicare coverage but excluded persons covered by Medicaid and those covered by both Medicaid and Medicare. Use of the Medicare population in estimates of normal expenditures is undesirable and probably results in underestimates of recipient value as well.

The normal expenditure data in table B-10 were tabulated from the 1972-73 CES. Adjustments were then made to the 1972-73 average medical expenditures and income classes to account for the increases

Table B-10. Normal Expenditure Values for Medical Care, by Age or Disability Status of the Householder and Size of Household

(In 1979 dollars)

Total household income	Householder age 65 years old and over or disabled		Householder under 65 years old and not disabled				
	One person	Two persons or more	One person	Two persons	Three persons	Four persons	Five persons or more
Under $1,250	341	637	99	209	307	380	410
$1,250 to $2,499	291	547	146	219	373	402	430
$2,500 to $3,749	385	578	178	290	390	396	421
$3,750 to $4,999	443	608	209	311	263	364	393
$5,000 to $6,249	488	828	248	336	256	383	414
$6,250 to $7,499	646	770	306	520	443	460	497
$7,500 to $8,749	610	891	289	549	518	419	575
$8,750 to $9,999	642	807	315	576	572	450	601
$10,000 to $11,249	684	868	302	585	652	637	675
$11,250 to $12,499	718	862	309	588	655	662	721
$12,500 to $13,749	738	1,060	299	606	662	588	712
$13,750 to $14,999	695	1,070	290	601	661	582	715
$15,000 or more	753	1,202	375	678	803	867	926

in consumer prices. The expenditure data were adjusted by the change in the medical component within the overall Consumer Price Index (CPI). The income classes were adjusted by the change in the overall CPI. These same adjustments were made annually to update the 1979 figures in this table to the appropriate year between 1980 and 1987. The assignment of recipient values followed the same procedures as outlined for food stamps.

Appendix C. Source and Reliability of Estimates

SOURCE OF DATA

Data from administrative records, the Annual Housing Survey (AHS, now called the American Housing Survey), and the Consumer Expenditure Survey (CE) were combined with Current Population Survey (CPS) data to evaluate the number and conditions of persons in poverty. A description of sources of data from which these estimates were derived follows. Except for the CPS, these descriptions are brief.

Sources of data other than CPS. Much of the data on cash and noncash benefits were obtained from administrative records. Values of school lunches and food stamps are from unpublished data from the Department of Agriculture. Data on Medicaid and Medicare were obtained from unpublished data from the Health Care Financing Administration (HCFA) of the Department of Health and Human Services. Data on veterans' pensions are from Veteran's Administration unpublished records. SSI and AFDC amounts are from administrative records published in the Social Security Bulletin. Recipient value for food expenditures was estimated using data from the 1972-73 Consumer Expenditure Survey, and value of public housing was estimated using a statistical matching procedure with the 1979 and 1981 Annual Housing Survey. Refer to appendix B and reports from these surveys for more information.

Current Population Survey. The CPS estimates in this report came from the March CPS from 1980 through 1988 and from supplementary questions to the March CPS. The Bureau of the Census conducts the CPS for the Bureau of Labor Statistics (BLS).

Basic CPS. The monthly CPS deals mainly with labor force data for the civilian noninstitutional population. Census Bureau interviewers ask questions relating to labor force participation about each member in every sample household.

Since the CPS began in 1948, the Census Bureau has redesigned the sample several times to improve data quality and reliability and to meet changing data needs. The last CPS redesign was phased in starting in April 1984 and was completed in July 1985. During that time, the sample included housing units in both the old and new designs.

The present CPS sample, which represents all 50 States and the District of Columbia, was selected from the 1980 decennial census files. The sample is continually updated to reflect new construction. CPS sample housing units are located in 729 areas which include 1,973 counties, independent cities, and minor civil divisions. Each month approximately 59,500 occupied households are eligible for interview; of these, about 2,500 occupied units are designated noninterviews, because interviews cannot find the occupants at home after repeated calls or cannot obtain an interview for some other reason.

The following table displays some information about the basic CPS sample designs in use during the referenced data collection periods.

Design of the Basic Current Population Survey

Interview period	Number of sample areas	Housing units eligible	
		Interviewed	Not interviewed
1986-present	729	57,000	2,500
1985	629/729	57,000	2,500
1982-84	629	59,000	2,500
1980-81	629	65,500	3,000

March supplement. In addition to the basic CPS questions described above, interviewers ask supplementary questions every March about money income, noncash benefits and work experience for the previous year. To obtain more reliable data for the Hispanic population, the Census Bureau enlarges the March CPS sample to include all households from the previous November with at least one sample person of Hispanic origin (approximately 3,000 in November 1987). Also, for this report, the Census Bureau interviews only those Armed Forces members who live with civilian adults.

Because the CPS is designed primarily to provide labor force estimates, it is not an optimal design for the types of information covered in the supplements. Therefore, estimates from the supplements may vary more than estimates from a sample designed specifically to produce estimates of the items, such as income, covered in the supplements. See the section on reliability below for a more detailed discussion.

CPS estimation procedure. The procedure used to calculate estimates from this survey involves the inflation of the weighted sample results to independent

estimates of the total civilian noninstitutional population of the United States by age, race, sex and Hispanic origin. These independent estimates are based on statistics from the decennial censuses of population; statistics on births, deaths, immigration and emigration; and statistics on the strength of the Armed Forces. The independent population estimates used in this report come from the 1980 decennial census. The estimation procedure for the data from the March supplement involves an additional adjustment so that the husband and wife of a household receive the same weight.

RELIABILITY OF ESTIMATES

Because the CPS estimates come from a sample, they may differ somewhat from the figures from a complete census using the same questionnaires, instructions, and enumerators. There are two types of errors possible in a sample survey estimate: sampling and nonsampling, and the accuracy of a survey result depends on both types of errors. The full effect of the nonsampling error is unknown, so exercise care when interpreting figures based on a relatively small number of cases or on small differences between estimates.

The standard errors provided here primarily measure the CPS sampling error. They also partially measure the effect of some of the CPS nonsampling errors in responses and enumeration, but they do not include any systematic biases in the data. (Bias is the difference, averaged over all possible samples, between the sample estimates and the desired value.) Also, these standard errors are computed from CPS data alone and do not reflect any sampling or nonsampling errors present in data from other sources.

Nonsampling variability. Nonsampling variability, or nonsampling error, is variation that would occur whether a sample or a complete census was taken. Nonsampling error is present in both the CPS and other data sources mentioned in this report. The interaction of nonsampling errors when combining data from many surveys may result in an additional component of error. The total effect of these additional errors is unknown.

