Technical Paper 50

Alternative Methods for Valuing Selected In-Kind Transfer Benefits and Measuring Their Effect on Poverty

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Alternative Methods for Valuing Selected In-Kind Transfer Benefits and Measuring Their Effect on Poverty

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Summary

This is the first of several reports to explore the issues, data requirements, and technical feasibility of measuring and valuing in-kind income. The purpose of this report is to examine several alternative methodologies for valuing public in-kind (noncash) transfers and to assess their effect on the size and composition of the official poverty population. The current definition of poverty used for statistical purposes, as indicated in Directive No. 14 issued by the Office of Management and Budget, is based on money income and does do not include the value of in-kind transfers as income. Between 1965 and 1980, the market value of major in-kind transfers in the form of food (food stamps and school lunches), housing (publicly owned or subsidized rental housing), and medical care (Medicare and Medicaid) grew from $2.2 billion to over $72.5 billion. In-kind transfers intended for the low-income population currently exceed cash public assistance by more than two to one. The Government's statistics on poverty have been criticized by a number of experts because they fail to account for noncash benefits. This research report, which is very exploratory in nature, was initiated following concerns expressed by Congress and the Office of Management and Budget and is in keeping with the Bureau's continuing research on problems and methods of statistical measurement. A report of this nature can only present estimates based on the official definition of poverty even though the perception of poverty may vary considerably between individuals in our society.

This report focuses on the valuation of in-kind food, housing, and medical care transfers received by the low-income population. Because of this limited focus, the analysis concentrates on the effect of the value of these benefits on estimates of the poverty population. No analysis is provided on the effect of in-kind benefits on the overall size distribution of income because this study did not take account of the full range of benefits received by all groups in the population (chapter 2). For example, employer-provided "fringe" benefits and the tax advantages of homeownership have not been valued. The study, while accounting for only about 34 percent of total food, housing, and medical in-kind benefits, accounts for 88 percent of the benefits targeted to the low-income population. Other studies are planned to examine methodologies for valuing selected in-kind benefits received by those at higher income levels.

Some of the limitations of measuring the effect of the value of in-kind benefits on the official level of poverty are discussed in chapter 2. Some analysts have argued that changing the definition of income to include in-kind benefits requires that the poverty thresholds be adjusted to reflect both cash and the value of these benefits. When the official poverty thresholds were derived, in-kind income was not included in the calculations.

This report presents several different approaches to valuing in-kind benefits and describes the policy-relevant aspects of each approach. Special attention was given to three valuation techniques that are appropriate for the purpose of measuring poverty. These approaches are 1) market value, 2) recipient or cash equivalent value, and 3) poverty budget share value.

1. The market value is equal to the purchase price in the private market of the goods received by the recipient, e.g., the face value of food stamps.

2. The recipient or cash equivalent value is the amount of cash that would make the recipient just as well off as the in-kind transfer; it, therefore, reflects the recipient's own valuation of the benefit. The recipient or cash equivalent value is usually less than and never more than the market value. Even though cash equivalent value is the theoretically preferred measure, it is quite difficult to estimate, especially for medical care.

3. The poverty budget share value, which is tied to the current poverty concept, limits the value of food, housing, or medical transfers to the proportions spent on these items by persons at or near the poverty line in 1960-61, when in-kind transfers were minimal. It assumes that in-kind transfers in excess of these amounts are not relevant for determining poverty status because an excess of one type of good (e.g., housing) does not compensate for a deficiency in another good (e.g., medical care). Because the value of in-kind transfers are limited in this way, the poverty budget share approach assigns the lowest average values to in-kind transfers of the three methods used.

A major portion of the work in this study involved the development of procedures to estimate the value of in-kind benefits. Various administrative and survey data were used to derive estimates of these values which were then assigned to persons reporting recipiency of in-kind benefits on the March 1980 Current Population Survey (CPS) data file; the March CPS data file is used annually as the source of poverty estimates. Of particular importance are the conceptual and empirical approaches used to value medical care benefits. Of the five transfer programs covered in this report, medical transfers constitute over 80 percent of the total market value of in-kind benefits.

Because of the importance of medical benefits, and because of the problematic nature of valuing these benefits, several alternative definitions of in-kind benefits to be included as income were investigated; these definitions were food and housing alone; food, housing, and medical care excluding institutional care benefits; and food, housing, and medical care including institutional care (chapter 5).

A summary of the results of the valuations of in-kind transfers on the overall level of poverty and on poverty among important subgroups of the poor is presented in chapter 6. Combinations of the three different valuation

approaches and three different income concepts result in the presentation of nine alternative estimates of poverty. Table A presents a comparison of these estimates with the official poverty estimate based on before-tax money income alone. (The poverty statistics in this report differ slightly from the official poverty statistics published by the Bureau of the Census, since poverty was determined on a household basis rather than for families and unrelated individuals. See chapter 6 for further details.)

The broadest income definition, which includes food, housing, and medical care with institutional benefits, reduces the poverty rate from 11.1 percent to 6.4 percent based on the market value approach. Of the three in-kind benefits, medical care is by far the most important for lowering the poverty rate. At market value, for example, the value of food and housing alone lower the poverty rate from 11.1 percent to 9.4 percent, while the remainder of the decrease is due to medical care benefits.

The recipient or cash equivalent value approach substantially reduces the number of poor although not to the same extent as market value. The reduction in the poverty rate using this approach for food and housing alone is nearly the same as for market value (9.5 percent remained poor compared to 9.4 percent for market value). The inclusion of medical care benefits with institutional care expenditures reduces the poverty rate further to 8.2 percent for the recipient or cash equivalent method. Thus, the marginal effect of medical benefits on the poverty rate is significantly less than that of the market value approach.

The poverty budget shares approach has a smaller effect on the number of poor than either of the other approaches. The poverty rate using the poverty budget share method for food and housing alone declines from 11.1 percent to 9.8 percent. The marginal effect of medical care benefits is less than either of the other valuation methods as well. The poverty rate based on the poverty budget share approach including medical benefits is 8.9 percent.

The choice of valuation technique and income concept produces a wide range of estimates when the value of in-kind benefits is included in the determination of poverty using the current poverty definition. The reduction in the estimated number of poor ranges from a high of 42 percent to a low of about 12 percent. Overall, the estimated number of poor in 1979 was 23.6 million. This number declines to 13.6 million using the procedure producing the 42-percent reduction and 20.7 million under the procedure producing the 12-percent reduction.

In no subgroup of the population is the effect of the value of medical benefits greater than on the elderly. (See table B.) The official poverty rate for the elderly was 14.7 percent in 1979. Food and housing benefits at market value reduce this poverty rate to 12.9 percent. The addition of the value of medical benefits with institutional care included reduces the poverty rate for this group dramatically to 4.5 percent. Other combinations of valuation techniques and income concepts have smaller effects.

The inclusion of the value of in-kind benefits in the measure of poverty reduces the estimates of poverty significantly, but does not eliminate poverty altogether. Use of the maximum values for in-kind benefits reduces the number of poor by as much as 50 percent for some subgroups such as Blacks and female householders, however, their poverty rates remain higher than average. For example, the poverty rates for Blacks and female householders are 15.1 percent and 17.6 percent, respectively, even after the food, housing, and medical in-kind benefits have been included at full market value (chapter 6).

It should be emphasized that the procedures and results presented in this report are intended to serve as a foundation for discussion of the valuation issues and a starting point for further analysis. While there have been several previous studies that have examined the effect of in-kind benefits on the poor, this is the first study that has investigated several different valuation techniques and assessed their effect on different subgroups of the poverty population. It is hoped that this report will initiate objective discussion concerning the valuation of in-kind benefits and the measurement of poverty.

Table A. All Persons: Comparison of the Number of Poor and Poverty Rates Using Alternative Income Concepts and Valuation Techniques: 1979

(Numbers in thousands)

Income concept	Valuation technique		
	Market value approach	Recipient or cash equivalent value approach	Poverty budget share value approach
Money income alone:			
Number of poor.....	23,623	23,623	23,623
Poverty rate.....	11.1	11.1	11.1
Money income plus food and housing:			
Number of poor.....	19,933	20,218	20,743
Poverty rate.....	9.4	9.5	9.8
Percent reduction[1].....	-15.6	-14.4	-12.2
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Number of poor.....	14,023	18,393	18,866
Poverty rate.....	6.6	8.7	8.9
Percent reduction[1].....	-40.6	-22.1	-20.1
Money income plus food, housing, and medical care (including institutional care expenditures):			
Number of poor.....	13,634	17,318	18,866
Poverty rate.....	6.4	8.2	8.9
Percent reduction[1].....	-42.3	-26.7	-20.1

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Table B. The Elderl
Using Alte

(Numbers in thousand

Income concept
Money income alone:
Number of poor.....
Poverty rate.....
Money income plus foo housing:
Number of poor.....
Poverty rate.....
Percent reduction[1].
Money income plus foo housing, and medical (excluding instituti care expenditures):
Number of poor.....
Poverty rate.....
Percent reduction[1].
Money income plus foo housing, and medical (including instituti care expenditures):
Number of poor.....
Poverty rate.....
Percent reduction[1].

[1]Percent reduction
mate based on mone

Chapter 1. Introduction

This is the first of several reports to explore the issue: requirements, and technical feasibility of measuring selected types kind income. The purpose of this report is to present several alte methodologies for valuing public in-kind (noncash) transfer benefits determine the effects of these valuations on estimates of the size anc sition of the poverty population. In accordance with Directive "Definition of Poverty for Statistical Purposes," issued by the Of Management and Budget, the current poverty definition is based o income alone.[1] This definition does not include the value of any benefits such as food stamps, Medicaid, and public housing. This presents three strategies for valuing a selected group of public transfers and the resulting effects on the poverty estimates for 19 addition, the strengths and weaknesses of each valuation techni examined, but none is recommended as the most appropriate metl valuation. It is expected that this report will be the basis for discussions concerning the valuation of noncash benefits and the mea of poverty.

This study is based on a continuing effort to broaden and impr definition of income used by the Census Bureau and other public a Consequently, this paper is highly exploratory in nature as compar normal Census Bureau statistical publications. This particular re being issued at this time because of the recent availability of ann on noncash benefit recipiency and public interest concerning the e major types of in-kind transfers on the poor.[2]

The report focuses only on those major public in-kind transfer in the form of health care, food, and housing for which recipiency available from the March Current Population Survey (CPS).[3] Ideal

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[1]Money income is before taxes or payroll deductions and includes from employment, Social Security, public assistance and welfare, income, and any other source of regularly received income.

[2]This research report is guided by requests from Congress and th of Management and Budget (U.S. Senate, 1980; Cutter, 1980) for analysis. See appendix A for the U.S. Senate statement expressi concern over this issue.

[3]The CPS is a national household survey conducted monthly to employment and unemployment statistics. Each March, additional are asked on money income and noncash benefits. The data, theref subject to sampling and nonsampling errors.

value of all types of public and private in-kind income should be included to assess the full effect of in-kind benefits on poverty and the size distribution of income. Although some information is available on in-kind benefits other than those shown in this report, such as employer-provided health insurance and pension plans, additional research is needed to develop adequate valuation methodologies.

The major types of benefits included in this report are health care benefits (through the Medicare and Medicaid programs), food benefits (from the Food Stamp and National School Lunch Programs), and housing benefits (from several public or subsidized rental housing programs). Over the past 15 years, there has been a tremendous growth in the value of income in-kind from these government transfer programs. The data shown in part A of table 1 indicate the extent of this increase. From a little over $2.2 billion in 1965, these major public transfers in the form of food, housing, and medical benefits increased to more than $72.5 billion in 1980 ($27.8 billion in constant 1965 dollar terms). Except for Medicare and roughly half of school lunch benefits, the programs shown in part A are "means-tested" or designed to benefit the low income population.[4] The individual must meet certain income and asset requirements to be eligible for "means-tested" benefits.

Early in the 1970's, the market value of in-kind benefits for the poor began to exceed the more commonly known cash public assistance or "welfare" expenditures (i.e., Aid to Families with Dependent Children, Supplemental Security Income, and General Assistance) which are collected annually in the March CPS and other income surveys. (See part B of table 1.) By 1980, more than $2 of every $3 of means-tested government aid to the poor was in the form of an in-kind food, housing, or medical transfer benefit. Means-tested in-kind transfers in current dollars continued to grow between 1975 and 1980 from $22.2 billion to $42.4 billion, although in constant (1975) dollars they grew only from $22.2 billion to $27.7 billion. In contrast, cash public-assistance transfers grew only slightly in current dollars ($16.3 billion to $18.9 billion) and actually fell in constant dollar terms. In particular, medical care transfer benefits increased most dramatically over this period. Medicaid was the largest means-tested income transfer program ($26.2 billion) in 1980, outweighing both all means-tested cash transfers ($18.9 billion) and all major food and housing in-kind transfers ($18.0 billion).

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[4]Virtually all children who eat hot school lunches receive a basic subsidy under this program, even if they pay "full-established price." This subsidy accounts for about 51 percent of total school lunch benefits. Another 49 percent of benefits go to those who either receive the lunch for free or pay a reduced price of 10 to 20 cents per meal. Medicare covers all elderly Social Security beneficiaries and a large group of the nonelderly disabled, who receive Social Security Disability Insurance benefits. While about 15 percent of Medicare benefits accrue to poor elderly persons, Medicare is not a means-tested transfer program.

Table 1. Major In-Kind Transfer Benefits: 1965-80

(Current and constant (1965) dollar market value of benefits in billions)

Type of benefit	1965	1970	1975	1980
A. MAJOR IN-KIND TRANSFERS (MEANS-TESTED and NONMEANS-TESTED[1]				
Total food, housing, and medical care.....	$ 2.166	$15.014	$36.685	$72.527
In constant 1965 dollars.....	2.166	12.200	21.505	27.771
Food:				
Total.....	.448	1.656	6.412	12.580
Food stamps.....	.033	1.119	4.386	9.247
School lunch.....	.415	.537	2.026	3.333
Housing:				
Public housing[2].....	.351	1.640	2.263	5.402
Medical Care:				
Total.....	1.367	11.718	28.010	54.545
Medicaid.....	1.367[3]	5.606	14.555	26.154
Medicare.....	(NA)	6.112	13.455	28.391
B. MAJOR MEANS-TESTED TRANSFER BENEFITS ONLY				
Total means-tested benefits.....	5.979	17.492	38.509	61.299
In constant 1965 dollars.....	5.979	14.214	22.574	23.471
Cash public assistance.....	4.025	8.864	16.312	18.863
In-kind benefits[4].....	1.954	8.628	22.197	42.436
Percent of total means-tested benefits which are:				
In-Kind.....	32.7	49.3	57.5	69.2
Medicaid alone.....	22.9	32.0	37.8	42.7

NA Not available.

[1]Means-tested income transfer programs are those which benefit only families with low enough incomes and resources (assets) to qualify. Nonmeans-tested benefits have no income or resource test.

[2]"Public housing" includes public and subsidized housing for low income families under various public programs including: Low Rent Public Housing, and Sections 8, 235, 236, 101, and 202b of the 1937 Housing Act.

[3]Prior to the inception of Medicaid, various public assistance programs provided medical assistance benefits to low income persons. The 1965 figure is for vendor payments under these programs. See: Social Security Bulletin, June 1981.

[4]Excludes "paid" School Lunch benefits and Medicare.

The period between 1965 and 1979 saw sharply declining poverty rates during the first 5 years followed by a 10-year stretch in which poverty declined only slightly. In 1965, the poverty rate was 17.3 percent but declined to 12.6 percent in 1970. Between 1970 and 1979 the poverty rate declined only slightly (11.6 percent) using the present definition of income.

Given these trends, widespread public interest concerning the disposition of these transfer payments and their effect on the poor has arisen during the last decade. Although much is known about the growth and magnitude of outlays for these programs, there was very little comparable information on the number of recipients and their economic and demographic circumstances until recently. In an attempt to provide limited information on this subject, the Bureau of the Census began in 1979 the necessary planning to supplement the usual collection of annual money income data in the CPS with questions designed to collect information on the selected group of noncash benefits shown in table 1.[5]

Underlying this study are data collected in the March 1980 CPS which provide the first nationwide picture of in-kind transfer recipiency for the 1979 calendar year.[6] The March CPS measures household money income and provides estimates of the extent of poverty and the characteristics of the poor. This information was used in conjunction with in-kind benefit data to estimate the effect of such benefits on the poor. It is expected that future surveys will continue to collect this information and provide the source for annual updating and year-to-year comparison of such estimates.

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[5]Information on CHAMPUS (Civilian Health and Medical Program of the United States) and military health care programs was also collected. However, this report presents no data or analysis of the value of CHAMPUS medical benefits. Because CHAMPUS provides medical care to members of the Armed Forces and their families and the CPS only includes military personnel if they live off base or with their civilian families on base, the CPS sample of CHAMPUS coverees excludes nonmarried military living on base. Moreover, in 1978, only 35,000 of the 5.3 million poor families (0.7 percent of all poor families) were headed by a person in the Armed Forces. Based on these figures, the effect of CHAMPUS on poverty should be very small in any case. Finally, there is some fear that persons covered by different military health plans, e.g., CHAMPVA (Civilian Health and Medical Program of the Veteran's Administration) reported CHAMPUS coverage. No specific information on these other military or veteran health plans was collected. For these reasons, no estimates are presented on the value of CHAMPUS.

[6]Previous efforts to value in-kind transfers and measure their effect on poverty (Smeeding, 1975; U.S. Congressional Budget Office, 1977; Hoagland, 1980; and Paglin, 1980) have not been able to rely on survey-based estimates of in-kind benefit recipiency. Other studies of multiple benefit recipiency concentrated on a small number of areas (U.S. Joint Economic Committee, 1973; Lyon, et. al. 1976) or on Blacks only (National Urban League, 1980).

It is important to realize that estimates of the value of in-kind transfers presented here are of a limited and exploratory nature. The implications drawn from these results must be interpreted in this experimental context. The wide-ranging nature of the various valuation strategies reflects the general unsettled nature of economic research in this area. In fact, one of the aims of this report and others that follow is to focus public debate on these issues and provide direction toward more definitive measures of the value of in-kind benefits and their effect on economic status.

This report is divided into seven chapters and several technical appendices. In chapter 2, the most important limitations surrounding this study are outlined in detail, and both conceptual problems and data availability problems are discussed. Chapter 3 describes, in detail, the in-kind benefit data collected in the March 1980 CPS and examines their quality. The different methodological approaches to defining in-kind transfer benefits and assigning benefit value are covered in chapter 4. The brief addendum to chapter 4 presents a diagrammatic analysis of the various theoretical approaches to valuing in-kind transfer benefits. Chapter 5 describes the empirical procedures underlying each of the three techniques used in this study to value in-kind transfers: market value, recipient (or cash equivalent) value, and poverty budget share value. This chapter also contains a comparison of the dollar values assigned using each of these three concepts and discussions of the strengths and shortcomings of each estimation procedure. An addendum to chapter 5 discusses the importance of the valuation of medical care benefits for determining poverty status. A summary of the results of the valuations of in-kind transfers on the overall level of poverty and on poverty among important subgroups of the poor is presented in chapter 6. (Appendix F contains several more detailed tables which allow readers to make further comparisons.) Chapter 7 describes other research strategies which have a high potential for improving estimates of the value of in-kind transfers. Several appendices at the end of the paper provide readers with a more technical and detailed discussion of the issues presented in the sections of the report outlined above.

Nine different estimates of the effect of in-kind benefits on the measurement of poverty are presented in this report. Each of the three valuation methodologies are given equal treatment and are applied to three different groups of in-kind benefits: 1) food and housing benefits alone, 2) food, housing, and medical benefits excluding institutional care, and 3) food, housing, and medical benefits including institutional care. These three groups were used because of the special problems in valuing medical care benefits, especially institutional care benefits.

Chapter 2. Limitations of the Study

The development of procedures for valuing noncash benefits and the subsequent measurement of the effect of these values on the poverty population required many assumptions. Associated with these assumptions are important conceptual and empirical limitations which affect the final results. Two of these limitations must be mentioned before valuation procedures and results are examined in more detail. First, because the purpose of this study is to examine the effect of noncash benefits on the poor, this study valued only a select group of noncash benefits, mainly those received by the poor. A more important limitation of this study concerns the appropriateness of using the current poverty thresholds based on money income alone to measure poverty when income has been redefined to include the value of noncash benefits.

COVERAGE OF NONCASH BENEFITS

This study focuses on the valuation of in-kind benefits received primarily by persons in the lower portion of the income distribution, since its primary purpose is to measure the effect of these benefits on the size and composition of the poverty population. Valuation is restricted to government in-kind transfers in the form of goods and services of a private good nature, which are received without reciprocal quid pro quo provision of goods and services by the recipient.[1] Ideally, it would have been preferable to estimate the value of all types of in-kind benefits from both public and private sources to assess their effect on poverty and on the entire income size distribution. This would provide a more comprehensive measure of the distribution of economic well-being. Valuation of many in-kind benefits was not attempted, however, because some of these benefits are conceptually difficult to define and, in many cases, sufficient information is not available for valuation.

A short example should serve to illustrate several problems associated with valuing some types of in-kind benefits. On a conceptual level, it is not always easy to differentiate between private and public goods or between

[1]Private consumption goods provide benefits directly to the recipient and need not be shared by others. The income measure is limited to private goods in order to avoid the unsettled issue of allocating nonexclusive public goods benefits to individuals. See Reynolds and Smolensky (1977) on the allocation of public good benefits to households. In addition, the annual income accounting period which is chosen here leads us to limit the range of goods and services to consumption goods (or consumption opportunities) excluding investment goods and savings, which necessitate looking at income from a multi-period or intertemporal perspective.

investment and consumption goods. First, some argue (Musgrave and Musgrave, 1980) that items such as primary and secondary education are largely a public good, i.e., all citizens benefit because the population is literate; therefore, no specific value should be assigned to individuals. Second, is education to be treated as an investment benefit to the recipient in terms of future earnings or as a consumption benefit to the family in the form of day care and other services provided at little or no direct cost? On an empirical level, no data exist with which to assign values for Veteran's Administration (VA) and Federal Housing Administration (FHA) insured mortgages and many employer-provided "fringe" benefits. For other benefits such as employer-provided group health and pensions, some data are available, however, more detailed data are needed before adequate valuation procedures can be developed.

The in-kind benefits included in this study can be placed in proper perspective by comparing them with total in-kind food, housing, and medical benefits. These comparisons are shown in table 2. The first column of table 2 shows the total market value of the in-kind benefits covered in this study. The next three columns of the table provide estimates of the total market value of in-kind benefits which have not been covered. The benefits which have not been accounted for include those from both the public and private sectors.

These estimates cover benefits which are received free or below market price as well as those received as tax subsidies. Including tax subsidies as in-kind income, however, is controversial, since not everyone would agree that the amount of an individual's earnings which is not taxed because of specific allowed deductions is equivalent to an in-kind transfer. For those who do not agree with the inclusion of tax subsidies, column 3 can be excluded from table 2.[2] The values in the table exclude some types of in-kind benefits such as interfamily transfers of food and housing and free private use of employer-provided vehicles. The benefits which are included and the source of the estimated values are detailed in appendix B.

While the estimated values for in-kind benefits in table 2 can be considered rough, they provide the reader with a general appreciation of the limited set of in-kind transfers included in this study. In total, the market value of in-kind transfers analyzed in this report is only slightly more than one-third of the total value of all food, housing, and medical in-kind benefits. This proportion is somewhat higher (39 percent) if tax

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[2]Indirect income tax subsidization of a particular type of expenditure whether by exclusion from tax, deduction from the tax base, or tax credit can be regarded as no different than a direct subsidy of the same amount for the same expenditure (see Musgrave and Musgrave, 1980). These subsidies are also known as "tax expenditures" to highlight the fact that a certain amount of foregone tax revenue has the same effect on the government budget as an equal amount of direct expenditures. However, some may not feel that tax subsidization is an in-kind benefit in the same sense as those valued in this report. As noted, those who do not choose to count tax subsidies as in-kind benefits can exclude them from table 2.

subsidies are excluded. Although only about one-third of the total food, housing, and medical care in-kind benefits were accounted for, 88 percent of the value of in-kind benefits received from these means-tested government transfer programs were covered in developing the estimates in this report. Since means-tested benefits are provided to those with low incomes, most of the food, housing, and medical in-kind transfers to the poor have been included.

Even though almost all of the means-tested benefits have been included, most nonmeans-tested benefits (some of which are received by the poor) have not, because the necessary data are not available. For example, the value of public or subsidized housing benefits covered in this report are rela-

Table 2. Comparison of Major Public In-Kind Transfer Programs with Total Private and Public Income In-Kind in 1980

(Current market value in billions)

Type of benefit	Major in-kind transfer benefits	Other in-kind income			Total value of benefits	Major as a percent of "total"
		Public		Private		
		Total	Tax subsidies			
Total benefits.....	$72.5	$59.8	$32.0	$ 83.5	$ 215.8	33.6
Food.....	12.6	1.2	(NA)	16.6	30.4	41.4
Housing.....	5.4	32.7	28.8	14.8	52.9	10.2
Medical Care.....	54.5	25.9	3.2	52.1	132.5	41.1
Total means-tested benefits.....	42.4	3.6	(NA)	2.4	48.4	87.6
Total nonmeans-tested benefits.....	30.1	56.2	32.0	81.1	167.4	18.0

NA Not available.

Sources: For a detailed explanation of the income elements contained in each cell and the source of those estimates, see appendix B.

tively small compared to other
subsidies in the form of mortgage
subsidies to owner-occupied homes,
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IN-KIND BENEFITS AND THE MEASUREMEN

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These issues can be seen more
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(income)	is less than	(original poverty thresholds)

$$Y_{ij} < \left[EFP_{61} \cdot \left(\frac{Y_{at}}{F} \right)_{5} \right.$$

where

Y_{ij} = level of before-tax total money income.

EFP_{61} = the 1961 Economy Food Plan.

$\left(\frac{Y_{at}}{F}\right)_{55}$ = the reciprocal of the ratio of food expenditures to after-tax income for all families, as determined by the 1955 Survey of Food Consumption Expenditures.

k = specific commodities used in computing the Consumer Price Index.

$\frac{P_{kj}}{P_{k61}}$ = the ratio of the price of commodity k in year j to 1961.

$\frac{EXP_{k72}}{EXP_{72}}$ = the ratio of expenditures on commodity k in 1972 to total expenditures in 1972. (The weights used to calculate the Consumer Price Index have been updated based on results from the 1972-73 Consumer Expenditure Survey.)

The right side of the expression separately identifies the original poverty thresholds and the Consumer Price Index (CPI) which is used to adjust them for changes in prices over time.

The original poverty levels were first computed for the year 1963 based on U.S. Department of Agriculture (USDA) data from the 1961 Economy Food Plan and the 1955 Survey of Food Consumption. The Economy Food Plan was the least costly of four USDA food plans which provided a nutritionally adequate diet. This food plan could be used as a standard for food, but there were no standards for other necessities, such as housing and medical care. One solution to this problem of how much money to assign to cover the cost of nonfood necessities was to look at the proportion of income spent by the average family on such items. For example, if the average family spent one-third of its after-tax income on food and two-thirds on other items, then it might be reasonable to suppose that, with proper budgeting, the poor could do the same. The 1955 Survey of Food Consumption provided estimates of the proportion of after-tax money income that the average family spent for food. The reciprocal of this ratio $(Y_{at}/F)_{55}$, which is often called "the multiplier," was multiplied by the Economy Food Plan (EFP_{61}) to derive the original poverty thresholds. The multiplier determined from the 1955 survey was about three for families of three or more persons, indicating that they spent about one-third of their income on food. 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. Thus, formula (1) is a simplification of reality, since there are separate poverty thresholds for each household configuration.[3]

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[3]The complete matrix of poverty thresholds can be found in appendix I.

The right side of the equation illustrates how the Consumer Price Index is used to make annual adjustments to the original poverty thresholds for changes in prices. The weights used for each commodity group included in the CPI are based on the expenditure patterns of the urban population in 1972. Changes in the price of each commodity group since 1961 are weighted by these factors to obtain the overall CPI, which is then used to adjust the poverty thresholds.

The disaggregation of poverty thresholds presented here illustrates why many analysts argue that there are conceptual problems in determining poverty status once in-kind benefits have been introduced. Four of these issues are summarized in the remainder of this chapter. These are 1) adjustments to the food to income multiplier to account for noncash benefits, 2) revising the food to income multiplier using more recent consumption data to reflect changes in food consumption patterns, real income, and so forth, 3) use of before-tax income to measure poverty, and 4) use of the change in the overall CPI to annually adjust poverty thresholds.

The food-to-income multiplier. The income concept used to derive estimates of poverty in this study includes in-kind benefits as income in Y_{ij} on the left side of the equation, however, no adjustment was made to income (Y_{at}) on the right side of the equation.[4] Both income (Y_{at}) and food expenditures (F) on the right side of the equation should reflect noncash benefits as well as cash to be consistent. Although it can be argued that it would be desirable to incorporate this information into the poverty thresholds, such adjustments are not easily made. The following discussion illustrates some of the problems of incorporating information on in-kind benefits into the poverty concept.

The most straightforward procedure to adjust the poverty lines to account for the value of in-kind benefits is to recompute the food-to-income expenditure ratio. This ratio would be adjusted by adding the value of in-kind food benefits to cash expenditures for food and dividing this amount by the sum of after-tax income and the value of all noncash benefits. Micro-data from household surveys would provide the best source of data to make this adjustment; however, data for many sources of noncash benefits have not been collected or valued. In the absence of these data, aggregate data from administrative sources might be used to approximate the average food-to-income ratio.

In order to make this adjustment, decisions must be made on 1) the year on which the estimates are based, 2) the sources of in-kind benefits to be included, and 3) the method(s) used to value these benefits. Ideally, the estimate should be based on the same year as the food expenditure data. This means that 1955 would be the optimum year for recomputing the multiplier if the 1955 food expenditure data are used. A second decision must be made on the sources of noncash benefits to be included. The list of noncash food

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[4]There is the further complication that income on the left side of the equation is before-tax money income whereas income on the right side is after-tax money income. The problems associated with this inconsistency are discussed later.

benefits would include homegrown food, employer-provided "business lunches" and subsidized cafeterias, charitable "soup kitchens," and the minute amount of government in-kind transfers available in 1955 (i.e., a relatively small amount of school lunch subsidies and surplus commodities, but no food stamps). The value of these benefits would be added to cash food expenditures. The income side of the ratio would include these food benefits and a large number of other noncash benefits that existed in 1955 as well. Some of these benefits are implicit rent for owner-occupied housing, capital gains, interhousehold transfers in-kind (e.g., free rent and medical care expenses paid by others), employer-provided health insurance and other fringe benefits, benefits from charities, and various benefits from Government such as mortgage interest subsidies, medical care transfers and subsidized housing. Neither precise nor complete estimates are available on the aggregate value of these benefits in 1955. Had data on in-kind income been available in 1955, it is likely that the poverty line would have been raised somewhat from its current level, although the amount is uncertain. The third decision concerns the technique chosen to value these benefits. As discussed later, the valuation technique selected can have a substantial effect on the value of benefits which in turn could affect the food-to-income ratio.

Revising the food consumption data and conceptual implications. Aside from the issue of the effect of in-kind benefits on the food-to-income ratio, formula (1) also reveals that the current poverty thresholds are based on fixed period food consumption data (1955) and food plans (1961). Some analysts have argued that poverty levels should be updated periodically to reflect changes in the proportion of cash income spent on food. Fendler and Orshansky (1979) have recalculated the poverty levels based on data from the 1965 USDA Household Food Consumption Survey. The ratio of food expenditures to after-tax income from the 1965 survey was .290 compared with the .333 used to derive the current levels. This increases the food budget multiplier by 15 percent, from 3.00 to 3.45. Changes in food requirements in the USDA Thrifty Food Plan for different size and structure families were also incorporated in their study. Based on their work, the poverty line for a four-person family was 21 percent above the current poverty line. This new poverty line was 43 percent of the median income of a four-person family (as compared to 44 percent in 1963). Using these new poverty lines, Fendler and Orshansky found a 52-percent increase in the number of poor in 1977 relative to the official poverty count. Both the use of the 1965 expenditure data and the introduction of data from the Thrifty Food Plan increased the number of poor.

It should be recognized that updating the food-to-income ratio would implicitly move the poverty measure closer to a relative concept. A relative measure of poverty is based on the overall level of well-being in a society. A poverty line based on a relative measure would change as real income levels or expenditure patterns for the whole society change. Periodic updating of current poverty levels based on changes in food-to-income ratios since 1955 would have produced a relative poverty measure since the proportion of income spent on food has declined. Many analysts view the official poverty levels

developed by Orshansky as an absolute measure of poverty.[5] Poverty levels based on an absolute measure are not adjusted for changes in the level of real income in society. Persons who favor an absolute measure argue that use of a frequently updated relative measure would mask significant reductions in poverty that occur when the level of real income within a society is increasing or increases in poverty when the level of real income is declining. (For an example of an absolute approach to defining poverty levels, see Friedman, 1965.) The choice between an absolute or relative concept of poverty is based on a value judgment of how poverty should be measured.

Using before-tax income to measure poverty. Formula (1) indicates an inconsistency between the definition of income used to measure poverty status and the definition of income that is implicit in the poverty thresholds. Poverty estimates are derived by comparing CPS money income before taxes (Y_{ij} in formula (1)) with the specified poverty level. The concept on which the poverty multiplier is based, however, is after (income and payroll) tax income (Y_{at} in formula (1)) from the 1955 USDA survey. If the poverty concept had been based on the ratio of food expenditures to before-tax income, the thresholds would have been higher. Basing the levels on before-tax income assumes that families experience the same increase in well-being from an equal amount of taxes paid or income received. Some analysts (Smeeding, 1977) would prefer to compare the after-tax income of the poor to the current poverty thresholds, thus keeping the income measure consistent with the original derivation. Although the March CPS does not collect the tax information required to make this adjustment, previous estimates based on microsimulation (e.g., Smeeding, 1975; Hoagland, 1980) indicate that these adjustments would increase the poverty rate by less than 10 percent.

