Technical Paper 57

Estimates of Poverty Including the Value of Noncash Benefits: 1986

U.S. Department of Commerce
BUREAU OF THE CENSUS

Acknowledgments

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SYMBOLS USED IN TABLES

- Represents zero or rounds to zero.
B Base less than 75,000.
X Not applicable.
r Revised

Estimates of Poverty Including the Value of Noncash Benefits: 1986

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 1986. This report updates estimates covering 1979 through 1985 which have been pub lished in previous technical papers released by the Bureau of the Census.

The Census Bureau's research in the valuation of noncash benefits began in the fall of 1980, following 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 the publication of Technical Paper 50, issued in March 1982, showing the effect of including the value of certain noncash benefits as income for purposes of measuring the poverty population. The 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 the Technical Paper 50 focused on conceptual and empirical problems associated with each of the three valuation techniques. The updated estimates published in subsequent technical papers used procedures to value noncash benefits that were the same as those described in the initial technical paper. The experimental estimates were subject to the same problems of measurement, but they provided a comparable time series.

Because noncash benefits, both government and private, have grown in importance, and because the problems of valuing such benefits are great, the Bureau of the Census sponsored a conference in December 1985 on the measurement of noncash benefits. This conference was held to provide an opportunity for the academic, private, and government communities to learn about noncash benefit valuation issues and to present their opinions to the Bureau of the Census.

That conference featured four papers devoted to conceptual and measurement issues, comments by two discussants on each paper, and a wide-ranging discussion of the issues by the 115 conference participants. The conference attendees were not asked to produce a set of recommendations, but from the Census Bureau's perspective, there was widespread agreement on two issues: (1) the Census Bureau should continue its work on the valuation of noncash benefits, and (2) the current methods have serious flaws and should be substantially modified.

In general, participants at the December 1985 conference did not support continuation of the poverty budget share approach or estimates of the value of medical care for institutionalized persons in the income of noninstitutionalized persons. The primary objection to the poverty budget share approach is that the value assigned by that approach is dependent upon the person's or family's poverty threshold. Most observers agreed that the cash equivalent or recipient value approach, in which the value assigned is dependent upon the person's or family's income, is conceptually superior to the poverty budget share approach. It should be noted that while the theoretical implications might be important, the poverty budget share approach and the cash equivalent or recipient value approach produced very similar estimates of poverty. There was essentially unanimous agreement that it was inappropriate to count the value of medical care for institutionalized persons as part of the income received by persons not in institutions.

This report is intended as a transition between the earlier technical papers and a report being developed for next year that will reflect the results of the Census Bureau's research and evaluation efforts. The estimates presented in this report are a subset of those presented in earlier reports. Estimates based on the poverty budget share method and estimates that counted the value of medical care services received by the institutionalized population as income received by noninstitutionalized persons have been deleted.

This report is organized into several sections. Following the introduction are sections covering the growth of noncash benefits programs and a descrip-

tion 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 gives a description of each of the noncash benefit programs; appendix E is a glossary of standard statistical definitions and explanations, and appendix F discusses problems of underreporting of recipiency and amounts in the March Current Population Survey (CPS).

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. The growth of both cash and noncash benefit programs since 1979 is illustrated in table A.

In 1979, the first year for which noncash benefit data were collected in the March CPS, the market value of means-tested noncash benefits stood at about $51.0 billion (in 1986 dollars), compared with $35.0 billion for means-tested cash assistance programs. The market value of means-tested noncash benefits was $59.0 billion in 1986. Means-tested cash benefits amounted to $32.1 billion. Medicaid, the largest means-tested noncash benefit program, had a market value of $39.7 billion in 1986, up from $31.6 billion in 1979.

The lower portion of table A shows the two nonmeans-tested benefits that were valued in this study. The market value of Medicare was $76.0 billion in 1986 and the market value of subsidies for full price school lunches was $698 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 recipvient. *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: 1979-86

(Figures in millions of 1986 dollars)

Type of benefit	1979	1980	1981	1982	1983	1984	1985	1986
Means-tested cash assistance	$34,965	$ 33,916	$ 32,410	$ 30,897	$ 30,368	$ 30,430	$ 30,745	$ 32,077
Noncash benefits, total	96,657	102,003	108,764	112,663	119,441	122,400	129,910	135,730
Means-tested, total	50,963	53,197	55,496	54,013	55,568	55,292	57,348	59,035
Food stamps	9,798	11,561	12,801	11,595	12,237	11,268	10,895	10,586
Free and reduced-price school lunches	3,194	3,253	2,893	2,743	2,891	2,877	2,819	2,687
Public and subsidized housing[2]	6,319	5,994	5,547	5,697	5,749	6,007	6,277	6,072
Medicaid[3]	31,652	32,389	34,255	33,978	34,691	35,140	37,357	39,690
Nonmeans-tested, total	45,694	48,806	53,268	58,650	63,873	67,108	72,562	76,695
Medicare	44,293	47,509	52,384	57,992	63,217	66,421	71,867	75,997
Regular price school lunches	1,401	1,297	884	658	656	687	695	698

[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.

75945 : 79%

115687

The market values of Medicaid and Medicare benefits were estimated by dividing total noninstitutional medical benefits paid by the programs 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.

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. The Congressional Budget Office (1977) and Hoagland (1980) both used MV but included a statement that the cash value of noncash benefits to recipients may be less than the MV.

In theory, the recipient or cash equivalent value can be estimated by assigning a utility function[1] 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 non-recipient 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.

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

ILLUSTRATION OF VALUATION TECHNIQUES

Food Stamps

The market value has been defined as the price of the good or service pro vided for by the noncash benefit. A four-person family with an annual cash income of $6,000 in 1986 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 $4,311 in 1986 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.[2] 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.

OFFICIAL AND EXPERIMENTAL POVERTY ESTIMATES, 1979-86

Tables B and C show the number and percent of persons in poverty for the years 1979-86 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 1985 to 1986 (the estimated number of persons in poverty was 33.1 million in 1985 and 32.4 million in 1986). The experimental approaches also did not show a statistically significant change from 1985 to 1986 in the number of persons below poverty.

The experimental approaches produced estimates of the number of persons in poverty in 1986 that ranged from about 21.4 million to about 29.8 million (from 2.6 million to about 11.0 million less than the official estimate). When medical care benefits were not counted, the two valuation approaches produced similar estimates (about 3 million less than the official estimate). When medical care benefits were counted, the market value approach produced estimates that were far lower than the recipient value approach (the

[2] A recent Government Accounting Office (GAO) evaluation of Census Bureau methods of assigning values to noncash benefits resulted in the detection of an error in the computer program used to implement the recipient value approach; the value assigned to medical care benefits does not increase as the recipient's income level increases. Because of this, the overall poverty rate using the recipient value approach is overstated in this and earlier reports (e.g., the published level for 1984 was 12.4 percent, compared with a "corrected" level of 12.0 percent). The error will be corrected in future reports.

Table B. Number of Persons in Poverty, by Valuation Technique and Type of Noncash Benefits Included: 1979-86

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

Type of measure	1986	1985	1984	1983	1982	1981	1980	1979
Official definition	32,370	33,064	33,700	35,515	34,398	31,822	29,272	26,072
Market value approach:								
Including food and housing	28,988	29,489	30,103	32,123	30,688	27,932	25,042	21,698
Including food, housing, and medical care for noninstitutionalized persons	21,369	21,941	23,019	24,512	23,563	21,046	18,221	15,696
Recipient value approach:								
Including food and housing	29,793	30,351	30,909	32,718	31,365	28,651	25,633	22,270
Including food, housing, and medical care for noninstiutionalized persons	27,592	28,281	28,917	30,720	29,407	26,784	23,895	20,478

Table C. Percent of Persons in Poverty, by Valuation Technique and Type of Noncash Benefits Included: 1979-86

Type of measure	1986	1985	1984	1983	1982	1981	1980	1979
Official definition	13.6	14.0	14.4	15.3	15.0	14.0	13.0	11.7
Market value approach:								
Including food and housing only	12.2	12.5	12.9	13.9	13.4	12.3	11.1	9.7
Including food, housing, and medical care for noninstitutionalized persons	9.0	9.3	9.8	10.6	10.3	9.3	8.1	7.0
Recipient value approach:								
Including food and housing only	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	11.6	12.0	12.4	13.3	12.8	11.8	10.6	9.2

market value approach estimate was 21.4 million compared to an estimate of 27.6 million using the recipient value approach).