Nonsampling error arises from many sources. For example, respondents may be unable or unwilling to provide correct information, may have trouble recalling information, or may interpret questions or define terms differently from what was intended. The data are subject to several potential sources of error: collection errors in recording or coding data, processing errors, and errors in estimating values for missing data. Additionally, the Census Bureau may be unable to obtain information about all cases in the sample, or may fail to represent all units with the sample (undercoverage).

Undercoverage in the CPS results from missed housing units and missed persons within sample housing units. Overall undercoverage is about 7 percent, compared with the 1980 decennial census. CPS undercoverage varies with age, sex, and race; generally, undercoverage is larger for males than for females and larger for Blacks and other races combined than for Whites. Ratio estimation to independent age-sex-race Hispanic population controls, as described earlier, partially corrects for the bias from survey undercoverage. However, biases exist in the estimates to the extent that missed persons are different from interviewed persons in the same age-sex-race Hispanic group. Also, the independent population controls are not adjusted for undercoverage in the 1980 census.

Answers to questions about income or noncash benefits often depend on the memory or knowledge of one person in a household, usually the wife. Therefore, recall problems can cause underestimates of income in survey data, because people can easily forget minor or irregular sources of income. Respondents may also misunderstand what the Census Bureau considers income or noncash benefits, or may simply be unwilling to answer these questions correctly because they think the questions are too personal. See appendix F on underreporting of income and noncash benefits for more discussion.

For additional information on nonsampling error including the possible impact on CPS data when known, refer to the following publications: Statistical Policy Working Paper 3, *An Error Profile: Employment as Measured by the Current Population Survey,* Office of Federal Statistical Policy and Standards, U.S. Department of Commerce, 1978; and Technical Paper 40, *The Current Population Survey: Design and Methodology,* Bureau of the Census, U.S. Department of Commerce.

Sampling variability. Sampling variability is variation that occurs by chance because a sample rather than the entire population was surveyed. The standard errors given in the following tables are primarily measures of sampling variability, although they also include some of the effect of nonsampling error. (See the discussion above.)

Standard errors are used to determine the reliability of survey estimates, and to evaluate the statistical validity of conclusions made about the data. For example, a conclusion that the difference between two estimates is statistically significant can be verified using standard errors.

Two procedures, confidence interval estimation and hypothesis testing, are commonly used to test for statistical validity. The confidence interval is a range about the sample estimate constructed so that, if the survey was repeated a large number of times under

the same general conditions, the confidence intervals would include the average result of all possible samples with a known probability. For example, approximately 90 percent of the intervals with a range of 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples. A particular interval may not contain the average result, but one can be 90 percent confident that it does.

Some statements in the report may contain an estimate followed by another number. For such statements, simply add that number to and subtract it from the estimate to calculate the upper and lower bounds of the 90-percent confidence interval. For example, if a statement contains the phrase "grew by 1.7 percent (± 1.0)," then the 90-percent confidence interval for the estimate, 1.7 percent, is from 0.7 to 2.7 percent.

Hypothesis testing uses sample estimates to distinguish between true population values. One common type of hypothesis is that two population values are different. Comparing the poverty rate for Whites to that of Blacks is an example.

Tests may be performed at various levels of significance. The significance level of a test is the probability of concluding that two parameters are different when, in fact, they are not. For example, for a statement of difference to pass at the 0.10 significance level, the absolute value of the difference between the estimates must be greater than 1.6 times the standard error of the difference.

The Census Bureau uses as standard statistical testing criteria 90-percent confidence intervals and 0.10 significance levels. Past reports in this series have used 95-percent confidence intervals and 0.05 significance levels, which require differences of at least 2.0 times the standard error. Consult standard textbooks on statistics for alternative criteria.

Comparability of data. As described earlier, data obtained from the CPS are not fully comparable with data from other government sources, mostly because of differences in interviewer training and experience and different survey procedures. This is another component of error not reflected in the standard error tables. Therefore, exercise caution when using the standard error tables to compare data from the CPS with data from these other sources.

Note when using small estimates. Summary measures (such as means, medians, and percent distributions) are shown only when the base is 75,000 or greater. Because of the large standard errors involved, there is little chance that summary measures would reveal useful information when computed on a smaller base. Estimated numbers are shown, however, even though the relative standard errors of these numbers are larger than those for corresponding percentages. These smaller estimates are provided primarily to enable the data user to combine categories as needed.

Take care when interpreting small differences: even a small amount of nonsampling error can distort a seemingly valid hypothesis test if it involves a borderline difference.

Standard errors for data from surveys other than CPS. To compute standard errors of AHS data, see any of the reports in the series Current Housing Reports, Series H-150-79 and H-150-81, Annual Housing Survey for 1979 and 1981. Standard error estimates for 1972-3 CE data are available upon request from the Bureau of Labor Statistics (Division of Living Conditions Studies, Office of Prices and Living Conditions). Data from other sources are from administrative records and thus are not subject to sampling error.

STANDARD ERROR TABLES

Standard errors for data from the CPS sample. To derive, at a moderate cost, standard errors that would apply to many estimates, the Census Bureau has made several approximations. Instead of providing an individual standard error for each estimate, generalized sets of standard errors are provided for various types of characteristics. As a result, the sets of standard errors provided here show the order of magnitude of the standard error of an estimate rather than the precise standard error.

Standard error tables and their use. There are two ways to estimate standard errors from the tables provided. The first way is to use the figures presented in tables C-1 through C-4 to approximate the standard errors of various estimates for households and persons. To approximate the standard error for a specific characteristic, multiply the appropriate standard error in tables C-1 through C-4 by the factor for that characteristic given in tables C-5 and C-6. These factors adjust the generalized standard errors for the combined effect of the sample design and the estimating procedure on the value of the characteristic.

Use linear interpolation to approximate standard errors for intermediate values not shown in the generalized tables of standard errors (tables C-1 to C-4).

The second method uses the parameters, a and b, presented in tables C-5 and C-6. Each type of characteristic has its own set of parameters. These parameters were used to calculate the standard errors in tables C-1 through C-4 and the factors in tables C-5 and C-6. They may also be used to calculate the standard errors for estimated numbers and percentages directly. Computing the standard errors directly from

Table C-1. Standard Errors of Estimated Numbers of Households Below the Poverty Level: 1979-87

(Numbers in thousands)

Size of estimate	Standard error[1]	Size of estimate	Standard error[1]
75	12	5,000	112
100	14	7,500	142
250	23	10,000	170
500	32	15,000	223
1,000	46	25,000	323
2,000	67	50,000	560
3,000	83	100,000	1,023

[1]These values must be multiplied by the appropriate factor in tables C-5 and C-6 to obtain the standard error for a specific characteristic.

NOTE: The parameters used to calculate this standard error table were a = +0.000084 and b = 2,067.

the parameters in tables C-5 and C-6 gives more accurate results than using standard error tables C-1 to C-4. Methods for computation follow.