Adjusting for changes in prices. Use of the CPI to adjust the poverty thresholds for changes in prices is problematic for persons receiving in-kind benefits. The ability of the CPI to reflect changes in cost of living for the average consumer has been criticized repeatedly. The CPI in recent times has probably overstated the true change in the cost of living for most people because of the way the price of new homes and mortgage interest rates affect the housing component of the CPI. Use of a price index which uses a more relevant measure of changes in housing costs would reduce the recent rates of

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[5]Orshansky refers to the poverty measure as "relatively absolute" because it contains elements from both concepts; relative because it is based on the average proportion of income spent on food for all families and absolute because the poverty levels are based on expenditures for food required to meet minimum nutritional standards. The poverty levels are updated annually by changes in the CPI but not by any other means, such as changes in real income or in expenditure patterns.

change in CPI and thus reduce estimates of the poverty population.[6] As shown in formula (1), the poverty thresholds are adjusted using the overall CPI, which reflects changes in the prices of commodities faced by persons of various income levels. Many feel that updating of poverty levels should be based on a price index for low income individuals. This CPI for the poor would reflect their expenditure patterns rather than those of the entire population--i.e., higher budget shares for food, housing, and energy. There is disagreement on procedures to compute a price index for the poor and it is not clear how such an index would affect the poverty line.[7]

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[6]Triplett (1981) estimates that if the housing component of the CPI was based on changes in the price of rental housing since 1972, the CPI for 1980 would have been about 12 percent lower. This adjustment would lower the poverty thresholds by 12 percent, reducing the number of poor by about 18 percent. Such revisions to the CPI have been officially proposed and are scheduled to take effect in 1983.

[7]Minarik (1981) presents a "necessities index" which rose an average of 7.1 percent per year during the 1970's, compared to 7.4 percent for the CPI. Alperovitz and Faux (1981) present a necessities index which rose by 8.6 percent per year over this period. Bowring (1981) readjusted both of these indexes and found that necessities prices rose faster than the CPI regardless of which necessities index was used.

Chapter 3. Program Descriptions, Data Collection, and Quality Evaluation

This chapter contains brief descriptions of each public in-kind transfer program covered in the March 1980 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, etc. Next is a review of the survey questions and the limitations associated with the question wording and design. Last is a comparison of the survey-derived estimates of noncash benefit recipients with independent estimates developed from other sources and adjusted to the CPS concept of calendar-year recipiency for the civilian noninstitutional population. In this section, the term "ever received" is used to describe households receiving benefits at any time during the calendar year 1979.

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 that provides benefits to all low-income and low-resource households regardless of household characteristics (e.g., sex, age, and disability). The questions on participation in the Food Stamp Program in the March 1980 CPS were designed to identify households in which one or more of the current members received food stamps during 1979. Once a food stamp household was identified, a question was asked to determine the number of current household members covered by food stamps during 1979. Questions were also asked about the number of months food stamps were received during 1979 and the total face value of all food stamps received during that period.

The USDA/FNS publishes monthly counts of the number of persons who received food stamps during the previous month. These FNS monthly figures cannot be simply summed over the year to arrive at an estimate which is comparable to the CPS estimate because persons receiving benefits for more than one month would be counted more than once. Unfortunately, USDA/FNS does not have estimates of the number of persons who "ever received" food stamp benefits at any time during 1979. Assuming that the March 1980 CPS accurately recorded the average number of months that any household participated in the program, the number of persons who ever received benefits during 1979 is simply the sum of the number of persons receiving benefits each month divided

by the average number of months food stamps were received.[1] Based on this technique, the March 1980 CPS recipient count of 17.55 million recipients is 77.0 percent of the administrative data-based estimate of 22.80 million beneficiaries. The implicit turnover rate between the monthly and yearly number of persons benefiting is 1.32 (22.80 divided by 17.25 or the average number of monthly recipients).[2] Separating the CPS and USDA estimates of the number of food stamp recipients into those who receive cash public assistance and those who do not indicates that CPS households receiving both cash public assistance and food stamps were 95 percent of the USDA-based estimate of such beneficiaries. The CPS estimate of food stamp households not receiving cash public assistance was only 59 percent of the estimate based on USDA figures.

Based on this analysis, the survey estimate accounted for 3 of every 4 food stamp recipients. Such a discrepancy might lead one to wonder about biases in the characteristics of the survey data, i.e., those reporting benefits may differ from those who did not. Comparisons of the characteristics of food stamp recipients in the March 1980 CPS and those found in a USDA Survey of Food Stamp Recipients for October 1979 are generally in agreement. (See appendix C, table C-1.)

The Food Stamp Program is the only in-kind transfer program for which benefit amounts, in the form of the face value of stamps received, were collected. After adjusting USDA data for the 11.9 percent of benefits received by persons in Puerto Rico, Guam, and the Virgin Islands, the $4.731 billion in the face value of food stamp benefits from the CPS is 75.6 percent of the USDA adjusted total of $6.260 billion.[3] In summary, the March 1980 CPS captures 77.0 percent of recipients and 75.6 percent of the total face value of benefits for 1979.

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

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[1]The reader should note that this procedure is highly dependent on the CPS reported "average number of months received." If underreporting of recipiency is greater for households benefits for short periods of time, as some speculate, the independent estimate may be too low.

[2]In their microsimulation model, Mathematica (Doyle, et.al., 1980) used a turnover rate of 1.43 for Food Stamp Program beneficiaries in fiscal year 1980. While these turnover rates are not strictly comparable because of the time period difference, this larger turnover rate, coupled with the average monthly number of recipients of 17.25 million for 1979, would imply a control total estimate of 24.67 million persons who received food stamps at some time in 1979. If this were the alternate estimate, about 71 percent of total recipients would have reported benefits on the CPS.

[3]These USDA totals are not adjusted for food stamp fraud, and so the CPS amounts are at least 75.6 percent of the correct comparable total.

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 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 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. Program regulations require students receiving free lunches to live in households with incomes below 125 percent of the official poverty level. Those students receiving a reduced-price school lunch (10 to 20 cents per meal) live in households with incomes between 125 percent and 195 percent of the official poverty level. Over one-half of the children benefiting from this program during 1979 paid full price. Most of the other children received free lunches; only about 6 percent of all children benefiting from the School Lunch Program paid a reduced price (U.S. Congressional Budget Office, 1980). The data in this report do not distinguish between recipiency of free and reduced-price school lunches, but because of the low number of reduced-price lunches and the low price itself, this distinction is practically insignificant for valuation purposes.

The questions on the March 1980 CPS provide a limited amount of data for the School Lunch Program. Questions concerning the program were designed to identify the number of household members 5 to 18 years old who "usually" ate a hot lunch in 1979. This defined the universe of household members receiving this noncash benefit. This approach was necessary because the majority of children benefit indirectly, i.e., they pay full-established price but are not aware that these lunches are subsidized. A second question identified the number of members receiving free or reduced-price lunches. The number paying the full-established price was estimated using the difference between the number who usually ate hot lunches and the number who ate free or reduced-price lunches.

Because the school population is fairly stable over the school year, and the free or reduced-price School Lunch Program operates on an annual accounting period, the USDA 1979 peak monthly average number of lunches served (11.607 million) is a fairly good alternative estimate to compare with the CPS estimate.[4] The number of children who were reported as free or reduced-price school lunch beneficiaries on the CPS was 88.1 percent of the USDA peak monthly estimate.

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[4]There may be some turnover in this USDA population which is not captured. The CPS income period covers all of 1979 and thus scans two "half" school years. Students entering (September 1979) and leaving (June 1979) public schools with School Lunch Programs are mutually exclusive and are not both counted in a peak monthly estimate.

It is not proper, however, to make a similar comparison for those paying the full-established price. The USDA peak monthly number of children paying the full price was only 15.541 million, far short of the 22.281 million estimate from the CPS. Part of the difference results because the CPS counts children eating hot lunches in both private and public schools. Thus, private-school children eating unsubsidized (not part of FNS lunch program) hot lunches are counted by the CPS. More importantly, according to FNS, there is a substantial monthly turnover among those children who do pay full-established price for their lunches. While there is an economic incentive for schools and parents to maximize the number of free and/or reduced-price lunches, no such incentive exists for those who pay the established price. This contributes to a high turnover among children who pay full price and, hence, eat school lunches on a sporadic basis. Unfortunately, the extent of this turnover is not known and it is, therefore, not possible to apply a turnover rate to the USDA peak monthly enrollment figure and derive an alternative estimate for those who paid full-established price.

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 programs. Some are funded by USDA (for rural families) or largely by 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 the U.S. Housing Act.

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 25 percent of net monthly money income. A recipient household can either be a family of 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 charges.

There were two questions dealing with public and low-cost rental housing on the March 1980 CPS supplement questionnaire. The first question identified residence in a housing unit owned by a public agency; the CPS estimates 1.794 million households living in such housing; the second question identified beneficiaries who were not living in public housing projects but who were paying lower rent because of a government subsidy; this question identified 0.717 million households. In total, the CPS estimated 2.511 million households residing in public or subsidized housing. These questions differed from other in-kind transfer recipiency questions covering noncash benefits in that they established current recipiency status (as of the third week in March 1980) rather than recipiency status during 1979.

In all likelihood, an administrative data-based estimate of public housing units which is comparable to the CPS estimate does not currently exist. HUD and Congressional Budget Office (CBO) estimates for these four programs indicate that there were 2.688 million public or subsidized housing beneficiaries in March 1980: 1.131 million in low rent public housing and the remaining 1.557 million benefiting from the other three programs. If one could be sure that all CPS recipients were benefiting from one of these four programs, the March 1980 CPS estimate would be 93 percent of the HUD-CBO based estimate. There are several reasons why, however, such a comparison might not be justified:

1. Assuming that the households which the CPS intended to identify in the first question were HUD Low Rent Public Housing Program beneficiaries, the CPS overcounted these beneficiaries by .663 million relative to the HUD-CBO estimate and undercounted other subsidized units (as identified by the second CPS question) by an equally large amount. It is possible that the total CPS estimate is accurate, but if so, not all the beneficiaries were residing in these HUD projects or they were not sure of exactly the type of HUD project they were residing in.

2. There are several other HUD programs, various State-local public housing projects (such as Mitchell-Lama housing in New York City), and other government agency housing programs (e.g., USDA rural rental housing and prison "controlled release" housing for convicts) which may have been counted in the CPS. The comparison of the CPS and HUD-CBO estimates may, therefore, be less than adequate.

3. In some sense, the public or subsidized housing questions asked on the CPS were too broad for the task at hand. Military housing, apartments subject to local "rent control," and State university graduate student and faculty housing can be legitimately interpreted

as owned by a public agency and/or subsidized by some branch of Government. Indeed, the March 1980 CPS identified a small number of each of these types of subsidized beneficiaries.[5]

4. A more narrow set of CPS questions cannot be readily designed because rarely do public or subsidized renters know the name of the program which subsidizes their rent.[6] In some cases where the landlord or building owner is subsidized via reduced mortgage, building, or maintenance costs (as in the Section 236 program), the public agency does not often, if ever, come in contact with the tenants. These tenants have little way of knowing that they are public housing beneficiaries.

Even if the vast majority of CPS recipients were benefiting from one of the major HUD programs outlined above (as seems likely based on the location, housing unit characteristics, incomes, and demographic composition of the CPS respondents when compared with HUD data), it is not necessary to know the specific HUD (or other public) rental housing program in order to value benefits. Chapters 4 and 5 demonstrate how the market value of a particular rental housing subsidy can be determined directly from AHS and CPS data without identifying the specific program.

MEDICAID

The Medicaid program is designed to furnish medical assistance for needy families with dependent children and for aged, blind, or permanently and totally disabled individuals whose incomes and resources are insufficient to meet the costs of necessary medical services.[7] The program is administered by State agencies through grants from the Health Care Finance Administration (HCFA) of the Department of Health and Human Services.

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[5]Note that most, if not all, of the families answering the CPS questions had incomes low enough to qualify for one of the HUD subsidy programs. Thus, these types of households (students, military, etc.) could be legitimately benefiting from a HUD program, despite the appearance of benefiting from the different types of "public subsidies" cited.

[6]In fact, these two questions are exactly the same as the questions used on the Census Bureau's Annual Housing Survey (AHS) to identify such recipients. The AHS is a nationwide sample of over 65,000 households, weighted to represent National totals (as in the CPS). The 1979 AHS provided almost the exact same estimate of public or subsidized housing (2.589 million units).

[7]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.

Medicaid is by far the largest means-tested income transfer program benefits in excess of total cash public assistance benefits from Aid to F lies with Dependent Children (AFDC), Supplemental Security Income (SSI) all other forms of cash public assistance combined. (See table 1.) In 1 the average market value of Medicaid benefits per household was in exces $2,000. Previous analyses of the effect of Medicaid on the poor (Smee and Moon, 1980) have shown that, by itself, Medicaid may account for ove percent of the total reduction in poverty from in-kind transfers. For t reasons, an accurate assessment of the quality of the CPS Medicaid dat crucial to the outcome of this report. Unfortunately, the Federal-St local nature of the Medicaid system coupled with its State specific eligi ity vagaries and governing rules also make it a most difficult progra analyze. The problem is further compounded by the fact that administra data are collected on an "ever-received benefits" basis, while CPS identifies those who were "ever-covered or enrolled" during 1979. T particular care needs to be taken in analyzing both the Medicaid recipi data and Medicaid benefit valuation.

Medicaid is, for the most part, a categorical program with com eligibility rules which vary from State to State. There are two basic gr of eligible individuals: the categorically eligible and the medically ne The major categorically eligible groups are all Aid to Families Dependent Children (AFDC) recipients and most Supplemental Security In (SSI) recipients. Other categorically eligible groups are (1) those who basic State cash assistance eligibility rules (the aged, blind, or disab needy single parents with children; and, in some States, needy unempl parents with children who are not currently receiving money payments) (2) needy persons meeting categorical eligibility standards but are inst tionalized for medical reasons (e.g., low-income elderly persons in nur homes). However, such institutionalized persons are not included in the universe and, therefore, are not reflected in the CPS recipiency statist

In roughly one-half of the States, Medicaid coverage is also extende the medically needy: persons meeting categorical age, sex, or disabi criteria and having money incomes and assets which exceed eligibility le for cash assistance but are not sufficient to meet the cost of medical c In some States, qualifying income and asset levels are above those set cash assistance. Families with large medical expenses relative to t incomes and assets may also meet medically needy eligibility standards these States by "spending down" (i.e., having high enough medical expen to obtain eligibility.

The Medicaid question on the March 1980 CPS attempted to identify persons 15 years old and over who were covered by Medicaid at <u>any</u> time du 1979. The term "covered" means enrolled in the Medicaid program, i.e., a Medicaid medical assistance card or incurred medical bills which were for by Medicaid. In order to be counted, the person did not necessarily to receive medical care paid for by Medicaid.

After data collection and creation of an initial microdata file, fur refinements were made to assign Medicaid coverage to children. In

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All of the CPS figures in this table are weighted estimates adjusted to updated independent population estimates based on the 1970 Census of Population. The alternative estimates rely on 1979 administrative figures. Adjusting the CPS estimates in table 3 to results from the 1980 Census of Population would show the CPS estimates for each of these programs to be 1 to 3 percentage points closer to their administrative benchmark than indicated.[11]

Table 3. Comparison of March 1980 CPS and Alternative Estimates of In-kind Benefit Recipients: 1979

(Numbers in millions)

Program type	March 1980 CPS	Alternative estimate	CPS as percent of alternative estimate
FOOD			
Food stamps.....	17.549	22.801	77.0
School lunch:			
Free and reduced-price.....	10.229	11.607	88.1
Full price.....	22.281	(NA)	(NA)
HOUSING			
Public or other subsidized housing.....	2.511	(NA)	(NA)
MEDICAL CARE			
Medicare.....	25.712	26.257	98.0
Medicaid.....	18.136	20.794	87.2

NA Not available

[11]Because the large majority of the computer tabulations and data adjustments which were prepared for this report were completed prior to the availability of 1980 census population figures, it was not possible to use the 1980 census population controls in this report.

Overall, in-kind transfer reporting on the CPS can be viewed as fairly successful. The in-kind data collected in the CPS appear to be as good as many CPS cash income estimates relative to their administrative data-based counterparts.

Chapter 4. Methodological Issues Concerning the Valuation of In-Kind Benefits

The collection of data on the receipt of noncash benefits in the CPS was an important and essential step toward any kind of valuation research. However, collection of these recipiency data is a routine operation compared with the assignment of values to these benefits. Researchers realize that no single measure of the value of in-kind benefits is adequate for all uses, since different strategies for valuing in-kind income depend on the purposes for which the data will be used. Unfortunately, most research studies have not established the conceptual basis for their approach to valuing in-kind transfers, and the use of inappropriate measures of the value of noncash benefits may lead to incorrect policy decisions.

The purpose of this chapter is to illustrate the wide range of values that can be estimated for in-kind transfers. The conceptual basis for each measure is explained, and the range of values between the measures is shown for food, housing, and medical care. First, an explanation of the three major concepts of in-kind transfer value is provided. These concepts are market value, recipient or cash equivalent value (as measured by normal expenditures), and poverty budget share value (an application of the funds-released principle). A diagrammatic analysis of these three measures can be found in the addendum at the end of this chapter. Next, government cost and social benefit concepts of value are briefly reviewed. While values based on these concepts were not assigned to recipients in this report because they are not directly relevant or applicable to poverty measurement, these concepts provide a useful comparison to the other three valuation methods.

The final part of this chapter contains a comparison of results from previous valuation studies using the three major conceptual approaches and the government cost concept. A rough index number is assigned to the food, housing, and medical in-kind transfers; the market value of benefits is assigned an index value of 100. The results of this comparison are shown in table 4 at the end of this section.

Before examining each valuation technique in detail, it is useful to understand the major conceptual differences between them and their general relationship to one another. "Market value" is the private market cost of the goods and services transferred to the recipient. "Government cost" is the total delivery cost of these goods, which are generally acquired by government at their market value. In general, the social benefits to recipients and taxpayers must be at least as large as the government cost if the provision of a given benefit is to be efficient in an economic sense. "Recipient or cash equivalent value" is the cash amount for which recipients would be willing to trade their right to the in-kind transfer given their current incomes (including cash and other in-kind transfers). The "poverty budget

share value" is the dollar amount of a good consumed by households with money income approximately equal to the poverty level. This amount is freed up to cover other purchases when replaced by an in-kind transfer whose value is greater than or equal to this poverty budget share value. Amounts of the in-kind transfer in excess of this amount are assumed to contribute nothing to the determination of a household's poverty status.[1]

MARKET VALUE

The market value (MV) of an in-kind transfer is equal to the private market purchasing power of benefits received by the individual. That is, in-kind transfers present beneficiaries with control over some amount of economic resources which can be bought and thus have been explicitly valued in the private market. Because MV is intuitively appealing and relatively easy to compute, it is the measure which is most often used in studies of the value and distribution of in-kind transfer benefits. All other valuation methods require a good estimate of the MV of the good or service being transferred as a starting place. In some cases, e.g., food stamps, the market value is directly measurable as the dollar value of food coupons in the market. In other cases, MV is not so easily estimated. Although the aggregate MV of medical care benefits is easily estimated as the sum of vendor payments plus the cost to the Government for processing claims and program management, the MV of these benefits to a specific individual is not so easily computed. (See the discussion in chapter 5.) In the case of public housing, the conceptual measure of MV is easily 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 becomes problematic when the private market rental value is not known.

The MV concept is most often used for program budgeting by administering agencies and the Congressional Budget Office when the net budget cost (net budget savings) of a proposed program change is estimated. In cases where overhead costs can be assumed fixed (i.e., not to vary with the proposed program change), changes in MV will be an accurate predictor of the net change in government or budgetary cost. However, in cases where government cost and MV vary significantly, as in the case of public housing, the government cost measure should be used in estimating the costs of the transfer program under consideration. The MV has also been used in studies of the distributional effect of in-kind programs and their effect on poverty status. The choice between using MV or any one of the other valuation techniques for this purpose presents several difficult and disputed issues.

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[1]Care should be exercised in the assignment of labels to the value of in-kind benefits. For instance, Borzilleri (1980, 1980a) refers to estimates of market value as "funds released," "freed income," or "cash equivalent." Similarly, Smeeding and Moon (1980) used "market value" and "government cost" for medical benefits interchangeably.

RECIPIENT OR CASH EQUIVALENT VALUE

Most economists would agree that if in-kind transfers distort consumption patterns, they add less to a recipient's economic well-being than an equal dollar value cash transfer. If so, they should be discounted to their recipient value to reflect this lower value. Recipient value reflects the program beneficiary's own valuation of the benefit; it is most often measured by the amount of cash which would make the recipient just as well off as the in-kind transfer. In economic theory, the recipient value is also known as the cash equivalent value (RV-CE) and is formally termed the "Hicksian equivalent variation" after John Hicks (1943). Most economists agree that RV-CE is the proper measure for valuing in-kind transfers to evaluate their effect on the economic well-being of the poor and the income size distribution (e.g., Smeeding and Moon, 1980). Not all economists are in full agreement on this issue, however, since many earlier studies of the effect of income in-kind on poverty have used MV. The Congressional Budget Office (1977, p. 19) and Hoagland (1980) both used MV but have included a statement that the cash value of in-kind transfers to recipients may be less than the MV.

Two economists who have studied in-kind transfers, Paglin (1980) and Browning (1979), prefer to use MV rather than RV-CE. Paglin agrees that in-kind transfers may be worth less than cash transfers of equal dollar value, but believes that in-kind transfers should be compared with earned income and not to cash transfers. On this basis, he argues that in-kind transfers are preferred to earned income because of the extra leisure they provide as compared with earnings which imply less leisure and require the added expenses of work-related costs (e.g., clothing and transportation). Since earned income is measured at its dollar value, in-kind transfers must also be counted at least at their dollar value (or MV) and cannot be valued less than earnings if they are preferred to earned income. While Paglin's line of reasoning also implies that cash transfers should be counted at more than their MV (since they are preferable even to in-kind benefits), he neither makes nor recommends any such adjustment. Nor has he considered the value of in-kind fringe benefits associated with employment (e.g., employer pension or health insurance provision) or other job amenities (e.g., free use of company cars) which might make earned income preferable to in-kind transfers.

Browning (1979) also recognizes the fact that in-kind transfers may be worth less than an equal cash transfer. He argues that it is wrong to make an adjustment for this distortion while ignoring other similar distortions which make certain goods and services worth less than their MV.[2] Browning feels that analysts should make no such adjustments for in-kind transfers unless adjustments are made for <u>all</u> types of "welfare costs"--from

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[2]For instance, certain income tax provisions produce distortions which reduce the price of goods to purchasers because of their deductibility. If the tax deductibility was not available many people would not purchase as much of certain goods, e.g., housing, as they do. Therefore, persons value these goods at less than their true market cost. It can be argued that some adjustment for this type of welfare cost should be made.

regulations through taxes. Income tax distortions do exist, but beca CPS uses pretax money income and the poor pay little income taxes anyw distortions are not particularly at issue when measuring the incomes poor. Assigning welfare costs of various rules and regulations to i uals would be difficult even if these costs were known. There is mu dence that most in-kind transfers, especially medical transfers, ar less to recipients than an equal cash transfer. (See Smolensk al. (1977); Smeeding (1975); Cooper and Katz (1978).) Moreover, thi will show that the different valuation methodologies have significant ferent effects on the level of poverty. Thus, to ignore this parti important welfare cost on the grounds that one cannot adjust for all costs seems unwise.

In theory, the recipient or cash equivalent value (RV-CE) can b mated by assigning a utility function[3] to all recipients. The cash lent measure is the amount of cash transfer which would leave the re at the same level of well-being or utility as the in-kind transfer. A estimates of RV-CE necessitate knowledge of all recipients' differing functions and the prices that they pay. Because utility functions be observed and measured with any degree of accuracy, and because of culties with current consumption data, a simplified measure of re value has been developed as a substitute.

RV-CE estimates in this study are based on survey data showing expenditures at different income levels. These estimates were der assuming that the RV-CE value of an in-kind transfer is equal to the expenditure on that item by unsubsidized consumer units. This pr actually involved matching subsidized units to unsubsidized units wit lar characteristics (e.g., income size, location, and age).[4] Inc unsubsidized units was defined as the sum of money income plus the MV in-kind transfers.[5]

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[3]A utility function is an economic construct which indicates r preferences for various goods and services depending on relative and how these goods and services are substituted for one a

[4]In calculating RV-CE, one implicitly assumes that there is no dif between the comparable family and the recipient family. However, units are eligible for a given benefit and only one actually parti in the program while the other (the comparison unit) does not, incorrectly infer that the expenditures for the given good by the ticipant are equivalent to those of the participant if there program. But if they were equivalent why didn't the comparable also receive the in-kind transfer? This selectivity bias is addressed later in chapter 5 of this paper.

[5]For example, if a particular CPS family has $5,000 worth of money $2,000 in Medicaid benefits (measured at MV), and $1,000 in food the income level at which to select the comparable family in o calculate RV-CE for either Medicaid or food stamps is the $8,000 level.

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some types of goods (e.g., large amounts of medical care) may be significantly upward biased in their valuations using RV-CE. For this reason (and other reasons outlined below), we now introduce a method that imposes a limit on the amount that each in-kind good can contribute to a family's economic well-being for purposes of measuring poverty.

POVERTY BUDGET SHARE VALUE

The third valuation method examined in this study is poverty budget shares (PBS). The PBS approach is a different and less general valuation technique which links the value of in-kind benefits directly to the current concept of poverty. The PBS approach assumes that, for the purpose of measuring poverty, the value of an in-kind benefit can be no more than that implied by observed consumption levels for people near the poverty level.[8] The derivation of the current poverty level, which is based on well-specified food needs, implies certain levels of need for other commodities as well (i.e., some amount of expenditure for each good is budgeted into the poverty level) even though no well-specified levels of minimum housing or medical care needs exist. It can be argued that the value of these benefits for purposes of measuring poverty should be limited to no more than the amounts which are assumed to be included in the poverty levels. To assign a larger value to those benefits assumes that they can substitute for other commodities, which is not the case.

A short example should illustrate the rationale for the PBS approach. The market value of Medicaid coverage in the State of New York for an elderly person was estimated in this study to be $4,430 (see appendix D, table D-3) for 1979. The poverty threshold for an elderly person living alone in 1979 was $3,472. Medicaid benefits valued at $4,430 are far in excess of the implied share of the $3,472 poverty level required for medical care. For purposes of measuring poverty, the person's medical needs have been met. Under the PBS approach, the excess value of medical care are not counted because these excess benefits cannot be substituted for other needs at the poverty level such as food and housing. The PBS approach is particularly useful for assessing the effect of medical care benefits on estimates of poverty because of the problematic nature of assigning values to these benefits.

There are several important aspects of the PBS approach which should be mentioned. First, because the procedure limits the value of in-kind benefits, especially that of medical care, it has less effect on poverty than

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[8]Orshansky (1977) suggests that the proper value of in-kind benefits is equal to the expenditure on the given good prior to the receipt of the in-kind benefits, i.e., the amount of funds released for additional consumption. The PBS approach is similar to this measure in that it measures funds released, but only at poverty line income levels.

the other approaches.[9] Second, because the PBS is tied directly to the poverty concept, it is not appropriate for use in studies to determine the effect of in-kind benefits on the income size distribution in general. Finally, the PBS approach is based on the assumption that the amount of necessary expenditures implied by the poverty line can be measured by observed consumer behavior of families at poverty line income levels.

GOVERNMENT COST

To compare the economic efficiency of public and private sector provision of in-kind transfers, a measure of the total government cost (GC) of producing the given benefit is required. The GC includes the MV of benefits provided and all of the associated economic costs of production and program management.[10] Explicit accounting for capital costs may also become important where Government decides to actually produce a given good, rather than provide it by subsidizing private sector production or investment. The GC is net of recipient contributions to the program, should there be any. Because, as generally calculated, it includes all direct costs of providing a given benefit, GC is normally the proper measure to determine net changes in budget outlays resulting from a given change in program rules and regulations. If overhead costs are fixed (i.e., they do not vary with minor changes in program parameters), MV may also prove to be a sufficient measure of budgetary impact.

SOCIAL BENEFIT VALUE

The social benefit value (SBV) of a public transfer program must be at least as great as the government cost in order to justify the program. The SBV should include spillover effects (consumption and production

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[9]The PBS method captures the "substitution" effect but not the "income" effect of in-kind benefits, both of which are accounted for by the RV-CE approach. Unless the income elasticity of demand for a subsidized good is zero, the PBS approach generally results in an underestimate of the "true" value (an income elasticity of demand equal to zero implies that consumption of the good does not increase with higher levels of income). These considerations are discussed further at the end of this chapter.

[10]The GC may also be defined to include the dead weight loss or welfare costs associated with the taxes or public debt needed to fund a given transfer benefit or other expenditure. Browning (1978) has estimated the efficiency costs of taxes. Further, if means-tested income transfer programs reduce beneficiary labor supply, e.g., see Moffit (1981), an additional cost element arises. However, because the primary purpose of this study is to estimate various measures of recipient value and not to compare total program cost to social value, such measures are not included. In comparing the value concepts used to gauge the effect of in-kind transfers on recipient well-being, these costs are constant across all measures of benefit value since they depend on the programs under consideration and not the measures of their value per se.

externalities) which accrue to taxpayers who finance the program as well as net benefits to the program recipient. Social benefit values have not been presented in this study because of difficulties in assigning values to individual recipients.

SUMMARY OF VALUATION CONCEPTS

This discussion has shown that each of the in-kind valuation concepts has its own strengths and weaknesses, depending on the estimation procedure used. The market value approach is preferred if value is considered to be the purchasing power of benefits in the private market place. The cash equivalent approach is preferred if value is considered to be the individual's assessment of the worth of the goods received. However, estimating cash equivalent value can be quite problematic given the available expenditure data and lack of a good counterfactual for valuing medical benefits. The poverty budget shares approach can only be used in assessing the effect of in-kind transfers on poverty; it is preferred if value is considered to be no more than the amount of expenditures for the specified good assumed to be included in the current poverty level budget. Because of difficulties in estimating cash equivalent value, particularly medical benefits, PBS provides an additional limited alternative to the market value approach.

Market value has been the most widely used of these three methods to value in-kind transfers. Researchers who prefer the cash-equivalent approach have argued that market value overstates the gain in the recipient's economic well-being since cash equivalent values are most often less than market value. In such cases, recipients of an in-kind benefit would be willing to accept an amount of cash which is less than the market value because their normal consumption pattern has been altered. Those who have favored using MV in studies of poverty and income distribution (Browning, 1979; Congressional Budget Office, 1977; Anderson, 1978; Hoagland, 1980; and Paglin, 1980) either implicitly or explicitly suggest that in-kind transfers have exactly the same value to recipients as cash transfers of an equal dollar amount, despite what some may feel is an overstatement of the value of in-kind transfers.

PREVIOUS ESTIMATES OF THE VALUE OF IN-KIND TRANSFERS

The comparison of the results of valuation techniques is complicated by the existence of several procedures which provide differing estimates of cash equivalent value. The comparisons are further complicated by the fact that the ratio of cash equivalent to market value increases with the level of income since the consumption of most goods increases with the level of income. Comparisons which follow are based only on the average cash equivalent value at all income levels. Because cash equivalent valuation is more problematic than other valuation techniques, a brief review of previous work follows prior to the summary comparison of results.[11]

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[11]For other reviews of this literature, see Cooper and Katz (1978); Danziger, Haveman, Plotnick (1981); Manser (1981); and Peskin (1976).

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approach (Kraft and Olsen, 1977; Weinberg, 1981).[16] These measures vary substantially, ranging from 48 to 82 percent of MV.[17] The PBS measure varies between 38 and 42 percent of MV, depending on family size and age structure.

The GC of public and other subsidized housing has been estimated to average from 117 percent (Murray, 1975) to 140 percent (Weinberg, 1981) of the MV of program benefits. Rydell, Mulford, and Helbers (1980) have shown that in one particular type of housing program (HUD's Section 8 existing housing), gross rents are 26 percent above their fair market value solely because of program regulations for setting rents. Costs of code compliance monitoring, tenant foreclosure, and other overheads are also substantial. Subsidized housing programs also incur long term costs involved in contracts which promise to maintain subsidies to the private owners of rental housing units over 30- to 40-year periods. In fact, the aggregate long-term costs are estimated to be quite high, probably exceeding the existing budget authority for many housing programs (U.S. Congressional Budget Office, 1979). In evaluating the budgetary effect of a change in the number of public housing units, it is therefore important to accurately measure the present and future GC of the units (net of expected tenant rent expense).

Medical transfers. Valuation of medical care transfers presents several unique problems, as discussed later in this chapter. Authors who have estimated the recipient value of medical transfers include Smolensky, et.al., 1977; Cooper and Katz, 1978; Smeeding, 1975; Smeeding and Moon, 1980. The value of medical transfers varies by type of program, income, and other characteristics of the recipient. For instance, Smeeding (1975) estimated that based on a normal expenditure approach, RV-CE's in 1972 were 63, 93, and 78 percent of MV for those who received Medicaid, Medicare, or both programs, respectively. Altogether, normal expenditure and utility based RV-CE values averaged between 58 and 74 percent of MV. PBS values for medical care benefits have been estimated by Smeeding and Moon (1980); these estimates were in the 28 to 38 percent range.