The estimates of change in the poverty rate produced by the experimental estimates were similar to the official estimate. The change in the official estimate, from 14.0 percent in 1985 to 13.6 percent in 1986, was not significant at the 95-percent confidence level but was significant at the 90-percent level of confidence. None of the experimental measures showed a statistically significant change at the 95-percent confidence level and only one approach (the recipient value method including food, housing, and noninstitutional medical care) showed a significant change at the 90-percent confidence level.

Table D shows 1985 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 1986 rate was about 12.4 percent under the official approach and about 3.0 percent under the experimental approach). The significance of this result is discussed below in the section on "Measurement Issues."

Table D. Percent of Persons in Poverty, by Valuation Technique and Selected Characteristics: 1986 and 1985

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	
	1986	1985	1986	1985	1986	1985	1986	1985	1986	1985
RACE AND HISPANIC ORIGIN[1]										
White	11.0	11.4	9.9	10.2	7.4	7.8	10.2	10.5	9.4	9.7
Black	31.1	31.3	27.3	27.5	19.8	19.4	28.3	28.6	26.4	26.8
Hispanic	27.3	29.0	24.3	25.5	18.7	19.1	25.0	26.2	23.7	24.6
AGE										
Under 6 years	22.1	23.0	20.1	20.8	16.1	16.4	20.6	21.4	19.9	20.7
6 to 17 years	19.6	19.5	17.1	16.9	12.6	12.7	17.5	17.5	16.5	16.7
18 to 24 years	15.6	16.5	14.4	15.3	12.5	13.2	14.8	15.6	14.3	15.1
25 to 44 years	10.2	10.6	9.2	9.4	7.4	7.6	9.4	9.7	9.0	9.3
45 to 64 years	9.1	9.5	8.4	8.7	6.4	6.7	8.6	8.9	8.0	8.3
65 years and over	12.4	12.6	10.7	10.7	3.0	3.2	11.1	11.1	8.0	7.9
RELATIONSHIP										
In families	12.0	12.6	10.7	11.2	7.9	8.4	11.0	11.5	10.2	10.8
Married-couple families	7.1	7.9	6.5	7.1	5.0	5.7	6.6	7.2	6.1	6.8
Families with female householder, no spouse present	38.3	37.6	33.1	32.4	23.5	22.6	34.7	34.2	32.1	31.9
Unrelated individuals	21.6	21.5	19.7	19.5	13.9	13.7	20.4	20.1	18.5	18.1

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

RECEIPT OF NONCASH BENEFITS AND AVERAGE NONCASH BENEFIT VALUES

Approximately 70 percent of all families in poverty in 1986 received food stamps or school lunches (table E). About 19 percent received housing benefits and approximately 57 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 F shows the receipt and value of noncash benefits by type among families and unrelated individuals by poverty status. Of the 7.0 million families in poverty, 4.9 million received food benefits and 1.3 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 4.0 million.

The estimated value of the food benefits (food stamp and school lunches) received by families in poverty was approximately $1,400 (the choice of valuation method had little effect on the estimate). The estimated value of housing benefits depended on the valuation method used. The mean value was approximately $1,780 using the market value and about $970 using the recipient value. The mean value of medical benefits varied substantially by valuation method; $2,890 if the market value was used and $700 if the recipient value was used.

Of the 57.5 million families not in poverty, 14.9 million received food stamps or school lunches, 0.8 million received housing benefits, and 13.3 million received medical benefits. The mean value of the food benefits received by these households was approx imately $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 1986 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

Table E. Receipt of Noncash Benefits, by Families and Unrelated Individuals in Poverty: 1979-86

(Numbers in thousands)

Year	In poverty	Received food benefits		Received housing benefits		Received medical benefits	
		Number	Percent	Number	Percent	Number	Percent
FAMILIES							
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							
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							
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 F. Families and Unrelated Individuals Receiving Selected Noncash Benefits, by Poverty Status and Mean Value of Benefits by Valuation Method: 1986

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 (thous.)	64,491	7,023	57,468	10,445	3,613	6,832	31,679	6,846	24,833
Received one or more noncash benefits (thous.)	32,465	5,770	26,694	5,612	3,017	2,595	11,517	3,831	7,687
Mean value:									
Market	$2,029	3,683	1,672	2,779	4,147	1,189	2,152	2,451	2,003
Recipiency	$840	1,902	611	1,520	2,323	587	705	780	668
Received food benefits (thous.)	19,808	4,894	14,913	5,212	2,860	2,352	1,817	1,420	397
Mean value:									
Market	$518	1,479	203	1,059	1,669	316	456	485	351
Recipiency	$498	1,404	201	1,009	1,583	312	424	447	340
Received housing benefits (thous.)	2,180	1,337	843	1,361	1,038	323	1,748	829	919
Mean value:									
Market	$1,619	1,777	1,369	1,712	1,823	1,356	1,455	1,567	1,355
Recipiency	$929	973	859	959	991	856	953	1,002	909
Received medical benefits (thous.)	17,306	4,034	13,272	3,050	2,330	721	10,607	3,352	7,256
Mean value									
Market	$3,009	2,885	3,047	2,541	2,510	2,644	2,019	2,208	1,932
Recipiency	$889	695	948	645	624	713	536	454	574

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 G shows the effect of cash and noncash transfers on poverty status. The number of families in poverty in 1986 before transfers (cash and noncash) was 11.4 million. Adding in the income received from Social Security and Railroad Retirement brought the total to 7.6 million, and adding in the remaining cash transfers brought the level to 7.0 million (the 7.0 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 4.5 million or 5.9 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 H shows the relationship between the market value of medical care benefits and the poverty thresholds in the 10 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 nine 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 $4,744, compared with their poverty threshold level of $6,623. 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 9 of the 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 much smaller, though

Table G. Poverty Status of Families and Unrelated Individuals Before and After Cash and Selected Noncash Transfers: 1986 and 1985

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

Recipiency	Number in poverty			Percent in poverty		
	1986	1985	Difference	1986	1985	Difference
FAMILIES						
Before transfers	11,417	11,660	-243	17.7	18.3	-0.6
After Social Security and Railroad Retirement	7,613	7,769	-156	11.8	12.2	-0.4
After all cash transfers[1]	7,023	7,223	-200	10.9	11.4	-0.5
After all cash transfers and selected noncash transfers:						
Market value	4,537	4,649	-112	7.0	7.3	-0.3
Recipient value	5,916	6,070	-154	9.2	9.6	-0.4
UNRELATED INDIVIDUALS						
Before transfers	11,263	11,003	260	35.6	35.1	0.5
After Social Security and Railroad Retirement	7,123	7,054	69	22.5	22.5	-
After all cash transfers[1]	6,846	6,725	121	21.6	21.5	0.1
After all cash transfers and selected noncash transfers:						
Market value	4,417	4,219	198	13.9	13.5	0.4
Recipient value	5,853	5,543	310	18.5	17.7	0.8

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

Table H. Examples of the Relationship Between Market Value of Medical Benefits and Poverty Thresholds, by Family Type in Ten Largest States: 1986