Standard errors of estimated numbers. To approximate the standard error, S_x, of an estimated number shown in this report from the standard error tables, use the formula

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

where f is the appropriate factor from table C-5 or C-6, and s is the standard error of the estimate obtained by interpolation from table C-1 or C-2.

For a more accurate approximation, use the formula

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

from which the standard errors in tables C-1 and C-2 were calculated. Here x is the size of the estimate and a and b are the parameters in table C-5 or C-6 for the particular characteristic. When calculating standard errors for numbers from cross-tabulations involving different characteristics, use the factor or set of parameters which gives the largest standard error.

Computing the standard error of an estimated number—illustration. Table B of this report shows that there were 32,546,000 persons below the poverty level in 1987. Using formula (1), the appropriate factor from table C-5 (1.0), and interpolation from table C-2, the approximate standard error is

$$S_x = (1.0)(510{,}000) = 510{,}000$$

Alternatively, using formula (2) with a = -0.000041 and b = 9,628 from table C-5, the approximate standard error is

$$S_x = \sqrt{(-0.000041)(32{,}546{,}000)^2 + (9{,}628)(32{,}546{,}000)} = 520{,}000$$

So the 90-percent confidence interval for the number of persons in poverty is from 31,714,000 to 33,378,000, i.e., 32,546,000 ± (1.6)(520,000). Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed this way would be correct for roughly 90 percent of all possible samples.

Standard errors of estimated percentages. The reliability of an estimated percentage, whose numerator and denominator are both sample estimates, depends on its size and on the size of its base (i.e., the total on which it is based). An estimated percentage is relatively more reliable than the corresponding estimate of its numerator, particularly if the percentage is 50 percent or greater.

Again, there are two ways to estimate the standard error of a percentage, $S_{x,p}$. To approximate the standard error using the standard error tables (tables C-3 or C-4), use the formula

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

In this formula, f is the appropriate factor from table C-5 or C-6 and s is the standard error of the estimate from table C-3 or C-4.

For a more accurate approximation, use

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

Table C-2. Standard Errors of Estimated Numbers of Persons Below the Poverty Level: 1979-87

(Numbers in thousands)

Size of estimate	Standard error[1]	Size of estimate	Standard error[1]
75	27	7,500	264
100	31	10,000	304
250	49	15,000	368
500	69	25,000	464
1,000	98	50,000	616
2,000	138	100,000	744
3,000	169	125,000	750
5,000	217	160,000	701

[1] These values must be multiplied by the appropriate factor in tables C-5 and C-6 to obtain the standard error for a specific characteristic.

NOTE: The parameters used to calculate this standard error table were a = -0.000041 and b = 9,628.

Table C-3. Standard Errors of Estimated Percentages of Households Below the Poverty Level: 1979-87

Base of estimated percentage (thousands)	Estimated percentage[1]				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75	2.32	3.62	4.98	7.19	8.30
100	2.01	3.13	4.31	6.23	7.19
250	1.27	1.98	2.73	3.94	4.55
500	0.90	1.40	1.93	2.78	3.22
1,000	0.64	0.99	1.36	1.97	2.27
2,000	0.45	0.70	0.96	1.39	1.61
3,000	0.37	0.57	0.79	1.14	1.31
5,000	0.29	0.44	0.61	0.88	1.02
7,500	0.23	0.36	0.50	0.72	0.83
10,000	0.20	0.31	0.43	0.62	0.72
15,000	0.16	0.26	0.35	0.51	0.59
25,000	0.13	0.20	0.27	0.39	0.46
50,000	0.09	0.14	0.19	0.28	0.32
100,000	0.06	0.10	0.14	0.20	0.23

[1]These values must be multiplied by the appropriate factor in tables C-5 and C-6 to obtain the standard error for a spe cific characteristic.
NOTE: The parameter used to calculate this standard error table was b = 2,067.

from which the standard errors in tables C-3 and C-4 were calculated. Here x is the base of the percentage, p is the percentage ($0 < p < 100$), and b is the parameter from table C-5 or C-6 for the characteristic in the numerator. When the numerator and denominator are in different categories, use the factors or parameters from table C-5 or C-6 for the numerator.

Computing the standard error of an estimated percentage—illustration. Table 1 shows that in 1987, 33.1 percent (total 9,683,000) of the 29,263,000 Black persons in the United States were below the poverty level. Using formula (3), the appropriate factor from table C-5 (1.0), and interpolation from table C-4, the standard error of 33.1 percent is approximately

$$S_{(x,p)} = (1.0)(0.9) = 0.9$$

The more accurate approximation is to use formula (4) and b = 9,628 from table C-5:

$$S_{(x,p)} = \sqrt{(9628/29{,}263{,}000)33.1(100.0-33.1)} = 0.9$$

So, rounded to one decimal place, the 90-percent confidence interval of the percentage of Blacks below the poverty level is from about 31.7 to 34.5 percent (33.1 percent ± (1.6)(0.9)).

Standard errors of estimated differences. The standard error of a difference between two sample estimates is approximately

$$S_{(x-y)} = \sqrt{S_x^2 + S_y^2 - 2r\,S_xS_y} \qquad (5)$$

where S_x and S_y are the standard errors of the estimates x and y, respectively, and r represents the correlation between the two estimates. The estimates

Table C-4. Standard Errors of Estimated Percentages of Persons Below the Poverty Level: 1979-87

Base of estimated percentage (thousands)	Estimated percentage[1]				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75	5.02	7.81	10.75	15.52	17.92
100	4.34	6.76	9.31	13.44	15.52
250	2.75	4.28	5.89	8.50	9.81
500	1.94	3.02	4.16	6.01	6.94
1,000	1.37	2.14	2.94	4.25	4.91
2,000	0.97	1.51	2.08	3.00	3.47
3,000	0.79	1.24	1.70	2.45	2.83
5,000	0.61	0.96	1.32	1.90	2.19
7,500	0.50	0.78	1.08	1.55	1.79
10,000	0.43	0.68	0.93	1.34	1.55
15,000	0.36	0.55	0.76	1.10	1.27
25,000	0.28	0.43	0.59	0.85	0.98
50,000	0.19	0.30	0.42	0.60	0.69
100,000	0.14	0.21	0.29	0.43	0.49
125,000	0.12	0.19	0.26	0.38	0.44
160,000	0.11	0.17	0.23	0.34	0.39

[1]These values must be multiplied by the appropriate factor in tables C-5 and C-6 to obtain the standard error for a specific characteristic.
NOTE: The parameter used to calculate this standard error table was b = 9,628.