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[16] A funds released approach is similar to the normal expenditure approach, except that the income effect from all in-kind benefits in the former approach is not taken into account. Thus, funds released only captures the substitution effect of the in-kind benefit for the current level of expenditure, while the normal expenditures approach also captures (and possibly overstates) the income effect from in-kind transfers. Weinberg (1981) measures funds released as defined here, but calls it the "income effect" from public housing.

[17] One bias in these measures involves the treatment of low rent public housing. Some authors (e.g., Smeeding, 1975; Kraft and Olsen, 1977) argue that families constrained to consume less housing in the project housing unit than they would consume if given an equal amount of cash, have RV-CE which are less than MV. In estimating RV-CE for all other programs, Smeeding assumes RV-CE=MV if normal expenditures exceed MV. Kraft and Olsen, however, only deal with estimates of RV-CE for low rent public housing and reduce RV-CE if normal expenditures exceed MV.

The estimation of the GC of medical care transfers presents several interesting issues, most of which have not yet been satisfactorily resolved. The GC of Medicare and Medicaid may actually be lower than the private MV for these same benefits because the Government can avoid the selling cost and any monopolistic profit margin "load" factor which private health insurers may receive for the same quantity and quality of medical insurance coverage. The GC may also fall short of private MV because the Government may not be willing to pay enough to cover the total cost for certain medical services. For instance, Medicare guidelines often specify maximum allowable charges which are less than "usual, customary, and reasonable" charges, i.e., the going market price for certain services. In such cases, however, the GC of a Medicare insurance policy may only appear to be less than the private MV because the lower price results in a lesser quality and/or quantity of care. However, the attendant regulations and overhead costs which Medicare and Medicaid place on medical care providers are in excess of those imposed by private insurance carriers with lesser quality control standards. Claims processing costs involved in government medical care provision are usually no more than those found in the private sector.

The GC of Medicare and Medicaid benefits has not been estimated because the net effect of regulation and overhead costs, lower selling costs, and absence of monopolistic profits has not been determined. The GC of a Medicare or Medicaid insurance policy is probably higher than the private market cost because of regulatory and overhead costs. For illustrative purposes, it is assumed that this cost can be anywhere from 0 to 10 percent of the MV of Medicare and Medicaid.[18]

SUMMARY

Table 4 summarizes the relationship between MV and each valuation technique. The wide range of values observed in table 4 must be interpreted with caution because the estimates are based on different studies using different approaches, different years, different data bases, and different MV measures. The wide range of values underscores the need to carefully specify the concept and measure of in-kind transfer value. For food transfers (in this case food stamps), the range of estimates is much smaller than for medical care or housing.[19] The range of RV-CE for food stamps without the purchase requirement is likely to be even smaller.

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[18]These costs are already accounted for in MV if they result in higher patient charges; undoubtedly this is true to some degree. For instance, Medicare nursing requirements may raise nursing costs above normal hospital costs because of a greater required quantity and quality of nursing services. In such cases, higher salaries will be included in the hospital overheads and, therefore, into Medicare (and other insurers) costs, resulting in zero additional GC in excess of MV.

[19]The low estimate for RV-CE of 83 is taken from Clarkson (1976) who used a Cobb-Douglas utility function and constrained food consumption to be no more than the amount of stamps received.

The RV-CE measures for medical care and housing transfers may be significantly lower than MV. To some extent, medical transfers enable elderly and poor recipients to pay for medical care which they either went without or received for free before these programs were created. This low willingness to pay for medical care manifests itself in the relatively low RV-CE. The lowest estimates for public housing are based on studies which consider only the Low Rent Public Housing Program. Estimates of RV-CE for other housing programs are higher (e.g., Section 8 housing). The wide differences between RV-CE's for medical and housing transfers indicate the need for more precise and definitive estimates.

The PBS measures are much lower than the MV or RV-CE values for housing and medical care but are nearly the same as market value for food benefits. This is caused by the procedures used to estimate PBS which limit expenditures to the average amounts spent by the poverty population. The PBS estimates for food are nearly the same as market value because the amount of food stamps received by beneficiaries are based on food budgets similar to those used to develop the official poverty level.

Table 4. Alternative Relative Values for In-kind Transfers

Type of in-kind transfer	Relative measure of value			
	Government cost	Market value	Recipient or cash equivalent value[2]	Poverty budget shares
Food[1].....	108	100	83-97	94-98
Medical care.....	100-110	100	58-74	28-38
Housing.....	117-140	100	48-82	38-42

[1]Includes only food stamps. Estimates on the recipient value of school lunch benefits are not available.

[2]Includes both normal expenditure and utility based estimates of RV-CE as explained above.

Addendum: A Diagrammatic Analysis of Various Approaches to Valuing In-Kind Transfers

Figure 1 provides a summary of the various approaches for valuing non-cash transfers which have been discussed in this study. Several of the footnotes in this section are designed to assist those with only a rudimentary background in economic theory. Using a standard utility maximizing framework, assume that there is a pre-in-kind transfer budget constraint of AD[20] and a pre-in-kind transfer utility level[21] of U_o that are just tangent to each other. The consumer maximizes his utility at this point, given the budget constraint, by purchasing OM units of the (about to be) subsidized good and OQ units of other goods. This framework can be used to describe the manner in which the provision of different types of in-kind benefits affect the budget constraint, and consequently, the recipient's level of economic well-being.

Assume that a fixed quantity of a subsidized good (or service) which has a MV of AB(DS) is provided to the recipient without cost. In figure 1, this is represented by an extension of the budget constraint from AD to ABS. There has been no change in relative prices (which would create a different tilt in the budget frontier than that observed in figure 1). Several in-kind benefits are similar in nature to this case, including Medicaid, Medicare part A, the Free or Reduced-Price School Lunch Program, and the Food Stamp

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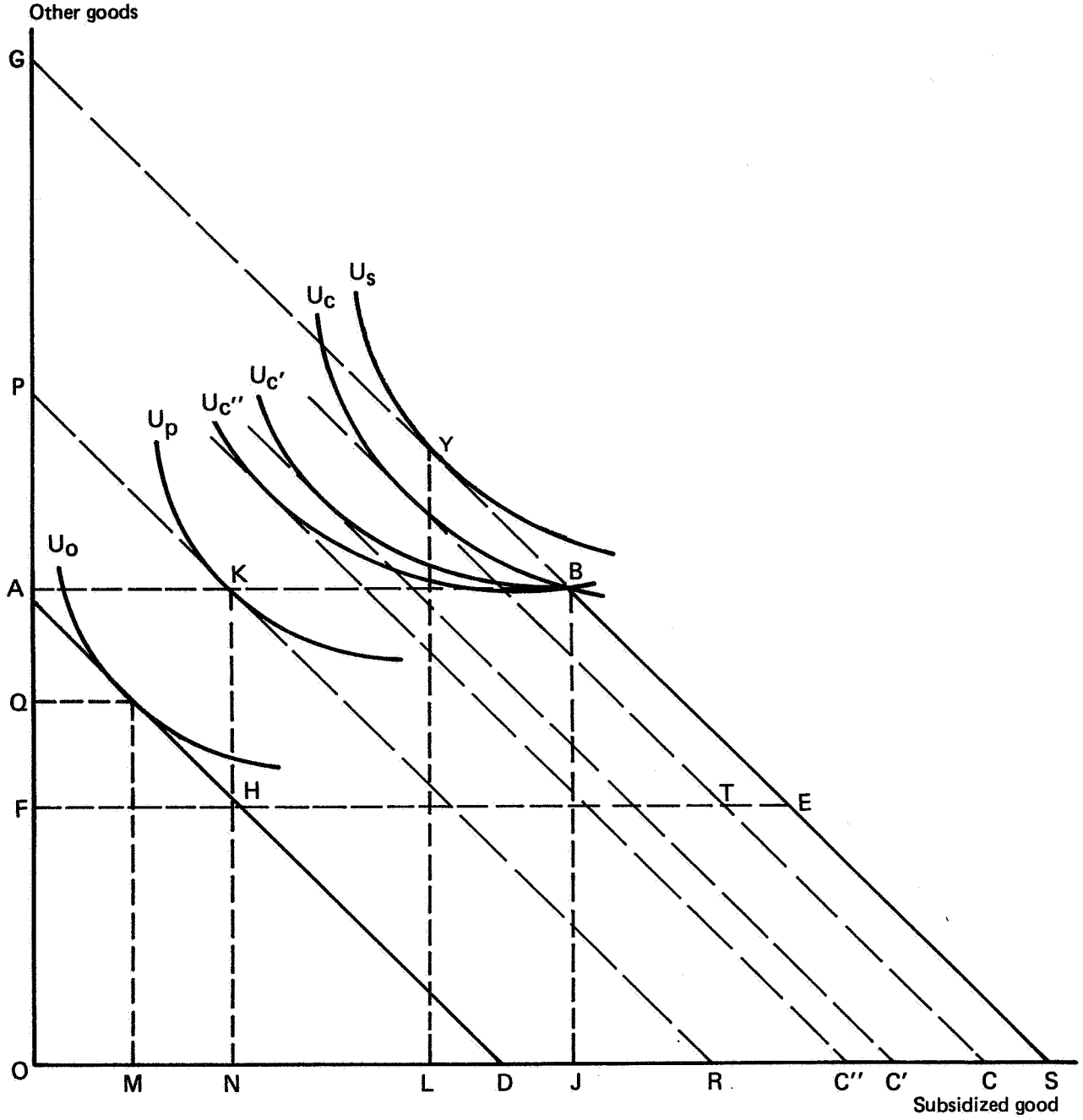
[20]The budget constraint specifies the maximum amount of subsidized and nonsubsidized goods which a consumer can purchase. For instance, a person facing the budget constraint AD with no preferences for the subsidized good could purchase up to OA units of other goods. Conversely, a person with preferences for the subsidized good could purchase up to OD units of the subsidized good, or any mix of subsidized and nonsubsidized goods along the line AD. In-kind transfers generally expand the budget constraint, allowing beneficiaries to enjoy larger quantities of both subsidized and nonsubsidized goods.

[21]Utility curves such as U_o, U_p, etc., in figure 1 indicate all mixes of subsidized and nonsubsidized goods which keep the individual at the same level of satisfaction. A utility curve is based on the recipient's tastes and preferences for various goods and services. A higher amount of goods and services indicates a higher level of well-being. For instance, a person who can reach U_s is better off (or enjoys a higher level of economic well-being) than a person at utility level U_c or any other utility level below U_c. The assumption that consumers maximize their level of utility produces the tangency between the utility curve and the budget constraint.

Figure 1.
Approaches to Valuing In-Kind Transfers



Program.[22] In the Food Stamp Program, however, the recipient can receive benefits for all or only part of the month (e.g., the recipient may only receive an amount of food stamps equal to DR rather than DS). In either case, the valuation problem is theoretically the same.

The analysis is altered slightly if a person has to pay a certain amount of money to receive an in-kind benefit. For example, persons who receive optional Supplemental Medical Insurance (SMI) under Part B of the Medicare program are required to pay a fee each month. The payment of this insurance fee can be represented by AF in figure 1. The recipient pays (or gives up) AF units of other goods in order to receive HE units of health care coverage under SMI. The new budget constraint is AHES in this case, but the analysis remains the same as in the earlier case. Other in-kind programs which require beneficiaries to pay a fee include the school lunch programs (both reduced price and full established price) and most housing programs (e.g., Section 8).

There are some unique features of public housing programs, which require further explanation. In most public housing programs, the beneficiary (tenant) pays a certain amount in rent (15 to 25 percent of their income) and, in return, receives a housing transfer. For example, the tenant may pay a charge equal to AF in return for a housing transfer with a market value of HE. The payment by the tenant (AF) covers FH units of housing and the housing authority purchases an additional HE units, implying a total of FE units of housing consumed. Because the tenant's contribution for this type of public housing is fixed at FH, he is constrained in his housing choice only by the maximum total value of housing which the housing authority is willing to purchase. Suppose that a prospective tenant found two acceptable Section 8 housing units, one with a market rent of FT and the other with a market rent of FE (as shown in figure 1). Since the tenant pays a fixed fee equal to FH, he will probably take the more expensive apartment, thus raising the market value of the transfer from HT to HE and increasing the government's cost and the MV of the housing subsidy by TE.

Other public housing programs, such as Low Rent Public Housing projects, are more restrictive. In this program, a person who gives up AF in other commodities can either participate in the program (consume FE units of housing) or not participate (consume FH units). That is, these public housing projects are transfers of a "take it or leave it" nature, similar to the Surplus Commodities Food Transfer Program which was replaced by the Food Stamp Program. The potential tenant can either take the HE units of housing offered by the housing authority or refuse it. In effect, the recipient has

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[22]Medicare and Medicaid are treated as insurance policies with a given value, and school lunch subsidies are treated as a fixed transfer with a given value. Alternatively, one could model these programs as a price subsidy inducing beneficiaries to consume more medical care due to a lower price. Such a model would be appropriate if medical transfers were measured on a benefits actually received basis.

no other choice and gets nothing in addition to the amount of the good being transferred once it is accepted.[23]

The MV of an in-kind benefit provided without cost to the recipient can be illustrated using figure 1. Assume that the recipient receives AB=DS units of the subsidized good; the MV of the in-kind transfer is the dollar value of the goods transferred to the recipient. This approach suggests that the new (post-transfer) budget constraint is GBS (not ABS). This budget constraint implies that the individual can reach utility level U_S after receiving the transfer. However, this utility level could be reached only if the recipient could sell or trade the right to the in-kind transfer for other goods or services; only then would the portion of the budget constraint labelled GB be available to the recipient. Since the right to sell in-kind transfers is not available to recipients, those accepting the transfer must consume at least OJ units of the subsidized good. With consumer preferences as shown in figure 1, the consumer could never reach U_S. Thus, unless the recipient prefers to consume more than OJ units of the in-kind transfer the MV approach overstates the recipient's gain in welfare from the in-kind transfer.

Figure 1 can also be used to illustrate the cash equivalent (RV-CE) value of the in-kind transfer. The RV-CE measure is the amount of cash transfer that enables the recipient to achieve the same level of well-being provided by the in-kind transfer.[24] In terms of figure 1, the cash equivalent value is the smallest cash-income transfer that keeps the individual on the indifference curve that passes through point B.[25] The amount of total income which keeps the in-kind transfer recipient at the same level of

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[23]This portrayal of public housing ignores the fact that the unit is only constrained in terms of its structural characteristics and location. At the tenant's expense, the quality of the housing unit can be altered by the purchase of minor alterations, better furniture, etc. However, beyond these limited choices, housing consumption is fixed once tenancy in a Low Rent Public Housing unit is accepted.

[24]In figure 1 a cash transfer expands the recipient's budget constraint for both types of goods by an equal amount. For instance, a cash transfer of AP would move the budget constraint from AD to PR, allowing the unit to purchase larger amounts of each type of good. With such a transfer the beneficiary's preferences fully determine the amount of each type of good which it will consume. In the example above, a cash transfer of DS (equal to the MV of the in-kind transfer DS) <u>would</u> expand the budget constraint from AD to GS allowing the recipient to reach utility level U_S. But with an in-kind transfer, U_S cannot be reached.

[25]B indicates tangency between the highest utility or indifference curve (U_C, $U_{C'}$, or $U_{C''}$) and the post-in-kind transfer budget constraint ABS.

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The foregoing analysis suggests that the use of the normal expenditures approach to approximate cash equivalent value may have two associated biases. First, RV-CE may be underestimated because in-kind transfers in excess of normal expenditures are valued at zero. Second, RV-CE may be overestimated because normal expenditures are calculated at an income level which includes the MV of all in-kind transfers, since we cannot consistently or simultaneously estimate the RV-CE. The extent of each of these biases is unknown. The rationale for using the normal expenditure approach instead of a utility-based approach is explained further in the next section. A detailed diagrammatic explanation of the normal expenditures technique for estimating RV-CE is shown in appendix E.

A modified funds-released approach called poverty budget shares (PBS) can also be used to value in-kind benefits, as demonstrated in figure 1. As mentioned earlier, this approach is tied to the current poverty concept, and only has justification as an approach to measure the impact of in-kind benefits on poverty. Assume that the official government poverty threshold for a particular type of family is OR(=OP). The value of the subsidized good (say medical care) that families at this income level would consume is ON. This level of expenditure (ON) could be subtracted from the poverty threshold (OR) for persons receiving the in-kind transfer, thus creating a "new" poverty line (OD). The logic of this adjustment implies that since recipients of medical transfers no longer need to make any payments for medical care, their cash income need only be above the "new" poverty line (OD) to escape poverty. In the case of medical care, this procedure prevents large medical transfers from raising individuals (or families) above the poverty thresholds. The PBS approach enables the in-kind transfer recipient to move to utility level U_p, because adjustment of the poverty line leaves them with just enough other income (OA) to escape poverty. But note that U_p is below U_c, U_c', and U_c''--the cash equivalent value measures, indicating that, in this case, it provides a lower bound estimate of the value of in-kind benefits. In fact, only if the recipient had right angle indifference curves (which included the line segment KB) would the PBS value equal the cash equivalent value. Such a utility curve indicates that in-kind benefits in excess of ON (i.e., KB in figure 1) are completely worthless to the recipient; this is not the case for the utility curves shown in this diagram. Thus, in studies of income distribution the PBS value would understate the true recipient value.

This discussion has illustrated the wide range of methods that can be used to value in-kind transfers. It has been shown that the MV approach assigns the highest possible value to the in-kind transfer (OJ=DS). On the one hand, because the recipient can never reach utility level U_s on budget constraint GB, the MV will overstate the true recipient value. On the other hand, the true estimate of recipient value is heavily dependent on the shape of an individual's utility function. It was shown that three different alternatives for utility curves (U_c, U_c', and U_c'') produce three different estimates of RV-CE (DC, DC', and DC"). Because of difficulties associated with estimation of utility functions, and the unrealistic assumption that

everyone has the same shape utility function, estimates of cash equivalent value have been made using the normal expenditures approach. The PBS approach to valuing in-kind transfers will generally result in the lowest value of the benefit, as in this example (ON).

Chapter 5. Derivation of the Values of In-Kind Transfers

This section describes the procedures used to estimate the value of in-kind transfers based on data from the March 1980 CPS and other sources. Procedures were developed for estimating market value, recipient or cash equivalent value, and poverty budget share value for food, housing, and medical care. One especially significant aspect of this process involves the definition of medical care transfers and estimation of their values. Appendix D contains a more technical discussion of several aspects of these valuation procedures.

MARKET VALUE

The market value (MV) is the cost of a good in the private market. The assignment of market value to in-kind transfers requires identification of an analogous good in the private market and the determination of its cost.

Food transfers. The market value of food stamps is easily measured by their face value, which is the market purchasing power. Estimates obtained directly from the March 1980 CPS indicate the average MV for food stamps in 1979 was $812 per household or $280 per person.

The estimates for the School Lunch Program for 1979 were derived using administrative data from the Food and Nutrition Service (FNS) and survey data from the March 1980 CPS. FNS program data indicate a market value of commodities ($710 million) and cash subsidies ($2.090 billion) totalling $2.800 billion. Of these benefits, "Section 4" cash payments ($714 million) and commodity subsidies for all hot lunches are distributed to each of the 32.5 million children in the School Lunch Program population, producing a subsidy of $43 per child. Next, "Section 11" cash subsidies ($1.376 billion) for free and reduced-price meals only are distributed to the 11.607 million children in this program, producing an additional $120 subsidy for free and reduced-price beneficiaries. The total school lunch benefit for each of these children is $163. These benefits do not vary by region or school district. Benefits were assigned to each school child on the March 1980 CPS microdata file resulting in a MV of $2.618 billion or 93.5 percent of the FNS total.

Some analysts might question the approach used here which treats food stamps and school lunches in a similar fashion. Both of these food benefits are substitutes for out-of-pocket food expenses and are in this sense the same. Identical treatment of food stamps and school lunches, however, assumes that recipients are indifferent between the two. This may not be a good assumption since food stamps provide a greater range of choice than school lunch benefits. It might also be argued that school lunch benefits have significant positive external benefits to taxpayers, so they should not be counted at all.

Housing transfers. Estimation of the MV for public housing has presented a number of problems to researchers (e.g., see Murray, 1975; Kraft and Olsen, 1977; and Aaron and Von Furstenberg, 1971). In theory, estimation of the MV is straightforward. The MV is equal to the difference between the market rental value of the housing unit and the rent actually paid by tenants. This information was not available from the March 1980 CPS and, therefore, two alternative estimation methodologies were examined.

The first method examined was the approach developed by the Congressional Budget Office (CBO) and Mathematica, Inc. for use in the MATH-CBO simulation of the MV for public housing.[1] This approach assigned MV to households reporting residence in public housing on the March 1980 CPS microdata file. Households were first assigned to a particular housing program and then assigned MV by income level based on data available from the Department of Housing and Urban Development (HUD). The HUD estimates of MV for Low Rent Public Housing did not account for household size and were estimated separately within only eight broad income categories (Housing in the Seventies, 1974). Because more than 40 percent of all public housing units are of this type, results of this procedure must be viewed with caution.

The second method examined involves the use of hedonic regression techniques to estimate the MV of public housing. A hedonic regression estimates this value based on characteristics which describe the quality of the housing unit, such as structural characteristics, neighborhood conditions, location, and contract conditions, independent of the income and characteristics of the tenants who occupy the unit. Use of the personal characteristics of the occupants of the housing unit in the regression can result in a selectivity bias, as pointed out by Aaron (1977).[2] This procedure avoids the need to assign a specific housing program to each public housing beneficiary and enables the calculation of MV using survey data. Because of these advantages, the hedonic regression approach was used to estimate the MV of public housing in this study. The estimation of the MV of public housing based on the hedonic technique was a multistage process using data from the 1979 Annual Housing Survey (AHS) and the March 1980 CPS. The first step involved development of a regression equation to estimate market rent (MR) for a subset of unsubsidized housing units using rents reported on the AHS. The

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[1]MATH is the acronym for the Mathematica micro-simulation model which is used by CBO to evaluate the distributional impact of particular in-kind transfer programs and their effect on poverty.

[2]Selectivity bias may arise because the tastes, preferences, and demand for housing services for public housing tenants probably differ from those of the non-public housing tenants which were used to develop estimates of the housing values. This problem may bias the results, however, not all economists agree on this point. Sheldon Danziger suggests that the goal of this estimation procedure is to maximize the explanatory power of the regression and, therefore, personal characteristics should be used if they help differentiate between different types and quality of housing units.

second step was to use the regression coefficients from this equation to estimate the market rent of public housing units identified on the AHS. The third step was the determination of the rent subsidy (which is MV) for public housing. This was defined as the difference between the predicted market rent and the reported amount of rent paid for the public housing unit (the subsidized rent (SR)). The final step was assignment of the rent subsidies to the public housing units on the March 1980 CPS data file.

Overall, the regression results were very good (appendix D), allowing use of the equation to compute the market value of public housing units. The procedure of subtracting SR from MR to compute the subsidy value (S) for public housing units, however, resulted in negative S values (i.e., MR less than SR) for 18 percent of all public housing units. In about 12 percent of the cases, the negative S values were less than $50 per month. Most of the units with negative S values greater than $50 per month were in highrise dwellings of 20 units or more located in large northern metropolitan areas. Although this result implies that some public housing beneficiaries may be paying more rent than they would pay for a similar unit in the private market, these negative values may be due to prediction error in the regression used to estimate MR.

A cell-matching procedure was used to assign the MV of the public housing subsidy derived from the AHS to the public housing units in the CPS. Table 5 shows the cells and corresponding monthly subsidies used in the match. Negative subsidy values were set equal to zero in order to minimize their influence in the cell averages. In some cases, cells containing a small number of observations were combined. This procedure has only a minor effect on the final estimates.

There are two other aspects of this estimation process which should be noted. First, estimation of the subsidy values was made assuming that the public housing recipients on the CPS resided in those units for the full year (i.e., monthly subsidies in table 5 were multiplied by 12 to derive the annual estimate). Secondly, while S values were calculated separately for units with and without heat included in rent, the S values assigned to CPS units were based on an average for all units. This procedure was used because there is no significant difference in S values between those with and without heat included in rent.[3] Furthermore, the CPS data do not distinguish whether heat is included in rent.

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[3]While MR should differ by the treatment of utilities, there is no apparent reason why MR-SR (the subsidy) should vary by this treatment.

Table 5. Average Monthly MV of Housing Subsidies for Residents of Publicly Owned or Subsidized Rental Housing in 1979, by Region, Location, and Money Income Level

Household money income in 1979	Northeast		North Central		South		West	
	SMSA	Not SMSA	SMSA	Not SMSA	SMSA	Not SMSA	SMSA	Not SMSA
Overall average....	$ 72	$ 77	$ 92	$ 80	$ 89	$ 81	$ 96	$ 95
Less than $2,500...	91	96	113	113	112	105	104	104
$2,500 to $4,999...	86	87	99	101	101	94	106	104
$5,000 to $7,499...	76	76	85	85	89	89	92	92
$7,500 to $9,999...	65	64	58	58	61	61	72	72
$10,000 to $12,499.	30	30	58	58	47	47	72	72
$12,500 to $14,999.	30	30	58	58	47	47	72	72
$15,000 or more....	30	30	58	58	47	47	72	72

SMSA - standard metropolitan statistical area.

Medical transfers. The estimation of the market value of in-kind medical care transfers is of crucial importance to this study because these programs are much larger than the food and housing programs combined. The difficulty in estimating the market value of medical benefits requires a detailed examination of several issues. First, the nature of the medical care benefits being transferred must be defined. Second, procedures must be developed for the treatment and valuation of institutional care expenditures.

In-kind medical care transfers can be defined as an insurance policy or as direct consumption of medical services.[4] If benefits are treated as an insurance policy then they are a nontransferable right granted to all "eligible" persons (either those enrolled in the program or those eligible but not enrolled) whether or not they actually consumed medical services. A choice must be made between these two concepts, medical care as insurance or as consumption. The insurance approach assumes that the right to the medical care transfer has a value greater than zero. The consumption approach implies that medical care transfer has value greater than zero only when medical services are used.[5] The number of medical care beneficiaries will vary depending on which of these approaches is used.

The consumption (or benefits received) approach requires information which is difficult to obtain. Data are needed on specific amounts of health care consumed by individuals in various circumstances, but recent data on this subject are not available. Consequently, it is nearly impossible to identify actual amounts of medical care consumed by recipients. Another problem is that substantial amounts of medical care are consumed shortly before death, e.g., during long expensive periods of hospitalization. Thus, many persons receiving substantial medical benefits were not included in the March 1980 CPS.

The insurance approach to value benefits requires that the private market analogue be identified and that its cost be distributed to individuals at risk. The market analogue, in this case, is a nonprofit insurance company which charges beneficiaries premium amounts, which when summed, equal the total value of benefits provided (total vendor payments and overhead costs).

A major decision in the insurance approach is to determine the population at risk. This group can be defined as all persons eligible to

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[4]Much of this discussion is based on previous work by Smeeding and Moon (1980).

[5]This approach would result in the situation whereby individuals suffering the most severe health problems and requiring greater medical care would be assigned a much higher value than a healthy individual. The reader should note, however, that if the measurement of poverty were based on all physical needs as well as income needs, a greater amount of required health care would have no effect on poverty status. The current poverty definition is based on only one aspect of physical need, a nutritionally adequate diet.

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program.[6] This decision is not i
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[8]Following this approach, the
persons had some probability
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(Doyle, et. al., 1980: 220).
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eligibility and directly bill the Medicaid agency for expenses. The agency would add this person to their list of enrolled individuals even though the person was unaware of the coverage. These persons would not be identified as covered by Medicaid in the CPS.

A final decision was made to define the universe at risk for Medicaid as the CPS covered population. This decision was based on the examination of the strengths and weaknesses of both conceptual and empirical aspects of each approach, as discussed previously.

Once the universe at risk was defined, procedures were developed to assign specific insurance values to the covered population. The first step in this development was examination of data sources from the Health Care Finance Administration (HCFA) which could be used to estimate total expenditures for Medicaid by State and within specific risk classes (elderly, disabled, etc.). The next step involved the estimation of the number of persons covered by State and risk class.[9] These figures were then used to compute the market value of Medicaid benefits, which were then assigned to the covered CPS population.

These procedures require the reconciliation of the HCFA and CPS universes. The HCFA universe is the population actually receiving medical care in 1979 paid for by Medicaid. This universe includes the institutionalized, decedents, and those eligibles covered only as the result of hospitalization (as in the previous example). They exclude between 0.5 and 1.0 million Medicaid recipients who were not covered by Federal-State matching provisions ("State-only" beneficiaries). Finally, the HCFA estimates are for fiscal year 1979 and are acknowledged, in some cases, to be only rough estimates of the number of recipients. In contrast, the CPS universe is the covered population for calendar year 1979. It includes the "State-only" recipients but excludes institutionalized, decedents, and unknowing Medicaid benefit recipients. These groups should theoretically be included in the universe of covered persons for estimating the insurance value.

The estimates of the number of persons covered by Medicaid within State and risk class were made by combining the CPS and HCFA information. First, the CPS estimates were adjusted to include the institutionalized and decedents by State. Next the HCFA estimates were adjusted to exclude beneficiaries in Puerto Rico and the Virgin Islands. The final estimates were derived by choosing the CPS estimate of covered or the HCFA estimate of "ever-received," whichever was greater, for each State and risk class. These results are summarized in table 6 for the United States.

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[9]Altogether, 36 different groups of States or separate States were used in order to assign eligibility to each of the four types of beneficiaries. Appendix D presents these groupings.

Table 6. Estimated Number of Persons Covered by Medicaid in the United States: 1979

(Numbers in millions)

Risk category	Fiscal year 1979 HCFA ever received	Calendar year 1979 CPS ever covered plus institutionalized and decedents	Sum of the largest State values[1]
Total.....	20.093	19.293	22.240
Aged.....	3.354	4.272	4.313
Blind/disabled..	2.699	2.066	2.743
Adults.....	4.717	4.916	5.333
Children.....	9.323	8.039	9.851

[1]The numbers in this column represent the sum of either the HCFA or CPS estimate for each State, whichever is larger. This sum, therefore, exceeds the total number of covered persons from either HCFA or CPS.

The next step was to estimate the aggregate dollar amount of Medicaid expenditures for medical services. Estimates of total expenditures for institutional care were made in order to examine conceptual issues regarding the inclusion of benefits received by the institutionalized. This conceptual issue involves whether or not the expenditures for the institutionalized should be distributed to the noninstitutionalized for purposes of computing an insurance value. One reason for including institutional expenditures for the noninstitutionalized is that, in an insurance sense, all Medicaid enrollees are covered in the event of institutionalization.

The decision to include or exclude Medicaid expenditures for the institutionalized will have a significant effect on the market value estimates because they are almost half of all Medicaid outlays. In FY 1979, HCFA estimated that 46 percent of all Medicaid outlays went to skilled nursing facilities (SNF's), institutional care facilities (ICF's), or other types of institutions (e.g., mental hospitals). Table 7 indicates the level of expenditure by type of facility for total, elderly, and disabled recipients in FY 1979. More than 98 percent of all Medicaid institutional care spending in FY 1979 went to the elderly and disabled. About 77 cents of each Medicaid dollar spent on the elderly and 50 cents of each dollar spent on the blind or disabled were for institutional care.

There are several reasons why institutional expenditures might be excluded from the determination of the market value of Medicaid. First, the institutional care features of Medicaid are considered by some as a public good (e.g., Granneman, 1980, 1981; Browning, 1974). Here, perhaps more than in any other program, the real beneficiaries of the system may be the general public.[10] This assumes that the entire population derives some satisfaction because the poor receive adequate medical care. Medicaid, therefore, has the properties of nonrivalness in consumption and nonexcludability which characterize public goods (Musgrave and Musgrave, 1980). Secondly, the majority of Medicaid institutional expenditures are not strictly for medical care expenses. Normally, Medicaid expenditures for institutional facilities cover "in-house" medical services provided by the institution such as nursing care, food, and shelter. The expenditures shown in table 7 do not include doctor bills or hospital bills for institutional residents. Average expenditures per institutionalized recipient in 1979 ranged between $4,961 and $10,018 per year.

There is, yet, one other very important reason for excluding institutional care expenditures from the computation of the insurance value of Medicaid. Persons qualifying for Medicaid-approved institutional care must

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[10]Adults who would otherwise have to care for their elderly parents or disabled relatives were it not for Medicaid receive a larger benefit. For more discussion on the private benefit to such persons as the adult children of elderly Medicaid beneficiaries, see Lampman and Smeeding (1982).

give up a large proportion of any cash transfer income they might be receiving such as Supplemental Security Income (SSI). For example, SSI benefits are reduced to $25 per month after the first two months of institutionalization. Furthermore, any additional income from Social Security, pensions,

Table 7. Medicaid Institutional Care Expenditures for Fiscal Year 1979

(Amounts in billions of dollars)

Type of institution	Total expenditures[1]	Elderly recipients	Blind or disabled recipients	Average expenditure per HCFA recipient
Total Medicaid expenditures.....	$ 20.474	$ 7.647	$ 6.226	(X)
Total institutional Medicaid expenditures..	9.432	5.873	3.307	(X)
Mental hospital.....	.786	.363	.277	$ 10,018
ICF[2]/mentally retarded..	1.506	.035	1.427	13,097
SNF[3].....	3.369	2.640	.716	5,623
ICF[2].....	3.771	2.834	.887	4,961
Institutional expenditures as a percent of total expenditures.....	46.1	76.8	53.1	(X)

X Not applicable.

[1]Total exceeds elderly plus blind or disabled. Excludes "State-only" benefits.

[2]ICF refers to intermediate care facilities.