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	$4,744	$6,623	71.6	$3,064	$5,255	58.3	$1,794	8,829	20.3
New York	4,290	6,623	64.8	6,456	5,255	122.9	2,606	8,829	29.5
Texas	3,820	6,623	57.7	2,903	5,255	55.2	1,898	8,829	21.5
Pennsylvania	4,508	6,623	68.1	2,875	5,255	54.7	1,835	8,829	20.8
Illinois	4,352	6,623	65.7	3,127	5,255	59.5	1,870	8,829	21.2
Florida	4,056	6,623	61.2	2,976	5,255	56.6	1,456	8,829	16.5
Ohio	3,618	6,623	54.6	2,701	5,255	51.4	2,217	8,829	25.1
Michigan	4,584	6,623	69.2	3,199	5,255	60.9	1,919	8,829	21.7
New Jersey	4,108	6,623	62.0	3,417	5,255	65.0	2,176	8,829	24.6
North Carolina	2,792	6,623	42.2	2,402	5,255	45.7	2,093	8,829	23.7

still sizable, proportion of the 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 I 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 risk classes. For example, a nondisabled adult in California was assumed to have an income from Medicaid of $946

Table I. Market Value of Medicaid, by Risk Class in Ten Largest States: 1986 and 1985

(In 1986 dollars)

State and year	Nondisabled person 21 to 64 years	Disabled person 21 to 64 years	Person 65 and over
1986			
California	$946	$2,560	$692
New York	1,282	6,941	4,311
Texas	1,072	1,829	993
Pennsylvania	813	1,931	621
Florida	752	1,928	948
Illinois	934	4,220	951
Ohio	973	2,574	892
Michigan	1,059	3,351	907
New Jersey	1,206	3,121	1,363
North Carolina	1,003	3,693	1,006
1985			
California	$948	$2,379	$637
New York	1,141	6,381	3,895
Texas	1,074	1,832	993
Pennsylvania	704	2,045	561
Illinois	947	4,438	949
Florida	913	1,636	818
Ohio	953	2,505	1,233
Michigan	853	3,121	792
New Jersey	1,106	2,727	1,191
North Carolina	906	3,350	917

in 1986. 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 $1,614 ($2,560-$946). A New York resident in a similar situation would have had an income increase of $5,659.

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 has been developed for valuing employer-provided health benefits or other noncash benefits received by the middle and upper portions of the income distribution. Future reports must broaden the range of benefits for which values are estimated.

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. The examination of conceptual issues will cover 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 conmparing modified definitions of income against existing poverty thresholds. Empirical research will focus 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.

Table 1. Persons Below The Poverty Level and Poverty Rate–Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979-86

(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, excluding institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excluding institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
ALL PERSONS										
1986	32,370	28,988	29,793	21,369	27,592	13.6	12.2	12.5	9.0	11.6
1985	33,064	29,489	30,351	21,941	28,281	14.0	12.5	12.8	9.3	12.0
1984	33,700	30,103	30,909	23,019	28,917	14.4	12.9	13.2	9.8	12.4
1983	35,303	32,123	32,718	24,512	30,720	15.2	13.9	14.1	10.6	13.3
1982	34,398	30,688	31,365	23,563	29,407	15.0	13.4	13.7	10.3	12.8
1981	31,822	27,932	28,651	21,046	26,784	14.0	12.3	12.6	9.3	11.8
1980	29,372	25,042	25,633	18,221	23,895	13.0	11.1	11.4	8.1	10.6
1979	26,072	21,698	22,270	15,696	20,478	11.7	9.7	10.0	7.0	9.2
RACE AND HISPANIC ORIGIN[1]										
White										
1986	22,183	20,039	20,540	14,882	18,969	11.0	9.9	10.2	7.4	9.4
1985	22,860	20,525	21,063	15,598	19,568	11.4	10.2	10.5	7.8	9.7
1984	22,955	20,881	21,279	16,136	19,755	11.5	10.5	10.7	8.1	9.9
1983	23,984	22,299	22,569	17,464	21,193	12.1	11.3	11.4	8.8	10.7
1982	23,517	21,280	21,665	16,653	20,363	12.0	10.9	11.1	8.5	10.4
1981	21,553	19,219	19,632	14,767	18,286	11.1	9.9	10.1	7.6	9.4
1980	19,699	17,381	17,727	12,997	16,503	10.2	9.0	9.2	6.7	8.6
1979	17,214	14,897	15,135	10,965	13,888	9.0	7.8	7.9	5.7	7.2
Black										
1986	8,983	7,884	8,171	5,705	7,613	31.1	27.3	28.3	19.8	26.4
1985	8,926	7,843	8,135	5,539	7,639	31.3	27.5	28.6	19.4	26.8
1984	9,490	8,084	8,464	5,976	8,060	33.8	28.8	30.1	21.3	28.7
1983	9,882	8,479	8,786	6,091	8,246	35.7	30.6	31.7	22.0	29.8
1982	9,697	8,347	8,633	6,126	8,068	35.6	30.7	31.7	22.5	29.6
1981	9,173	7,764	8,060	5,536	7,579	34.2	28.9	30.0	20.6	28.2
1980	8,579	6,767	7,006	4,525	6,529	32.5	25.6	26.5	17.1	24.7
1979	8,050	6,088	6,407	4,126	5,884	31.0	23.5	24.7	15.9	22.7
Hispanic										
1986	5,117	4,565	4,687	3,501	4,439	27.3	24.3	25.0	18.7	23.7
1985	5,236	4,614	4,737	3,456	4,444	29.0	25.5	26.2	19.1	24.6
1984	4,806	4,315	4,394	3,413	4,197	28.4	25.5	26.0	20.2	24.8
1983	4,633	4,228	4,292	3,343	4,104	28.0	25.6	25.9	20.2	24.8
1982	4,301	3,806	3,917	3,029	3,780	29.9	26.5	27.2	21.1	26.3
1981	3,713	3,201	3,307	2,401	3,137	26.5	22.8	23.6	17.1	22.4
1980	3,491	2,923	3,014	2,111	2,829	25.7	21.5	22.2	15.5	20.8
1979	2,921	2,328	2,398	1,668	2,234	21.8	17.4	17.9	12.5	16.7
AGE										
Under 6 Years										
1986	4,796	4,353	4,472	3,480	4,311	22.1	20.1	20.6	16.1	19.9
1985	4,972	4,503	4,633	3,551	4,473	23.0	20.8	21.4	16.4	20.7
1984	5,115	4,627	4,734	3,778	4,591	24.0	21.7	22.2	17.7	21.5
1983	5,256	4,791	4,904	3,913	4,746	25.0	22.8	23.3	18.6	22.6
1982	4,977	4,472	4,597	3,649	4,431	23.8	21.4	22.0	17.5	21.2
1981	4,555	3,964	4,113	3,160	3,949	22.4	19.5	20.3	15.6	19.4
1980	4,107	3,502	3,602	2,722	3,482	20.7	17.6	18.1	13.7	17.5
1979	3,521	2,870	2,973	2,253	2,815	18.2	14.8	15.4	11.6	14.5