Table C-5. a and b Parameters and Factors for Calculating Approximate Standard Errors of Estimated Numbers and Percentages of Households and Persons: 1979-87

Characteristic	Parameter		Factor
	a	b	
HOUSEHOLDS			
Total or White	-0.000010	1,778	[1]0.93
Black and/or other races	-0.000066	1,606	[1]0.88
Hispanic	-0.000137	1,606	[1]0.88
Metropolitan and central city	-0.000010	1,778	[1]0.93
South Region	-0.000010	1,831	[1]0.94
Other regions	-0.000010	1,778	[1]0.93
Below poverty level:			
Total/White, Black/other, Hispanic	+0.000084	2,067	1.00
Type of size of household, age or work experience of householder, and tenure	+0.000084	2,067	1.00
Type of residence:			
Metropolitan	+0.000084	2,067	1.00
Nonmetropolitan	+0.000126	3,101	1.22
Region (1979-81):			
Northeast	+0.000078	1,932	0.97
Midwest	+0.000079	1,951	0.97
South	+0.000083	2,045	0.99
West	+0.000071	1,745	0.92
Region (1982-1983):			
Northeast	+0.000075	1,857	0.95
Midwest	+0.000078	1,914	0.96
South	+0.000074	1,838	0.94
West	+0.000064	1,576	0.87
Region (1984-87):			
Northeast	+0.000063	1,550	0.87
Midwest	+0.000077	1,902	0.96
South	+0.000087	2,129	1.01
West	+0.000090	2,212	1.03
PERSONS			
Total or White	-0.000011	2,077	0.46
Black and/or other races	-0.000092	2,374	0.50
Hispanic	-0.000189	2,374	0.50
Metropolitan and central city	-0.000011	2,077	0.46
South Region	-0.000011	2,129	0.47
Other regions	-0.000011	2,077	0.46
Below poverty level:			
Total or White[2]	-0.000041	9,628	1.00
Black and/or other races[2]	-0.000270	9,628	1.00
Hispanic[2]	-0.000534	9,628	1.00
Relationship to and age of family householder	-0.000041	9,628	1.00
Region (1979-81):			
Northeast	-0.000032	8,184	0.92
Midwest	-0.000032	8,264	0.93
South	-0.000034	8,661	0.90
West	-0.000029	7,390	0.88
Region (1982-83):			
Northeast	-0.000031	7,867	0.90
Midwest	-0.000032	8,105	0.92
South	-0.000030	7,787	0.90
West	-0.000026	6,675	0.83
Region (1984-87):			
Northeast	-0.000031	7,221	0.87
Midwest	-0.000038	8,858	0.96
South	-0.000042	9,917	1.01
West	-0.000044	10,302	1.03

[1]These factors are to be applied to table C-3 only. For estimated numbers use formula (2).
[2]For nonmetropolitan residence categories multiply the a and b parameters by 1.5 and the factor by 1.22.

Table C-6. Parameters for Estimated Numbers and Percentages of Persons in Poverty by Age, Sex, Race, and Hispanic Origin: 1979-87

Characteristic	Parameter		
	a	b	factor
Total and White:			
Persons 15 and over[1]	-0.000052	9,628	1.00
Male 15 and over	-0.000110	9,628	1.00
Female 15 and over	-0.000100	9,628	1.00
Under 15 years	-0.000128	6,663	0.83
15 to 24	-0.000087	3,319	0.59
25 to 34	-0.000080	3,319	0.59
35 to 44	-0.000103	3,319	0.59
45 to 64	-0.000074	3,319	0.59
65 and over	-0.000121	3,319	0.59
Black and/or other races:			
Persons 15 and over[1]	-0.000375	9,628	1.00
Male 15 and over	-0.000825	9,628	1.00
Female 15 and over	-0.000688	9,628	1.00
Under 15 years	-0.000671	6,663	0.83
15 to 24	-0.000507	3,319	0.59
25 to 34	-0.000521	3,319	0.59
35 to 44	-0.000751	3,319	0.59
45 to 64	-0.000593	3,319	0.59
65 and over	-0.001213	3,319	0.59
Hispanic origin:			
Persons 15 and over[1]	-0.000768	9,628	1.00
Male 15 and over	-0.001552	9,628	1.00
Female 15 and over	-0.001519	9,628	1.00
Under 15 years	-0.000870	6,663	0.83
15 to 24	-0.000612	3,319	0.59
25 to 34	-0.000397	3,319	0.59
35 to 44	-0.000727	3,319	0.59
45 to 64	-0.000466	3,319	0.59
65 and over	-0.001298	3,319	0.59

[1]Use these parameters for work experience and employment status data for persons.

can be of numbers, percentages, ratios, etc. For differences between consecutive-year estimates, use the value of r for the appropriate characteristic from table C-7. For all other differences, assume that r is equal to zero.

Computing the standard error of an estimated difference— illustration. Table B shows that there were 32,546,000 persons below the poverty level in 1987, and in 1986 there were 32,370,000. The apparent difference is 176,000. The standard error of the 1987 estimate was calculated in an earlier example. Using formula (2), and a = -0.000041 and b = 9,628 from table C-5, the standard error of the 1986 estimate (32,370,000) is about

$$S_x = \sqrt{(-0.000041)(32{,}370{,}000)^2 + (9{,}628)(32{,}370{,}000)} = 518{,}000$$

With these estimated standard errors and the correlation coefficient, r, from table C-7 (0.45), the standard error of the estimated difference is approximately

$$S_{(x-y)} = \sqrt{(520{,}000)^2 + (518{,}000)^2 - 2(0.45)(520{,}000)(518{,}000)} = 544{,}000$$

This means that the 90-percent confidence interval around the 176,000 difference is from -694,000 to 1,046,000, i.e., 176,000 ± (1.6)(544,000). Because this interval contains zero, we cannot conclude with 90 percent confidence that there was a statistically significant change in the number of persons below the poverty level from 1986 to 1987.

Standard error of estimated ratios. Certain mean values for persons in families or households shown in the tables were calculated as the ratio of two numbers. For example, the mean number of persons per family or household is calculated as

$$\frac{x}{y} = \frac{\text{total number of persons in families or households}}{\text{total number of families or households}} \qquad (6)$$

Standard errors for these ratios may be approximated as shown below. There are three cases to consider. In the first two cases, the denominator y represents a count of families or households of a certain class, and the numerator x represents a count

of persons with the characteristic of interest who are members of these families or households.

Case 1: There is at least one person having the characteristic in every family or household of the class: for example, the mean number of persons per family or the mean number of persons per family with a male householder. For ratios of this kind, approximate the standard errors using the following formula:

$$S_{x/y} = (x/y)\sqrt{(S_x/x)^2 + (S_y/y)^2 - 2r(S_x/x)(S_y/y)} \qquad (6)$$

The standard error of the estimated number of families or households, S_y, and the standard error of the estimated number of persons with the characteristic in those families or households, S_x, may be calculated by the methods described earlier. In formula (6), r represents the coefficient of correlation between the numerator and the denominator of the estimate. In the above example, and for other ratios of this kind, use 0.7 as an estimate of r.