[3]SNF refers to skilled nursing facilities.

Source: Unpublished HCFA State-specific data summaries for FY 1979.

etc., is forfeited entirely to the institution. Medicaid, therefore, pays only the difference between the total cost of care and the amount of income received by the institutionalized individual over and above their $25 allowance. Thus, the benefit from institutionalized care may not be worth anything to the noninstitutionalized population because their income would be reduced by roughly the same amount.[11]

In response to these considerations, this report presents two estimates of the market value of medical care. One estimate includes all expenditures for medical care and the other excludes institutional care benefits for the elderly and the disabled. The Medicaid institutional care adjustment was accomplished by subtracting institutional care expenditures from total expenditures for each State and risk category.[12] (See appendix D for State-specific estimates.) Aside from the more general problem of inclusion or exclusion of institutional care expenditures, there is the broader issue of whether or not to include the value of medical care for the purposes of defining poverty. A discussion of these issues can be found in the addendum at the end of this chapter.

Estimates of the market value of Medicaid were made using the procedures that have been described. The average Medicaid insurance value per enrollee, including and excluding institutional care expenditures, are shown in table 8 for each risk category. The estimates of insurance value excluding institutional care expenditures was only 21 percent of the insurance value including institutional care for the elderly and 52 percent for the disabled. The treatment of institutional care expenditures, therefore, is a very important aspect of the valuation process.

There are several shortcomings to the technique used to estimate the market value of Medicaid. First, no estimates are available on the duration of Medicaid coverage during 1979. Thus, the average MV was assigned to all beneficiaries, a procedure which overstates MV for part-year recipients and understates MV for full-year recipients.[13] Secondly, no adjustments could be made for State differences in the types of health care covered by Medicaid. There are wide differences between States in total Medicaid expenditures which are due to price differences and, to some extent, the differences in covered health care. (See appendix D.) Finally, some studies

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[11]Further details concerning this issue are included in the discussion of recipient value later in this chapter.

[12]The same adjustment was made for Medicare by multiplying total expenditures by .979.

[13]Morton Paglin suggests that poor Medicaid recipients are more likely to be covered for longer periods of time. If this is true, larger MV's for Medicaid should be assigned to the poor. Hence, the number of poor would be reduced to a greater extent than that produced by assigning the average MV to all recipients. This impact would, however, be somewhat less using RV-CE, and negligible using PBS.

have found large differences in the insurance value of Medicaid by race and metropolitan-nonmetropolitan residence (Smeeding and Moon, 1980; Davis and Schoen, 1978). Earlier research (Smeeding, 1975) has indicated that the net impact of adjustments to account for these differences would be small.

The market value of Medicare was computed by dividing the total Medicare expenditures less the SMI premiums by the number of persons covered by Medicare. The insurance value of Medicare including institutional care benefits was estimated to be $1,243 in 1979; the insurance value net of institutional care expenditures was $1,215.

Table 8. The Average Market Value or Insurance Value for Medicaid, by Risk Category: 1979

Type of beneficiary	Average Medicaid insurance value per enrollee	
	Including institutional care	Excluding institutional care
Elderly[1] (age 65 or over).....	$ 1,970	$ 418
Disabled[1] (blind or disabled)...	2,522	1,311
Adult (age 21-64, nondisabled)..	629	629
Child (age less than 21).....	329	329

[1]Excludes SMI premium.

Table 9 summarizes the results of the assignment of market values to the March 1980 CPS microdata file. The results of these assignments are compared against administratively derived estimates. The CPS estimates do not equal administrative totals due to underreporting on the survey. Assignments of values to the CPS data file accounted for about 81 percent of the in-kind food benefits and about 89 percent of the value of in-kind medical benefits; no administrative estimate could be derived for housing benefits. The ratio of assigned benefits to the administrative estimate was lowest for food stamps (76 percent) and highest for Medicare (95 percent). The relative size of the medical in-kind transfers should be noted. Including institutional benefits, medical transfers are $39.8 billion, about 80 percent of the total $49.6 billion in in-kind benefits assigned to CPS beneficiaries.

Table 9. Comparisons of the Market Values of In-Kind Benefits Assigned to the March 1980 CPS with Administrative Estimates

(Billions of dollars)

Type of program	March 1980 CPS	Administrative estimate	CPS as a percent of administrative estimate
FOOD			
Total	$ 7.349	$ 9.060	81.1
Food stamps	4.731	6.260	75.6
School lunch	2.618	2.800	93.5
HOUSING			
Housing total	2.462	(NA)	(X)
MEDICAL CARE			
Excluding Institutional Care Expenses			
Total	32.140	(NA)	(X)
Medicaid	9.760	(NA)	(X)
Medicare	22.380	(NA)	(X)
Including Institutional Care Expenses			
Total	39.790	43.743	91.0
Medicaid	16.883	19.632	86.0
Medicare	22.907	24.111	95.0

NA Not available. X Not applicable.

RECIPIENT VALUES

This section describes the procedures and methods employed in this study to estimate the recipient value for food, housing, and medical in-kind benefits. There are two basic approaches to estimating the recipient value of in-kind benefits. These are the utility function approach and the normal expenditure approach. Although the utility function approach has been used by most researchers,[14] the normal expenditures approach was chosen for this study. The normal expenditures approach was selected over the utility approach on theoretical and pragmatic grounds.

There are several important problems associated with both the specification and estimation of the utility functions required to estimate recipient value (Manser, 1981, and Manser and Christiansen, 1976). A Cobb-Douglas utility function which does not require product price information is simplistic and yields unsatisfactory results.[15] More sophisticated utility functions like the constant elasticity of substitution (CES) require relative price data across locations. They also require that the system of demand equations underlying the utility function be closed, so that expenditures equal total income plus the change in net worth. The parameters of the utility function, income and price elasticities, can either be "imposed" from exogenous sources or derived directly from available consumption data. Although utility functions can be estimated for different population subgroups, it is assumed that all persons within each group possess the same (unknown) utility funtion with the same (unknown) parameters. Other items which can affect the utility surface, such as health status, are most often excluded from the analysis.

Another important consideration is the use of utility functions for valuing medical insurance. Using the standard CES function, the relative price for medical care will be the market price in a given location, not the market price of zero for Medicaid or the below market price for Medicare; these are the prices which actually guide the recipient's consumption choices and marginal rate of substitution between medical care and other goods. Theoretically the market price for this group can be determined from data on the market prices paid by persons with similar characteristics who did not participate in these programs. It is difficult, however, to obtain reliable survey data to make these comparisons.

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[14]See Murray (1975, 1980), Kraft and Olson (1977), Smolensky, et. al. (1977), and Cooper and Katz (1978).

[15]The Cobb-Douglas assumes that the share of expenditure on a given good is fixed and independent of price changes and income level. Thus, income elasticity, own price elasticity, and cross price elasticity are assumed to be 1, -1, and 0, respectively.

The most recent data which can be used to estim
from the 1972-73 Consumer Expenditure Survey (CEX).
several major problems. First, there are no price c
fic locations. Secondly, the sum of expenditures,
worth does not equal income for most households. Th
assumes that durable goods other than homes are en
year. Thus, expenditures for consumption can easily
ly for low income persons.[16] In any case, it is nc
complete system of demand equations (or to impos
restrictions) which are necessary for an efficient s
function approach (see Manser, 1981). Even the mo
function approach cannot correct for the inadequacie
on which it is based (see Cooper and Katz (1978) ar
city of Substitution model). The quality of the CE
level of sophistication implied by the more co
functions.

The other method for determining recipient val
ture approach. There are two methods for estimatin
assigning recipient value. The first technique a
(1975) is a "cell matching" procedure to link the
the March CPS in-kind benefit data. In this proce
generate average consumption levels for specific com
tion levels (C_{ij}) for group (i) and consumption
according to household pre-tax money income level (a
consumer prices from 1972-73 and 1979), demographi
size of household and age of householder), and loc
geographic price differentials). The in-kind trans
are then assigned a recipient value based on the
for the cell which defines that household's characte

Alternatively, following Smolensky and Van der
expenditure functions can be estimated using the
care, and the AHS for housing. These functions a
linear expenditure system" (ELES) because they a
income, and they do not require consumption plus cha
income. These equations take the following general

$$C_{ij} = a_0 + a_1F + a_2L + a_3R + a$$

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[16]This problem breaks the relationship between c
probably explains the low income elasticity
searchers who use the CEX to estimate ex
Smolensky and Van der Gaag, 1980).

[17]In the assignment process, the income of CPS u
income plus the MV of all in-kind benefits.

where consumption expenditures (C_{ij}) by any unit (i) on a given good (j) are a function of family characteristics, (F), location (L), region (R), and pre-tax income (Y), plus an error term (ϵ). Again, consumption expenditures and income are adjusted for consumer price index changes between 1972-73 and 1979 prior to estimating C_{ij}. As in the cell matching approach the location and region variables capture inter-area price differences. In this case, CPS in-kind benefit recipients' values for F, L, R, and Y along with the regression coefficients are used to assign a predicted C_{ij} to CPS in-kind benefit recipients.[18] Both the cell matching and regression approaches risk "selectivity bias" in that some consistent but unknown difference exists between the group used to derive the consumption levels and the beneficiary group to which these levels are assigned.

Use of either the cell matching or regression approach requires the adjustment of consumption levels (C_{ij}'s) to 1979 prices since they are based on the 1972-73 CEX (housing estimates were estimated using the 1979 AHS and, therefore, did not require adjustment).

As mentioned earlier, all valuation techniques require a good estimate of MV as a starting place. The final step in estimating cash equivalent values ($RV\text{-}CE_{ij}$'s) is to compare the C_{ij}'s with the market values (MV_{ij}'s). The $RV\text{-}CE_{ij}$ is equal to the C_{ij} if C_{ij} is less than MV_{ij} and equal to MV_{ij} if C_{ij} is greater than or equal to MV_{ij}. In the case of housing, this procedure is modified slightly because the recipient must pay some rent. For these benefits, the C_{ij}'s must be compared to the market rent (the market value of housing services consumed). The market rent (MR_{ij}) is actually the sum of the rent paid by the tenant and the rent subsidy. If C_{ij} is less than MR_{ij}, $RV\text{-}CE_{ij}$ is equal to the C_{ij} less the rent paid. If C_{ij} is greater than MR_{ij}, then $RV\text{-}CE_{ij}$ is equal to MR_{ij} less the rent paid by the subsidized household. The procedure assumes that if normal expenditures exceed market value, the benefit is equivalent to cash (normal expenditures greater than market value are valued at $0). When market value exceeds normal expenditures, the cash equivalent value equals normal expenditures.

Although both the cell matching and regression approaches would be expected to yield similar results, each procedure has its own shortcomings. In a cell match model, differences in expenditures are accounted for by the various recipient characteristics used to define the cells. In the regression model, the coefficients control for differences in the characteristics of recipients. A limitation of the cell approach is that the variance of normal expenditures is suppressed.[19] This occurs because the number of cells

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[18]Smolensky and Van Der Gaag (1980) use the predicted C_{ij} from this equation along with a Stone-Geary utility function to estimate relative equivalence scales.

[19]The regression helps direct the construction of the cells by indicating which demographic characteristics are most significant in explaining the variance in each type of consumer expenditure.

is limited in order to obtain reliable data and everyone in the cell is assumed to spend the same amount. The reliability of the regression model is limited by the goodness of fit. A poor fit will generate predicted C_{ij}'s which may differ substantially from estimates derived from the cell matching procedure. In such cases, the constant term (a_0) will dominate the regression, limiting the variance in C_{ij}'s. In such cases, the cell match procedure can result in a greater variance in C_{ij} than the regression model.[20]

Based on the generally poor performance of the regression approach (see appendix D for details), a cell-matching procedure was used to estimate C_{ij} (and thus the RV-CE_{ij}) for food, housing, and medical care.[21] These results are summarized in tables 10 through 12 which present the average ratio of the normal expenditures based RV-CE to MV for each type of transfer. These ratios are termed "benefit weights" following the pioneering work of Smolensky, et. al. (1977).

Food transfers. The cash equivalent values for food are based on normal expenditure data derived from the 1972-73 Consumer Expenditure Survey. Food was defined to include 1) grocery store food, 2) school lunches, 3) homegrown food, and 4) 50 percent of the cost of food purchased in restaurants. The rough convention used for food purchased in restaurants attempts to separate the value of restaurant services from the value of the food consumed. Normal expenditures were computed using a subset of households on the CEX which excluded households receiving food stamps and participants in USDA food commodity programs.[22] It is assumed that the C_{ij}'s represent the normal expenditures that families receiving food benefits would make in the absence of such transfers. This definition of food implies complete substitutability between food stamps (and school lunches) and groceries, homegrown food, and a high degree of substitution between these and restaurant meals.

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[20] A more sophisticated approach, which allows the researcher to restore the variance in C_{ij} using regression residuals (or coefficients of variation in the cell match approach), has recently been developed by Schwartz (1981), but was not available in time for this study.

[21] Reasonably good regression estimates were obtained only for food expenditures. However, in order to ensure consistency, a cell matching procedure was used for food as well. In any case, the RV-CE for food transfers estimated by the cell match approach were almost identical to those obtained by the regression model.

[22] The USDA Surplus Commodities Food Distribution Program provided basic food stuffs in 24 categories to qualifying families in roughly one-half of all U.S. counties in 1972-73. Prior to July 1, 1974, U.S. counties had the option to either have a Food Stamp or a Surplus Commodities Program. After that date, Food Stamps became mandatory and were required in all counties. The USDA Surplus Commodity Food Distribution Program was then phased out and no longer exists.

The C_{ij}'s were estimated for three different groupings of food transfer recipients: 1) those receiving food stamps only, 2) those receiving food stamps and school lunches, and 3) those receiving school lunches only. For households receiving school lunches only, the C_{ij}'s were adjusted to reflect only expenditures for school lunches using data available from the USDA. The C_{ij}'s were then inflated to 1979 price levels based on changes in the food component of the CPI. Average C_{ij}'s were computed for each cell of a matrix defined by 13 income classes, 6 family sizes, and 2 age of householder groups (under 35 years old and 35 years old and over).[23] These C_{ij}'s were then compared to MV_{ij} for food transfers in order to derive the estimates of $RV\text{-}CE_{ij}$.

Benefit weights for food transfers are shown in table 10 for each of the three subgroups of beneficiaries. In general, the benefit weights are high, indicating that food transfers are nearly equivalent to cash.[24] Thus, for food transfers, the $RV\text{-}CE_{ij}$'s are roughly equivalent to the MV_{ij}'s. The average benefit weight for all households was 95.7. These values represent the amount of cash transfer per dollar of food transfer that keeps the recipient at the same level of well-being.[25] In other words, families with $100 worth of food transfers would realize the same levels of well-being if given $95.70 in cash. The lowest average benefit weights were found in the lowest money income classes. While over 90 percent of all recipients had benefit weights of 100.0, only 2.2 percent of all beneficiaires had benefit weights below 80.0. These results are quite consistent with those of other similar studies reviewed in chapter 4.

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[23]These groups were chosen based on indications of their significance from the food regression approach. The estimates of normal expenditures for food for each cell of the matrix are shown in appendix D.

[24]This statement is not unqualified, however. It ignores the differential stigma costs which accompany the Food Stamp Program as compared to an equal cost cash transfer program. See Weisbrod (1970) for a general discussion of this issue.

[25]Estimates of C_{ij}'s using a definition of food restricted to grocery store items produced benefit weights which were significantly lower than those in table 11 (an overall average of 83 percent compared to 96 percent). Other researchers have used a broader definition of food, similar to that used in this study but including all restaurant meals (Smeeding (1975), MacDonald (1977), and Smolensky, et. al. (1977)). Further discussion of this issue can be found in appendix D.

Table 10. Benefit Weights for Food Transfers in 1979

Household money income in 1979	Food transfer program recipient groups			
	All food transfers	Food stamps only	Food stamps and school lunch	School lunch only
Total.....	95.7	96.9	94.0	98.0
Under $1,250.....	82.8	85.6	70.7	79.5
$1,250 to $2,499...	89.5	95.0	81.9	84.6
$2,500 to $3,749...	92.9	98.0	88.8	84.9
$3,750 to $4,999...	94.4	97.9	93.3	86.2
$5,000 to $6,249...	97.4	97.5	98.2	88.3
$6,250 to $7,499...	97.0	100.0	96.7	93.5
$7,500 to $8,749...	97.8	98.7	97.5	98.0
$8,750 to $9,999...	98.1	97.2	98.2	98.4
$10,000 to $11,249.	98.1	97.4	98.7	97.3
$11,250 to $12,499.	98.1	99.8	97.0	99.0
$12,500 to $13,749.	98.4	98.5	98.0	98.7
$13,750 to $14,999.	99.2	100.0	99.1	99.0
$15,000 or more....	99.5	100.0	98.3	99.8

NOTE: The benefit weight expresses the recipient-cash equivalent value (RV-CE) as a percent of market value (MV).

Housing transfers. The cash equivalent values for publicly owned or other subsidized housing are based on data from the 1979 Annual Housing Survey. The first step was the calculation of the C_{ij}'s, which are the average normal rental expenditure for unsubsidized renters, for each cell of a matrix defined by selected household characteristics.[26] These tabulations were restricted to households with annual incomes of less than $20,000. The cells were defined by age (under 62 years old and 62 years old and over), household size, and household income levels. The average rental value for each of these cells was assigned to "matching" CPS households residing in public housing units. These rental values were adjusted to reflect geographical differences in the price of rental housing based on differences in average rental values by region and metropolitan location as tabulated from the AHS. (See appendix D for the subsidy values assigned under the normal expenditures approach.)

The final determination of the RV-CE_{ij}'s requires comparison of the C_{ij}'s with the MR_{ij}'s (market rents). As noted earlier, the RV-CE_{ij} is equal to C_{ij} less the rent (SR_{ij}) paid by the subsidized household when C_{ij} is less than MR_{ij}. If the C_{ij} is greater than MR_{ij} then RV-CE_{ij} is equal to MR_{ij} less the subsidized rent paid (SR_{ij});in this case, RV-CE_{ij} equals the market value of the housing subsidy. In calculating the RV-CE_{ij}, the SR_{ij} was assigned to CPS households based on estimates obtained from the AHS. These subsidized rents are identical to those used in determination of the MV_{ij}'s.

The results of estimating RV-CE for public housing benefits are shown in table 11. Overall, benefit weights averaged 80.6 percent for all households receiving benefits and varied irregularly by income class with a low value of 53.1 percent for the "$10,000 to $11,249" category and a high of 91.2 percent of the "$3,750 to $4,999" category.[27] These estimates are quite similar to those found by Murray (1975, 1980) and Smolensky, et. al. (1977) but, somewhat greater than those found by Smeeding (1975) and Kraft and Olsen

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[26]Some nonsubsidized units had heat included in their rent while others did not. This fact was ignored in estimating the C_{ij}'s. This is the same as the procedure used in determining the MV of public and subsidized housing.

[27]While benefit weights tend to rise with income for most types of in-kind transfers, this is not the case for public housing benefits. The subsidized rent which public housing tenants pay is calculated as a percent of their income and thus rises monotonically with income, while the C_{ij}'s also rise with income. Thus, the RV-CE estimate, which equals normal housing expenditures less the subsidized rent in cases where the normal housing expenditures are less than the market rent, does not necessarily increase with income.

(1977).[28] In 41.5 percent of all cases, public housing benefits had benefit weights equal to 100.0.[29]

Table 11. Estimated Benefit Weights for Public Housing: 1979

Household money income in 1979	Benefit weight for public housing[1]
Total	80.6
Under $1,250	60.2
$1,250 to $2,499	79.5
$2,500 to $3,749	86.1
$3,750 to $4,999	91.2
$5,000 to $6,249	72.9
$6,250 to $7,499	79.2
$7,500 to $8,749	74.8
$8,750 to $9,999	69.5
$10,000 to $11,249	53.1
$11,250 to $12,499	68.8
$12,500 to $13,749	72.9
$13,750 to $14,999	75.7
$15,000 or more	77.9

[1]The benefit weight expresses the recipient-cash equivalent value (RV-CE) as a percent of market value (MV).

[28]These studies used a different formula for estimating RV-CE than this study. Their procedure reduced the value of public housing benefits below MV for families who would have consumed more housing than was provided by the public housing unit had they received the same amount of subsidy or cash transfer.

[29]In 1.4 percent of the cases, RV-CE was negative. This occurs when normal expenditures are less than the rent paid by public housing residents (i.e., C_{ij} less than SR_{ij}); in these cases RV-CE was set equal to zero.

Medical transfers. The RV-CE estimates of medical transfers were derived using the expenditure data from the 1972-73 CEX. As with food stamps and housing, the first step was the selection of the universes from which normal expenditures were computed. However, unlike with food and housing, there are fundamental problems in deriving a relevant counter-factual group for valuing in-kind medical care expenses by the RV-CE concept. This is because most individuals who are not covered by a public in-kind program are covered by a private in-kind program, either in part or full. Among individuals under 65 who are not covered by Medicaid, employer group policies are widespread. And for the over 65 group, the problem is even more acute--almost everyone over 65 is covered by either Medicare, Medicaid, or both.

Ideally, the counter-factual group should contain only individuals who obtain all their medical care dealing directly with insurance companies, doctors, and hospitals. All the premiums, co-payments, etc. would be paid directly by the individual. It was not possible to obtain sufficiently large groups like this in the estimation procedure. For the under 65 group, individuals were included who were covered for part of their care by employer contributions. Since only data on their outlays were available and not the employers', this probably leads to a downward bias in the estimate of the RV-CE value of Medicaid. For the over 65 group, it was necessary, unfortunately, to include all the individuals who were covered by Medicare only. This makes the estimates of value for Medicare also very difficult to interpret. They may be on balance upward biased or downward biased so they are subject to a high degree of unreliability.[30] After the adjustments, the total sample size available for estimation was about 9,000 observations.

The next step was the tabulation of expenditures (C_{ij}'s) for medical services and health insurance by income class, family size, and age (under 65 years old and 65 years old and over). Both income and expenditures were adjusted to 1979 prices prior to tabulation (see appendix D for the normal expenditure values used to calculate the RV-CE for medical care). In addition, an adjustment was made to account for geographical differences in prices prior to assigning RV-CE values to Medicare and Medicaid beneficiaries on the March CPS data file. Table 12 contains the results of the RV-CE estimations for medical benefits. Estimates including and excluding institutional care benefits are shown separately.

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[30]The counterfactual group which should be used to determine RV-CE for Medicare would exclude persons covered by this program. Use of the 1972-73 CEX data did not allow that these persons be excluded. It would appear, therefore, that these estimates of normal expenditures on medical care are baised downward. Studies have shown (Gibson and Fisher, 1979), however, that Medicare covers only about 62 percent of the total health care expenses of the elderly. This study has assumed that 100 percent of the normal expenditures for medical care substitutes for Medicare, a procedure which biases the estimates upward. The net effect of these downward and upward biases is unknown.

The low overall benefit weight of 47.3 percent for medical benefits including institutional care reflects low willingness to pay for medical care among the elderly and the poor. Medical care expenses paid by institutionalized persons were not collected in the 1972-73 CEX because the survey did not cover the institutional population. As a result, when medical care benefits are defined to exclude institutional care expenditures, the benefit

Table 12. Benefit Weights for Medical Care Transfers: 1979

Household money income in 1979	Medical care transfer recipient groups			
	All medical transfers	Medicaid only	Medicare and Medicaid	Medicare only
MEDICAL BENEFITS, INCLUDING INSTITUTIONAL CARE				
Total.....	47.3	37.3	24.9	67.8
Under $1,250.....	23.8	23.7	16.2	34.8
$1,250 to $2,499.....	30.4	31.0	21.2	44.3
$2,500 to $3,749.....	32.9	30.4	21.4	55.4
$3,750 to $4,999.....	36.6	32.0	22.3	57.1
$5,000 to $6,249.....	41.4	35.1	20.9	63.1
$6,250 to $7,499.....	45.7	37.3	22.9	62.4
$7,500 to $8,749.....	45.8	39.5	23.6	60.4
$8,750 to $9,999.....	50.4	40.7	28.7	62.5
$10,000 to $11,249.....	51.2	41.9	28.2	65.8
$11,250 to $12,499.....	57.2	46.8	30.4	70.5
$12,500 to $13,749.....	59.1	47.3	28.9	77.8
$13,750 to $14,999.....	64.6	52.4	32.8	79.9
$15,000 or more.....	63.7	49.1	32.7	80.9
MEDICAL BENEFITS, EXCLUDING INSTITUTIONAL CARE				
Total.....	57.5	44.1	42.1	68.9

Note: The benefit weight expresses the recipient-cash equivalent value (RV-CE) as a percent of market value (MV).

weight rises to 57.5 percent, mainly because only MV (the denominator) has been adjusted to exclude these expenditures. Weights for the Medicare only group are the highest, reflecting a greater willingness to pay for medical care among the relatively higher-income elderly. However, benefit weights are the lowest for persons receiving both Medicare and Medicaid. This group consists of the low-income elderly and disabled. The Medicaid only group consisting mainly of low-income nonaged adults and children had a benefit weight of 37.3. If institutional care expenses are excluded, the benefit weights for the Medicare and Medicaid group rise from 24.9 to 42.1 percent.

The benefit weights developed in this study are substantially below those found by Smeeding (1975) for 1972, even when institutional care benefits are included. That study found a benefit ratio of 68.0 for all medical benefits in 1972. This compares to the benefit weight of 47.3 for medical benefits including institutional care expenditures shown in table 13. Exclusion of institutional care expenditures, which results in a benefit weight of 57.5, brings the overall estimate somewhat closer to Smeeding's earlier results. There are several factors which help explain the difference in these estimates. First, although Smeeding included institutional benefits, his results were based on the 1960-61 CEX and not the 1972-73 CEX. Second, institutional care benefits were only 22 percent of all Medicaid expenditures in 1972 compared to 46 percent in 1979. Given these two factors, and the rapid rise in Medicare and Medicaid medical benefits relative to normal expenditures for medical care (as we have calculated them) from 1972 to 1979, the estimates in table 12 are not inconsistent with Smeeding's previous results.

There were relatively few cases (17.5 percent) for which the RV-CE of medical care equaled the MV. While 24.3 percent of the Medicare only recipients had benefit weights of 100.0, only 9.1 percent of Medicaid beneficiaries would have spent as much on medical care as the MV of Medicaid had they been given the same transfer in cash. Virtually none (less than 0.1 percent) of the Medicare and Medicaid group had benefit weights of 100.0, which indicates that the medical benefit was not "just as good as cash." Excluding institutional care benefits increases the proportion of cases with benefit weights of 100.0 from 17.5 percent to only 19.7 percent.

In summary, this portion of the report has discussed the procedures for estimating the RV-CE for food, housing, and medical care transfers for 1979. It appears that food transfers are largely equivalent to cash, with an overall benefit weight equal to nearly 97 percent of MV. The RV-CE for public housing are worth 81 cents per dollar of housing subsidy. Medical benefits are worth only 47 cents per dollar including, and 58 cents per dollar excluding, institutitional expenditures. The benefit weights for food and housing are comparable to estimates from earlier research (see table 4), however, the medical transfer benefit weights are below previous work by Smeeding for the reasons mentioned earlier. Based on these results, it appears that any reduction in the poverty population resulting from the valuation of food and housing benefits would be quite similar for both the MV and RV-CE approaches. In contrast, medical benefits, which make up over 80 percent of the total MV of the in-kind transfers included in this report, have

recipient values which vary significantly from market values. For medical care, the choice of valuation techniques is expected to have significantly different effects on the estimated number of poor. As noted, however, the estimates of the RV-CE of medical care are difficult to interpret because of severe problems in constructing a counterfactual group.

POVERTY BUDGET SHARE VALUE

The final valuation approach investigated in this study involves estimating poverty budget shares (PBS) or equivalently, estimating funds released at the poverty line income level as a result of the receipt of in-kind benefits. In order to derive values for in-kind benefits under the PBS approach, the budget shares at the poverty level for food, housing, and medical care must be determined. There were two major decisions which had to be made before the estimation could proceed. The data base, either 1960-61 or 1972-73 CEX, had to be chosen and either consumption levels or income levels had to be selected for determining the budget shares. A discussion of the issues surrounding these decisions is included with the details concerning the PBS estimation for each type of benefit.

Food transfers. A simple approach was chosen for the food budget share. The food budget share of .333 used to derive the original poverty levels was selected.[31] The 1960-61 CEX indicates a much smaller food budget share (about 22 to 28 percent depending on family size) at the poverty level than .333. However, it is unlikely that a family could consistently meet the calorie requirements of the USDA Economy Food Budget even with food purchases amounting to one-third of the poverty line. The food budget share of .333 was selected mainly as a "mid-range" value.

Housing transfers. The estimates of the poverty budget shares for housing were based on the 1960-61 CEX. The budget shares were defined to include both rent and utilities.[32] An average of the budget shares based on

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[31]In the original formulation of poverty levels, one-third was the food budget share for families of two or more (Orshansky, 1965). Poverty levels for single persons were set at 80 percent of the levels for two or more persons. Thus the food budget share for one-person units was never directly estimated in the Orshansky study.

[32]Heat was included in the rent of roughly 65 percent of the AHS units which were in public or subsidized housing in 1979. Roughly 30 percent had all utilities included in their rent. Under some housing programs tenants are reimbursed for utilities even if they are not included in rent. Maintenance and management fees are also included in some Section 8 units but not in others. Thus, it is difficult to decide which utilities to include in either PBS or RV-CE calculations. This treatment differs from the treatment of housing in the RV-CE calculations where in some cases only heat was included in rent, because light and water bills could not be separated from other utilities in the 1960-61 CEX. Most analysts would include utilities with housing as part of the "shelter" which the family consumes, which suggests that the PBS value for housing should include these items.

income and consumption levels was used as the final estimate of the PBS value for housing. A detailed discussion of the reasons for using this averaging procedure is contained in the next section.

Medical transfers. The estimation of poverty budget shares for medical care transfers first required that decisions be made on the two major issues mentioned earlier; which of the CEX surveys should be used and on what basis, consumption or income, should the shares be computed? The 1960-61 CEX was chosen as the data base for estimation for several reasons. First, the 1960-61 survey measured consumption and income levels for a time period which is much closer to 1955, the base year for the food consumption budget shares used to derive the poverty levels. Second, the 1960-61 data precede the introduction of Medicare and Medicaid, the programs being valued. Third, the 1972-73 CEX data are weak in the medical expenditure area and do a poor job of identifying the medically subsidized population. The CEX data for 1972-73 indicate, for example, that consumers spent less on health care than in 1960-61 (5.1 percent, compared with 6.1 percent). This trend may seem surprising since average expenditures for health insurance rose from $77 per family in 1960-61 to $229 per family in 1972-73. One possible reason for this decline in the ratio of medical expenditures to income is the large increase in private, employer-provided, and public health insurance over this period. The poor quality of CEX medical care expenditure data do not allow the testing of this hypothesis. Finally, use of the 1960-61 data allows an examination of the expenditures for persons 65 to 74 years separately from those persons aged 75 and over.

The estimates of budget shares for medical care (and housing) are based on an average between a consumption-based share and an income-based share. The "consumption-based share" is the ratio of medical care expenditures to total expenditure levels for persons at or near the poverty level. The "income-based share" is the ratio of medical care expenditures to total pre-tax income. Although the poverty level is based on food consumption needs, the estimates of the number of poor are based on before-tax money income levels. Budget shares at (or near) the poverty level can be computed from 1960-61 CEX data using either consumption levels or income levels published by the Bureau of Labor Statistics. Since income is generally less than consumption for the poor and since medical care expenditures increase faster with the level of income than with the level of consumption, the income-based budget shares are generally larger than the consumption-based shares. For each individual, all consumption-based budget shares sum to unity. However, income-based poverty budget shares would sum to greater than unity (if all budget items were included) because consumption generally exceeds income at poverty line income levels. In general, our estimates indicate that there is little difference between the consumption- and income-based poverty budget shares for either medical care or housing and, therefore, the two were averaged together.

The poverty budget shares shown in table 13 for medical care can be used for either those covered by Medicaid alone or those covered by Medicaid and Medicare but not for the Medicare only population. These values cannot be used for persons receiving only Medicare because this program does not pay for all medical expenses. In 1977, about 62 percent of the health care

expenditures for the elderly were covered by Medicare or other public programs; the remaining 38 percent were covered by out-of-pocket expenditures (including Medicare-SMI premiums) or by private insurance (Gibson and Fisher, 1979). The PBS estimates are based on the 1960-61 CEX, which was before the inception of the Medicare program. It was assumed that had Medicare existed in 1960-61, it would have paid 62 percent of the medical care expenses. As a result, the PBS value for Medicare beneficiaries was limited to 62 percent of the medical care values in table 13.[33]

Table 13. Poverty Budget Share (PBS) Dollar Values for 1979

Family size and age of householder	Food	Housing	Medical care
One person:			
Under 65 years.....	$1,258	$ 1,487	$ 241
65 to 74 years.....	1,160	1,246	375
75 years or older.....	1,160	1,319	385
Two persons:			
Under 65 years.....	1,619	1,584	359
65 to 74 years.....	1,463	1,414	467
75 years or older.....	1,463	1,459	528
Three persons.....	1,921	1,602	473
Four persons.....	2,462	1,714	547
Five persons.....	2,912	1,782	524
Six persons.....	3,283	1,794	552
Seven or more persons.....	4,071	2,104	684

Note: The values in this table were derived by multiplying poverty levels by percentages shown in appendix D, tables D-10 and D-11.