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

Table 1. Persons Below The Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979-86—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, excluding institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excluding institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
AGE—Continued										
6 to 17 Years										
1986	8,080	7,051	7,239	5,209	6,822	19.6	17.1	17.5	12.6	16.5
1985	8,038	6,978	7,225	5,240	6,877	19.5	16.9	17.5	12.7	16.7
1984	8,305	7,193	7,404	5,701	7,099	20.2	17.5	18.0	13.9	17.3
1983	8,505	7,693	7,826	6,050	7,470	20.8	18.6	18.9	14.6	18.1
1982	8,670	7,514	7,663	5,982	7,320	20.9	18.1	18.5	14.4	17.7
1981	7,950	6,732	6,930	5,314	6,661	18.9	16.0	16.4	12.6	15.8
1980	7,436	6,032	6,239	4,452	5,940	17.3	14.0	14.5	10.3	13.8
1979	6,856	5,298	5,550	3,934	5,251	15.6	12.0	12.6	8.9	11.9
18 to 24 Years										
1986	4,133	3,823	3,922	3,302	3,776	15.6	14.4	14.8	12.5	14.3
1985	4,463	4,148	4,222	3,585	4,104	16.5	15.3	15.6	13.2	15.1
1984	4,616	4,317	4,384	3,717	4,236	16.6	15.5	15.7	13.4	15.2
1983	4,925	4,570	4,627	3,924	4,479	17.3	16.1	16.3	13.8	15.7
1982	4,546	4,182	4,259	3,613	4,143	15.7	14.4	14.7	12.4	14.3
1981	4,329	3,932	4,015	3,407	3,884	14.8	13.5	13.8	11.7	13.3
1980	3,818	3,429	3,482	2,902	3,386	13.1	11.7	11.9	9.9	11.6
1979	3,366	2,883	2,925	2,433	2,816	11.6	9.9	10.0	8.4	9.7
25 to 44 Years										
1986	7,815	7,012	7,187	5,667	6,855	10.2	9.2	9.4	7.4	9.0
1985	7,899	7,042	7,248	5,700	6,952	10.6	9.4	9.7	7.6	9.3
1984	7,938	7,140	7,318	5,924	7,013	11.0	9.9	10.1	8.2	9.7
1983	8,403	7,669	7,791	6,431	7,528	12.0	10.9	11.1	9.2	10.7
1982	8,031	7,178	7,344	6,124	7,069	11.8	10.5	10.8	9.0	10.4
1981	7,010	6,170	6,304	5,236	6,075	10.6	9.3	9.5	7.9	9.2
1980	6,242	5,319	5,456	4,365	5,256	9.8	8.3	8.5	6.8	8.2
1979	4,949	4,106	4,227	3,348	4,023	8.0	6.6	6.8	5.4	6.5
45 to 64 Years										
1986	4,070	3,762	3,868	2,866	3,592	9.1	8.4	8.6	6.4	8.0
1985	4,236	3,892	4,000	2,989	3,704	9.5	8.7	8.9	6.7	8.3
1984	4,397	4,020	4,162	3,098	3,863	9.9	9.0	9.3	7.0	8.7
1983	4,439	4,144	4,254	3,223	3,999	10.0	9.3	9.6	7.3	9.0
1982	4,423	4,048	4,133	3,153	3,877	10.0	9.2	9.4	7.1	8.8
1981	4,125	3,787	3,859	2,870	3,623	9.3	8.6	8.7	6.5	8.2
1980	3,799	3,405	3,460	2,611	3,232	8.6	7.7	7.8	5.9	7.3
1979	3,697	3,304	3,353	2,527	3,097	8.4	7.5	7.6	5.7	7.0
65 Years and Over										
1986	3,477	2,987	3,105	846	2,237	12.4	10.7	11.1	3.0	8.0
1985	3,456	2,927	3,023	876	2,170	12.6	10.7	11.1	3.2	7.9
1984	3,330	2,806	2,907	801	2,114	12.4	10.5	10.8	3.0	7.9
1983	3,625	3,257	3,317	973	2,498	13.8	12.4	12.6	3.7	9.5
1982	3,751	3,294	3,368	1,043	2,566	14.6	12.8	13.1	4.1	10.0
1981	3,853	3,347	3,430	1,059	2,591	15.3	13.3	13.6	4.2	10.3
1980	3,871	3,355	3,395	1,169	2,600	15.7	13.6	13.8	4.7	10.5
1979	3,682	3,237	3,242	1,200	2,476	15.2	13.4	13.4	5.0	10.2

Table 1. Persons Below The Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979-86—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, excluding institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excluding institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
FAMILY STATUS										
In Families										
1986	24,754	22,002	22,597	16,259	21,002	12.0	10.7	11.0	7.9	10.2
1985	25,729	22,779	23,447	17,092	22,000	12.6	11.2	11.5	8.4	10.8
1984	26,458	23,483	24,092	18,179	22,659	13.1	11.6	11.9	9.0	11.2
1983	27,933	25,173	25,614	19,467	24,139	13.9	12.5	12.7	9.7	12.0
1982	27,349	24,144	24,665	18,809	23,219	13.6	12.0	12.3	9.4	11.6
1981	24,850	21,491	22,074	16,500	20,717	12.5	10.8	11.1	8.3	10.4
1980	22,601	18,968	19,477	13,914	18,281	11.5	9.6	9.9	7.1	9.3
1979	19,964	16,070	16,604	11,696	15,274	10.2	8.2	8.5	6.0	7.8
In Married-Couple Families										
1986	11,963	10,918	11,012	8,335	10,247	7.1	6.5	6.6	5.0	6.1
1985	13,213	11,886	12,014	9,491	11,361	7.9	7.1	7.2	5.7	6.8
1984	13,717	12,529	12,643	10,032	11,831	8.3	7.6	7.6	6.1	7.2
1983	15,111	13,923	13,983	11,230	13,167	9.1	8.4	8.4	6.8	7.9
1982	14,839	13,342	13,478	10,762	12,647	8.9	8.0	8.1	6.5	7.6
1981	13,177	11,722	11,807	9,372	11,085	8.0	7.1	7.2	5.7	6.7
1980	11,861	10,264	10,377	7,946	9,745	7.2	6.2	6.3	4.8	5.9
1979	10,074	8,644	8,743	6,613	8,010	6.1	5.3	5.3	4.0	4.9
In Families With a Female Householder, No Husband Present										
1986	11,944	10,310	10,802	7,319	10,011	38.3	33.1	34.7	23.5	32.1
1985	11,600	10,013	10,548	6,977	9,844	37.6	32.4	34.2	22.6	31.9
1984	11,831	10,117	10,602	7,500	10,022	38.4	32.8	34.4	24.3	32.5
1983	12,072	10,496	10,885	7,615	10,275	40.2	34.9	36.2	25.3	34.2
1982	11,701	10,064	10,437	7,438	9,870	40.6	34.9	36.2	25.8	34.2
1981	11,051	9,214	9,710	6,716	9,122	38.7	32.2	34.0	23.5	31.9
1980	10,120	8,183	8,572	5,535	8,039	36.7	29.7	31.1	20.1	29.2
1979	9,400	6,988	7,425	4,741	6,861	34.9	26.0	27.6	17.6	25.5
All Unrelated Individuals										
1986	6,846	6,241	6,450	4,417	5,853	21.6	19.7	20.4	13.9	18.5
1985	6,725	6,116	6,310	4,302	5,688	21.5	19.5	20.1	13.7	18.1
1984	6,609	6,001	6,197	4,284	5,647	21.8	19.8	20.5	14.2	18.7
1983	6,740	6,339	6,493	4,510	5,976	23.1	21.7	22.3	15.5	20.5
1982	6,458	5,958	6,115	4,228	5,603	23.1	21.4	21.9	15.2	20.1
1981	6,490	5,981	6,116	4,119	5,618	23.4	21.6	22.1	14.9	20.3
1980	6,227	5,669	5,741	3,946	5,202	22.9	20.9	21.2	14.5	19.2
1979	5,743	5,280	5,314	3,696	4,853	21.9	20.2	20.3	14.1	18.5
Male Unrelated Individuals										
1986	2,536	2,403	2,452	1,980	2,364	17.5	16.6	16.9	13.7	16.3
1985	2,499	2,393	2,439	1,996	2,324	17.4	16.7	17.0	13.9	16.2
1984	2,575	2,455	2,496	2,047	2,382	18.7	17.9	18.2	14.9	17.3
1983	2,641	2,547	2,580	2,105	2,481	20.1	19.4	19.6	16.0	18.9
1982	2,347	2,231	2,269	1,908	2,174	18.8	17.9	18.2	15.3	17.4
1981	2,239	2,150	2,181	1,779	2,086	18.1	17.4	17.6	14.4	16.9
1980	2,109	2,010	2,025	1,623	1,914	17.4	16.6	16.7	13.4	15.8
1979	1,972	1,875	1,885	1,542	1,779	16.9	16.1	16.2	13.2	15.8
Female Unrelated Individuals										
1986	4,311	3,837	3,998	2,436	3,489	25.1	22.3	23.2	14.2	20.3
1985	4,226	3,722	3,871	2,306	3,365	24.8	21.9	22.8	13.6	19.8