Case 2: The number of persons having the characteristic in a given household may be 0, 1, 2, 3, or more, such as the mean number of persons under 18 years of age per household. For this kind of ratio, use formula (6), but assume r is equal to zero. If r is actually positive (negative), then this will overestimate (underestimate) of the standard error of the ratio.

Case 3: The numerator and denominator are different definitions of poverty. See the sections below on poverty estimates for more detail.

Comparisons of alternate poverty estimates for the same population. As discussed in this report, several estimates of poverty may be obtained for a population group by using different income concepts and valuation techniques to determine poverty status. The most meaningful comparisons between two measures of poverty are those for which either the income concept or the valuation technique is fixed: for example, one could compare a poverty estimate determined by income plus the market value of food and housing benefits vs. one determined by income plus the market value of food, housing and medical benefits. All comparisons presented in this section make this assumption.

Standard errors of within-year differences between poverty estimates using different methods. Estimate the standard error for the difference of two poverty estimates (numbers or percentages), using different methods to evaluate poverty, for a given year with the formula

$$S_{(x,y)} = S_d \qquad (7)$$

Table C-7. Year-to-Year Correlation Coefficients for Poverty Estimates of Households and Persons: 1979-87

Characteristic	1979-84, and 1986-87		1985	
	Households	Persons	Households	Persons
Total	0.35	0.45	0.32	0.40
White	0.30	0.35	0.27	0.32
Black and/or other races	0.35	0.45	0.32	0.40
Hispanic origin	0.55	0.65	0.50	0.58

Note: For estimates 2 or more years apart, assume the correlation to be zero.

The value $d = |x-y|$, is the absolute difference between the two estimates x and y. Estimate S_d from formula (1) or (2) where d is the size of the estimate, or from formula (3) or (4) where d is the estimated percentage.

Standard errors of differences of yearly change between poverty estimates using different methods. In comparing year-to-year changes between two poverty estimates using different poverty valuation methods, the standard error of a difference of differences is needed.

If x_1, x_2 (y_1, y_2) are the x (y) estimates in years 1 and 2, and $d = d_1 - d_2 = (x_1 - y_1) - (x_2 - y_2)$, then use the formula

$$S_d = \sqrt{S_{d1}^2 + S_{d2}^2 - 2rS_{d1}S_{d2}} \qquad (8)$$

where for i = 1 and 2, $d_i = x_i - y_i$ is the difference of the estimates from year i. Estimate the standard error of d_i, S_{di}^2, using formula (7) and use table C-7 to find the appropriate value for r.

Computing the standard error of a difference of annual change when comparing alternate definitions of poverty—illustration. Table B shows that the number of persons below the poverty level as determined by two poverty definitions are as follows:

Method	1987	1986	Increase, 1986-87
1. Official definition	32,546,000	32,370,000	176,000
2. Market valuation including food/housing	29,004,000	28,908,000	96,000

The data show that the apparent difference in the increase in poverty between the two methods from 1986 to 1987 is 80,000, i.e. d = -80,000.

Using formula (8) we have

$$d_1 = 32{,}370{,}000 - 28{,}908{,}000 = 3{,}462{,}000;$$

$$s_{d1} = \sqrt{(-0.000041)(3{,}462{,}000)^2 + (9{,}628)(3{,}462{,}000)} = 181{,}000$$

and

$d_2 = 32{,}546{,}000 - 29{,}004{,}000 = 3{,}542{,}000;$

$s_{d2} = \sqrt{(-0.000041)(3{,}542{,}000)^2 + (9{,}628)(3{,}542{,}000)} = 183{,}000$

So $d = d_1 - d_2 = 3{,}462{,}000 - 3{,}542{,}000 = -80{,}000$. In this case, $r = 0.45$, so the standard error associated with the difference of the differences (-80,000) is

$\sqrt{(181{,}000)^2 + (183{,}000)^2 - 2(0.45)(181{,}000)(183{,}000)} = 191{,}000$

A 90-percent confidence interval around -80,000 is from -386,000 to 226,000, i.e. $-80{,}000 \pm (1.6)(191{,}000)$. Because this interval contains zero, we cannot conclude that fewer persons have been added to poverty status from 1986 to 1987 with method 2 than with method 1. These data show no evidence of difference between the two numbers.

Standard error of a ratio of an alternative poverty estimate to the official poverty estimate. Estimate the standard error of the ratio of the number of persons in poverty using an alternative poverty definition divided by the number of persons in poverty using the official poverty definition (only income included) with the formula

$$S_{x/y} = (x/y)\sqrt{(S_x/x)^2 - (S_y/y)^2} \qquad (9)$$

where S_x and S_y are the estimates of the standard errors of the estimates x and y as determined by formula (1) or (2).

Standard error of an estimated mean for grouped data. Use the formula

$$S_x = \sqrt{\frac{b}{y} S^2} \qquad (10)$$

to approximate the standard error of a mean, where y is the size of the base and b is the appropriate b parameter for the characteristic from table C-5 or C-6. The variance, S^2, is equal to

$$S^2 = \sum_{i=1}^{c} p_i \bar{x}_i^2 - \bar{x}^2 \qquad (8)$$

where
$\bar{x}$ = the mean of the distribution, defined by

$$\sum_{i=1}^{c} p_i x_i;$$

c = the number of groups: i indicates a specific group, taking on values 1 through c;
p_i = the estimated proportion of households, families or persons whose values for the characteristic (x-values) fall in group i; and
$\bar{x}_i = (A_{i-1} + A_i)/2$ where A_{i-1} and A_i are the lower and upper interval boundaries, respectively, for group i.

The value $\bar{x}_i$ is assumed to be the most representative value for the characteristic for households, families or persons in group i. Group c is open-ended, i.e., no upper interval boundary exists. For this group the approximate average value is

$$\bar{x}_c = (3/2)\, A_{c-1} \qquad (12)$$

Contact Statistical Methods Division of the Census Bureau for the method to compute the standard error of a mean for two or more combined distributions.

Note that because the formula for the standard error of a mean involves several approximations, this statistic will generally be different from the tabled value.

Appendix D. Program Descriptions and Data Collection

This appendix contains brief descriptions of each public in-kind transfer program covered in the March CPS, a description of the questions used to collect the data, and an evaluation of the data quality. The description of each program begins with a statement of program objectives and is followed by general comments regarding program characteristics, eligibility, and so forth. Next is a review of the survey questions and the limitations associated with the question wording and design.