[33]No such adjustment for Medicare only beneficiaries was made in calculating RV-CE. This adjustment was not made because the 1972-73 CEX, which was used to value Medicare in the RV-CE calculations, includes Medicare recipients. Because there is no way to get around this problem by observing a sufficient number of non-Medicare recipients age 65 or older we decided not to make an adjustment when estimating C_{ij} for Medicare only recipients, on the grounds that their willingness to pay for Medicare may already be underestimated due to its presence. (See the addendum to this chapter for additional discussion of this issue).

Determination of the PBS value requires information on the MV for each commodity. For a given household, if the MV for a commodity is less than the poverty budget share, the PBS value is equal to the MV. If the MV is greater than the poverty budget share, then the PBS value is equal to the poverty budget share. Thus, the PBS approach "caps" the value of in-kind benefits at the levels implied by the poverty budget shares.

Once the PBS values have been computed, the effect of this valuation technique on estimates of the number of poor can be measured. There are two equivalent methods for integrating the PBS values into the measure of poverty. The first method computes poverty status by adding the PBS value for food, housing, and medical care to money income and then comparing this new income level to the appropriate poverty level. Alternatively, the PBS value could be subtracted from the poverty level and then the money income level can be compared to the adjusted poverty level. Both methods yield the same results.

As mentioned earlier, the PBS approach is not a general valuation technique, but is only applicable for measuring the effect of in-kind benefits on estimates of poverty. The PBS estimates are based only on implied budget shares at the poverty level, and therefore do not reflect differing preferences for various goods of all income levels. The PBS, therefore, cannot be treated as a substitute for the RV-CE methodology if recipient's preferences are deemed important. In the case of medical care transfers, the PBS approach eliminates many of the complicated valuation problems mentioned earlier by defining a poverty line which excludes some or all medical care expenditures for Medicare and Medicaid. The application of the PBS approach to food and housing transfers is of less significance since more definitive measures of value (RV-CE and MV) are available.

SUMMARY

This section has examined three methods for valuing food, housing, and medical care in-kind transfers. The strengths, weaknesses, and problems in estimation for each method were presented. The valuation of medical care transfers presents special problems, both empirically and conceptually. Because the market value of medical care transfers is about 80 percent of all in-kind benefits, the treatment of medical care is of particular importance in the measurement of poverty for the elderly. Table 14 in the addendum to this chapter provides data which compare the size of medical care transfers for the elderly to the poverty line for the United States and for the States with the highest and lowest values for medical care.

In keeping with the objectives of this study, no discussion of the most preferable approach to value in-kind benefits has been presented. It is expected that the results of this study will serve as background materials for such a discussion. In this regard, it should be noted that it is not necessary to use the same valuation technique for each different type of in-kind benefit. For example, one approach would be to use the MV for food, RV-CE for housing, and PBS for medical care; any other combination is possible, as well.

Addendum : The Valuation of Medical Care Benefits and the Determination of Poverty Status

The determination of the effect of in-kind benefits on the size and composition of the poverty population is greatly affected by the treatment of medical care benefits. This addendum discusses some of the special considerations in valuing medical care benefits and reviews some of the arguments for excluding them altogether from the determination of poverty status.

It can be argued that medical transfers should be treated on an ex post facto basis,[34] which implies that medical transfer benefits such as vendor payments are not really income because they do not increase utility.[35] These benefits can be viewed as replacement costs for maintaining physical capital (health). Such a treatment might suggest that poverty standards should be adjusted for greater health needs, so that medical care needs and benefits cancel each other. The MV of the insurance provided by Medicaid or Medicare (including institutional benefits) for an elderly or disabled person is four to five times the MV of the <u>same</u> insurance policy for younger adults, because the elderly and disabled have greater health care needs. The determination of poverty does not account for this differential need, resulting in an overstatement of the impact of medical transfers on poverty for the elderly. More generally, the needs of all those who have above (below) average demands for medical care will be understated (overstated) by the current poverty matrix.

Another reason for omitting medical in-kind transfers in assessing poverty status is the problem of defining a proper counterfactual.[36] The proper counterfactual for medical care is the group of persons not receiving Medicaid or Medicare who paid for their own medical expenses. One problem is that the percent of elderly who are not covered by Medicare (or a different insurance policy) is too small a group to estimate their normal expenditures.[37] The proportion of nonelderly persons who do not have medical insurance is also very small. According to the Congressional Budget Office

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[34]Smolensky has mentioned this argument in previous correspondence.

[35]This approach ignores the utility derived from the pure insurance benefit of Medicaid or Medicare coverage.

[36]In this report, a counterfactual refers to persons not receiving a particular in-kind benefit who are similar in most other respects to persons receiving the in-kind benefit. See Behrens and Smolensky (1974) for more on the topic of counterfactuals.

[37]The Congressional Budget Office (1979, table 1) estimates that only 1.0 percent of the elderly were uninsured in 1976.

(1979), only about 5 to 8 percent of Americans had no health insurance coverage (or public program coverage: e.g., Medicaid or Medicare) in 1976. Some of the uninsured would probably rely on public health clinics or Medicaid to reduce their financial burden of medical care expenses.

The CEX surveys indicate that the elderly (families with a householder 65 and over) spent a lesser percentage of their incomes on medical care or medical insurance in 1960-61 (10 to 11 percent) than they did in 1972-73 (12 to 13 percent). The proportion of income spent on medical care by nonelderly poor persons was 5 to 9 percent in 1960-61 and 4 to 7 percent in 1972-73. These data suggest that the elderly spent slightly more on medical care after the introduction of Medicare and Medicaid while the nonelderly poor spent slightly less.[38] The surveys also indicate that 23 percent of all persons and 17 percent of all poor persons reported medical care as an item received without expense in 1960-61 compared with 13 and 14 percent, respectively, in 1972-73.[39]

These small changes in expenditure patterns for the poor do not reflect the enormous growth in the market value of Medicare and Medicaid insurance. In 1972, the average value of Medicare was about $400 and the average value of Medicaid was $600 for the elderly, indicating a combined value of $1,000 for the low income elderly. These values are much larger than the average medical expenditures ($250) made by low-income elderly persons in 1972-73. By 1979, the average insurance value of Medicare and Medicaid had increased to $2,981[40] for each elderly person. Inclusion of market value for medical insurance of this magnitude in the measurement of poverty would almost eliminate the elderly poor. If normal expenditures for medical care are substantially less than this insurance value (as indicated by earlier surveys), the inclusion of this value may distort estimates of the size and composition of the poverty population. Use of recipient value rather than market value could provide a better measure of the "true" value of Medicare and Medicaid to the elderly, however, a good measure of recipient value requires health care expenditure data for elderly persons not covered by Medicare and

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[38]Of course some of this difference can be explained by the "normal income effect" of higher real 1972-73 incomes on medical expenses, and also higher medical care prices. Between 1960-61 and 1972-73 medical care expenses as a percentage of GNP increased from 5 to 7 percent, or by more than 42 percent.

[39]The reader should note that respondents were asked to exclude payments made on their behalf by employer-provided health insurance.

[40]Growth in medical care is affected by changes in the price, quantity, and quality of the care. While the poor and elderly have experienced improved access to medical care (Davis and Schoen, 1978), these programs have, themselves, contributed to the increased cost of medical care.

Medicaid for recent years. Virtually all of the elderly population, however, are covered by one or both of these programs.[41]

For these reasons, the Congressional Budget Office (1977) and Hoagland (1980) have followed the practice of publishing estimates of the effect of in-kind transfers on poverty which both include and exclude the value of medical care benefits. This report also presents these alternative estimates of the effect on the poverty population.

Comparing medical benefits to the poverty line for the elderly. Shown in table 14 is the relative magnitude of medical care transfers for the elderly as compared to their minimum income guarantee and poverty level. These comparisons are shown for medical care valued at MV with and without institutional care, RV-CE, and PBS for the U.S. and for the State with the highest (New York) and lowest (Mississippi) values for medical transfers. These alternatives effectively express the potential range of medical care transfers.

The value of in-kind medical benefits received by the elderly varies widely depending upon the valuation technique which is used. For an elderly person living alone, the MV for medical benefits including institutional care was $2,981 in 1979 ($1,404 excluding institutional care), the RV-CE was $1,420, and the PBS value was $380. As shown in table 14, medical care benefits as a percent of the minimum income guarantee ranged from 113 percent based on MV including institutional care to 15 percent for the PBS approach. Medical care benefits as a percent of the poverty line ranged from 86 percent for MV including institutional care to 11 percent for the PBS value. The ratios for MV and RV-CE are even higher for a two-person elderly household. These data suggest that the market value approach to valuing medical care including institutional care benefits results in values which, by themselves,

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[41]Browning suggested an alternative to using the 1972-73 CEX data since medical expenditures from this source are affected by the existence of the Medicare and Medicaid programs. His idea is to adjust the 1960-61 CEX data (prior to the introduction of Medicare and Medicaid) for changes in medical expenditures which occurred between that time and the year for which estimates are required. He suggests that the normal expenditures from the 1960-61 CEX be adjusted by changes in the ratio of aggregate medical expenditures to GNP. Given that this ratio increased by nearly 50 percent between 1960-61 and 1972-73, the proportion of income spent on medical care would increase by 40 to 80 percent (depending on how these adjustments are made). It should be noted that this adjustment assumes that consumers would be willing to spend these additional amounts on medical care. Available data indicate that the proportion of aggregate health expenditures paid by consumers actually declined from 70 percent in 1960 to 55 percent in 1973 (Health Care Financing Review, 1980). This assumption does not seem tenable and, therefore, this proposal was not used to adjust the medical expenditure data for the 1972-73 CEX.

raise many of the elderly poor above the poverty line. The table shows substantial variation in these relationships for New York and Mississippi.

Table 14. Comparisons of Medical Benefits to the Poverty Line for the Elderly Who are Eligible for Medicare and Medicaid: 1979

Row	Item	United States		New York		Mississippi	
		One person	Two persons	One person	Two persons	One person	Two persons
	MINIMUM INCOME GUARANTEE, EXCLUDING MEDICAL BENEFITS						
1	SSI guarantee.....	$ 2,390	$ 3,580	$ 3,552	$ 4,704	$ 2,390	$ 3,580
2	Food stamp bonus (MV).....	240	460	120	210	240	460
3	Minimum income guarantee (1 + 2).....	2,630	4,040	3,672	4,914	2,630	4,040
4	Poverty line.....	3,470	4,360	3,470	4,360	3,470	4,360
5	(Deficit: 4 - 3).....	840	320	-202	-584	840	320
	MV FOR MEDICAL BENEFITS, INCLUDING INSTITUTIONAL CARE						
6	Medicare.....	$ 1,011	$ 2,022	$ 1,118	$ 2,236	$ 743	$ 1,486
7	Medicaid.....	1,970	3,940	4,430	8,860	1,023	2,046
8	TOTAL.....	2,981	5,962	5,548	11,096	1,766	3,532
9	Medical/pov. line (8 ÷ 4)..	85.9%	136.7%	159.9%	254.5%	50.9%	81.0%
10	Medical/min. inc. (8 ÷ 3)..	113.3	173.3	151.1	225.8	67.2	87.4
	MV FOR MEDICAL BENEFITS, EXCLUDING INSTITUTIONAL CARE						
11	Medicare.....	$ 986	$ 1,972	$ 1,095	$ 2,190	$ 728	$ 1,456
12	Medicaid.....	418	836	886	1,772	273	546
13	TOTAL.....	1,404	2,808	1,981	3,962	1,001	2,002
14	Medical/pov. line (13 ÷ 4).	40.4%	64.4%	57.1%	90.9%	28.8%	45.8%
15	Medical/min. inc. (13 ÷ 3).	53.3	69.5	53.9	80.1	28.8	49.6

Table 14. Comparisons of Medical Benefits to the Poverty Line for the Elderly Who are Eligible for Medicare and Medicaid: 1979--Continued

Row	Item	United States		New York		Mississippi	
		One person	Two persons	One person	Two persons	One person	Two persons
	RV-CE FOR MEDICAL BENEFITS[1] INCLUDING INSTITUTIONAL CARE						
16	Medicare.....	$ 685	$ 1,370	$ 758	$ 1,516	$ 504	$ 1,008
17	Medicaid.....	735	1,470	1,652	3,304	382	764
18	TOTAL.....	1,420	2,840	2,410	4,820	886	1,772
19	Medical/pov. line (13 ÷ 4).	40.9%	65.1%	69.4%	110.6%	25.5%	40.6%
20	Medical/min. inc. (13 ÷ 3).	54.0	70.3	65.6	97.5	33.7	43.9
	PBS FOR MEDICAL BENEFITS, INCLUDING INSTITUTIONAL CARE						
21	Medical benefit TOTAL[2/].....	$ 380	$ 497	$ 380	$ 497	$ 380	$ 497
22	Medical/pov. line (16 ÷ 4).	11.0%	11.4%	11.0%	11.4%	11.0%	11.4%
23	Medical/min. inc. (17 ÷ 3).	14.5	12.3	10.3	10.1	14.5	12.3

[1]The RV-CE for Medicare and Medicaid are calculated by multiplying by the Medicare only and Medicaid only benefit weights. Different results would be obtained if the computations were based on the joint Medicare-Medicaid benefit weight, the overall medical care benefit weight, or the benefit weights excluding institutional care.

[2]These values differ from those in table 13 because they are the average value for persons 65 to 74 years old and 75 years old or older.

Chapter 6. The Effect of Alternative Methodologies for Valuing In-Kind Benefits on Poverty

The purpose of this chapter is to present estimates of the effect of in-kind food, housing, and medical care benefits on the measurement of poverty. These effects are shown for each of the three valuation methodologies and by the inclusion or exclusion of medical care for the institutionalized population and the exclusion of medical care benefits altogether. The examination of the effects of in-kind benefits on estimates of the poverty population is divided into five basic elements. The first part of the analysis presents a general overview of the reductions in the number of persons with income below the poverty level using three definitions of income and the three valuation techniques (table 15). The second part presents effects of the valuation of in-kind benefits on selected subgroups of the poverty population. These results are contained in tables 16 through 21. Table 22 summarizes the largest and smallest reductions in the poverty rate for selected subgroups of the poverty population. The third part indicates the changes in the composition of the poor for each of the valuation techniques (table 23). The fourth part of this analysis compares results of this study with those of previous valuation research studies (tables 24 and 25). The last part shows poverty rates for selected subgroups of the population and the percent reduction in these rates for each income definition and valuation technique (tables 26 through 32).

It should be noted that the poverty statistics contained in this report differ slightly from the official poverty statistics published by the Bureau of the Census for 1979. The determination of poverty for this study was on a household basis, unlike the official procedure which derives poverty status separately for families and unrelated individuals. This approach was adopted since much of the data on in-kind benefits collected in the CPS are reported on a household basis. Secondary individuals are the group most affected by this procedure because their poverty status in this study is dependent on status of the primary family or individual in the household. The net effect of this modified procedure is small, causing a reduction in the official poverty rate (11.6 percent) to 11.1 percent.

OVERVIEW OF RESULTS

An overview of the effect of the valuation of in-kind food, housing, and medical benefits on poverty is shown in table 15. The effect of each valuation technique is shown for three different income definitions which have been expanded to include various combinations of the food, housing, and medical in-kind benefits. Table 15 shows numbers of poor and poverty rates for each combination of income definition and valuation method, as well as the percent reduction in the number of poor based on money income alone.

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Table 15. Overall Effect of In-Kind Benefit Valuation Techniques on the Number and Percent of Poor: 1979

(Numbers in thousands. Persons as of March 1980)

Income concept	Market value		Recipient value - cash equivalent		Poverty budget shares	
	Below 100 percent of poverty level	Below 125 percent of poverty level	Below 100 percent of poverty level	Below 125 percent of poverty level	Below 100 percent of poverty level	Below 125 percent of poverty level
Money income alone:[1]						
Number of poor.....	23,623	33,445	23,623	33,445	23,623	33,445
Poverty rate.....	11.1	15.8	11.1	15.8	11.1	15.8
Money income plus food and housing:						
Number of poor.....	19,933	31,178	20,218	31,367	20,743	31,744
Poverty rate.....	9.4	14.7	9.5	14.8	9.8	15.0
Percent reduction[2].....	-15.6	- 6.8	-14.4	- 6.2	-12.2	- 5.1
Money income plus food, housing and medical care (excluding institutional care expenditures):						
Number of poor.....	14,023	24,689	18,393	28,877	18,866	30,381
Poverty rate.....	6.6	11.6	8.7	13.6	8.9	14.3
Percent reduction[2].....	-40.6	-26.2	-22.1	-13.7	-20.1	- 9.2
Money income plus food, housing and medical care (including institutional care expenditures):						
Number of poor.....	13,634	23,674	17,318	28,284	18,866	30,381
Poverty rate.....	6.4	11.2	8.2	13.3	8.9	14.3
Percent reduction[2].....	-42.3	-29.2	-26.7	-15.4	-20.1	- 9.2

[1]Differs from the official poverty count for 1979 of 25,345 (11.6 percent) because poverty status was computed on a household basis; the official estimate of persons below 125 percent of the poverty level is 35,592 (16.3 percent).

[2]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

approach lowers the number of poor by about 20 percent. Thus, these two methods yield poverty estimates which differ by 5.2 million persons. Taking into account all combinations of income definitions and valuation techniques, the number of poor range from a low of 13.6 million using the market value approach (including medical care with institutional expenditures) to a high of 20.7 million using the PBS approach and excluding medical care benefits.

CHANGES IN POVERTY FOR POPULATION SUBGROUPS

Previous studies have indicated that the valuation of in-kind benefits can affect various subgroups of the poverty population in different ways. Tables 16 through 18 show changes in poverty numbers and rates by valuation approach and income definition for selected characteristics of the population. Tables 19 through 21 present similar information for persons below 125 percent of the poverty level.

Results of the market value approach are summarized in table 16. The inclusion of the value of all in-kind transfers lowers the poverty in the South by 37 percent, compared with 46 percent in the non-South. This result is probably due to greater accessibility of benefits outside the South (Smeeding, 1981). The importance of the value of medical care benefits is indicated by their effect on poverty among the elderly. Valuation of all in-kind benefits lowers poverty for the elderly by 69 percent compared to a 37-percent reduction for the nonelderly. The inclusion of institutional care expenditures has almost no additional impact on poverty of the nonelderly but lowers the poverty rate for the elderly from 5.2 percent to 4.5 percent. These changes in poverty among the elderly are supported by the earlier work by Smeeding and Moon (1980) and Hoagland (1980). Other data in the table indicate that poverty is lowered proportionally more for persons in central cities, for Blacks, and for persons in households maintained by women with no husband present than for their counterparts. While the poverty rate for residents of central cities (15 percent) was somewhat higher than the rate for nonmetropolitan residence (13 percent) based on official poverty levels, this relationship is reversed when in-kind benefits are valued at MV (see also Seninger and Smeeding, 1981). Use of an income definition restricted to food and housing does not produce such major differences in the reduction of poverty between subgroups. For instance, the MV of food and housing reduces the number of elderly poor by about 12 percent, compared with 16 percent for the non-elderly. The reduction resulting from food and housing transfers was about 14 percent for the South and 16 percent for the non-South. Blacks, persons in central cities, and persons in families maintained by women still benefit relatively more from these programs but to a much lesser extent than when medical benefits are counted.

One important fact which emerges from table 16 is that the inclusion of the value of in-kind benefits as income does not lift the income of all families above the poverty level even when all benefits are included and assigned market value. Poverty rates for subgroups such as Blacks and persons in families maintained by women are still substantial (15 percent and 18 percent, respectively).

Table 16. Market Value Approach: Number of Persons Below the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	23,623	11.1	19,933	9.4	14,023	6.6	13,634	6.4
South.....	10,108	14.6	8,526	12.3	6,577	9.5	6,343	9.2
Non-South.....	13,515	9.5	11,407	8.0	7,446	5.2	7,291	5.1
Elderly (65 and over).....	4,097	14.7	3,601	12.9	1,452	5.2	1,251	4.5
Non-elderly....	19,526	10.6	16,332	8.9	12,571	6.8	12,383	6.7
Central city...	8,748	15.0	7,005	12.0	4,563	7.8	4,436	7.6
Suburb.....	5,661	6.7	4,972	5.9	3,733	4.4	3,633	4.3
Nonmetropolitan area.....	9,214	13.4	7,957	11.5	5,728	8.3	5,565	8.1
Black.....	7,456	30.4	5,874	23.9	3,872	15.8	3,712	15.1
Non-Black.....	16,167	8.6	14,059	7.5	10,151	5.4	9,922	5.3
In households with female householder, no husband present.....	9,142	34.8	7,230	27.5	4,762	18.1	4,625	17.6
All other persons.....	14,481	7.8	12,703	6.8	9,261	5.0	9,009	4.8

[1]Differs from official poverty count for 1979 of 25,345 (11.6 percent) because poverty status was computed on a household basis.

Changes in the poverty population resulting from use of the recipient value-cash equivalent (RV-CE) approach are shown in table 17. Because RV-CE is always less than or equal to MV, the effects on the population subgroups are less than those resulting from MV, but, the trends are generally the same. The RV-CE approach significantly reduces the value of medical benefits relative to MV. As a result, the decline in poverty for the elderly is somewhat less than when MV is used. The RV-CE approach does not lower the poverty rate for central-city residents below the rate for nonmetropolitan residents as was the case with market value.

The results of the PBS approach as shown in table 18 indicate the smallest effect on poverty for the three valuation techniques. Reduction in the poverty rates using the PBS approach are similar for various subgroups of the poverty population. Overall, the PBS method reduces the number of poor by about 20 percent. The reduction was about 19 percent for the South, 24 percent for Blacks and for persons in families maintained by women (no husband present), 23 percent for central-city residents, and 26 percent for the elderly. The poverty rate for the elderly using the PBS approach was 10.8 percent, more than twice as large as the 4.5 percent rate from the MV approach. Except for the elderly it appears that, under this approach, food and housing benefits account for most of the reduction in poverty.

The effects of valuing in-kind benefits on the number and percent of selected population subgroups below 125 percent of the poverty level are shown in tables 19, 20, and 21. Reductions in the number of persons below the 125-percent level are somewhat less, proportionately, than reductions at the 100-percent poverty level. For example, the poverty rate for the elderly declined 69 percent using all in-kind benefits at market value; the comparable decline at the 125-percent poverty level was 60 percent. The relationship between declines at the 100- and 125-percent poverty levels are similar for other subgroups and these relationships are generally consistent within the RV-CE and PBS techniques (see tables 20 and 21).

The data in tables 15 through 21 have been rearranged and summarized in tables 26 through 32 so that the effect of income concepts and valuation techniques can be compared for each of the selected poverty subgroups. These tables have been included so that the full range of poverty estimates can be examined separately for each of these groups. Although these tables are not discussed in detail, they are shown at the end of this chapter.

The largest and smallest reductions in poverty rates for the selected poverty subgroups are summarized in table 22. Because of the relative size of medical benefits and conceptual problems in their treatment, separate estimates are shown which exclude the value of medical care. In all cases, the largest reductions are attributed to market value and the smallest to poverty budget share values. Overall, there is a substantial difference between the largest and smallest reductions in poverty, <u>especially</u> when medical care benefits are included.

An examination of the largest reductions shown in table 22 reveals the extreme importance of medical care in lowering estimates of the poor. While

Table 17. Recipient Value-Cash Equivalent Approach: Number of Persons Below the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	23,623	11.1	20,218	9.5	18,393	8.7	17,318	8.2
South.....	10,108	14.6	8,723	12.6	8,023	11.6	7,646	11.0
Non-South.....	13,515	9.5	11,495	8.1	10,370	7.3	9,672	6.8
Elderly (65 and over).....	4,097	14.7	3,649	13.1	2,601	9.3	1,951	7.0
Non-elderly....	19,526	10.6	16,569	9.0	15,792	8.6	15,367	8.3
Central city...	8,748	15.0	7,172	12.3	6,607	11.4	6,123	10.5
Suburb.....	5,661	6.7	5,021	5.9	4,622	5.4	4,418	5.2
Nonmetropolitan area.....	9,214	13.4	8,026	11.6	7,165	10.4	6,777	9.8
Black.....	7,456	30.4	6,009	24.5	5,571	22.7	5,144	21.0
Non-Black.....	16,167	8.6	14,209	7.6	12,822	6.8	12,174	6.5
In households with female householder, no husband present.....	9,142	34.8	7,384	28.1	6,967	26.5	6,411	24.4
All other persons.....	14,481	7.8	12,834	6.9	11,426	6.1	10,907	5.9

[1]Differs from official poverty count for 1979 of 25,345 (11.6 percent) because poverty status was computed on a household basis.

Table 18. Poverty Budget Share Approach: Number of Persons Below the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	23,623	11.1	20,743	9.8	18,866	8.9	18,866	8.9
South.....	10,108	14.6	8,841	12.8	8,180	11.8	8,180	11.8
Non-South.....	13,515	9.5	11,902	8.3	10,686	7.5	10,686	7.5
Elderly (65 and over).....	4,097	14.7	3,838	13.7	3,019	10.8	3,019	10.8
Non-elderly....	19,526	10.6	16,905	9.2	15,847	8.6	15,847	8.6
Central city...	8,748	15.0	7,470	12.8	6,739	11.6	6,739	11.6
Suburb.....	5,661	6.7	5,079	6.0	4,696	5.5	4,696	5.5
Nonmetropolitan area.....	9,214	13.4	8,194	11.9	7,432	10.8	7,432	10.8
Black.....	7,456	30.4	6,255	25.5	5,677	23.1	5,677	23.1
Non-Black.....	16,167	8.6	14,488	7.7	13,189	7.0	13,189	7.0
In households with female householder, no husband present.....	9,142	34.8	7,655	29.1	6,969	26.5	6,969	26.5
All other persons.....	14,481	7.8	13,088	7.0	11,897	6.4	11,897	6.4

[1]Differs from official poverty count for 1979 of 25,345 (11.6 percent) because poverty status was determined on a household basis.

Table 19. Market Value Approach: Number of Persons Below 125 Percent of the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	33,445	15.8	31,178	14.7	24,689	11.6	23,674	11.2
South.....	13,767	19.9	12,918	18.6	10,982	15.8	10,461	15.1
Non-South.....	19,678	13.8	18,260	12.8	13,707	9.6	13,213	9.3
Elderly (65 and over).....	6,708	24.0	6,262	22.4	3,269	11.7	2,650	9.5
Non-elderly....	26,737	14.5	24,916	13.5	21,420	11.6	21,024	11.4
Central city...	11,915	20.5	10,903	18.7	8,205	14.1	7,911	13.6
Suburb.....	8,369	9.9	7,823	9.2	6,346	7.5	6,170	7.3
Nonmetropolitan area.....	13,161	19.1	12,452	18.0	10,139	14.7	9,593	13.9
Black.....	9,614	39.2	8,764	35.7	6,896	28.1	6,607	26.9
Non-Black.....	23,831	12.7	22,414	11.9	17,793	9.5	17,067	9.1
In households with female householder, no husband present.....	11,317	43.1	10,302	39.2	8,172	31.1	7,988	30.4
All other persons.....	22,128	11.9	20,876	11.2	16,517	8.9	15,686	8.4

[1]Differs from official poverty count for 1979 of 35,592 (16.3 percent) because poverty status was determined on a household basis.

Table 20. Recipient Value-Cash Equivalent Approach: Number of Persons Below 125 Percent of the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	33,445	15.8	31,367	14.8	28,877	13.6	28,284	13.3
South.....	13,767	19.9	13,011	18.8	12,245	17.7	12,020	17.3
Non-South.....	19,678	13.8	18,356	12.9	16,632	11.6	16,264	11.4
Elderly (65 and over).....	6,708	24.0	6,286	22.5	4,712	16.9	4,504	16.1
Non-elderly....	26,737	14.5	25,081	13.6	24,165	13.1	23,780	12.9
Central city...	11,915	20.5	10,997	18.9	10,119	17.4	9,843	16.9
Suburb.....	8,369	9.9	7,852	9.2	7,194	8.5	7,086	8.3
Nonmetropolitan area.....	13,161	19.1	12,518	18.1	11,564	16.8	11,355	16.5
Black.....	9,614	39.2	8,864	36.1	8,281	33.8	8,061	32.9
Non-Black.....	23,831	12.7	22,503	12.0	20,596	11.0	20,223	10.8
In households with female householder, no husband present.....	11,317	43.1	10,421	39.6	9,797	37.3	9,520	36.2
All other persons.....	22,128	11.9	20,946	11.3	19,080	10.3	18,764	10.1

[1]Differs from official poverty count for 1979 of 35,592 (16.3 percent) because poverty status was determined on a household basis.

Table 21. Poverty Budget Share Approach: Number of Persons Below 125 Percent of the Poverty Level and Poverty Rates, by Income Concept for Selected Population Subgroups: 1979

(Numbers in thousands. Persons as of March 1980)

Selected characteristics	Income concept							
	Money income alone[1]		Money income plus food and housing		Money income plus food, housing, and medical care (excluding institutional care)		Money income plus food, housing, and medical care (including institutional care)	
	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate	Number	Poverty rate
All persons.	33,445	15.8	31,744	15.0	30,381	14.3	30,381	14.3
South.....	13,767	19.9	13,061	18.8	12,596	18.2	12,596	18.2
Non-South.....	19,678	13.8	18,683	13.1	17,785	12.5	17,785	12.5
Elderly (65 and over).....	6,708	24.0	6,497	23.3	5,708	20.4	5,708	20.4
Non-elderly....	26,737	14.5	25,247	13.7	24,673	13.4	24,673	13.4
Central city...	11,915	20.5	11,227	19.3	10,712	18.4	10,712	18.4
Suburb.....	8,369	9.9	7,915	9.3	7,574	8.9	7,574	8.9
Nonmetropolitan area.....	13,161	19.1	12,603	18.3	12,096	17.5	12,096	17.5
Black.....	9,614	39.2	8,980	36.6	8,603	35.1	8,603	35.1
Non-Black.....	23,831	12.7	22,764	12.1	21,778	11.6	21,778	11.6
In households with female householder, no husband present.....	11,317	43.1	10,520	40.0	10,142	38.6	10,142	38.6
All other persons.....	22,128	11.9	21,224	11.4	20,239	10.9	20,239	10.9

[1]Differs from official poverty count for 1979 of 35,592 (16.3 percent) because poverty status was determined on a household basis.

Table 22. Summary of the Largest and Smallest Reductions in Estimates of Poverty for Selected Population Subgroups: 1979

Selected characteristics	Money income poverty rate	Impact of in-kind benefits on poverty rate			
		Largest percent reduction[1]		Smallest percent reduction[2]	
		Including food, housing, and medical care	Including food and housing only	Including food, housing, and medical care	Including food and housing only
All persons.....	11.1	42.3	15.6	20.1	12.2
Elderly (65 and over).	14.7	69.5	12.1	26.3	6.3
South.....	14.6	37.2	15.7	19.1	12.5
Central city.....	15.0	49.3	19.9	23.0	14.6
Nonmetropolitan areas.	13.4	39.6	13.6	19.3	11.1
Blacks.....	30.4	50.2	21.2	23.9	16.1
In households with female householder, no husband present...	34.8	49.4	20.9	23.8	16.3

[1]The largest reductions are always attributable to the MV approach.

[2]The smallest reductions are always experienced with the PBS approach.

the total number of poor is reduced 42 percent when medical care is included, it is reduced by only 16 percent when medical care is excluded. When medical care is counted, groups with above average reductions in poverty are the elderly (70 percent), central-city residents (49 percent), Blacks (50 percent), and persons in families maintained by women, no husband present (49 percent). When medical care benefits are not counted, all of these groups except the elderly have above average reductions in poverty. In fact, the elderly have the lowest reduction (12 percent) of any of these subgroups.

An examination of the smallest reductions indicated a diminished importance of medical care in lowering the estimates of the poor. A comparison of the smallest reductions including and excluding medical care indicate a reduction of 20 percent when medical care is included and 12 percent when it is excluded. Comparisons of the reductions for the subgroups show a similar pattern to that described for the largest reductions. The elderly still have the largest reduction including medical care (26 percent) and the smallest reduction excluding medical care (6 percent).

Of all of the groups discussed, the elderly experienced the smallest relative reduction in poverty when only food and housing were counted and the largest when medical care was also counted. The elderly poor benefit less from food and housing transfers than the non-elderly. This probably occurs because many of the elderly poor (based on cash income) have assets which are larger than those allowed in the Food Stamp Program and because many (67 percent) own their own homes.

CHANGES IN THE COMPOSITION OF THE POOR

Given the differential impact of in-kind benefits on various subgroups of the poor, it might be expected that changes in the overall composition of the poverty population would occur. Table 23 shows the composition of the poor based on the current poverty definition and on three selected combinations of valuation techniques and income concepts which were chosen to highlight the largest and smallest changes. The market value approach valuing all in-kind benefits results in a significant change in the composition of the poor. Under this approach, the elderly comprise only about 9 percent of the poor as compared with 17 percent under the money income definition. However, the proportion of the poor living in the South increased from 43 to 47 percent. These changes again reflect the importance of medical care benefits in the determination of poverty for the elderly and the lower provision of medical care benefits in the South. Under the market value approach excluding medical care, the composition of the poor shows very little change. There is also very little change in composition noted for the PBS approach even when medical benefits are counted.

Only slightly different results were noted for persons below 125 percent of the poverty level. In general the changes in composition are less pronounced than for the 100-percent poverty level.

Table 23. Composition of the Pc
with Selected Charact
Techniques and Income

Characteristics
Below poverty level.....
South.....
Elderly (65 and over).....
Central city.....
Suburb.....
Nonmetropolitan area.....
Black.....
In households with female householder, no husband present).....
Below 125 percent of poverty level.....
South.....
Elderly (65 and over).....
Central city.....
Suburb.....
Nonmetropolitan area.....
Black.....
In households with female householder, no husband present.....