Table 1. Persons Below The Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979-86—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, excluding institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excluding institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
FAMILY STATUS—Continued										
Female Unrelated Individuals—Continued										
1984	4,035	3,546	3,702	2,238	3,265	24.4	21.5	22.4	13.5	19.8
1983	4,099	3,792	3,914	2,405	3,495	25.6	23.7	24.4	15.0	21.8
1982	4,110	3,728	3,847	2,320	3,429	26.6	24.2	24.9	15.0	22.2
1981	4,251	3,831	3,935	2,340	3,532	27.7	24.9	25.6	15.2	23.0
1980	4,118	3,659	3,716	2,323	3,288	27.4	24.4	24.7	15.5	21.9
1979	3,771	3,405	3,429	2,154	3,074	26.0	23.5	23.6	14.8	21.2
REGION										
Northeast										
1986	5,211	4,440	4,702	2,698	4,254	10.5	9.0	9.5	5.4	8.6
1985	5,751	4,952	5,194	2,961	4,692	11.6	10.0	10.5	6.0	9.5
1984	6,531	5,587	5,832	3,819	5,391	13.2	11.3	11.8	7.7	10.9
1983	6,605	5,936	6,056	3,930	5,584	13.4	12.1	12.3	8.0	11.4
1982	6,364	5,451	5,631	3,685	5,228	13.0	11.1	11.5	7.5	10.7
1981	5,815	5,049	5,212	3,442	4,887	11.9	10.3	10.6	7.0	10.0
1980	5,369	4,456	4,613	2,683	4,226	11.1	9.2	9.5	5.5	8.7
1979	5,058	3,932	4,095	2,443	3,684	10.4	8.1	8.4	5.0	7.6
Midwest										
1986	7,641	6,872	7,060	4,895	6,469	13.0	11.7	12.0	8.3	11.0
1985	8,191	7,460	7,665	5,497	7,226	13.9	12.7	13.0	9.4	12.3
1984	8,303	7,490	7,670	5,510	7,212	14.1	12.7	13.1	9.4	12.3
1983	8,511	7,771	7,923	5,812	7,472	14.6	13.3	13.6	10.0	12.8
1982	7,772	7,113	7,278	5,343	6,792	13.3	12.2	12.5	9.2	11.7
1981	7,142	6,277	6,477	4,632	6,050	12.3	10.8	11.1	8.0	10.4
1980	6,592	5,698	5,893	4,114	5,533	11.4	9.8	10.2	7.1	9.5
1979	5,639	4,753	4,901	3,329	4,455	9.7	8.2	8.5	5.7	7.7
South										
1986	13,106	11,888	12,103	9,266	11,339	16.1	14.6	14.8	11.3	13.9
1985	12,921	11,586	11,832	9,158	11,066	16.0	14.4	14.7	11.4	13.7
1984	12,792	11,454	11,754	9,186	11,010	16.2	14.5	14.8	11.6	13.9
1983	13,504	12,218	12,435	9,852	11,705	17.2	15.5	15.8	12.5	14.9
1982	13,967	12,507	12,705	9,967	11,961	18.1	16.2	16.4	12.9	15.5
1981	13,256	11,675	11,893	9,247	11,123	17.4	15.4	15.6	12.2	14.6
1980	12,353	10,498	10,693	8,058	10,037	16.5	14.0	14.3	10.7	13.4
1979	11,098	9,248	9,467	7,073	8,814	15.0	12.5	12.8	9.6	11.9
West										
1986	6,412	5,788	5,927	4,511	5,529	13.2	11.9	12.2	9.3	11.4
1985	6,201	5,492	5,660	4,325	5,296	13.0	11.5	11.8	9.0	11.1
1984	6,074	5,572	5,654	4,504	5,303	13.1	12.0	12.2	9.7	11.4
1983	6,682	6,197	6,303	4,917	5,959	14.6	13.6	13.8	10.8	13.1
1982	6,296	5,617	5,752	4,569	5,426	14.1	12.5	12.9	10.2	12.1
1981	5,609	4,931	5,069	3,725	4,724	12.7	11.2	11.5	8.5	10.7
1980	4,958	4,391	4,434	3,366	4,100	11.4	10.1	10.2	7.7	9.4
1979	4,276	3,765	3,808	2,851	3,524	10.1	8.9	9.0	6.7	8.3
METROPOLITAN-NONMETROPOLITAN RESIDENCE										
Inside Metropolitan Areas										
1986	22,657	20,159	20,777	14,741	19,222	12.3	10.9	11.2	8.0	10.4
1985	23,275	20,609	21,317	15,068	19,853	12.7	11.3	11.6	8.2	10.8

NA Not available.

Table 1. Persons Below The Poverty Level and Poverty Rate—Current Poverty Definition and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics: 1979-86—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, excluding institutional expenditures		Current poverty definition	Valuing food and housing benefits only		Valuing food, housing, and medical benefits, excluding institutional expenditures	
		Market value	Recipient value	Market value	Recipient value		Market value	Recipient value	Market value	Recipient value
METROPOLITAN-NONMETROPOLITAN RESIDENCE—Continued										
Inside Metropolitan Areas—Continued										
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	21,826	19,835	20,256	14,749	18,973	13.8	12.6	12.8	9.3	12.0
1982	21,247	18,763	19,275	14,187	18,062	13.7	12.1	12.4	9.1	11.6
1981	19,347	16,776	17,346	12,338	16,163	12.6	10.9	11.3	8.0	10.5
1980	18,021	15,287	15,763	10,892	14,668	11.9	10.1	10.4	7.2	9.7
1979	16,134	13,196	13,636	9,513	12,573	10.7	8.7	9.0	6.3	8.3
Inside Central Cities										
1986	13,295	11,713	12,155	8,321	11,239	18.0	15.9	16.5	11.3	15.2
1985	14,177	12,320	12,822	8,644	11,923	19.0	16.5	17.2	11.6	16.0
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	12,989	11,604	11,925	8,275	11,168	19.9	17.8	18.3	12.7	17.1
1982	12,696	11,073	11,447	8,026	10,744	19.9	17.4	18.0	12.6	16.9
1981	11,231	9,593	9,981	6,834	9,343	18.0	15.4	16.0	11.0	15.0
1980	10,644	8,795	9,167	6,005	8,542	17.2	14.2	14.8	9.7	13.8
1979	9,720	7,609	7,924	5,223	7,251	15.7	12.3	12.8	8.4	11.7
Outside Central Cities										
1986	9,362	8,446	8,622	6,420	7,983	8.4	7.6	7.8	5.8	7.2
1985	9,097	8,289	8,495	6,424	7,930	8.4	7.6	7.8	5.9	7.3
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	8,837	8,231	8,332	6,474	7,805	9.6	8.9	9.0	7.0	8.4
1982	8,551	7,691	7,828	6,161	7,318	9.3	8.4	8.5	6.7	8.0
1981	8,116	7,183	7,365	5,505	6,820	8.9	7.9	8.1	6.0	7.5
1980	7,377	6,492	6,596	4,887	6,125	8.2	7.2	7.3	5.4	6.8
1979	6,415	5,587	5,712	4,290	5,322	7.2	6.3	6.4	4.8	6.0
Outside Metropolitan Areas										
1986	9,712	8,829	9,015	6,628	8,370	18.1	16.4	16.8	12.3	15.6
1985	9,789	8,880	9,034	6,873	8,428	18.3	16.6	16.9	12.8	15.8
1984	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1983	13,477	12,287	12,461	9,763	11,747	18.3	16.6	16.9	13.2	15.9
1982	13,152	11,925	12,091	9,376	11,345	17.8	16.2	16.4	12.7	15.4
1981	12,475	11,156	11,305	8,708	10,621	17.0	15.2	15.4	11.8	14.4
1980	11,251	9,755	9,870	7,329	9,228	15.4	13.4	13.5	10.0	12.6
1979	9,937	8,502	8,634	6,182	7,904	13.8	11.8	12.0	8.6	11.0

NA Not available.