FOOD STAMPS

The Food Stamp Act of 1977 defines this Federally funded program as one intended to "permit low-income households to obtain a more nutritious diet." (From title XIII of P.L. 95-113, The Food Stamp Act of 1977, declaration of policy.) Food purchasing power is increased by providing eligible households with coupons which can be used to purchase food. The Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA) administers the Food Stamp program through State and local welfare offices. The Food Stamp program is the major national income support program to which all low-income and low-resource households, regardless of household characteristics, are eligible.

The Food Stamp Act was amended by the 1981 Omnibus Budget Reconciliation Act which changed the criteria used to determine food stamp eligibility (P.L. 97-35, title I, subtitle A). As of October 1, 1981, households without an elderly or disabled member must have gross monthly income below 130 percent of the Federal poverty level. Previously, eligibility was based on "countable" income (gross income less specified deductions for shelter, medical expenses, child care, etc.) so, e.g., a household with a gross income of twice the poverty guideline and substantial specified deductions could have been eligible for food stamps. Households meeting the income requirement may be ruled ineligible for the program on the basis of their holdings of assets (resources). The current limit for assets is $2,000 for households with no elderly persons and $3,000 for households with at least one elderly person. The questions on participation in the Food Stamp Program in the March CPS were designed to identify households in which one or more of the current members received food stamps during the calendar year. Once a food stamp household was identified, a question was asked to determine the number of current household members covered by food stamps during the year. Questions were also asked about the number of months food stamps were received and the total face value of all food stamps received during that period.

SCHOOL LUNCHES

The National School Lunch Program is designed "to help safeguard the health and well-being of the Nation's children by assisting the States in providing an adequate supply of foods" (P.L. 79-396, the National School Lunch Act of 1946) for all children at moderate cost. Additional assistance is provided for children determined by local school officials to be unable to pay the "full established" price for lunches. Like the Food Stamp program, the National School Lunch Program is administered by the Food and Nutrition Service of the U.S. Department of Agriculture through State educational agencies or through regional USDA nutrition services for some nonprofit private schools.

All students eating lunches prepared at participating schools pay less than the total cost of the lunches. Some students pay the "full established" price for lunch (which itself is subsidized), while others pay a "reduced" price for lunch, and still others receive a "free" lunch. Until January 1981, children were eligible for free school lunches if their household's income was below 125 percent of the poverty guidelines or reduced-price lunches if their household's income was between 125 and 195 percent of the poverty guidelines. The term "income" basically followed the Census Bureau definition but excluded certain Federal benefits and specified "hardship" expenses. Effective January 1, 1981, the hardship exclusion was replaced by a standard deduction. (Ref. Federal Register, Vol. 46, No. 11, January 16, 1981.) Beginning August 13, 1981, the income definition was amended to a gross income concept with the standard deduction being eliminated. At the same time, the income eligibility criteria were changed to 130 percent for free lunches and to 185 percent for reduced-price lunches. (Ref. Omnibus Budget Reconciliation Act of 1981, P.L. 97-35, title VIII.)

The questions on the March CPS provide a limited amount of data for the School Lunch program. Questions concerning the program were designed to identify the number of household members 5 to 18 years old who "usually" ate hot lunches during the year. This defined the universe of household members receiving this noncash benefit. This approach was necessary because the majority of children benefit indirectly; i.e., they pay full-established price but are not aware that these lunches are subsidized. A second question identified the number of members receiving free or reduced-price lunches.

PUBLIC OR OTHER SUBSIDIZED HOUSING

There are numerous programs designed to "remedy the unsafe and unsanitary housing conditions and the acute shortage of decent, safe, and sanitary dwellings for low-income families" (U.S. Housing Act of 1937, declaration of policy). Several Federal, State, and local agencies administer these pro grams. Some are funded by USDA (for rural families) or State-local agencies, but most are administered by the Department of Housing and Urban Development (HUD). Among the most important HUD rental housing programs are Low Rent Public Housing and Sections 8, 236, and 101 (rent supplements) of various U.S. Housing Acts.

Low Rent Public Housing projects are owned, managed, and administered by a local housing authority. Partial financing may be provided by the State or HUD. Participation in public housing is determined by two factors: program eligibility and the availability of housing. Income standards for initial and continuing occupancy vary by local housing authority, although the limits are constrained by Federal guidelines. Rental charges, which, in turn, define net benefits, are set by a Federal statute not to exceed 30 percent of adjusted monthly money income. A recipient household can be a family or two or more related persons or an individual who is handicapped, elderly, or displaced by urban renewal or natural disaster. Other HUD programs provide similar types of housing assistance to low-income families and individuals.

Two of the more common types of programs in which Federal, State, and local funds are used to subsidize private sector rental housing are rent supplement and interest reduction plans. Under a rent supplement plan (e.g., Sections 8 and 101), the difference between the "fair market" rent and the rent charged to the tenant is paid to the owner by a government agency. Under an interest reduction program (e.g., Section 236), the amount of interest paid on the mortgage by the owner is reduced so that subsequent savings can be passed along to low-income tenants in the form of lower rent changes.

There were two questions dealing with public and low-cost rental housing on the March CPS supplement questionnaire. The first question identified residence in a housing unit owned by a public agency. The second question identified beneficiaries who were not living in public housing projects but who were paying lower rent because of a government subsidy.

MEDICAID

The Medicaid program is designed to furnish medical assistance for needy families with dependent children and for aged, blind, or disabled individuals whose incomes and resources are insufficient to meet the costs of necessary medical services.[1] The program is administered by State agencies through grants from the Health Care Financing Administration (HCFA) of the Department of Health and Human Services.

Medicaid is, for the most part, a categorical program with complex eligibility rules which vary from State to State. There are two basic groups of eligible individuals: the categorically eligible and the medically needy. The major categorically eligible groups are all Aid to Families with Dependent Children (AFDC) recipients and most Supplemental Security Income (SSI) recipients.[2] Other categorically eligible groups are (1) those who meet basic State cash assistance eligibility rules (the aged, blind, or disabled; needy single parents with children; and, in some States, needy unemployed parents with children who are not currently receiving money payments) and (2) needy persons meeting categorical eligibility standards who are institutionalized for medical reasons (e.g., low-income elderly persons in nursing homes). Institutionalized persons are not included in the CPS universe and, therefore, are not reflected in the CPS recipiency statistics.

In many States, Medicaid coverage is also extended to the medically needy: persons meeting categorical age, sex, or disability criteria and having money incomes and assets which exceed eligibility levels for cash assistance but are not sufficient to meet the cost of medical care. Families with large medical expenses relative to their incomes and assets may also meet medically needy eligibility standards by "spending down" (i.e., having high enough medical expenses) to obtain eligibility.