Table 24. Comparison of Results from Previous Studies Using the Market Value of In-Kind Transfers

Study	Data set and income year	Poverty rate		Percent reduction in poverty
		Prior to in-kind transfers	After in-kind transfers	
A. FOOD, HOUSING, AND MEDICAL TRANSFERS				
This report[1].....	CPS; 1979	11.1	6.4	42.3
Hoagland/CBO[2].....	Aged CPS; 1974 aged to 1976	10.0	5.3	47.0
Hoagland.....	Aged CPS; 1978 aged to 1980	8.6	3.9	54.6
Paglin[3].....	Grouped CPS; 1975	10.0	3.6	64.0
B. FOOD AND HOUSING TRANSFERS ONLY				
This report[1].....	CPS; 1979	11.1	9.4	15.6
Hoagland/CBO[2].....	Aged CPS; 1974 aged to 1976	10.0	7.4	26.0
Hoagland.....	Aged CPS; 1978 aged to 1980	8.6	5.9	31.3

[1]In this report, CPS money income data are not adjusted for income under-reporting, as in the other studies.

[2]Hoagland uses the same data base and estimation techniques as the CBO study, but makes estimates for persons rather than households. Thus, the results are labeled "Hoagland/CBO."

[3]Both of Paglin's estimates include some adjustment for taxes paid and for household income sharing.

on food and housing benefits only (not available from the Paglin study) show a substantially larger reduction in poverty in the Hoagland studies than in this study. These results reflect the larger assignment of in-kind benefits to the poor in both the Hoagland and Paglin studies.

Results from this study and from earlier work by Smeeding (1981) are shown in table 25 for in-kind benefits valued using the cash equivalent approach. The earlier estimates are based on a simulation model which was quite similar to the model used by the Hoagland/CBO study (Smeeding, 1975). This model simulated in-kind benefit recipiency and benefit levels in a similar manner but did not "age" the file (Doyle, et. al., 1980). In this study and in the earlier study, Smeeding used the normal expenditure approach to estimate cash equivalent value. The Smeeding results for 1972 and 1974 indicate significantly larger reductions in the number of poor, compared with this study (47 and 38 percent as compared with 27 percent). Some of the differences in these estimates are due to adjustments for underreporting of income, smaller numbers of in-kind benefit recipients, higher benefit weights for medical care, and over-assignment of multiple benefit recipiency in the earlier studies. As far as is known there are no other national estimates of the effect of in-kind benefits on estimates of the poor using the cash equivalent approach.[1]

Although not contained in tables 24 or 25, Smeeding and Moon (1980) used a modified poverty budget share (PBS) approach to value medical care transfers in conjunction with cash equivalent values for food and housing. This methodology, which also involved adjustments for income underreporting and use of after-tax income, reduced the number of poor by about 26 percent, compared with a reduction of 20 percent in this study using the PBS approach.

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[1]Other earlier studies by Smeeding (1977) and Smeeding and Moon (1980) did not value school lunch benefits and the latter study also excluded the value of public housing.

Table 25. Comparison of Results from Previous Studies Using the Cash Equivalent Value of In-Kind Transfers

Study	Data set and income year	Poverty rate		Percent reduction in poverty
		Prior to in-kind transfers	After in-kind transfers	
A. FOOD, HOUSING, AND MEDICAL TRANSFERS				
This report[1].....	CPS, 1979	11.1	8.2	26.7
Smeeding (1981)[2].....	CPS, 1974	11.6	7.2	37.9
	CPS, 1972	11.9	6.2	47.0
B. FOOD AND HOUSING ONLY				
This report[1].....	CPS, 1979	11.1	9.5	14.4
Smeeding (1981)[2].....	CPS, 1974	11.6	9.0	22.4
	CPS, 1972	11.9	8.3	30.2

[1]In this report, CPS money income data are not adjusted for income under-reporting, as in the other studies.

[2]Smeeding (1981) adjusts Smeeding (1977)--the source of the 1972 estimates--and Smeeding-Moon (1980)--the source of the 1974 estimates, for omission of housing transfers in 1972, and school lunch benefits in both years.

Table 26. All Persons: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	11.1	11.1	11.1
Money income plus food and housing:			
Poverty rate.....	9.4	9.5	9.8
Percent reduction[1].....	-15.6	-14.4	-12.2
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	6.6	8.7	8.9
Percent reduction[1].....	-40.6	-22.1	-20.1
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	6.4	8.2	8.9
Percent reduction[1].....	-42.3	-26.7	-20.1
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	15.8	15.8	15.8
Money income plus food and housing:			
Poverty rate.....	14.7	14.8	15.0
Percent reduction[1].....	- 6.8	- 6.2	- 5.1
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	11.6	13.6	14.3
Percent reduction[1].....	-26.2	-13.7	- 9.2
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	11.2	13.3	14.3
Percent reduction[1].....	-29.2	-15.4	- 9.2

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Table 27. Elderly: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	14.7	14.7	14.7
Money income plus food and housing:			
Poverty rate.....	12.9	13.1	13.7
Percent reduction[1].....	-12.1	-10.9	- 6.3
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	5.2	9.3	10.8
Percent reduction[1].....	-64.6	-36.5	-26.3
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	4.5	7.0	10.8
Percent reduction[1].....	-69.5	-52.4	-26.3
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	24.0	24.0	24.0
Money income plus food and housing:			
Poverty rate.....	22.4	22.5	23.3
Percent reduction[1].....	- 6.6	- 6.3	- 3.1
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	11.7	16.9	20.4
Percent reduction[1].....	-51.3	-29.8	-14.9
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	9.5	16.1	20.4
Percent reduction[1].....	-60.5	-32.9	-14.9

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

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Table 29. Central City Residents: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	15.0	15.0	15.0
Money income plus food and housing:			
Poverty rate.....	12.0	12.3	12.8
Percent reduction[1].....	-19.9	-18.0	-14.6
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	7.8	11.4	11.6
Percent reduction[1].....	-47.8	-24.5	-23.0
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	7.6	10.5	11.6
Percent reduction[1].....	-49.3	-30.0	-23.0
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	20.5	20.5	20.5
Money income plus food and housing:			
Poverty rate.....	18.7	18.9	19.3
Percent reduction[1].....	- 8.5	- 7.7	- 5.8
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	14.1	17.4	18.4
Percent reduction[1].....	-31.1	-15.1	-10.1
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	13.6	16.9	18.4
Percent reduction[1].....	-33.6	-17.4	-10.1

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Table 30. Nonmetropolitan Area Residents: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	13.4	13.4	13.4
Money income plus food and housing:			
Poverty rate.....	11.5	11.6	11.9
Percent reduction[1].....	-13.6	-12.9	-11.1
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	8.3	10.4	10.8
Percent reduction[1].....	-37.8	-22.2	-19.3
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	8.1	9.8	10.8
Percent reduction[1].....	-39.6	-26.4	-19.3
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	19.1	19.1	19.1
Money income plus food and housing:			
Poverty rate.....	18.0	18.1	18.3
Percent reduction[1].....	- 5.4	- 4.9	- 4.2
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	14.7	16.8	17.5
Percent reduction[1].....	-23.0	-12.1	- 8.1
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	13.9	16.5	17.5
Percent reduction[1].....	-27.1	-13.7	- 8.1

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Table 31. Blacks: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	30.4	30.4	30.4
Money income plus food and housing:			
Poverty rate.....	23.9	24.5	25.5
Percent reduction[1].....	-21.2	-19.4	-16.1
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	15.8	22.7	23.1
Percent reduction[1].....	-48.1	-25.3	-23.9
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	15.1	21.0	23.1
Percent reduction[1].....	-50.2	-31.0	-23.9
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	39.2	39.2	39.2
Money income plus food and housing:			
Poverty rate.....	35.7	36.1	36.6
Percent reduction[1].....	- 8.8	- 7.8	- 6.6
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	28.1	33.8	35.1
Percent reduction[1].....	-28.3	-13.9	-10.5
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	26.9	32.9	35.1
Percent reduction[1].....	-31.3	-16.2	-10.5

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Table 32. Female Householders, No Husband Present: Reductions in Poverty Rates Using Alternative Valuation Techniques and Income Concepts: 1979

Income concept	Market value approach	Recipient value - cash equivalent approach	Poverty budget share approach
BELOW POVERTY LEVEL			
Money income alone:			
Poverty rate.....	34.8	34.8	34.8
Money income plus food and housing:			
Poverty rate.....	27.5	28.1	29.1
Percent reduction[1].....	-20.9	-19.2	-16.3
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	18.1	26.5	26.5
Percent reduction[1].....	-47.9	-23.8	-23.8
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	17.6	24.4	26.5
Percent reduction[1].....	-49.4	-29.9	-23.8
BELOW 125 PERCENT OF POVERTY LEVEL			
Money income alone:			
Poverty rate.....	43.1	43.1	43.1
Money income plus food and housing:			
Poverty rate.....	39.2	39.6	40.0
Percent reduction[1].....	- 9.0	- 7.9	- 7.0
Money income plus food, housing, and medical care (excluding institutional care expenditures):			
Poverty rate.....	31.1	37.3	38.6
Percent reduction[1].....	-27.8	-13.4	-10.4
Money income plus food, housing, and medical care (including institutional care expenditures):			
Poverty rate.....	30.4	36.2	38.6
Percent reduction[1].....	-29.4	-15.9	-10.4

[1]Percent reduction in the number of poor from the current poverty estimate based on money income alone.

Chapter 7. Suggestions for Future Research

There are several important issues in the in-kind benefit valuation area which warrant further research. First, the quantity and quality of data on in-kind benefits need to be expanded. Second, refined procedures for valuing in-kind benefits need to be developed using the expanded data set. Third, procedures should be developed to adjust survey data for underreporting of both money income and in-kind benefits.

As pointed out earlier in this report, while most means-tested in-kind benefits (88 percent) have been covered in this study, only 34 percent of all food, housing, and medical care benefits were included. Discussions of which in-kind benefits should ultimately be included as income for purposes of measuring poverty need to be initiated. Additional survey data are needed to account for these other benefits. Major sources of benefits for which more data are needed include employer-provided "fringe" benefits, the tax advantages for homeownership, and the implicit net rental value of owner-occupied housing.

Refining procedures for valuing in-kind benefits requires more recent expenditure data than are now available from the 1960-61 and 1972-73 Consumer Expenditure Surveys. Based on our experience with the Medicare coverage reported in the 1972-73 CEX, the quality of the medical care expenditure data needs to be improved in this survey. Use of data from other surveys, such as the National Medical Care Expenditure Survey and Medical Care Expenditure and Utilization Survey, needs to be explored. Even with these new data sources, the identification of "counterfactuals" (nonsubsidized population) required to value Medicare is virtually impossible. In response to this problem, several strategies could be employed. First, perhaps survey data could be collected on how recipients value their benefits (no data have as yet been collected on how much these benefits are worth in cash). Second, following the work of Van Praag (1968), Wansbeck and Kapetyn (1981), and others, one could use survey respondents' subjective measures of well-being in conjunction with money income and in-kind benefits data to estimate values.[1]

[1]Using this technique, respondents with given levels of money income, in-kind transfer benefits, and family size and structure, are asked to specify a numerical value which represents their relative level of well-being. Using regression analysis, differences in these levels can be converted to cash income. Comparing levels of well-being between families of similar income and family size and structure, but with different noncash benefits, permits the derivation of the impact of in-kind benefits on welfare levels.

Both of these alternatives solve the problem of simultaneously valuing all types of income in-kind to arrive at accurate measures of recipient value. Moreover, both methodologies reduce the need to rely on the costly and complicated exogenous calculations needed to compute RV-CE. On the grounds of simplicity and ease of calculation alone, such approaches as these merit future attention.

Two major problems with survey data on money income and in-kind benefits are underreporting of recipiency and amounts and misreporting of sources.[2] Correction of these problems requires both better survey data and improved administrative statistics which can be used to apply adjustments to the survey data. For example, administrative data on the number of families (persons) receiving an in-kind benefit at any time during the calendar year would help improve the estimation procedures. Second, sophisticated microsimulation models are needed to adjust for these deficiencies in the survey data.[3]

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[2]In a recent study, Godreau, Oberheu, and Vaughn (1981) found that misreporting of AFDC as general assistance or other welfare was more prevalent than either underreporting dollar amounts of AFDC or failure to report receipt of public assistance altogether.

[3]For instance, Smeeding (1981a) has shown how in-kind benefit recipiency patterns differ between the March 1980 CPS recipient patterns and the results of several microsimulation models, which assign recipiency to CPS units based entirely on program eligibility rules and administrative data.

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Appendix B. Explanation of the Data Sources for Table 2

Table 2 presented estimates of the aggregate value of food, housing, and medical care benefits. This table is repeated below along with a detailed explanation of the sources used to derive each estimate. All estimates are for 1980 unless otherwise noted.

Table B-1. Comparison of Major Public In-kind Transfer Programs with Total Private and Public Income In-Kind in 1980

Row	Type of benefit	Major in-kind transfer benefits[1]	"Other" in-kind income			Total value of benefits	Major as a percent of Total
			Public		Private[3]		
			Total	Tax sub-sidies[2]			
1	Total.....	$72.5	$59.8	32.0	$83.5	$ 215.8	33.6
2	Food	12.6	1.2	(NA)	16.6	30.4	41.4
3	Housing.....	5.4	32.7	28.8	14.8	52.9	10.2
4	Medical care.....	54.5	25.9	3.2	52.1	132.5	41.1
5	Total means-tested benefits..	42.4	3.6	(NA)	2.4	48.4	87.6
6	Total nonmeans-tested benefits..	30.1	56.2	32.0	81.1	167.4	18.0

NA Not available.

[1]Includes only those transfer programs which are valued in this report.

[2]Tax subsidies (also known as tax expenditures) are subsidies accruing to households from tax deductibility of mortgage interest, property taxes, etc., and are shown separately for those who do not classify such benefits as income in-kind.

[3]Includes some employer-provided benefits, philanthropic transfers, and some sources of nonmarket income in-kind, but excludes other private in-kind transfers (e.g., the medical bills of the elderly which are paid by their children, or the free housing and food provided for an elderly parent who lives with their children). In 1979 these benefits totalled roughly $20.0 billion (Lampman and Smeeding, 1982). It was not possible to separate this estimate into food, housing, and medical components.

Sources: Social Security Bulletin (1981), U.S. Budget, FY 1982 (1981); Survey of Current Business (1981).

Row 2 (Food)

- Major in-kind transfer benefits include $9.3 billion in food stamps and $3.3 billion in school lunch benefits. (U.S. Budget, FY 1982)

- Other public includes several U.S. Department of Agriculture programs, e.g., Women's, Infant's, and Children's Special Food Program (WIC), and School Milk (U.S. Budget, FY 1982)

- Other private includes $6.6 billion in food produced and consumed on farms and food received as pay in 1979 (Survey of Current Business, July 1981, table 8.8, lines 93 plus 96), plus $10.0 billion in employer-provided "business lunches" furnished by proprietors and partnerships (see Clotfelter, 1981). The estimates do not include the value of corporate business lunches.

Row 3 (Housing)

- Major in-kind transfer benefits include $5.4 billion in public and subsidized housing for low income families under various public programs including Low Rent Public Housing and Sections 8, 235, 236, 101 and 202b of the 1937 Housing Act. (U.S. Budget, FY 1982)

- Other public includes $28.8 billion in tax exemptions for mortgage interest, property tax deductibility, and tax-exempt bonds to finance mortgages; includes $3.9 billion in FHA, VA, FHMA mortgage subsidies for 1980 only (i.e., no account taken of prior years subsidies which are still in effect). (U.S. Budget, FY 1982)

- Other private includes $14.8 billion in net imputed rental income for owner-occupied farm ($3.1 billion) and nonfarm ($11.7 billion) housing in 1979. This estimate is gross rental value ($33.9 billion) less property taxes, depreciation, and other maintenance costs. (Survey of Current Business, July 1981, Table 8.8, lines 79 and 86; table 8.5, line 4).

Row 4 (Medical Care)

- Major in-kind transfer benefits include $26.2 billion in Medicaid and $28.4 billion in Medicare vendor payments. (Social Security Bulletin, 1981)

- Other public includes $22.7 billion vendor payments for medical services under several public programs, including CHAMPUS, Veteran's Health Care, Worker's Compensation, Maternal and Child Health Care, Public Health Services, etc., in 1979 (Social Security Bulletin, 1981). Also included are $3.2 billion in tax expenditures for tax deductible health and medical expenses (U.S. Budget, FY 1982). Estimates do not include medical research or construction expenditures.

- Other private includes $52.1 billion in employer-provided group health insurance contributions for private sector and government employees in

1979; excludes other health-related employer benefits such as sickness and accident insurance, and employer-provided private disability insurance. (Survey of Current Business, July 1981, table 8.4, line 10)

Row 5 (Total Means-Tested Benefits)

- Major in-kind transfer benefits exclude "paid" school lunch benefits and Medicare. Virtually all children who eat hot school lunches receive a basic subsidy under this program, even if they pay "full established price". This subsidy accounts for about 51 percent of total school lunch benefits. The other 49 percent of benefits go to those who either receive the lunch for free or pay a reduced price of 10 to 20 cents per meal. Medicare covers all elderly Social Security beneficiaries and a large group of the nonaged disabled, primarily those receiving Social Security benefits. About 15 percent of Medicare benefits accrue to poor elderly persons, however, Medicare is not a means-tested transfer program.

- Other public includes expenditures for USDA income-tested programs such as WIC, expenditures for maternal and child health care, and one-half of mortgage interest guarantees (which are income-tested only in the broadest sense because they accrue mainly to households with incomes above the median).

- Other private includes health care vendor payments made by charitable organizations ($2.0 billion) and charitable food and housing expenditures ($0.4 billion) (Social Security Bulletin, 1981). Because these payments are generally for the benefit of the indigent, they were included under means-tested benefits.

Appendix C. Quality of the CPS In-Kind Benefit Data

This appendix contains additional information on comparisons of March 1980 CPS benefit data with alternative administrative based estimates.

FOOD TRANSFERS

Table C-1 compares selected characteristics of food stamp households from a USDA survey taken in October 1979 with the March 1980 CPS data covering calendar year 1979. The differences between the USDA and CPS estimates are, in most cases, small. Some of these differences may result from differences in the reference periods between these surveys. The USDA survey covers only October 1979, whereas the CPS covers food stamp recipients at any time in 1979.

Table C-1. Characteristics of Food Stamp Households: October 1979 USDA Survey and March 1980 CPS

Selected Characteristics	October 1979 USDA	March 1980 CPS
RACE AND SPANISH ORIGIN OF HOUSEHOLDER[1]		
Total	100.0	100.0
White	58.5	63.0
Black	41.5	35.3
Spanish origin	13.1	10.5
SEX OF HOUSEHOLDER		
Male	31.0	42.0
Female	69.0	58.0
AGE OF HOUSEHOLDER		
15 to 19 years	4.0	1.9
20 to 34 years	41.0	39.1
35 to 44 years	15.7	17.4
45 to 54 years	10.5	13.1
55 to 59 years	4.9	5.4
60 to 64 years	5.9	5.6
65 years or older	18.0	17.3
SIZE OF HOUSEHOLD		
One person	31.1	28.4
Two persons	21.2	20.7
Three persons	19.0	18.5
Four persons	12.5	14.2
Five persons	7.8	8.6
Six persons	4.2	4.5
Seven persons	1.9	5.0
Eight persons or more	2.3	
Received cash public assistance[2]	42.2	49.1

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

[2]Public Assistance includes AFDC, emergency assistance and general assistance, but excludes SSI.

MEDICAL CARE TRANSFERS

As mentioned in chapter 3, HCFA estimates of the number of Medicaid recipients in 1979 must be adjusted in order to make them comparable to the March 1980 CPS estimate of persons covered by Medicaid at any time during 1979. First, the HCFA estimates were separated into those receiving and not receiving cash assistance. The assumption was made that the HCFA estimate of persons receiving Medicaid benefits but not receiving cash public assistance is the same as the number of these persons covered by Medicaid, i.e., all such persons covered by Medicaid actually received benefits. This assumption was made because the vast majority of these persons became covered only because they needed medical attention which they could not afford. A similar procedure could not be used for the cash assistance group because a significant proportion of this group were covered by Medicaid but did not receive benefits. Instead, the second component of the independent estimate of persons covered by Medicaid was considered to be the number of persons receiving cash public assistance (AFDC and SSI) during 1979. This procedure was chosen because all AFDC recipients are automatically covered by Medicaid and nearly all SSI recipients are covered.[1] Estimates of the number of persons receiving cash public assistance in 1979 were made using monthly numbers of recipients in December 1978 and December 1979, estimates of new applicants and persons leaving the "rolls" in 1979, and estimates of recidivism. Estimates were also adjusted for decedents and the institutionalized population. The results of these procedures are contained in table C-2. The "ever-received" HCFA figures are also included for comparison purposes.

Comparisons of the CPS and alternate estimates should be made with caution for several reasons. First, the alternate estimate probably excludes some beneficiaries who were not covered by Federal-State matching provisions, but were covered by Medicaid entirely at the option of the State. For instance, California covers some illegal aliens and provides Medicaid financed abortions solely from State funds. New York has a higher income eligibility standard than allowed by Title XIX and categorically covers additional groups who do not receive AFDC or SSI. There are, however, no estimates of the number of these beneficiaries. Second, the CPS estimates exclude children in households where no adults were covered (children in a foster care home). Unfortunately, it is not possible to separate these children from other children using the HCFA noncash public assistance beneficiary data. The "State--funds only" and the "covered children only" discrepancies work in opposite directions, but, the net effect is unknown.

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[1]In 15 States (Colorado, Connecticut, Hawaii, Illinois, Indiana, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, North Carolina, Ohio, Oklahoma, Utah, and Virginia) SSI recipients are not automatically covered. In each of these States qualification standards for Medicaid are more strict than qualifying standards for SSI. (Hawkins and Rigby, 1979; Davidson, 1979). Anywhere from 10 to 40 percent of SSI beneficiaries may be ineligible for Medicaid in these States.

Table C-2. Comparisons of CPS and Alternative Estimates of Persons Covered by Medicaid in 1979

(Numbers in millions)

Type of recipient	CPS	Alternate estimate	CPS as a percent of alternate	"Ever received" HCFA[5]
Total.....	18.136	20.794	87.2	21.540
No cash public assistance received.....	4.917	3.610[1,4]	136.2	5.575
Received cash public assistance.....	13.219	17.184	76.9	15.960
AFDC adult.....	3.710	4.345[2]	85.4	3.875
AFDC child.....	6.718	8.997[2]	74.6	7.924
SSI aged.....	1.606	1.786[3,4]	89.9	2.071
SSI blind or disabled.....	1.185	2.056[3,4]	57.6	2.091

[1]HCFA estimate adjusted for decedents and institutionalization and for 1.269 million beneficiaries in Puerto Rico and the Virgin Islands.

[2]AFDC "ever-received" estimates from Mathematica MATH Model for FY 1980 (Doyle, et.al., 1980) adjusted to CY 1979.

[3]SSI "ever-received" estimates, obtained from Jack Schmulowitz, SSA. Basis: December 1978 caseload, plus new applicants, minus decedents and institutionalized, minus one-third of SSI recipients in "209b" States which do not provide categorical Medicaid coverage to SSI beneficiaries.

[4]Adjustment for institutionalization: all institutionalized Medicaid recipients living in mental hospitals or homes for the mentally retarded are subtracted. In addition, all aged, blind, or disabled recipients who reside in skilled nursing homes (SNF) or intermediate care facilities (ICF) for 9 months (270 days) or more during 1979 are subtracted. Further adjustments for SNF (ICF) recipients who (1) die, (2) move from one type of institution to another, (3) temporarily move to a hospital and then die, or (4) move to a hospital and then move back to an SNF or an ICF are made for Medicaid recipients residing in an SNF (ICF) for less than 9 months. These adjustments are used to adjust the administrative estimate of those who "ever-received" SSI and the elderly, blind, and disabled Medicaid recipients receiving no cash assistance. About 62 percent of all institutionalized aged Medicaid recipients and 71 percent of all institutionalized blind or disabled Medicaid recipients were judged to have been excluded from the March 1980 CPS because of either being in an institution at the time of the survey, or because of dying prior to the March 1980 survey date. These estimates are based on the 1977 National Nursing Home Survey (1979: table 28) and on Rigby and Ponce (1981).

[5]Includes institutionalized, decedents, and residents of Puerto Rico and Virgin Islands.

A comparison of those receiving and not receiving cash public assi groups in table C-2 indicates wide differences between CPS and ali estimates. Part of these differences may be due to cash assistance holds who do not report such payments in the CPS, but do report Me coverage. More likely the difference is due to the fact that CPS an have different criteria for classifying public assistance recipient: many cases, a person must first qualify for public assistance before fying for Medicaid. Some of these persons never actually receive an public assistance benefits. HCFA, however, would count such persons cash assistance Medicaid beneficiaries, while the CPS would not.

To examine these data in more detail, the alternate and CPS est were divided into four subgroups. A comparison of these data are sh table C-3. While this comparison helps clarify matters to some extent, mates for the aged and disabled still differ considerably. The CPS es of aged Medicaid beneficiaries is 29 percent greater than the alte while the CPS estimate of disabled is about the same percent below the nate. There are two main reasons for the CPS estimate of aged Me beneficiaries to be "high." First, the elderly may misidentify Medic Medicaid, however, the extent of this type of error is probably sma second factor concerns the HCFA classification of Medicaid beneficiar disability status. If a person was initially covered by Medicaid as abled beneficiary (e.g., a 62-year-old SSI beneficiary) and continued program at age 65 without losing SSI status, the person is still clas both by SSI and HCFA as a disabled beneficiary. The juxtaposition of 2 cent too many elderly and the same percent too few disabled may theref due in large part to this classification problem. All persons cove Medicaid and age 65 or over on the CPS were classified as aged benefici

As previously noted, the CPS does not count children whose pare guardians are not covered by Medicaid. While the CPS estimate cover percent of the alternate estimate for adults, a much lower percentage r for children, 77.4 percent. A large part of this discrepancy can proba explained by covered children whose parents or guardians did not quali Medicaid.

Table C-3. Medicaid Coverage in 1979: CPS Compared to Alternate Estimate, by Type of Beneficiary

(Numbers in millions)

Recipient category	March 1980 CPS	Alternate	CPS as a percent of alternate
Total.....	18.136	20.794	87.2
Aged.....	3.424	2.651	129.2
Blind or disabled.....	1.757	2.503	70.2
Adults.....	4.915	5.247	93.7
Children.....	8.039	10.393	77.4

Appendix D. Details of Procedures Used to Estimate Values of In-Kind Benefits

A more detailed discussion of the procedures used to estimate the value of in-kind benefits is contained in this appendix.

MARKET VALUES

Food transfers. The procedures used to assign the market value of food benefits as described in chapter 5 do not require further clarification.

Housing transfers. For public or subsidized housing, the first step in the estimation of MV was the calculation of the private market rental value (MR) of public or subsidized housing units. The method used for estimating MR begins with a hedonic regression where the dependent variable, MR, is explained by the quantity and quality of the housing unit. The characteristics of the occupants were not used as explanatory variables. The regression equation was hypothesized to have the following functional form:

$$Ln(MR) = a_0 + a_1 SC + a_2 NC + a_3 L + a_4 C + \epsilon \qquad (1)$$

where Ln refers to the natural logarithm, a_0 is the constant term, SC are the structural characteristics of the housing unit, NC are neighborhood characteristics, L are geographic location variables, C are contract condition variables, and ϵ is the error term. In this log-linear form, the coefficients (a_1, a_2, a_3, and a_4) can be interpreted as the percentage change in MR given a unit change in the corresponding independent variable.

The coefficients for this equation were estimated for a subset of nonsubsidized rental units using data reported on the Annual Housing Survey (AHS) for 1979. This equation was then used to estimate the MR of public or subsidized housing on the AHS. The housing subsidy (S), which is the MV, was derived by subtracting the reported rent of the housing unit (SR) from the predicted MR. This procedure has some advantage over use of administrative data available from HUD on the actual market rent and subsidized rent for a sample of Section 8 housing units. There is some evidence that landlords inflate the market rent above competitive levels. The housing authority bears the extra cost since tenants pay a fixed percentage of their income as rent.[1]

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[1]Rydell, et. al. (1980) find that Section 8 rental housing units experienced a 26 percent increase in rents after the introduction of "fair market" rent regulation. Weinberg (1981) argues that rent is only about 4 percent larger than MR for a small set of Section 8 rental housing units, but his findings are disputed by Rydell, et. al.

The independent variables chosen for the equation were based on the work of Struyk, et.al. (1980) and Malpezzi, et.al. (1980) who also developed hedonic regressions using AHS data. A set of 59 independent variables were chosen to represent SC, NC, L, and C. SC contains dummy variables representing 1) the number of bedrooms, 2) the number of bathrooms, 3) the number of other rooms, 4) the type of structure, 5) presence of air conditioning, 6) length of tenancy, 7) presence of an elevator, 8) age and age squared for the housing unit, etc. NC contains dummy variables representing 1) the tenant's assessment of neighborhood conditions, 2) percent of neighborhood residents who are Black, 3) presence of broken windows in the neighborhood, etc. L contains dummy variables representing 1) the 5 largest SMSA's, 2) the suburb or central city of the next 25 largest SMSA's, 3) the next 30 largest SMSA's as a group by region, 4) the remainder of SMSA's as a group by region, and 5) nonmetropolitan areas by region. C contains dummy variables indicating whether or not heat or other utilities were included in rent.

A regression equation was estimated using these variables for all non-subsidized renters with 1979 money incomes of less than $20,000 (a sample of 10,761 households).[2] The regression produced an R^2 of .58. Of the 59 independent variables from the AHS, 57 possessed the theoretically correct signs and 53 were significantly different from zero at the 95-percent confidence level.

After the equation was estimated, predicted MR's for each subsidized unit were computed. The subsidy (S) was then computed by subtracting the rent paid as reported on the AHS from the predicted MR's. An examination of these initial results showed that the predicted MR's were less than the actual rent paid for the public housing unit in about 26 percent of the cases. Only 10 percent of the units had subsidy values which exceeded -$50.

The resulting "negative" subsidies produced by these procedures may have resulted because the regression equation is a poor predictor of MR[3] or because the market rent of some public housing units may be less than the actual rent being paid. In some cases, such as older low-rent public housing program units (e.g., the Cabrini Project in Chicago) it may be possible that the rents being paid exceed the market rent of the unit.

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[2] Less than 7 percent of CPS subsidized units had 1979 annual money incomes over $15,000, and none had money incomes above $20,000. Including these units did not significantly affect the results of the regression, in any case.

[3] It would have been useful if information was available on the relationship between the tenant and the landlord. Over and above the length of tenancy (which has been controlled for), certain tenant-landlord relationships (relatives, "reciprocal arrangements" such as "apartment manager", etc.) may reduce predicted MR in the hedonic equations. However, if "reciprocal arrangements" such as these can be expected for public housing units should they suddenly be turned into private market rental units, or should some public housing tenants rely on housing owned by relatives, the omission of such information is much less damaging.

Following the analysis of these initial results, work was directed toward determining the reasons for the negative subsidies and developing an improved predictor equation. An examination of the characteristics of subsidized and unsubsidized housing units revealed some important systematic differences. Nonsubsidized units were more likely to lack central heating, running water, indoor toilet facilities, etc. Because of these differences, the MR equation was re-estimated excluding nonsubsidized units which had one or more of these "shortcomings." This new equation resulted in about the same proportion of negative subsidy values as the first equation (24 percent).

Further examination of the data indicated that estimating separate equations for housing units with and without utilities included in rent significantly reduced the proportion of negative subsidy values. It was found that while about two-thirds of the subsidized units paid rents which included heating expenses only or all utility expenses, only about one-third of the nonsubsidized units paid rents which included these expenses. This difference pointed to the development of separate equations for those with and without heat or other utilities included in rent. The results based on these equations are shown in table D-1.

The net result of the use of separate equations was to reduce the total proportion of subsidized units with negative subsidies from the original 26 percent to about 18 percent. In addition, the proportion of units with negative subsidies between $-1 and -$50 was reduced from 10 percent to 6 percent.

Over one half (55 percent) of the remaining 91 housing units with negative subsidies of greater than $50 per month were located in what appear to be public housing projects located in large, northern metropolitan areas, most of these within the central city. Assuming that the regression equations predict market rents accurately, the results imply that some public housing residents are worse off than if they had rented in the private market. Because this study assumes that public housing subsidies have nonnegative values, the negative subsidy values were changed to $0 when computing average subsidy values to be assigned to the CPS public housing units.

Table D-1. The Distribution of Estimated Subsidy Values for Public and Other Subsidized Rental Housing in 1979

(Unweighted sample cases)

Monthly Subsidy Values and Regression Results	Total	With Heat and Utilities Included in Rent	Without Heat and Utilities Included in Rent
DISTRIBUTION OF SUBSIDY VALUES			
Total	1,464	939	525
-$201 or more	1	0	1
-$101 to -$200	32	19	13
-$51 to -$100	58	26	32
-$1 to -$50	168	102	66
$0 to $50	266	166	100
$51 to $100	341	221	120
$101 to $200	533	371	162
$201 to $300	59	34	25
$301 or more	6	0	6
REGRESSION RESULTS			
R^2	(X)	.43	.47
Number of observations	(X)	2,731	5,455
Independent variables	(X)	59	59
Insignificant variables	(X)	6	8

X Not applicable.

Medicare. Computation of estimated market values (MV) for Medicare benefits required data from a number of sources. The basic equation for estimating MV for Medicare requires administrative data from the Department of Health and Human Services and survey data from the Health Care Finance Administration and the Bureau of the Census. The equation used was

$$MV_{ij} = \frac{EX_{ij} \times A \times CV}{C_{ij} \times CB_i} - SMIP \qquad (2)$$

where:

MV_{ij} = MV of Medicare including institutional care for beneficiary type i (i = elderly, non-elderly) in State j.