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. 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

Table B-1. Annual Market Value Subsidies for the National School Lunch Program, by Cost Status of Lunch: 1979-86

(Figures in 1986 dollars)

Cost status of lunch	1979	1980	1981	1982	1983	1984	1985	1986
Full price	$ 78	$ 76	$ 64	$ 44	$ 44	$ 44	$ 43	$ 42
Reduced price	212	211	199	159	165	167	180	197
Free	262	255	240	235	239	238	248	264

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 pub lic 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 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 Medic-

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 Survey)

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 $17,500	$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

aid, 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 1985. At the time this report was prepared, State data for 1986 were not available. The 1985 data have been used after multiplying the estimate for each State by a factor of 1.0546. The factor is based on data for the nation and is equal to the ratio of the 1986 expenditure per enrollee to the 1985 figure. 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

Table B-5. Annual Market Values for Medicare, by State and Risk Class: 1985

State	Risk class	
	Age 65 and over	Blind and disabled
United States	$1,945	$2,237
Alabama	1,612	1,959
Alaska	1,980	2,998
Arizona	1,945	2,237
Arkansas	1,584	1,724
California	2,249	2,952
Colorado	1,758	2,255
Connecticut	1,820	2,415
Delaware	1,854	2,151
District of Columbia	2,338	3,915
Florida	1,923	2,401
Georgia	1,644	2,108
Hawaii	1,562	2,540
Idaho	1,424	1,670
Illinois	2,063	2,899
Indiana	1,511	2,072
Iowa	1,545	2,075
Kansas	1,694	2,294
Kentucky	1,408	1,527
Louisiana	1,843	2,078
Maine	1,487	1,738
Maryland	1,868	2,620
Massachusetts	2,094	2,553
Michigan	2,173	2,480
Minnesota	1,347	1,889
Mississippi	1,626	1,854
Missouri	1,868	2,249
Montana	1,329	1,520
Nebraska	1,380	1,896
Nevada	1,982	2,449
New Hampshire	1,512	1,977
New Jersey	1,948	2,709
New Mexico	1,542	1,899
New York	2,034	2,499
North Carolina	1,324	1,764
North Dakota	1,720	2,431
Ohio	1,715	2,020
Oklahoma	1,511	1,799
Oregon	1,582	1,816
Pennsylvania	2,137	2,710
Rhode Island	2,030	2,265
South Carolina	1,475	1,953
South Dakota	1,376	1,695
Tennessee	1,543	1,975
Texas	1,811	2,551
Utah	1,157	1,559
Vermont	1,358	1,804
Virginia	1,305	1,707
Washington	1,556	1,975
West Virginia	1,579	1,603
Wisconsin	1,671	1,923
Wyoming	1,491	1,759

Table B-6. Annual Market Values for Medicaid Excluding Expenditures for Institutionalized Persons, by State and Risk Class: 1986

State	Age 65 and over	Blind and disabled	Age 21-64, nondisabled	Age less than 21, nondisabled
United States	$1,324	$3,040	$976	$515
Alabama	596	1,205	794	340
Alaska	3,361	5,116	1,474	774
Arizona	1,324	3,040	976	515
Arkansas	1,010	1,811	930	583
California	692	2,560	946	424
Colorado	726	3,012	717	460
Connecticut	1,272	6,696	1,129	584
Delaware	851	2,450	931	489
District of Columbia	1,211	2,780	687	352
Florida	948	1,928	752	352
Georgia	997	2,002	1,130	423
Hawaii	945	3,104	911	418
Idaho	497	2,163	959	501
Illinois	951	4,220	934	468
Indiana	1,060	3,808	1,367	594
Iowa	752	1,924	871	448
Kansas	480	2,660	660	379
Kentucky	556	2,301	760	336
Louisiana	1,075	1,798	1,095	471
Maine	1,448	2,925	1,016	481
Maryland	1,155	4,491	1,193	720
Massachusetts	2,477	6,102	1,258	704
Michigan	907	3,351	1,059	430
Minnesota	1,463	4,494	1,071	480
Mississippi	655	1,003	734	307
Missouri	846	1,747	676	427
Montana	982	3,400	1,105	512
Nebraska	893	2,320	947	481
Nevada	868	3,657	1,230	608
New Hampshire	969	5,232	400	400
New Jersey	1,363	3,121	1,206	485
New Mexico	852	2,126	1,254	619
New York	4,311	6,941	1,282	662
North Carolina	1,006	3,693	1,003	545
North Dakota	955	5,716	1,168	564
Ohio	892	2,574	973	622
Oklahoma	848	1,974	803	553
Oregon	947	1,849	889	378
Pennsylvania	621	1,931	813	511
Rhode Island	2,198	2,764	811	399
South Carolina	701	1,441	551	283
South Dakota	790	3,555	1,022	583
Tennessee	823	1,862	1,278	716
Texas	993	1,829	1,072	413
Utah	835	2,277	1,026	448
Vermont	910	3,145	876	414
Virginia	1,267	2,253	925	381
Washington	791	2,128	886	470
West Virginia	611	1,018	605	369
Wisconsin	763	1,762	472	319
Wyoming	464	2,124	824	456

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 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 1986 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 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 1979-86 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.

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 Survey

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

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.

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 Survey)

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

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 of the 5 years.

Medical care benefits. The procedures used to estimate recipient value of medical care benefits were based on simple updates of the original 1979 techni ques. 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 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 1986.

The assignment of recipient values followed the same procedures as outlined for food stamps. Separate estimates of recipient value were made based on the inclusion or exclusion of institutional care expenditures.

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				
	1 person	2 persons or more	1 person	2 persons	3 persons	4 persons	5 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 $11,24	684	868	302	585	652	637	675
$11,250 to $12,49	718	862	309	588	655	662	721
$12,500 to $13,74	738	1,060	299	606	662	588	712
$13,750 to $14,99	695	1,070	290	601	661	582	715
$15,000 or more	753	1,202	375	678	803	867	926

Appendix C. Source and Reliability of the Estimates

SOURCE OF DATA

The estimates in this report are based on data obtained in March 1980 through March 1987 from the Current Population Survey (CPS) conducted by the Bureau of the Census and from supplementary questions to the CPS. The monthly CPS deals mainly with labor force data for the civilian noninstitutional population. Questions relating to labor force participation are asked about each member in every sample household. In addition, supplementary questions are asked every March about money income, noncash benefits and work experience for the previous year. To obtain more reliable data for the Hispanic population, the March CPS sample was enlarged to include all households from the previous November sample which contained at least one sample person of Hispanic origin (approximately 3,000 in November 1986). For this report, the only persons in the Armed Forces who are interviewed are those living with other civilian adults.

Current Population Survey (CPS). The present CPS sample was selected from the 1980 census files with coverage in all 50 States and the District of Columbia. The sample is continually updated to reflect new construction. The current CPS sample is located in 729 areas comprising 1,973 counties, independent cities, and minor civil divisions in the Nation. In this sample, approximately 60,500 occupied households were eligible for interview.[1] Of this number, about 2,500 occupied units were visited but interviews were not obtained because the occupants were not found at home after repeated calls or were unavailable for some other reason.

Other sources of data. 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 were 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.

CPS estimation procedure. The estimation procedure used in 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 estimation procedure for the data from the March supplement involved a further adjustment so that husband and wife of a household received the same weight.

Description of the 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
1982-1984	629	59,000	2,500
1980-1981	629	65,500	3,000

RELIABILITY OF THE ESTIMATES

Since the CPS estimates were based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaires, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey: sampling and nonsampling. The accuracy of a survey result depends on both types of errors, but the full extent of the nonsampling error is unknown. Consequently, particular care should be exercised in the interpretation of figures based on a relatively small number of cases or on small differences between estimates. The standard errors provided for the CPS estimates primarily indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in re-

[1] Numbers reflect the initial size of the CPS sample and do not include expansions for Hispanic households.

sponses and enumeration; but do not measure any systematic biases in the data. (Bias is the difference, averaged over all possible samples, between the estimate and the desired value.)