[1]Taken from Title XIX of the 1965 Amendments to P.L. 89-97, *The Social Security Act,* "Grants to States for Medical Assistance Programs," declaration of policy.

[2]In 1981, Public Law 97-35 made several changes in AFDC elilgibility determinations under the Medicaid program. Changes in treatment of earnings and other income and resources have resulted in some persons being dropped not only from the AFDC rolls but also off of automatic Medicaid coverage. Some of these individuals may be able to regain coverage if their State offers medically needy protection; however, the range of available benefits may be less.

The Medicaid question on the March CPS attempted to identify all persons 15 years old and over who were covered by Medicaid at any time during the year. The term "covered" means enrolled in the Medicaid program, i.e., had a Medicaid medical assistance card or incurred medical bills which were paid for by Medicaid. In order to be counted, the person did not necessarily have to receive medical care paid for by Medicaid.

After data collection and creation of an initial microdata file, further refinements were made to assign Medicaid coverage to children. In this procedure, all children under 21 years old in families were assumed to be covered by Medicaid if either the householder or spouse reported being covered by Medicaid.[3] AFDC recipients in all States and SSI recipients living in the 36 States which legally require Medicaid coverage of all SSI recipients were also assigned coverage. The data shown in this report exclude children covered by Medicaid in households where no adult member was covered. Because there are no administrative data which separately identify these recipients, the extent of the bias is unknown.

MEDICARE

The Medicare program consists of two separate but complementary health plans to provide adequate medical care for the aged and disabled. The Hospital Insurance Plan (Part A) is designed to provide basic protection against the costs of hospital and related post-hospital services. In addition to the elderly, this plan also covers virtually all persons under 65 years old who receive Social Security or Railroad Retirement benefits based on long-term disability. Part A is financed jointly by employers and employees through Social Security payroll deductions. Qualified persons 65 years old and over who are not otherwise eligible for Part A benefits may pay premiums directly to obtain this coverage. The Supplemental Medical Insurance Plan (Part B) is a voluntary plan which builds upon the hospital insurance protection provided by the basic plan and is available to all Medicare Part A beneficiaries. It provides insurance protection covering physicians' and surgeons' services and a variety of medical and other health services received either in hospitals or on an ambulatory basis. It is financed through monthly preminum payments (about $8.50 per month in 1979 and $17.90 in 1987) by each enrollee and further subsidized by Federal general revenue funds.

The Medicare question on the March CPS attempted to identify all persons 15 years old and over who were covered by Medicare at any time during the year. The term "covered" means enrolled in the Medicare program. In order to be counted, the persons did not necessarily have to receive medical care paid for by Medicare.

[3]This procedure was required mainly because the Medicaid coverage question was asked only for persons 15 years old and over.

Appendix E. Definitions and Explanations

Population coverage. This report includes the civilian noninstitutional population of the United States (the 50 States and the District of Columbia) and members of the Armed Forces living off post or with their families on post but excludes all other members of the Armed Forces.

Current poverty definition. Families and unrelated individuals are classified as being above or below the poverty level using the poverty index originated at the Social Security Administration in 1964 and revised by Federal Interagency Committees in 1969 and 1980. The poverty index is based solely on money income and does not reflect the fact that many low-income persons receive noncash benefits such as food stamps, Medicaid, and public housing. The index is based on the Department of Agriculture's 1961 Economy Food Plan and reflects the different consumption requirements of families based on their size and composition. It was determined from the Department of Agriculture's 1955 Survey of Food Consumption that families of three or more persons spend approximately one-third of their income on food; the poverty level for these families was, therefore, set at three times the cost of the economy food plan. For smaller families and persons living alone, the cost of the economy food plan was multiplied by factors that were slightly higher in order to compensate for the relatively larger fixed expenses of these smaller households. The poverty thresholds are updated every year to reflect changes in the CPI. The average weighted poverty thresholds for 1979 to 1987 are shown in table E-1. The average annual CPI for 1979 through 1987 are shown in table E-2.

The poverty definition was modified slightly in 1981 based on recommendations made by the Federal Interagency Committee. These revisions (1) eliminated distinctions made between families with a female householder, no husband present, and all other families; (2) eliminated the distinctive poverty levels used for nonfarm and farm residence categories; and (3) expanded the matrix of poverty levels to include eight-person families, and nine-or-more person families that previously had been limited to seven persons or more.

An evaluation of the effect of this change showed that in 1980 the estimated poverty rate was 13.2 percent based on the revised definition compared to 13.0 percent using the definition prior to revision.

Money income. Total money income is the sum of the amounts received from wages and salaries, self-employment income (including losses), Social Security, Supplemental Security Income, public assistance, interest, dividends, rent, royalties, estates or trusts, veterans' payments, unemployment and workers' compensation,

Table E-1. Weighted Average Poverty Thresholds: 1979-87

Size of family unit	1987	1986	1985	1984	1983	1982	1981	1980	1979
One person (unrelated individual).	$5,778	$ 5,572	$ 5,469	$ 5,278	$ 5,061	$ 4,901	$ 4,620	$ 4,184	$ 3,683
15 to 64 years	5,909	5,701	5,593	5,400	5,180	5,019	4,729	4,286	3,773
65 years and over	5,447	5,255	5,156	4,979	4,775	4,626	4,359	3,941	3,472
Two persons	7,397	7,138	6,998	6,762	6,483	6,281	5,917	5,338	4,702
Householder 15 to 64 years	7,641	7,372	7,231	6,983	6,697	6,487	6,111	5,518	4,858
Householder 65 years and over.	6,872	6,630	6,503	6,282	6,023	5,836	5,498	4,954	4,364
Three persons	9,056	8,737	8,573	8,277	7,938	7,693	7,250	6,539	5,763
Four persons	11,611	11,203	10,989	10,609	10,178	9,862	9,287	8,385	7,386
Five persons	13,737	13,259	13,007	12,566	12,049	11,684	11,007	9,923	8,736
Six persons	15,509	14,986	14,696	14,207	13,630	13,207	12,449	11,215	9,849
Seven persons (or more)[1]	17,649	17,049	16,656	16,096	15,500	15,036	14,110	13,883	12,212
Eight persons	19,515	18,791	18,512	17,961	17,170	16,719	15,655	(X)	(X)
Nine persons or more	23,105	22,497	22,083	21,247	20,310	19,698	18,572	(X)	(X)

X Not applicable.

[1]1979 and 1980.

Table E-2. Annual Average Consumer Price Index (CPI): 1979-87

(1967 = 100)

Year	CPI
1979	217.4
1980	246.8
1981	272.4
1982	289.1
1983	298.4
1984	311.1
1985	322.2
1986	328.4
1987	340.4

Source: Department of Labor, Bureau of Labor Statistics.

private and government retirement and disability pensions, alimony, child support, and any other source of money income which was regularly received. Capital gains (or losses) and lump sum or one-time payments such as life insurance settlements are excluded.