EX_{ij} = Total vendor payments including institutional care expenditures for beneficiary type i in State j for FY 1979.

A = The 3.4 percent administrative claims processing markup in FY 1979.

CV = The change in vendor payments between FY 1979 and calendar year (CY) 1979, about 5.8 percent.

C_{ij} = The total number of Medicare beneficiaries, including institutionalized and decedents of beneficiary type i in State j during FY 1979 as provided by HCFA.

CB_i = The change in number of beneficiaries between FY 1979 and CY 1979 for beneficiary type i, an increase of 11.2 percent for the non-elderly, and an increase of 5.7 percent for the elderly.

SMIP = The $101 for Medicare part B insurance premium.

Substituting these values into equation (2) yields the following formulae for elderly and non-elderly beneficiaries:

(2a) Elderly

$$MV_{1j} = \frac{EX_{1j}\ (1.034)(1.058)}{C_{1j}\ (1.057)} - 101$$

(2b) Non-elderly

$$MV_{2j} = \frac{EX_{2j}\ (1.034)(1.058)}{C_{2j}\ (1.112)} - 101$$

In summary, the HCFA FY 1979 estimates were transformed into CY 1979 estimates, the administrative costs were included, and the out-of-pocket premium expenses were deducted in arriving at MV for Medicare. The actual estimates of the MV_{ij}'s are presented in table D-2. To estimate the MV_{ij}'s for Medicare excluding institutional care benefits, the MV_{ij}'s are multiplied by the ratio of noninstitutional care expenditures to total Medicare expenditures. This ratio was .977 for 1979.

Table D-2. Estimated Annual Market Value of Medicare as Insurance for Each Medicare Beneficiary in 1979 Including Institutional Benefits, by Type of Beneficiary and State

State	Market value of Medicare	
	Elderly	Non-elderly
Total.....	$ 910	$ 1,177
Alabama.....	731	987
Alaska.....	1,076	1,442
Arizona.....	827	1,106
Arkansas.....	660	646
California.....	1,205	1,607
Colorado.....	868	1,175
Connecticut.....	965	1,407
Delaware.....	895	1,312
District of Columbia.	1,336	2,321
Florida.....	976	1,222
Georgia.....	669	936
Hawaii.....	892	1,583
Idaho.....	1,486	812
Illinois.....	1,053	1,514
Indiana.....	772	1,113

Table D-2. Estimated Annual Market Value of Medicare as Insurance for Each Medicare Beneficiary in 1979 Including Institutional Benefits, by Type of Beneficiary and State--Continued

State	Market value of Medicare	
	Elderly	Non-elderly
Iowa	751	1,079
Kansas	886	1,261
Kentucky	625	700
Louisiana	715	763
Maine	810	990
Maryland	1,113	1,662
Massachusetts	1,178	1,419
Michigan	1,138	1,523
Minnesota	807	1,199
Mississippi	642	716
Missouri	892	1,055
Montana	708	879
Nebraska	747	1,115
Nevada	1,144	1,637
New Hampshire	775	1,010
New Jersey	932	1,354
New Mexico	741	857
New York	1,017	1,203
North Carolina	630	902
North Dakota	861	1,128
Ohio	867	1,096
Oklahoma	766	858
Oregon	808	1,024
Pennsylvania	954	1,249
Rhode Island	1,030	1,223
South Carolina	571	745
South Dakota	658	838
Tennessee	698	873
Texas	840	1,157
Utah	666	993
Vermont	775	1,013
Virginia	739	1,053
Washington	732	981
West Virginia	664	621
Wisconsin	834	1,223
Wyoming	696	810

Medicaid. The insurance value of Medicaid was derived using a procedure similar to that used for Medicare. Separate equations were developed for persons receiving Medicaid only and receiving both Medicaid and Medicare.

Persons receiving Medicaid only

$$MV_{ij} = \frac{EX_{ij} \times A_j}{C_{ij}} \tag{3}$$

Persons receiving Medicaid and Medicare

$$MV_{ij} = \frac{EX_{ij} \times A_j}{C_{ij}} + SMIP \tag{4}$$

where:

MV_{ij} = Medicaid insurance value for beneficiary type i (elderly, disabled, adult, or child) in State (or State group) j ($j = 1,2,....36$)[4]

EX_{ij} = Total vendor payments including institutional care expenditures for beneficiary type i in State j for FY 1979.

C_{ij} = The larger number of either HCFA recipients or CPS covered population (plus institutionalized and decedents) for beneficiary type i in State j.

A_j = Administrative and processing markup in State j for 1978 (Health Care Finance Administration, 1980)

SMIP = SMI Part B premium paid on behalf of Medicare beneficiaries by Medicaid.

The estimates derived using these formulae are shown in table D-3.

4/ Relatively small populations were combined with other States, which reduced the number of separate groups to 36. (See table D-3.)

Table D-3. Estimated Annual Market Value of Medicaid as Insurance for Each Medicaid Beneficiary in 1979, Including Institutional Care Expenditures, by Type of Beneficiary and State

State or State group	Elderly[1] (age 65 and over)	Disabled[1] (blind or disabled)	Adult (age 21-64, nondisabled)	Child (age less than 21)
Total	$ 1,970	$ 2,522	$ 629	$ 329
Maine, New Hampshire, Vermont	2,316	1,950	529	289
Massachusetts	2,288	2,571	274	310
Rhode Island, Connecticut	3,515	2,932	714	357
New York	4,430 (H)	3,849	1,212 (H)	619 (H)
New Jersey	2,957	2,918	691	444
Pennsylvania	2,139	2,604	669	289
Ohio	1,756	2,796	699	287
Indiana	1,959	4,124	822	310
Illinois	2,647	3,305	563	379
Michigan	2,024	3,616	823	406
Wisconsin	2,348	4,229	526	352
Minnesota	2,857	4,918 (H)	694	421
Iowa	1,489	3,801	768	370
Missouri	882 (L)	1,705	487	221
North Dakota, South Dakota	1,666	3,691	529	356
Nebraska, Kansas	1,494	4,115	831	351
Delaware, Maryland, District of Columbia	2,033	1,834	762	451
Virginia	1,917	1,828	744	334
West Virginia	1,018	970	255 (L)	271
North Carolina	1,760	1,588	617	274
South Carolina	1,302	841	598	195
Georgia	1,331	1,861	718	284
Florida	1,041	730	334	152 (L)
Kentucky, Mississippi	1,023	779	488	219
Tennessee, Alabama	967	715 (L)	528	214
Arkansas, Oklahoma	1,486	2,461	567	324
Louisiana	1,220	2,034	394	206
Texas	1,901	2,961	487	198
Montana, Idaho, Wyoming	1,832	3,204	527	319
Colorado	1,909	3,437	846	363
New Mexico, Utah, Nevada	1,253	2,864	525	376
Arizona[2]	0	0	0	0
Washington	1,922	3,385	385	324
Oregon	2,117	2,769	460	231
California	1,513	1,707	622	393
Alaska, Hawaii	2,879	3,530	342	417

H = high estimate.
L = low estimate.

[1]Excludes SMI part B premium of $101 for Medicare-Medicaid enrollees.

[2]Arizona does not have a Medicaid program.

Table D-4 presents an estimate of the value of Medicaid for the elderly and disabled which excludes institutional care benefits. These estimates were derived by subtracting the expenditures for institutional care from total vendor payments in equations (3) and (4). The percent of the total value of Medicaid insurance which is for noninstitutional care is also shown for each State or State group.

Table D-4. Estimated Annual Market Value of Medicaid a
Medicaid Beneficiary in 1979, Excluding Ins
Type of Beneficiary and State

State or State group	Elderly[1]	
	Market value	Ratio to total MV[2]
Total	$ 418	.212
Maine, New Hampshire, Vermont	307	.133
Massachusetts	801	.350
Rhode Island, Connecticut	734	.209
New York	886	.200
New Jersey	368	.124
Pennsylvania	205	.096
Ohio	266	.151
Indiana	273	.139
Illinois	533	.201
Michigan	310	.153
Wisconsin	408	.174
Minnesota	384	.134
Iowa	258	.173
Missouri	225	.255
North Dakota, South Dakota	196	.118
Nebraska, Kansas	239	.160
Delaware, Maryland, District of Columbia	519	.255
Virginia	383	.200
West Virginia	316	.310
North Carolina	479	.272
South Carolina	214	.164
Georgia	332	.249
Florida	346	.332
Kentucky, Mississippi	273	.267
Tennessee, Alabama	231	.239
Arkansas, Oklahoma	342	.230
Louisiana	366	.300
Texas	403	.212
Montana, Idaho, Wyoming	268	.146
Colorado	286	.150
New Mexico, Utah, Nevada	225	.180
Arizona	(NA)	(NA)
Washington	405	.211
Oregon	300	.142
California	514	.340
Alaska, Hawaii	524	.182

NA Not applicable.

[1]No adjustment was made for adult or child benefici

[2]Ratio of MV of Medicaid insurance excluding instit
tures to MV including institutional care expenditu

RECIPIENT VALUES

The estimates of recipient value shown in this report were derived using the normal expenditures approach. Both the 1979 AHS and 1972-73 CEX were used as sources of expenditure data because the CPS does not collect these data. Two procedures for estimating normal expenditures were examined. These were a regression approach and a cell-matching approach. In the regression approach, the first step is to develop an equation which estimates the normal expenditure based on characteristics of the consumer unit using the AHS or CEX. The independent variables were restricted to those available from the CPS. The second step is to use this equation to estimate the level of normal expenditures on the CPS. In the cell-matching approach average expenditures are tabulated within cells of a matrix which defined unique cross-classifications of consumer units from the AHS and CEX. The socioeconomic variables used to define these cells were also restricted to those available from the CPS. These average values are assigned to each CPS unit from the cell defined by that unit's unique set of characteristics. Both regression and cell-matching approaches were used in this study to estimate normal expenditures for food, housing, and medical care. Because the regression approaches proved to be unsatisfactory for housing and medical expenditures, the cell-matching approach was used to assign recipient values to the CPS file for food, housing, and medical benefits in order to be consistent.

Food transfers. The regression equation used to estimate normal expenditures for food followed the work of Smolensky and Van Der Gaag (1980). The dependent variable was defined to include all food for home consumption, the value of homegrown food, and one-half of restaurant expenditures.[5] The independent variables included 1) the number and age of children, 2) age and sex of the householder, 3) household size, and 4) level of money income. Households receiving food stamps or food commodities were excluded from the data base. The 1972-73 food expenditure and income data were adjusted to reflect 1979 prices.

The results of the regression for food expenditures were satisfactory (R^2 = .45), with the coefficients for most variables having the expected sign and being significant at the 95-percent confidence level. The RV-CE benefit weights based on this equation were, on average, about 98 percent of the market value. Even though the regression results were satisfactory, the cell matching approach was chosen to provide the final RV-CE estimates in order to be consistent with the procedures used for medical and housing. (See table D-5.) The overall RV-CE benefit weight from the cell matching was 96 percent compared to the 98 percent for the regression method.

5/ The inclusion of all restaurant expenses assumes perfect substitution between food stamps and these expenditures. The exclusion of restaurant expenditures altogether assumes no substitution. In theory, the income and substitution effects between food stamps and restaurant meals move in opposite directions. Food stamps reduce the price of food consumed at home (implying lower restaurant expenditures) but increase total income which should increase restaurant expenditures (assuming that restaurant meals are a normal good).

Table D-5. Normal Expenditure Values for Food Used in the Computation of RV-CE by Age of Householder and Size of Household for 1979

(Numbers in dollars)

Total Household income	Householder age less than 35 years old			Householder age 35 years old and over				
	1 Person	2 Persons	3 Persons or more	1 Person	2 Persons	3 Persons	4 Persons	5 Persons or more
Under $1,250.....	363	747	847	835	1,514	2,529	2,760	3,398
$1,250 to $2,499.....	428	528	738	956	1,591	1,691	2,658	3,160
$2,500 to $3,749.....	672	833	933	984	1,474	2,226	2,516	3,722
$3,750 to $4,999.....	775	892	925	1,123	1,956	2,651	2,624	3,400
$5,000 to $6,249.....	723	1,316	1,082	1,159	1,974	2,947	3,162	3,561
$6,250 to $7,499.....	716	1,270	1,679	1,262	1,875	2,558	3,156	3,337
$7,500 to $8,749.....	701	1,552	1,834	1,534	1,975	2,752	2,836	2,431
$8,750 to $9,999.....	733	1,401	2,215	1,494	1,925	2,287	2,992	3,670
$10,000 to $11,249...	859	1,012	2,389	1,463	2,281	2,325	2,340	3,614
$11,250 to $12,499...	959	1,611	2,486	1,347	2,408	2,543	3,360	4,165
$12,500 to $13,749...	1,626	1,505	2,355	1,388	2,191	2,514	3,011	3,796
$13,750 to $14,999...	1,201	1,641	2,095	1,405	2,235	3,198	3,412	3,586
$15,000 or more.....	1,293	1,919	2,878	1,757	2,693	3,436	4,002	4,681

Housing transfers. The regression equation used to estimate the normal expenditures for housing required a subset of the 1979 AHS data file restricted to unsubsidized units with incomes of less than $20,000 (later analysis indicated that excluding renters with incomes above $20,000 did not affect the results of the RV-CE determination process). Separate equations were developed for the elderly (age 62 and over) and nonelderly. The dependent variable was the annualized market rent (monthly rent x 12). As with the subsidized units, some of these unsubsidized units had heat included in rent. The independent variables for the equation for the nonelderly included number of children, number of adults, family size, sex of householder, level of pre-tax money income, and geographical location. The variable for the elderly included marital status and sex of householder, level of pre-tax income, and geographical location.

The results of these regressions were less satisfactory than the regression results for food expenditures (R^2 = .26 for the elderly and .18 for the nonelderly). Several of the independent variables had the expected sign and were significantly different from zero, but many more did not perform as expected.

Given the relatively poor fit indicated by these results for housing (and even poorer results for medical transfers as discussed later) the cell matching procedure was used in favor of the regression approach. Average market rents (normal expenditures) were tabulated for cells defined by family size, age of householder, and level of pre-tax income. (See table D-6.) A second tabulation further subdivided by geographical location was made in order to provide indexes for adjusting rents for geographical differences. (See table D-7.) These market rents were compared to the market value of the housing subsidy plus the subsidized rent paid by public housing residents in order to arrive at average RV-CE amounts as described in chapter 5.

Medical transfers. The regression equations used to estimate normal expenditures for medical care were developed from the 1972-73 CEX. Separate equations were developed for consumer units with householders over and under 65 years of age. Consumer units whose medical bills were paid in full by an employer or union, Medicaid recipients, and most other public health care transfer beneficiaries (e.g., Veteran's medical beneficiaries) were excluded from the data base. As noted in chapter 5, Medicare recipients were not excluded. The dependent variable was annual medical expenses in 1972-73 adjusted to 1979 price levels. For the under 65 year old group the independent variables were family size, sex of householder, level of family income, presence of children, and geographical location. The independent variables for the over 65 year old group excluded the presence of children variable but all others mentioned for the under 65 year old group were used.

The results of the regressions for medical care expenditures were unsatisfactory (R^2 = .07 for the under 65 year old group and .08 for the over 65 year old group). Based on these poor results, a cell matching procedure was used to estimate normal expenditures for medical care. (See table D-8.) Adjustments were made to account for geographical differences in the price of

Table D-6. Normal Expenditures Values for Housing Used in the Computation of RV-CE by Age of Householder and Size of Household

(Numbers in dollars)

Total household income	Householder 62 years old and over		Householder under 62 years old			
	1 Person	2 Persons or more	1 Person	2 Persons	3 and 4 Persons	5 Persons or more
Under $1,250.....	1,559	1,564	2,084	2,179	2,666	2,660
$1,250 to $2,499.....	1,375	1,664	1,769	2,067	2,083	2,083
$2,500 to $3,749.....	1,578	1,744	1,941	2,045	2,136	2,136
$3,750 to $4,999.....	1,906	1,962	1,997	2,233	2,281	2,461
$5,000 to $6,249.....	2,238	2,185	2,092	2,231	2,271	2,279
$6,250 to $7,499.....	2,204	2,286	2,114	2,296	2,426	2,327
$7,500 to $8,749.....	2,328	2,356	2,418	2,418	2,473	2,417
$8,750 to $9,999.....	2,543	2,566	2,511	2,549	2,532	2,482
$10,000 to $11,249...	2,427	3,115	2,449	2,673	2,623	2,587
$11,250 to $12,499...	2,802	2,858	2,493	2,645	2,663	2,713
$12,500 to $13,749...	2,565	2,734	2,639	2,729	2,584	2,806
$13,750 to $14,999...	3,100	2,934	2,676	2,761	2,817	3,111
$15,000 or more.....	3,166	2,934	2,790	2,784	2,947	2,832

Table D-7. Price Adjustment Factors for Adjustment of Normal Expenditures for Housing

Residence and region	Householder 62 years old and over		Householder under 62 years old			
	1 Person	2 Persons or more	1 Person	2 Persons	3 and 4 Persons	5 Persons or more
Inside Metropolitan Areas						
Northeast.....	1.12	1.09	1.00	.99	1.01	1.08
North Central.....	.93	.95	.89	.90	.90	.95
South.....	.83	.80	.89	.90	.83	.79
West.....	1.09	1.09	1.23	1.32	1.32	1.31
Outside Metropolitan Areas						
Northeast.....	1.36	1.34	1.12	1.11	1.13	1.21
North Central.....	1.06	1.09	.95	.97	.97	1.02
South.....	.65	.69	.81	.82	.76	.70
West.....	1.20	1.20	1.30	1.40	1.40	1.38

Table D-8. Normal Expenditure Values for Medical Care Used in the Calculation of RV-CE by Age or Disability Status of the Householder and Size of Household

(Numbers in 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 $11,249...	684	868	302	585	652	637	675
$11,250 to $12,499...	718	862	309	588	655	662	721
$12,500 to $13,749...	738	1,060	299	606	662	588	712
$13,750 to $14,999...	695	1,070	290	601	661	582	715
$15,000 or more.....	753	1,202	375	678	803	867	926

Table D-9. Price Adjustment Factors for Adjustment of Normal Expenditures for Medical Care

Region	Price Adjustment Factor
Relative price factor.....	1.103
Regional Price Factors	
New England.....	.960
Middle Atlantic.....	1.040
East North Central.....	1.080
West North Central.....	.990
South Atlantic.....	1.020
East South Central.....	.940
West South Central.....	.970
Mountain.....	.950
Pacific, excluding Hawaii and Alaska..	1.010
Alaska and Hawaii.....	1.240

medical care. (See table D-9.) These values were assigned to units on the March CPS file in a manner similar to that used for food and housing benefits.

Poverty Budget Shares

The calculation of the poverty budget shares (PBS) requires the estimation of the amount of expenditures for food, housing, and medical care for persons at or near the poverty level. These estimates were based on expenditure and pre-tax income data from the 1960-61 CEX. The PBS ratios developed in this study are shown in tables D-10 and D-11. The poverty thresholds for each group were multiplied by these ratios to approximate the dollar values of the poverty budget shares for food, housing, and medical care. The data on medical care expenditures from the 1972-73 CEX shown in table D-11 were not used in the determination of PBS values but were included for illustrative purposes.

Table D-10. Poverty Budget Shares for Food and Housing: 1960-61 CEX

Family size and age	Food	Housing		
	$\frac{FY}{PL}$[1]	$\frac{HY}{PL}$[1]	$\frac{HC}{PL}$[2]	Average
1 person:				
Under 65 years.....	33.3	40.0	38.7	39.4
65 to 74 years.....	33.3	40.2	31.6	35.9
75 years and older.....	33.3	42.1	33.8	38.0
2 persons:				
Under 65 years.....	33.3	35.6	29.5	32.6
65 to 74 years.....	33.3	35.7	29.1	32.4
75 years and older.....	33.3	37.0	29.0	33.0
3 persons.....	33.3	30.7	24.8	27.8
4 persons.....	33.3	23.7	22.6	23.2
5 persons.....	33.3	20.8	20.2	20.4
6 persons or more[3].....	33.3	17.3	17.0	17.2

[1]Food (FY) and housing (HY) expenses calculated relative to the pre-tax money income level closest to the poverty line (PL).

[2]Housing (HC) expenses calculated relative to the level of current consumption expenditures closest to the poverty line.

[3]Calculated at the simple average poverty line for families of six and families of seven or more persons.

Table D-11. Poverty Budget Shares for Medical Care: 1960-61 and 1972-73 CEX

Family size and age	1960-61 CEX			1972-73 CEX		
	$\frac{MY}{PL}$[1]	$\frac{MC}{PL}$[2]	Average	$\frac{MY}{PL}$[1]	$\frac{MC}{PL}$[2]	Average
Total.....	5.4	6.7	6.1	3.6	5.1	4.4
1 person:						
Under 65 years.....	6.1	6.7	6.4	5.4	3.4	4.4
65 to 74 years.....	11.2	10.3	10.8	12.7[3]	10.1	11.4
75 years and over...	11.5	10.6	11.1			
2 persons:						
Under 65 years.....	8.8	6.3	7.4	8.0	3.9	6.0
65 to 74 years.....	10.9	10.4	10.7	10.3[3]	10.2	10.3
75 years and over...	12.4	11.7	12.1			
3 persons.....	8.9	7.5	8.2	5.7	4.8	5.3
4 persons.....	8.1	6.6	7.4	5.4	3.4	4.4
5 persons.....	6.8	5.1	6.0	5.7	5.0	5.4
6 persons or more[4].....	5.9	5.3	5.6	5.0	4.5	4.8

[1]Medical care expenditures (MY) (other than Medicare premiums in 1972-73) relative to the pre-tax income level closest to the poverty line.

[2]Medical care expenditures (MC) as above, but relative to the level of current consumption expenditures closest to the poverty line.

[3]The estimates for 1972-73 are for those 65 or older.

[4]Calculated at the simple average poverty line for families of six and families of seven or more.

Appendix E. The Use of the Normal Expenditures Approach to Approximate Cash Equivalent Value: Theoretical Discussion

Use of the normal expenditures approach to estimate cash equivalent value (RV-CE) may result in either an overestimate or an underestimate of the "true" but unknown RV-CE. Two factors are important in determining the net effect of the bias caused by the normal expenditures approach: (1) the shape of the utility function implied by the normal expenditures approach as compared to its "true" but unknown shape; and (2) the process of calculating normal expenditures at a "total" income level which includes cash income plus the market value (MV) of all in-kind transfers.

Figure E-1 shows the relationship between the estimated RV-CE based on normal expenditures and the true RV-CE for one in-kind benefit. Assume that a household initially is at utility level U_0 tangent to the budget constraint AD (the money income budget constraint) prior to receiving the in-kind transfer. Receipt of the in-kind transfer shifts the budget constraint to ABS.[1] The normal expenditures approach indicates the level of expenditure on the subsidized good for a household with total cash income (OG), equal to the sum of money income (OA) and the MV of the in-kind benefit (AG) received by a person with similar characteristics. A person with total cash income of OG would face budget constraint GBS and would consume OL units of the subsidized good to attain utility level U_S. However, the portion of this budget constraint above B (GB) is not applicable to the recipient of the in-kind benefit, since the subsidized good cannot be exchanged for other goods.

Assume that the true (but unknown) utility curve for the household is U_C, which touches ABS at point B. If the household consumes OL units of the subsidized good, the amount of cash income which maintains the same level of utility is determined by the budget constraint which is parallel to GBS, tangent to U_C, and passes through point P on the AB portion of the budget frontier. This budget constraint (RC) implies that the RV-CE of the in-kind transfer is equal to DC.[2] Since this amount is also equal to the level of normal expenditures (OL=AP), the normal expenditures approach (in this case) provides an accurate estimate of the RV-CE. This result will only obtain when the utility curve implied by the normal expenditures approach (U_C) is equal to the true but unknown utility curve.

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[1]This analysis applies to food and medical care benefits. The analysis is slightly different for public housing benefits because the recipient must pay some rent. The difference between the two classes of goods, however, is mainly quantitative.

[2]Note that the cash equivalent value of the in-kind benefit (DC) is less than the market value of the benefit (DS) because the household is assumed to normally consume less of the good (OL) than provided by the benefit (AB or DS).

Figure E

Use of

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If the utility curves are shaped differently than U_C, the normal expenditures approach will result in a biased estimate of RV-CE. If the utility curve is shaped like U_C', the normal expenditures approach understates the true RV-CE which is equal to DC'. However, if the utility curve was shaped like U_C'', the normal expenditures approach overstates the true RV-CE which is equal to DC". Because the true utility curve is unknown, the accuracy of the normal expenditures approach in estimating the true RV-CE cannot be determined.

The second factor which may bias the estimation of RV-CE is the calculation of normal expenditures at an income level which includes the MV of all in-kind benefits. This factor may be quantitatively more important than the implied shape of the utility surface, since many poor families receive more than one in-kind transfer. Of all poor households receiving in-kind transfer benefits in 1979, 62 percent received more than one type; in fact, 31 percent received three or more benefits (U.S. Bureau of the Census, 1980). For these households, there is particular concern about the calculation of normal expenditures at a "total" income level which includes the MV of all in-kind transfers. Normal expenditures should be calculated at an income level which includes the RV-CE of all in-kind transfers. However, because true RV-CE of all in-kind benefits can only be determined in a simultaneous fashion, it is not possible to utilize such a measure. If RV-CE is less than the MV of the transfer, the normal expenditures approach will produce an overestimate of the income effect from the in-kind benefit, resulting in an overestimate of the true RV-CE. Moreover, this bias will likely be larger for households receiving more than one in-kind transfer, since multiple transfers with RV-CE below the MV will lead to multiple overstatements of the income effect.[3]

The importance of these potential biases for different groups of goods is not known. The MV equals RV-CE for most households receiving food transfers, indicating that the normal expenditure levels for food are in excess of the MV of food transfers (i.e., the normal expenditure levels for food are somewhere along BS in figure E-1). Thus, if food transfers are one of several benefits received, inclusion of the MV of food in total income should not seriously bias the estimate of RV-CE for other in-kind benefits.[4] If the RV-CE of the in-kind benefit is substantially below the MV, as in the case of medical care transfers, inclusion of the MV of these benefits in total income

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[3]The final outcome also depends on the shape of the utility curves as well. For instance, if the shape of the "true" utility curve is similar to U_C' in figure E-1, the normal expenditure estimate leads to an underestimate of the true RV-CE. On the other hand, if this family is a multiple benefit recipient, calculation of normal expenditures using the full MV of in-kind benefits leads to an overstatement. The net effect of these biases cannot be determined.

[4]Even if normal expenditures are based on money income only, the RV-CE for food transfers is still very close to the MV. In contrast, normal expenditures on medical care are very sensitive to the income level at which they are calculated.

can bias the estimation of normal expenditures for other benefits as well. Although the shape of the utility curve which represents recipient's marginal rate of substitution between health care (or housing) and other goods is unknown, the income effect from including the MV of medical transfers (or housing benefits) in total income definitely overstates the "income" level at which normal expenditures should be calculated. This is particularly true in cases where medical care benefits are defined to include institutional care benefits, where it has been shown that RV-CE is quite low relative to MV. In summary, the normal expenditures method for estimating RV-CE provides only an approximation of the true RV-CE, which in turn may be higher or lower than those found in this report. As noted in chapter 5, however, the RV-CE values estimated for 1979 are generally consistent with those estimated by other researchers using different approaches and different data bases.

Appendix F. Detailed Poverty Status Table

Table F-1. Poverty Status in 1979 of Households Using Money Income and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics

(HOUSEHOLDS AS OF MARCH 1980. HOUSEHOLDS ARE CLASSIFIED ACCORDING TO THE POVERTY STATUS OF THE FAMILY OR THE NONFAMILY HOUSEHOLDER. FOR MEANING OF SYMBOLS, SEE TEXT)

SELECTED CHARACTERISTICS	ALL HOUSEHOLDS	BELOW 100 PERCENT OF THE POVERTY LEVEL								BELOW 125 PERCENT OF THE POVERTY LEVEL							
		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT	
	(THOUS)	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE
VALUING FOOD AND HOUSING ONLY																	
TOTAL	79 108	9 549	12.1	8 286	10.5	8 411	10.6	8 703	11.0	13 714	17.3	12 877	16.3	12 948	16.4	13 232	16.7
TYPE OF RESIDENCE																	
INSIDE METROPOLITAN AREAS	54 051	5 872	10.9	5 016	9.3	5 106	9.4	5 299	9.8	8 481	15.7	7 878	14.6	7 921	14.7	8 142	15.1
INSIDE CENTRAL CITIES	23 705	3 578	15.1	2 952	12.5	3 019	12.7	3 169	13.4	5 022	21.2	4 605	19.4	4 639	19.6	4 807	20.3
OUTSIDE CENTRAL CITIES	30 346	2 295	7.6	2 064	6.8	2 087	6.9	2 130	7.0	3 459	11.4	3 273	10.8	3 282	10.8	3 335	11.0
OUTSIDE METROPOLITAN AREAS	25 057	3 677	14.7	3 270	13.1	3 305	13.2	3 404	13.6	5 233	20.9	4 999	20.0	5 027	20.1	5 089	20.3
REGION																	
NORTHEAST	17 447	1 899	10.9	1 569	9.0	1 582	9.1	1 676	9.6	2 844	16.3	2 614	15.0	2 618	15.0	2 727	15.6
NORTH CENTRAL	20 933	2 231	10.7	1 954	9.3	1 980	9.5	2 062	9.9	3 201	15.3	3 022	14.4	3 047	14.6	3 104	14.8
SOUTH	25 523	3 905	15.3	3 415	13.4	3 499	13.7	3 567	14.0	5 281	20.7	5 019	19.7	5 059	19.8	5 102	20.0
WEST	15 205	1 514	10.0	1 349	8.9	1 350	8.9	1 398	9.2	2 388	15.7	2 223	14.6	2 223	14.6	2 298	15.1
RACE AND SPANISH ORIGIN OF HOUSEHOLDER[1]																	
WHITE	69 454	6 846	9.9	6 074	8.7	6 150	8.9	6 340	9.1	10 237	14.7	9 681	13.9	9 725	14.0	9 913	14.3
BLACK	8 405	2 515	29.9	2 042	24.3	2 091	24.9	2 188	26.0	3 211	38.2	2 950	35.1	2 977	35.4	3 064	36.5
SPANISH ORIGIN	3 730	779	20.9	636	17.1	647	17.3	668	17.9	1 068	28.6	1 000	26.8	1 002	26.9	1 020	27.3
TYPE OF HOUSEHOLD																	
FAMILY HOUSEHOLDS	58 426	5 320	9.1	4 511	7.7	4 575	7.8	4 684	8.0	7 586	13.0	7 077	12.1	7 121	12.2	7 196	12.3
MARRIED-COUPLE FAMILIES	48 180	2 573	5.3	2 287	4.7	2 305	4.8	2 328	4.8	4 080	8.5	3 875	8.0	3 888	8.1	3 914	8.1
MALE HOUSEHOLDER, NO WIFE PRESENT	1 706	172	10.1	155	9.1	155	9.1	158	9.3	265	15.5	250	14.7	250	14.7	254	14.9
FEMALE HOUSEHOLDER, NO HUSBAND PRESENT	8 540	2 575	30.2	2 069	24.2	2 115	24.8	2 198	25.7	3 241	38.0	2 952	34.6	2 983	34.9	3 029	35.5
NONFAMILY HOUSEHOLDS	20 682	4 229	20.4	3 775	18.3	3 836	18.5	4 018	19.4	6 129	29.6	5 800	28.0	5 827	28.2	6 036	29.2
MALE HOUSEHOLDER	8 594	1 256	14.6	1 164	13.5	1 173	13.6	1 201	14.0	1 756	20.4	1 686	19.6	1 690	19.7	1 731	20.1
FEMALE HOUSEHOLDER	12 088	2 974	24.6	2 611	21.6	2 663	22.0	2 817	23.3	4 373	36.2	4 114	34.0	4 137	34.2	4 305	35.6
AGE OF HOUSEHOLDER																	
15 TO 24 YEARS	6 398	1 183	18.5	1 075	16.8	1 080	16.9	1 105	17.3	1 545	24.1	1 488	23.3	1 496	23.4	1 512	23.6
25 TO 34 YEARS	17 900	1 802	10.1	1 526	8.5	1 562	8.7	1 595	8.9	2 496	13.9	2 323	13.0	2 346	13.1	2 357	13.2
35 TO 44 YEARS	13 904	1 237	8.9	1 010	7.3	1 032	7.4	1 053	7.6	1 664	12.0	1 539	11.1	1 545	11.1	1 563	11.2
45 TO 54 YEARS	12 581	1 053	8.4	931	7.4	935	7.4	959	7.6	1 441	11.5	1 359	10.8	1 364	10.8	1 382	11.0
55 TO 64 YEARS	12 177	1 349	11.1	1 207	9.9	1 223	10.0	1 248	10.2	1 830	15.0	1 752	14.4	1 758	14.4	1 794	14.7
65 YEARS AND OVER	16 149	2 926	18.1	2 538	15.7	2 579	16.0	2 742	17.0	4 738	29.3	4 416	27.3	4 438	27.5	4 624	28.6
SIZE OF HOUSEHOLD																	
1 PERSON	17 816	3 762	21.1	3 323	18.7	3 385	19.0	3 562	20.0	5 500	30.9	5 180	29.1	5 206	29.2	5 411	30.4
2 PERSONS	24 734	2 111	8.5	1 905	7.7	1 927	7.8	1 980	8.0	3 086	12.5	2 959	12.0	2 965	12.0	3 018	12.2
3 PERSONS	13 845	1 144	8.3	943	6.8	957	6.9	986	7.1	1 616	11.7	1 484	10.7	1 499	10.8	1 523	11.0
4 PERSONS	12 470	1 086	8.7	930	7.5	943	7.6	961	7.7	1 499	12.0	1 389	11.1	1 402	11.2	1 406	11.3
5 PERSONS	5 996	679	11.3	571	9.5	579	9.7	587	9.8	938	15.6	870	14.5	876	14.6	875	14.6
6 PERSONS	2 499	352	14.1	286	11.4	287	11.5	292	11.7	522	20.9	482	19.3	484	19.4	484	19.4
7 PERSONS OR MORE	1 748	417	23.9	327	18.7	333	19.1	335	19.2	554	31.7	514	29.4	516	29.5	515	29.5
PRESENCE OF CHILDREN 5 TO 18 YEARS OLD																	
1 CHILD	12 446	1 326	10.7	1 138	9.1	1 152	9.3	1 184	9.5	1 801	14.5	1 657	13.3	1 665	13.4	1 693	13.6
2 CHILDREN	9 297	978	10.5	813	8.7	830	8.9	847	9.1	1 368	14.7	1 242	13.4	1 255	13.5	1 264	13.6
3 CHILDREN	3 809	610	16.0	488	12.8	493	12.9	499	13.1	809	21.2	759	19.9	766	20.1	769	20.2
4 CHILDREN	1 312	300	22.9	239	18.2	245	18.7	246	18.8	407	31.0	371	28.3	373	28.4	371	28.3
5 CHILDREN OR MORE	690	249	36.1	188	27.2	191	27.7	195	28.3	320	46.4	291	42.2	293	42.5	291	42.2
WORK EXPERIENCE IN 1979 OF HOUSEHOLDER																	
WORKED	58 749	3 739	6.4	3 303	5.6	3 335	5.7	3 387	5.8	5 572	9.5	5 233	8.9	5 266	9.0	5 314	9.0
40 WEEKS OR MORE	50 515	1 757	3.5	1 541	3.1	1 554	3.1	1 561	3.1	2 898	5.7	2 703	5.4	2 727	5.4	2 739	5.4
27 TO 39 WEEKS	3 369	470	14.0	416	12.3	423	12.6	424	12.6	705	20.9	661	19.6	665	19.7	670	19.9
14 TO 26 WEEKS	2 778	720	25.9	653	23.5	657	23.7	674	24.3	1 021	36.8	959	34.5	960	34.6	978	35.2
13 WEEKS OR LESS	2 087	792	37.9	693	33.2	700	33.5	727	34.8	948	45.4	910	43.6	914	43.8	927	44.4
DID NOT WORK	19 599	5 787	29.5	4 964	25.3	5 055	25.8	5 295	27.0	8 069	41.2	7 582	38.7	7 618	38.9	7 655	40.1
TENURE																	
OWNER-OCCUPIED	53 830	4 305	8.0	4 063	7.5	4 064	7.5	4 069	7.6	6 458	12.0	6 311	11.7	6 311	11.7	6 311	11.7
RENTER-OCCUPIED	23 849	4 850	20.3	3 851	16.1	3 975	16.7	4 259	17.9	6 720	28.2	6 041	25.3	6 111	25.6	6 395	26.8
OCCUPIER PAID NO CASH RENT	1 429	394	27.6	371	26.0	372	26.0	375	26.2	536	37.5	525	36.7	525	36.7	526	36.8

[1]PERSONS OF SPANISH ORIGIN MAY BE OF ANY RACE.