Nonsampling variability. 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 extent of these additional errors is unknown. Particular caution should be used in drawing conclusions based on small differences.

Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all cases in the sample, definitional difficulties, differences in the interpretation of questions, inability or unwillingness on the part of respondents to provide correct information, inability to recall information, errors made in collection such as in recording or coding the data, errors made in processing the data, errors made in estimating values for missing data, and failure to represent all units with the sample (undercoverage).

Undercoverage in the CPS results from missed housing units and missed persons within sample households. Overall undercoverage as compared to the level of the 1980 decennial census is about 7 percent. It is known that 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 previously, partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different characteristics from those of interviewed persons in the same age-sex-race Hispanic group. Further, the independent population controls used have not been adjusted for undercoverage in the 1980 census.

For additional information on nonsampling error including the pos sible impact on CPS data when known, refer to 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. The standard errors given in the following tables are primarily measures of sampling variability, that is, of the variations that occurred by chance because a sample rather than the entire population was surveyed. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average results of all possible samples with a known probability. For example, if all possible samples were selected, each of these being surveyed under essentially the same general conditions and using the same sample design, and if an esti mate and its standard error were calculated from each sample, then:

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

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

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. The most common type of hypothesis appearing in this report is that the population parameters are different. An example of this would be comparing the poverty rate for Whites versus the poverty rate for Blacks. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

To perform the most common test, let x and y be sample estimates for two characteristics of interest. Let the standard error on the difference x-y be s_{DIFF}. If the ratio $R = (x-y)/s_{DIFF}$ is between -2 and +2, no conclusion about the difference between the characteristics is justified at the 0.05 level of significance. If, however, this ratio is smaller than -2 or larger than +2, the observed difference is significant at the 0.05 level. In this event, it is commonly accepted practice to say that the characteristics are different. Of course, sometimes this conclusion will be wrong. When the characteristics are, in fact, the same, there is a 5 percent chance of concluding that they are different.

All statements of comparison in the text have passed a hypothesis test at the 0.10 level of significance or better, and most have passed a hypothesis test at the 0.05 level of significance or better. This means that, for most differences cited in the text, the estimated difference between characteristics is greater than twice the standard error of the difference. For the other differences mentioned, the estimated difference between characteristics is between 1.6 and 2.0 times the standard error of the difference. When this is the case, the statement of comparison is qualified, e.g., by the use of the phrase "some evidence."

Comparability of data. Data obtained from the CPS and other governmental sources are not entirely comparable. This is due in large part to differences in interviewer training and experience and in differing survey processes. This is an additional component of error not reflected in the standard error tables. Therefore, caution should be used in comparing results between these different 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 permit such combinations of the categories as serve each data user's needs. Also, care must be taken in the interpretation of small differences. For instance, even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Standard error tables and their use. In order to derive standard errors that would be applicable to a larger number of estimates and could be prepared at a moderate cost, a number of approximations were required. Therefore, 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 give an indication of the order of magnitude of the standard error of an estimate rather than the precise standard error.

The figures presented in tables C-1 through C-4 are approximations to the standard errors of various estimates for households and persons. To obtain the approximate standard error for a specific characteris tic the appropriate standard error in tables C-1 through C-4 must be multiplied by the factor for that characteristic given in tables C-5 and C-6. These factors must be applied to the generalized standard errors in order to adjust for the combined effect of the sample design and the estimating procedure on the value of the characteris tic. Standard errors for intermediate values not shown in the generalized tables of standard errors may be approximated by linear interpolation.

Two parameters (denoted "a" and "b") are used to calculate standard errors for each type of characteristic; they are presented in tables C-5 and C-6. These parameters were used to calculate the standard errors in tables C-1 through C-4 and to calculate the factors in tables C-5 and C-6. They also may be used directly to calculate the standard errors for estimated numbers and percentages. Methods for computation are given in the following sections.

Standard errors of estimated numbers. The approximate standard error, s_x, of an estimated number shown in this report can be obtained in two ways. It may be obtained by use of 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 on the estimate obtained by interpolation from table C-1 or C-2. Alternatively, the standard error may be approximated by formula (2) from which the standard errors in tables C-1 and C-2 were calculated. Use of this formula will provide more accurate results than the use of formula (1) above.

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

Here x is the size of the estimate and a and b are the parameters in table C-5 or C-6 associated with the particular characteristic. When calculating standard errors for numbers from cross-tabulations involving different characteristics, use the "f" factor or set of parameters which will give the largest standard error.

Illustration of the computation of the standard error of an estimated number. Table B shows that there were 32,370,000 persons below the poverty level in 1986. From table C-5 the appropriate parameters are a = -0.000041 and b = 9,628. Using formula (2), the approximate standard error on an estimate of 32,370,000 is

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

Using the 518,000 estimate of standard error, the 90-percent confi dence interval as shown by the data is

Table C-1. Standard Errors of Estimated Numbers of Households Below the Poverty Level: 1979-86

(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.

Table C-2. Standard Errors of Estimated Numbers of Persons Below the Poverty Level: 1979-86

(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.

from 31,541,200 to 33,198,800. Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples. Similarly, we could conclude with 95-percent confidence that the number of persons below the poverty level in 1986 lies within the interval from 31,334,000 to 33,406,000 (using twice the standard error). Alternately, by interpolation in table C-2, the standard error on 32,370,000 using a factor of 1.0 (table C-5) and rounding to the nearest thousand is 509,000 (1.0 x 509,000).

Standard errors of estimated percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends upon both the size of the percentage and the size of the total upon which this percentage is based. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more. When the numerator and denominator of the percentage are in different categories, use the factors or parameters from table C-5 or C-6 indicated by the numerator. The approximate standard error, $s_{(x,p)}$, of an estimated percentage can be obtained by use of 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 on the estimate from table C-3 or C-4. Alternatively, it may be approximated by the following formula from which the standard errors in tables C-3 and C-4 were calculated. Use of this formula will give more accurate results than use of formula (3) above.

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

Here x is the size of the subclass of persons or households which is the base of the percentage, p is the percentage (0 p 100), and b is the parameter in table C-5 or C-6 associated with the particular characteristic in the numerator of the percentage.

Illustration of the computation of the standard error of a percentage. Table 1 shows that in 1986, 8,983,000, or 31.1 percent, of all Black persons (total 28,871,000) were below the poverty level. From table C-5, the appropriate b parameter is 9,628. Using formula (4), the approximate standard error on 31.1 percent is

$$s_{(x,p)} = \sqrt{(9628/28{,}871{,}000)\ 31.1\ (100.0\text{-}31.1)} = 0.8$$

Therefore, the 90-percent confidence interval of the percentage of Blacks below the poverty level is from 29.8 to 32.4, and the 95-percent confidence interval is from 29.5 to 32.7.

Alternately, by interpolation in table C-4, the standard error on 31.1 percent using a factor of 1.0 is 0.8 percent (1.0 x 0.8).

Standard error of a difference. For a difference between two sample estimates, the standard error is approximately equal to

$$s_{(x-y)} = \sqrt{s_x^2 + s_y^2 - 2rs_xs_y} \qquad (5)$$

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 for adjacent years.(See table C-7). The estimates can be of numbers, percents, ratios, etc. If the years being compared are not adjacent, then r is assumed to be equal to zero.