Underreporting. As in most household surveys, estimates from the March CPS of the number of money income recipients and the total amount of money income received are somewhat less than comparable estimates derived from independent sources, such as the Bureau of Economic Analysis, Social Security Administration, and Veterans Administration. The difference between the survey estimate and the independent estimate is generally termed "underreporting." Underreporting tends to be more pronounced for income sources such as public assistance and welfare, unemployment compensation, and property income (interest, dividends, and net rental income). Estimates of income from wages and salaries tend to have less underreporting than most income types. For further details concerning the reporting of cash income and noncash benefits, see appendix F.

Family. The term "family" refers to a group of two or more persons related by blood, marriage, or adoption and residing together; all such persons are considered members of the same family. Thus, if the son of the householder and the son's wife are in the household, they are treated as part of the householder's family. However, a lodger and his wife not related to the householder or an unrelated servant and his wife are considered as additional families, not a part of the householder's family. These unrelated subfamilies are not included in the count of total families.

Unrelated individuals. The term "unrelated individuals" refers to persons 15 years old and over (other than inmates of institutions) who are not living with any relatives. An unrelated individual may (1) constitute a one-person household, (2) be part of a household including one or more families or other unrelated individuals, or (3) reside in group quarters (such as a rooming house). Thus, a widow living by herself or with one or more other persons not related to her, a lodger not related to the householder or to anyone else in the household, and a servant living in an employer's household with no relatives are examples of unrelated individuals.

Appendix F. Underreporting of Cash Income and Noncash Benefits

This appendix discusses some important aspects of underreporting and its measurement and presents some estimates of underreporting for the year 1983. The general survey phenomenon that is commonly termed underreporting actually refers to the tendency of household surveys to underestimate the number of income or noncash benefit recipients and/or the amount of income or benefits received. There are three main causes for underreporting. These are failure to report receipt of the income type, underreporting of the amount received, and misclassification of the income type received.

Accurately measuring the extent of underreporting of cash income and noncash benefits is difficult for many of the income types and noncash benefit programs. There are two main components of measuring underreporting: the number of income or noncash benefit recipients and the total amount of income or benefits received. Measuring the survey undercount of recipients for the March CPS is extremely difficult because independent estimates (benchmarks or controls) for the CPS noninstitutional, "ever-received during the year" recipient concept are difficult to validate. In addition, some of the administrative sources required for the derivation of independent estimates have significant errors themselves.

The derivation of accurate underreporting estimates for amounts of income or noncash benefits is easier but still not without similar problems. In general, better administrative data are available on the annual amount of benefits received, or income earned, than recipients. Some of the more important problems associated with development of the independent controls for amounts are adjusting independent estimates to the CPS noninstitutional population, significant differences between alternate sources of independent estimates, especially for self-employment income, interest, dividends, and rents, and periodic revisions to the sources of independent estimates that delay availability of data and significantly alter estimates of underreporting. In the case of noncash benefits, the face value of food stamps was the only noncash benefit amount collected.

Shown in table F-1 are estimates of underreporting for amounts of cash income for 1983, the latest year available.

Estimates of the extent of underreporting for most noncash benefits are less well defined. Following are discussions of the underreporting for each benefit type.

Food stamps. The March CPS estimate for the face value of food stamps received in 1984 was about $7.6 billion, 71 percent of the independent estimate derived for that year. The 20.1 million recipient (persons covered) estimate for 1984 compares to a 26.1 million independent estimate of recipients. Since this independent estimate was developed using USDA monthly person recipiency counts and average months of participation as reported in the CPS, it is difficult to validate its accuracy.

School lunches. The March CPS data for 1984 show 10.8 million children usually eating free or reduced-price school lunches and 17.5 million usually eating full-price school lunches. Since independent estimates on the "ever-partici pated" universe are not available for this group, comparisons of the CPS estimates with peak monthly average daily participation have been made. These peak figures were 11.6 million for free or reduced-price lunches and 11.4 million for full-price lunches. The CPS estimate is 93 percent of the peak monthly average for free or reduced-price. The CPS estimate of full-price lunch participants was about 54 percent higher than the peak monthly figure. The obvious conceptual differences between the CPS and USDA figures make these comparisons difficult to interpret.

Public or other subsidized housing. In 1984 the March CPS estimate for the number of households residing in public or other subsidized rental housing was 3.6 million. An independent estimate was derived by summing housing units in (1) low-income public housing, (2) Section 8 (including Section 202), (3) rent supplements (Section 101), and (4) Section 236. This summing yielded a figure of 3.3 million. While the CPS estimate was about 9 percent higher than the independent figure, it is likely that the survey estimate contains some units, such as student or military housing, that were not intended to be counted. The magnitude of this problem is probably small, but unknown.

Medicare. The independent estimate for persons covered by Medicare is probably the most reliable of all independent estimates. In 1984, this figure was 28.4

million persons. This compares to a survey estimate of 28.2 million, 99.3 percent of the control. The survey count probably contains some persons covered by Medicaid that report coverage under Medicare by mistake. The magnitude of this misreporting problem is not known.

Medicaid. While the previous technical paper contained figures labeled independent estimates, the derivation of these estimates used a combination of administrative counts for persons "ever receiving" benefits and the March CPS "ever covered" figures. Because the derivation of the independent estimates should not be based, even partially, on the survey data, this comparison has not been made here. The CPS estimate of 19.3 million for 1984 was about 3 percent higher than the "unduplicated" administative figure of 18.7 million persons "ever receiving" benefits available from the HCFA. This HCFA figure has not been adjusted for decedents or the institutionalized population and does not include persons who were covered by Medicaid but did not receive benefits in 1984.

Table F-1. Comparisons of CPS Aggregate Money Income in 1983 With Independently Derived Estimates, by Income Type

(Billions of dollars)

Source of income	Independent estimate	CPS estimate	CPS as a percent of independent
Total	2,402.5	2,164.9	90.1
Wages and salaries	1,632.3	1,616.3	99.0
Self-employment	112.6	130.1	115.5
Social Security[1]	155.2	142.3	91.7
Supplemental Security Income	9.0	7.6	84.9
Aid to Families with Dependent Children	13.8	10.5	76.0
Interest, dividends, and rental income	315.3	143.2	45.4
Veterans' payments	14.0	8.8	63.3
Unemployment compensation	26.1	19.7	75.5
Workers' compensation	14.1	6.6	47.0
Private, government, and military pensions	110.1	79.7	72.4

[1]Includes Railroad Retirement benefits.