Table F-1. Poverty Status in 1979 of Households Using Money Income and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics—Continued

(HOUSEHOLDS AS OF MARCH 1980. HOUSEHOLDS ARE CLASSIFIED ACCORDING TO THE POVERTY STATUS OF THE FAMILY OR THE NONFAMILY HOUSEHOLDER. FOR MEANING OF SYMBOLS, SEE TEXT)

SELECTED CHARACTERISTICS	ALL HOUSEHOLDS	BELOW 100 PERCENT OF THE POVERTY LEVEL								BELOW 125 PERCENT OF THE POVERTY LEVEL							
		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT	
	(THOUS)	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE
VALUING FOOD, HOUSING, AND ALL MEDICAL BENEFITS																	
TOTAL	79 108	9 549	12.1	5 337	6.7	6 910	8.7	7 752	9.8	13 714	17.3	8 989	11.4	11 285	14.3	12 479	15.8
TYPE OF RESIDENCE																	
INSIDE METROPOLITAN AREAS	54 051	5 872	10.9	3 266	6.0	4 244	7.9	4 738	8.8	8 481	15.7	5 475	10.1	6 867	12.7	7 650	14.2
INSIDE CENTRAL CITIES	23 705	3 578	15.1	1 844	7.8	2 481	10.5	2 804	11.8	5 022	21.2	3 137	13.2	4 039	17.0	4 523	19.1
OUTSIDE CENTRAL CITIES	30 346	2 295	7.6	1 421	4.7	1 763	5.8	1 934	6.4	3 459	11.4	2 339	7.7	2 829	9.3	3 128	10.3
OUTSIDE METROPOLITAN AREAS	25 057	3 677	14.7	2 071	8.3	2 666	10.6	3 014	12.0	5 233	20.9	3 514	14.0	4 418	17.6	4 829	19.3
REGION																	
NORTHEAST	17 447	1 899	10.9	870	5.0	1 246	7.1	1 454	8.3	2 844	16.3	1 599	9.2	2 231	12.8	2 551	14.6
NORTH CENTRAL	20 933	2 231	10.7	1 239	5.9	1 596	7.6	1 835	8.8	3 201	15.3	2 091	10.0	2 609	12.5	2 941	14.0
SOUTH	25 523	3 905	15.3	2 297	9.0	2 925	11.5	3 208	12.6	5 281	20.7	3 730	14.6	4 561	17.9	4 890	19.2
WEST	15 205	1 514	10.0	931	6.1	1 143	7.5	1 255	8.3	2 388	15.7	1 570	10.3	1 885	12.4	2 097	13.8
RACE AND SPANISH ORIGIN OF HOUSEHOLDER[1]																	
WHITE	69 454	6 846	9.9	3 964	5.7	5 023	7.2	5 628	8.1	10 237	14.7	6 709	9.7	8 371	12.1	9 307	13.4
BLACK	8 405	2 515	29.9	1 241	14.8	1 728	20.6	1 957	23.3	3 211	38.2	2 083	24.8	2 693	32.0	2 930	34.9
SPANISH ORIGIN	3 730	779	20.9	425	11.4	557	14.9	602	16.1	1 068	28.6	730	19.6	931	25.0	987	26.5
TYPE OF HOUSEHOLD																	
FAMILY HOUSEHOLDS	58 426	5 320	9.1	3 101	5.3	3 860	6.6	4 231	7.2	7 586	13.0	5 334	9.1	6 345	10.9	6 882	11.8
MARRIED-COUPLE FAMILIES	48 180	2 573	5.3	1 629	3.4	1 911	4.0	2 093	4.3	4 080	8.5	2 877	6.0	3 409	7.1	3 717	7.7
MALE HOUSEHOLDER, NO WIFE PRESENT	1 706	172	10.1	118	6.9	135	7.9	146	8.6	265	15.5	197	11.5	231	13.5	247	14.5
FEMALE HOUSEHOLDER, NO HUSBAND PRESENT	8 540	2 575	30.2	1 354	15.9	1 814	21.2	1 991	23.3	3 241	38.0	2 259	26.5	2 705	31.7	2 918	34.2
NONFAMILY HOUSEHOLDS	20 682	4 229	20.4	2 235	10.8	3 050	14.7	3 521	17.0	6 129	29.6	3 655	17.7	4 940	23.9	5 597	27.1
MALE HOUSEHOLDER	8 594	1 256	14.6	852	9.9	1 025	11.9	1 103	12.8	1 756	20.4	1 255	14.6	1 516	17.6	1 650	19.2
FEMALE HOUSEHOLDER	12 088	2 974	24.6	1 383	11.4	2 025	16.8	2 418	20.0	4 373	36.2	2 400	19.9	3 424	28.3	3 947	32.7
AGE OF HOUSEHOLDER																	
15 TO 24 YEARS	6 398	1 183	18.5	922	14.4	1 012	15.8	1 051	16.4	1 545	24.1	1 359	21.2	1 455	22.7	1 500	23.4
25 TO 34 YEARS	17 900	1 802	10.1	1 198	6.7	1 426	8.0	1 495	8.4	2 496	13.9	2 033	11.4	2 257	12.6	2 314	12.9
35 TO 44 YEARS	13 904	1 237	8.9	778	5.6	961	6.9	1 010	7.3	1 664	12.0	1 304	9.4	1 453	10.5	1 517	10.9
45 TO 54 YEARS	12 581	1 053	8.4	694	5.5	844	6.7	883	7.0	1 441	11.5	1 109	8.8	1 299	10.3	1 356	10.8
55 TO 64 YEARS	12 177	1 349	11.1	883	7.3	1 093	9.0	1 175	9.6	1 830	15.0	1 320	10.8	1 612	13.2	1 734	14.2
65 YEARS AND OVER	16 149	2 926	18.1	862	5.3	1 574	9.7	2 138	13.2	4 738	29.3	1 864	11.5	3 210	19.9	4 058	25.1
SIZE OF HOUSEHOLD																	
1 PERSON	17 816	3 762	21.1	1 858	10.4	2 631	14.8	3 087	17.3	5 500	30.9	3 117	17.5	4 339	24.4	4 982	28.0
2 PERSONS	24 734	2 111	8.5	1 242	5.0	1 509	6.1	1 727	7.0	3 086	12.5	1 964	7.9	2 460	9.9	2 829	11.4
3 PERSONS	13 845	1 144	8.3	658	4.8	820	5.9	899	6.5	1 616	11.7	1 133	8.2	1 362	9.8	1 457	10.5
4 PERSONS	12 470	1 086	8.7	709	5.7	863	6.9	893	7.2	1 499	12.0	1 179	9.5	1 330	10.7	1 372	11.0
5 PERSONS	5 996	679	11.3	418	7.0	514	8.6	549	9.2	938	15.6	756	12.6	846	14.1	863	14.4
6 PERSONS	2 499	352	14.1	219	8.8	263	10.5	276	11.0	522	20.9	396	15.8	454	18.2	474	19.0
7 PERSONS OR MORE	1 748	417	23.9	233	13.3	310	17.7	319	18.2	554	31.7	446	25.5	493	28.2	502	28.7
PRESENCE OF CHILDREN 5 TO 18 YEARS OLD																	
1 CHILD	12 446	1 326	10.7	851	6.8	1 029	8.3	1 088	8.7	1 801	14.5	1 373	11.0	1 567	12.6	1 654	13.3
2 CHILDREN	9 297	978	10.5	606	6.5	740	8.0	787	8.5	1 368	14.7	1 042	11.2	1 195	12.9	1 231	13.2
3 CHILDREN	3 809	610	16.0	347	9.1	443	11.6	473	12.4	809	21.2	646	17.0	730	19.2	754	19.8
4 CHILDREN	1 312	300	22.9	175	13.3	221	16.8	233	17.8	407	31.0	319	24.3	352	26.8	361	27.5
5 CHILDREN OR MORE	690	249	36.1	117	17.0	176	25.5	186	27.0	320	46.4	240	34.8	278	40.3	286	41.4
WORK EXPERIENCE IN 1979 OF HOUSEHOLDER																	
WORKED	58 749	3 739	6.4	2 862	4.9	3 123	5.3	3 218	5.5	5 572	9.5	4 709	8.0	5 021	8.5	5 182	8.8
40 WEEKS OR MORE	50 515	1 757	3.5	1 399	2.8	1 480	2.9	1 507	3.0	2 898	5.7	2 481	4.9	2 606	5.2	2 676	5.3
27 TO 39 WEEKS	3 369	470	14.0	368	10.9	399	11.8	407	12.1	705	20.9	594	17.6	635	18.8	654	19.4
14 TO 26 WEEKS	2 778	720	25.9	530	19.1	602	21.7	629	22.6	1 021	36.8	863	31.1	930	33.5	961	34.6
13 WEEKS OR LESS	2 087	792	37.9	564	27.0	642	30.8	675	32.3	948	45.4	771	36.9	850	40.7	891	42.7
DID NOT WORK	19 599	5 787	29.5	2 458	12.5	3 768	19.2	4 513	23.0	8 069	41.2	4 219	21.5	6 200	31.6	7 234	36.9
TENURE																	
OWNER-OCCUPIED	53 830	4 305	8.0	2 534	4.7	3 268	6.1	3 644	6.8	6 458	12.0	4 260	7.9	5 380	10.0	5 892	10.9
RENTER-OCCUPIED	23 849	4 850	20.3	2 530	10.6	3 321	13.9	3 761	15.8	6 720	28.2	4 310	18.1	5 420	22.7	6 083	25.5
OCCUPIER PAID NO CASH RENT	1 429	394	27.6	273	19.1	321	22.5	347	24.3	536	37.5	419	29.3	485	33.9	504	35.3

[1]PERSONS OF SPANISH ORIGIN MAY BE OF ANY RACE.

Table F-1. Poverty Status in 1979 of Households Using Money Income and Alternative Methods of Valuing Noncash Benefits, by Selected Characteristics—Continued

(HOUSEHOLDS AS OF MARCH 1980. HOUSEHOLDS ARE CLASSIFIED ACCORDING TO THE POVERTY STATUS OF THE FAMILY OR THE NONFAMILY HOUSEHOLDER. FOR MEANING OF SYMBOLS, SEE TEXT)

SELECTED CHARACTERISTICS	ALL HOUSEHOLDS	BELOW 100 PERCENT OF THE POVERTY LEVEL								BELOW 125 PERCENT OF THE POVERTY LEVEL							
		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT		CURRENT MONEY INCOME CONCEPT		MARKET VALUE CONCEPT		RECIPIENT AND/OR CASH EQUIVALENT CONCEPT		POVERTY BUDGET SHARES CONCEPT	
	(THOUS)	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE	NUMBER (THOUS)	POVERTY RATE
VALUING FOOD, HOUSING, AND MEDICAL BENEFITS, EXCLUDING INSTITUTIONAL EXPENDITURES																	
TOTAL	79 108	9 549	12.1	5 551	7.0	7 403	9.4	7 752	9.8	13 714	17.3	9 631	12.2	11 597	14.7	12 479	15.8
TYPE OF RESIDENCE																	
INSIDE METROPOLITAN AREAS	54 051	5 872	10.9	3 392	6.3	4 555	8.4	4 738	8.8	8 481	15.7	5 770	10.7	7 078	13.1	7 650	14.2
INSIDE CENTRAL CITIES	23 705	3 578	15.1	1 918	8.1	2 688	11.3	2 804	11.8	5 022	21.2	3 320	14.0	4 190	17.7	4 523	19.1
OUTSIDE CENTRAL CITIES	30 346	2 295	7.6	1 473	4.9	1 867	6.2	1 934	6.4	3 459	11.4	2 450	8.1	2 888	9.5	3 128	10.3
OUTSIDE METROPOLITAN AREAS	25 057	3 677	14.7	2 159	8.6	2 848	11.4	3 014	12.0	5 233	20.9	3 861	15.4	4 519	18.0	4 829	19.3
REGION																	
NORTHEAST	17 447	1 899	10.9	914	5.2	1 366	7.8	1 454	8.3	2 844	16.3	1 702	9.8	2 311	13.2	2 551	14.6
NORTH CENTRAL	20 933	2 231	10.7	1 274	6.1	1 737	8.3	1 835	8.8	3 201	15.3	2 225	10.6	2 695	12.9	2 941	14.0
SOUTH	25 523	3 905	15.3	2 407	9.4	3 093	12.1	3 208	12.6	5 281	20.7	4 077	16.0	4 669	18.3	4 890	19.2
WEST	15 205	1 514	10.0	956	6.3	1 205	7.9	1 255	8.3	2 388	15.7	1 627	10.7	1 922	12.6	2 097	13.8
RACE AND SPANISH ORIGIN OF HOUSEHOLDER[1]																	
WHITE	69 454	6 846	9.9	4 099	5.9	5 364	7.7	5 628	8.1	10 237	14.7	7 169	10.3	8 589	12.4	9 307	13.4
BLACK	8 405	2 515	29.9	1 315	15.6	1 878	22.3	1 957	23.3	3 211	38.2	2 257	26.9	2 786	33.1	2 930	34.9
SPANISH ORIGIN	3 730	779	20.9	439	11.8	604	16.2	602	16.1	1 068	28.6	768	20.6	951	25.5	987	26.5
TYPE OF HOUSEHOLD																	
FAMILY HOUSEHOLDS	58 426	5 320	9.1	3 185	5.5	4 112	7.0	4 231	7.2	7 586	13.0	5 525	9.5	6 476	11.1	6 882	11.8
MARRIED-COUPLE FAMILIES	48 180	2 573	5.3	1 662	3.4	1 996	4.1	2 093	4.3	4 080	8.5	2 989	6.2	3 445	7.2	3 717	7.7
MALE HOUSEHOLDER, NO WIFE PRESENT	1 706	172	10.1	128	7.5	139	8.1	146	8.6	265	15.5	213	12.5	237	13.9	247	14.5
FEMALE HOUSEHOLDER, NO HUSBAND PRESENT	8 540	2 575	30.2	1 395	16.3	1 977	23.1	1 991	23.3	3 241	38.0	2 323	27.2	2 794	32.7	2 918	34.2
NONFAMILY HOUSEHOLDS	20 682	4 229	20.4	2 366	11.4	3 291	15.9	3 521	17.0	6 129	29.6	4 106	19.9	5 120	24.8	5 597	27.1
MALE HOUSEHOLDER	8 594	1 256	14.6	879	10.2	1 060	12.3	1 103	12.8	1 756	20.4	1 350	15.7	1 555	18.1	1 650	19.2
FEMALE HOUSEHOLDER	12 088	2 974	24.6	1 487	12.3	2 231	18.5	2 418	20.0	4 373	36.2	2 756	22.8	3 565	29.5	3 947	32.7
AGE OF HOUSEHOLDER																	
15 TO 24 YEARS	6 398	1 183	18.5	929	14.5	1 052	16.4	1 051	16.4	1 545	24.1	1 369	21.4	1 468	22.9	1 500	23.4
25 TO 34 YEARS	17 900	1 802	10.1	1 210	6.8	1 524	8.5	1 495	8.4	2 496	13.9	2 047	11.4	2 291	12.8	2 314	12.9
35 TO 44 YEARS	13 904	1 237	8.9	795	5.7	984	7.1	1 010	7.3	1 664	12.0	1 334	9.6	1 486	10.7	1 517	10.9
45 TO 54 YEARS	12 581	1 053	8.4	718	5.7	865	6.9	883	7.0	1 441	11.5	1 165	9.3	1 327	10.5	1 356	10.8
55 TO 64 YEARS	12 177	1 349	11.1	925	7.6	1 122	9.2	1 175	9.6	1 830	15.0	1 390	11.4	1 648	13.5	1 734	14.2
65 YEARS AND OVER	16 149	2 926	18.1	973	6.0	1 856	11.5	2 138	13.2	4 738	29.3	2 326	14.4	3 377	20.9	4 058	25.1
SIZE OF HOUSEHOLD																	
1 PERSON	17 816	3 762	21.1	1 975	11.1	2 864	16.1	3 087	17.3	5 500	30.9	3 545	19.9	4 515	25.3	4 982	28.0
2 PERSONS	24 734	2 111	8.5	1 297	5.2	1 617	6.5	1 727	7.0	3 086	12.5	2 072	8.4	2 521	10.2	2 829	11.4
3 PERSONS	13 845	1 144	8.3	674	4.9	883	6.4	899	6.5	1 616	11.7	1 191	8.6	1 401	10.1	1 457	10.5
4 PERSONS	12 470	1 086	8.7	719	5.8	910	7.3	893	7.2	1 499	12.0	1 198	9.6	1 348	10.8	1 372	11.0
5 PERSONS	5 996	679	11.3	427	7.1	535	8.9	549	9.2	938	15.6	769	12.8	854	14.2	863	14.4
6 PERSONS	2 499	352	14.1	225	9.0	268	10.7	276	11.0	522	20.9	403	16.1	459	18.4	474	19.0
7 PERSONS OR MORE	1 748	417	23.9	233	13.3	326	18.6	319	18.2	554	31.7	452	25.9	498	28.5	502	28.7
PRESENCE OF CHILDREN 5 TO 18 YEARS OLD																	
1 CHILD	12 446	1 326	10.7	874	7.0	1 077	8.7	1 088	8.7	1 801	14.5	1 411	11.3	1 600	12.9	1 654	13.3
2 CHILDREN	9 297	978	10.5	621	6.7	790	8.5	787	8.5	1 368	14.7	1 063	11.4	1 220	13.1	1 231	13.2
3 CHILDREN	3 809	610	16.0	354	9.3	472	12.4	473	12.4	809	21.2	654	17.2	744	19.5	754	19.8
4 CHILDREN	1 312	300	22.9	176	13.4	228	17.4	233	17.8	407	31.0	323	24.6	354	27.0	361	27.5
5 CHILDREN OR MORE	690	249	36.1	117	17.0	190	27.5	186	27.0	320	46.4	247	35.8	283	41.0	286	41.4
WORK EXPERIENCE IN 1979 OF HOUSEHOLDER																	
WORKED	58 749	3 739	6.4	2 894	4.9	3 211	5.5	3 218	5.5	5 572	9.5	4 766	8.1	5 079	8.6	5 182	8.8
40 WEEKS OR MORE	50 515	1 757	3.5	1 413	2.8	1 500	3.0	1 507	3.0	2 898	5.7	2 505	5.0	2 632	5.2	2 676	5.3
27 TO 39 WEEKS	3 369	470	14.0	371	11.0	411	12.2	407	12.1	705	20.9	602	17.9	646	19.2	654	19.4
14 TO 26 WEEKS	2 778	720	25.9	538	19.4	625	22.5	629	22.6	1 021	36.8	876	31.5	941	33.9	961	34.6
13 WEEKS OR LESS	2 087	792	37.9	572	27.4	676	32.4	675	32.3	948	45.4	784	37.6	860	41.2	891	42.7
DID NOT WORK	19 599	5 787	29.5	2 640	13.5	4 172	21.3	4 513	23.0	8 069	41.2	4 802	24.5	6 453	32.9	7 234	36.9
TENURE																	
OWNER-OCCUPIED	53 830	4 305	8.0	2 672	5.0	3 437	6.4	3 644	6.8	6 458	12.0	4 637	8.6	5 423	10.1	5 892	10.9
RENTER-OCCUPIED	23 849	4 850	20.3	2 605	10.9	3 628	15.2	3 761	15.8	6 720	28.2	4 551	19.1	5 686	23.8	6 083	25.5
OCCUPIER PAID NO CASH RENT	1 429	394	27.6	273	19.1	338	23.7	347	24.3	536	37.5	443	31.0	488	34.1	504	35.3

[1]PERSONS OF SPANISH ORIGIN MAY BE OF ANY RACE.

Appendix G. Source and Reliability of the Estimates

INTRODUCTION

The estimates in this report are based directly on the March 1980 Current Population Survey (CPS) or on a combination of data from other surveys, administrative sources, and the March 1980 CPS. The CPS is a monthly survey which deals mainly with labor force data for the civilian noninstitutional population. In March the monthly labor force questions are supplemented with questions covering money income and noncash benefits received during the previous calendar year.

The present CPS sample was initially selected from the 1970 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 629 areas comprising 1,133 counties, independent cities and minor civil divisions in the Nation. In this sample, approximately 68,000 occupied households were eligible for interview. Of this number, about 2,900 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.

The estimation procedure used in the CPS involved the inflation of the weighted sample results to independent estimates of the total civilian noninstitutional population of the United States by age, race, and sex. These independent estimates were based on statistics from the 1970 Census of Population; statistics on births, deaths, immigration and emigration; and statistics on the strength of the Armed Forces.

Since the CPS estimates and other estimates derived from survey data are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaires, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey--sampling and nonsampling. Standard errors primarily indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in the data. The full extent of nonsampling error is generally 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.

NONSAMPLING ERROR

Nonsampling errors are particularly important in surveys of income and expenditures, such as those used in this study. Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all

cases in the sample, definitional difficulties, differences in th tation of questions, inability or unwillingness on the part of t ents to provide correct information, inability to recall informa made in collection such as in recording or coding the data, err processing the data, errors made in estimating values for missin failure to represent all units with the sample (undercoverage).

In the case of income and expenditures underreporting or r are the most serious nonsampling errors. A detailed discussion porting and nonreporting of money income data can be found in Curr tion Reports, Series P-60, No. 129, page 292. A discussion of problems for noncash benefit data has already been covered in ap this report. Details on the nonsampling errors for the 1972- Expenditure Survey data can be found in Technical Paper No. 45, T Consumer Expenditure Survey: A Preliminary Evaluation.

SAMPLING VARIABILITY

Standard errors, such as those shown in the following tabl March 1980 CPS, are primarily measures of sampling variability, t variation that occurred by chance because a sample rather than population was surveyed. The sample estimate and its estimat error enable the construction of confidence intervals, ranges include the average result of all possible samples with a known p For example, if all possible samples were selected, each of tho under the same conditions, and an estimate and estimated standard calculated from each sample, approximately 68 percent of the int one standard error below the estimate to one standard error abov mate would include the average result of all possible samples. A figure could be expected if the confidence interval were increa standard errors.

Tables G-1 through G-4 contain standard errors for the estima and percentages of persons and households below the poverty le standard errors apply directly to the estimates of poverty base income alone derived from the March 1980 CPS.

Use of these tables to estimate standard errors on the numb cent of persons and households below the poverty level based on c of money income and the value of in-kind benefits may be less a These standard errors should, however, provide some guidance whe the results. While ordinarily the standard errors are an essent in analyses of the income and poverty data published by the B exploratory nature of this work, the use of data from many sourc various assumptions made in the valuation methodologies make th errors much less significant in examining the differences noted the report.

Table G-1. Standard Errors of Estimated Numbers Below the Poverty Level for Total or White: 1979

(Numbers in thousands)

Size of estimate	Standard error for persons		Standard error for households
	Total	65 years and over	
100.....	28	17	14
250.....	45	27	22
500.....	63	38	31
1,000.....	89	54	44
2,500.....	140	82	72
5,000.....	197	108	106
10,000.....	276	128	162
25,000.....	423	(X)	307
50,000.....	566	(X)	532
100,000.....	696	(X)	973

X Not applicable.

Table G-2. Standard Errors of Estimated Numbers Below the Poverty Level for Blacks: 1979

(Numbers in thousands)

Size of estimate	Standard error for persons		Standard error for households
	Total	65 years and over	
100.....	28	17	14
250.....	44	25	22
500.....	62	33	31
1,000.....	88	37	44
2,500.....	135	(X)	72
5,000.....	182	(X)	106
10,000.....	229	(X)	(X)
15,000.....	242	(X)	(X)

X Not applicable.

Table G-4. Standard Errors of Estimated Percentages of Households Below the Poverty Level: 1979

Base of estimated percentage (thousands)	Estimated percentage				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75.....	2.2	3.4	4.7	6.8	7.9
100.....	1.9	3.0	4.1	5.9	6.8
250.....	1.2	1.9	2.6	3.8	4.3
500.....	0.9	1.3	1.8	2.7	3.1
1,000.....	0.6	0.9	1.3	1.9	2.2
2,500.....	0.4	0.6	0.8	1.2	1.4
5,000.....	0.3	0.4	0.6	0.8	1.0
10,000.....	0.2	0.3	0.4	0.6	0.7
25,000.....	0.1	0.2	0.3	0.4	0.4
50,000.....	0.09	0.1	0.2	0.3	0.3

Table G-3. Standard Errors of Estimated Percentages of Persons Below the Poverty Level: 1979

Base of estimated percentage (thousands)	Estimated percentage				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75.....	4.6	7.1	9.8	14.1	16.3
100.....	3.9	6.1	8.5	12.2	14.1
250.....	2.5	3.9	5.3	7.7	8.9
500.....	1.8	2.7	3.8	5.5	6.3
1,000.....	1.2	1.9	2.7	3.9	4.5
2,500.....	0.8	1.2	1.7	2.4	2.8
5,000.....	0.6	0.9	1.2	1.7	2.0
10,000.....	0.4	0.6	0.8	1.2	1.4
25,000.....	0.2	0.4	0.5	0.8	0.9
50,000.....	0.2	0.3	0.4	0.5	0.6
100,000....	0.12	0.2	0.3	0.4	0.4

Appendix H. 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.

Money income. Income distributions and income summary measures (such as medians and means) shown in this report are limited to money income before payment of Federal, State, local, or Social Security (FICA) taxes and before any other types of deductions, such as union dues and Medicare premiums. 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 losses) and lump sum or one-time payments such as life insurance settlements are excluded.

Underreporting. As in most household surveys, the estimates of the number of money income recipients and the total amount of money income derived from the March CPS are somewhat less than comparable estimates derived from independent sources, such as the Bureau of Economic Analysis, Social Security Administration, and Veterans Administration. The difference between the survey estimate and the independent estimate is generally termed "underreporting." Underreporting tends to be more pronounced for income sources such as public assistance and welfare, unemployment compensation, and property income (interest, dividends, and net rental income). Estimates of income from wages and salaries tend to have less underreporting than most income types. For 1978 (the latest year for which estimates of underreporting are available), underreporting of wage and salary income was only about 3 percent, compared with 41 percent for unemployment compensation and 24 percent for public assistance. For total money income, underreporting was about 10 percent. For further details concerning the reporting of money income, see Current Population Reports, Series P-60, No. 123.

Poverty (low-income) classification. In this report, households are classified as being above or below the poverty level using the poverty index developed at the Social Security Administration in 1964 and revised by a Federal Interagency Committee in 1969. It should be noted that this index is based solely on money income and does not reflect the fact that many persons are receiving noncash benefits such as those described in this report. 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, sex and age of the family householder, and farm-nonfarm

residence. 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 relatively larger fixed expenses of these smaller households. Households are classified according to the poverty status of the family or the nonfamily householder. The poverty thresholds are updated every year to reflect changes in the annual average Consumer Price Index (CPI). The average poverty threshold for a nonfarm family of four was $7,412 in 1979. For further details, see Current Population Reports, Series P-60, No. 130.

Household. A household consists of all persons who occupy a housing unit. A house, an apartment or other group of rooms, or a single room is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is either (1) direct access from the outside or through a common hall or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

A household includes the related family members and all the unrelated persons, if any, such as lodgers, foster children, wards, or employees who share the housing unit as partners are also counted as a household. The count of households excludes group quarters.

Appendix I. Poverty Thresholds: 1979

Table I-1. Income Thresholds at the Poverty Level in 1979, by Size and Type of Family, Number of Related Children Under 18 Years Old, and Farm-Nonfarm Residence

Size of family unit	Number of related children under 18 years old						
	None	1	2	3	4	5	6 or more
NONFARM							
Families With Female Householder, No Husband Present							
1 person (unrelated individual):							
Under 65 years.....	$ 3,619						
65 years and over.....	3,469						
2 persons:							
Householder under 65 years....	4,519	$ 4,934					
Householder 65 years and over.	4,336	4,934					
3 persons.....	5,510	5,249	$ 5,805				
4 persons.....	7,208	7,467	7,433	$ 7,355			
5 persons.....	8,651	8,912	8,874	8,801	$ 8,504		
6 persons.....	10,094	10,278	10,205	10,130	9,798	$ 9,500	
7 or more persons.....	12,680	12,866	12,828	12,717	12,386	12,128	$11,535
All Other Families							
1 person (unrelated individual):							
Under 65 years.....	3,912						
65 years and over.....	3,515						
2 persons:							
Householder under 65 years....	4,891	5,479					
Householder 65 years and over.	4,392	5,479					
3 persons.....	5,694	5,879	6,213				
4 persons.....	7,506	7,617	7,355	7,727			
5 persons.....	9,059	9,168	8,874	8,651	8,837		
6 persons.....	10,391	10,425	10,205	9,983	9,687	9,836	
7 or more persons.....	13,086	13,199	12,939	12,717	12,424	11,978	11,868

Table I-1. Income Thresholds at the Poverty Level in 1979, by Size and Type of Family, Number of Related Children Under 18 Years Old, and Farm-Nonfarm Residence--Continued

Size of family unit	Number of related children under 18 years old						
	None	1	2	3	4	5	6 or more
FARM							
Families With Female Householder No Husband Present							
1 person (unrelated individual):							
Under 65 years.....	$ 3,076						
65 years and over.....	2,948						
2 persons:							
Householder under 65 years....	3,841	$ 4,194					
Householder 65 years and over.	3,686	4,194					
3 persons.....	4,682	4,462	$ 4,935				
4 persons.....	6,129	6,346	6,318	$ 6,251			
5 persons.....	7,353	7,575	7,542	7,480	$ 7,229		
6 persons.....	8,581	8,737	8,675	8,612	8,329	$ 8,076	
7 or more persons.....	10,776	10,938	10,905	10,811	10,528	10,308	$ 9,805
All Other Families							
1 person (unrelated individual):							
Under 65 years.....	3,324						
65 years and over.....	2,988						
2 persons:							
Householder under 65 years....	4,156	4,656					
Householder 65 years and over.	3,732	4,656					
3 persons.....	4,840	4,997	5,281				
4 persons.....	6,382	6,476	6,251	6,568			
5 persons.....	7,701	7,794	7,542	7,353	7,511		
6 persons.....	8,832	8,861	8,675	8,486	8,234	8,360	
7 or more persons.....	11,126	11,220	11,000	10,811	10,561	10,182	10,089

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