Illustration of the computation of the standard error of a difference. Table B shows that there were 32,370,000 persons below the poverty level in 1986 and in 1985 there were 33,064,000. The apparent difference is 694,000. Using formula (2), and a = -0.000041 and b = 9,628 from table C-5 and the correlation coefficient from table C-7, r = 0.45, the standard error[2] on the estimated difference is approximately

$$s_{(x-y)} = \sqrt{(518{,}000)^2 + (523{,}000)^2 - 2(0.45)(518{,}000)(523{,}000)} = 546{,}000$$

Therefore, the 90-percent confidence interval around the 694,000 difference is from -179,600 to 1,567,600,

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

$\sqrt{(-0.000041\ (33{,}064{,}000)^2 + (9{,}628)(33{,}064{,}000)} = 523{,}000$.

Table C-3. Standard Errors of Estimated Percentages of Households Below the Poverty Level: 1979-86

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 specific characteristic.

NOTE: The parameter used to calculate this standard error table was b = 2,067.

i.e., 694,000 q (546,000 x 1.6). Since the 90-percent confidence interval includes zero, we can conclude that there was no statistically significant difference in persons below the poverty level between 1985 and 1986.

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

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

Standard errors for these ratios may be approximated as shown below. There are two cases to consider. In either case, 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 characteris tic under consideration who are members of these families or house holds.

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

$$s_{x/y} = \sqrt{\left(\frac{x}{y}\right)^2 \left[\left(\frac{s_x}{x}\right)^2 + \left(\frac{s_y}{y}\right)^2 - 2r\frac{s_x}{x}\frac{s_y}{y}\right]} \quad (6)$$

The standard error of the estimated number of households, s_y, and the standard error of the estimated number of persons with the characteristic

Table C-4. Standard Errors of Estimated Percentages of Persons Below the Poverty Level: 1979-86

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.

in those households, s_x, may be obtained from formula (1). Alternatively, formula (2) and represents the correlation coefficient 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; for example, the mean number of persons under 18 years of age per household. For ratios of this kind the standard error is approximated by formula (6), but r is assumed to be zero. If r is actually positive (negative), then this procedure will provide an 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 any given population by using different income concepts and valuation techniques in determining poverty status. The most meaningful comparisons between two measures of poverty are those in which either the income concept or the valuation technique is fixed, e.g., a comparison between a poverty estimate determined by income and the market value of food and housing benefits and a poverty estimate determined by income and the market value of food, housing and medical benefits. All comparisons presented in this section make this assumption.

Standard errors for within-year differences between poverty estimates. In a given year the standard error for the difference of two poverty estimates (numbers or percentages) is given by the formula

$$s_{(x,y)} = s_d \qquad (7)$$

where $d = |x-y|$, the absolute difference between the two estimates x and y, and s_d is computed by using formula (1) or (2) using d as the size of the estimate, or by using formula (3) or (4) using d as the estimated percentage.

Standard errors for difference of yearly change between poverty estimates. In comparing year-to-year changes between two poverty estimates, (e.g., change in poverty from 1985 to 1986 using cash income alone in determining poverty versus the change in poverty using income and food and housing benefits in determining poverty) 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 $d = (x_1 - x_2) - (y_1 - y_2)$ then

$$s_d = \sqrt{s_{d1}^2 + s_{d2}^2 - 2rs_{d1}s_{d2}} \qquad (8)$$

where for i = 1 and 2, $d_i = |x_i - y_i|$ is the absolute difference for the estimates in year i. The variance of d_i, s_{di}^2, is obtained using formula (7) and r is obtained from table C-7.

Standard error of the ratio of an alternative poverty estimate to the official poverty estimate. When computing 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) the standard error of the ratio can be approximated by the formula

$$s_{x/y} = \sqrt{\left(\frac{x}{y}\right)^2 \left[\left(\frac{s_y}{y}\right)^2 + \left(\frac{s_x}{x}\right)^2\right]} \qquad (9)$$

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).

Illustration of the computation of a standard error when comparing alternate dedfinitions of poverty. Table B shows that the number of persons below the poverty level as determined by two definitions of poverty are as follows:

Method	1986	1985	Decrease 1985-1986
1. Official definition.....	32,370,000	33,064,000	694,000
2. Market valuation including food/housing	28,988,000	29,489,000	501,000

The data show that the apparent difference in the decrease in pov erty between the two methods from 1985 to 1986 is 193,000.

Using formula (8) we have

$d_1 = 3{,}575{,}000$ [3] $\quad s_{d1} = 184{,}000$ [4]

$d_2 = 3{,}382{,}000$ [3] $\quad s_{d2} = 179{,}000$ [4]

and r = 0.45 so that the standard error associated with 193,000 is

$$\sqrt{(184{,}000)^2 + (179{,}000)^2 - 2(0.45)(184{,}000)(179{,}000)} = 190{,}000$$

[3] $d_1 = 33{,}064{,}000 - 29{,}489{,}000$; $d_2 = 32{,}370{,}000 - 28{,}988{,}000$.

[4] $s_{d1} = \sqrt{(-0.000041)(3{,}575{,}000)^2 + (9{,}628)(3{,}575{,}000)}$;

$s_{d2} = \sqrt{(-0.000041)(3{,}382{,}000)^2 + (9{,}628)(3{,}382{,}000)}$.

Table C-5. "a" and "b" Parameters and "f" factors for Calculating Approximate Standard Errors of Estimated Numbers and Percentages of Households and Persons: 1979-86

Type of characteristic	a	b	f factor
HOUSEHOLDS			
Total or White	-0.000010	1,778	[1]0.93
Black and/or other races	-0.000066	1,606	[1]0.88
Hispanic origin	-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 or White; Black and/or other races	+0.000084	2,067	1.00
Hispanic origin	+0.000084	2,067	1.00
Type of household, age of householder, size of household, 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 (1982-83):			
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 (1984-86):			
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 origin	-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 origin [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 (1984-86):			
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 Spanish Origin: 1979-86

Type of characteristic	a	b	f factor
Below poverty level:			
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.

A 90-percent confidence interval around 193,000 is from -111,000 to 497,000. Thus, since this interval includes zero we cannot conclude that more persons have been dropped from poverty status between 1985 and 1986 by using method 2 than by using method 1. These data show no evidence of difference between the two numbers.

Standard error of an estimated mean. The standard error of a mean can be approximated by formula (10). Because of approximations used in developing formula (10), an estimate of the standard error of the mean obtained from that formula will generally underestimate the true standard error. The formula used to estimate the standard error of a mean is

$$s_x = \sqrt{(b/y)\, S^2} \qquad (10)$$

where y is the size of the base and b is the parameter appropriate to the characteristic, as shown in table C-5 or C-6. The variance, S^2, is given by formula (11):

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

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

$$\bar{x} = \sum_{i=1}^{c} p_i \bar{x}_i \qquad (11)$$

c is the number of groups; i indicates a specific group, thus taking on values 1 through c;

p_i is the estimated proportion of households, families or persons whose values for the characteristic being considered (x-values), fall in group i; and

$\bar{x}_i = (Z_{i-1} + Z_i)/2$ where Z_{i-1} and Z_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 $\bar{x}_c = (3/2)\, Z_{c-1}$.

When two or more distributions are combined, the mean of the combined distribution is

$$\bar{x} = (1/y) \sum_j \bar{x}_j\, y_j$$

where $\bar{x}_j$ is the mean of the j^{th} distribution, y_j is the base of the j^{th} distribution, and $y = S\, y_j$. This mean must be computed by the user.

Table C-7. Year-to-Year Correlation Coefficients for Poverty Estimates of Households and Persons: 1979-86

Characteristic	1979 to 1984, 1986		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 two or more years apart assume the correlation to be zero.

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 pro gram 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 iden-

tify 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 major ity 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 resi dence in a housing unit owned by a public agency. The second question identi fied 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 eligi bility 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) recipi ents.[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.

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 pro-

[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.

gram, 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 benefi ciaries. 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 $15.50 in 1985) 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 1986 are shown in table E-1. The average annual CPI for 1979 through 1986 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, private and government retirement and disability pensions, alimony, child support, and any other source of money income which was regularly received. Capital gains (or

Table E-1. Weighted Average Poverty Thresholds: 1979-86

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

X Not applicable.

[1] 1979 and 1980.