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GAO

Report to Congressional Requesters

September 1987

NONCASH BENEFITS

Methodological Review of Experimental Valuation Methods Indicates Many Problems Remain

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Program Evaluation and
Methodology Division

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September 30, 1987

The Honorable William D. Ford
Chairman, Committee on Post Office
and Civil Service
House of Representatives

The Honorable Mervyn Dymally
Chairman, Subcommittee on Census
and Population
Committee on Post Office and Civil
Service
House of Representatives

The Honorable Constance A. Morella
Ranking Minority Member
Subcommittee on Census and
Population
House of Representatives

In response to your March 18, 1985, letter, this report focuses on efforts by the Bureau of the Census to estimate income and poverty by using alternative methods for determining the value of noncash benefits such as food stamps and medical care. As you know, the basis on which poverty is counted can affect many federal programs and millions of people. How the cash values for noncash benefits should be assigned has been controversial.

As you requested, we examined in depth the Census Bureau's experimental valuation methods and developed a general approach for use in assessing new proposals to change the poverty indicator. As for the Census Bureau's methods themselves, we presented preliminary empirical findings in our report entitled Noncash Benefits: Initial Results Show That Valuation Methods Differentially Affect the Poor (GAO/PEMD-87-7BR, October 26, 1986).

In this report, we present our general approach for assessing new proposals and additional findings with regard to the Census Bureau's experimental valuation methods. These include our empirical examination, for the first time, of some special concerns with the valuation of health benefits.

As we arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from its date. We will then send copies to the departments of Commerce, Agriculture, Housing and Urban Development, and Health and Human Services and to experts in poverty measurement. We will also make copies available to others upon request. Please call me (202-275-1854) or Lois-ellin Datta (202-275-1370) if you need further information.

Eleanor Chelimsky
Director

Executive Summary

Purpose

Increasingly, the poor have been receiving federal assistance through goods and services rather than cash. These goods and services have not been counted in the cash-only method the Bureau of the Census uses for measuring income and poverty.

The Subcommittee on Census and Population of the House Committee on Post Office and Civil Service asked GAO to examine the ways in which proposals to change how poverty is measured have been assessed in the past, to identify and examine specific concerns that have been raised about the Census Bureau's alternative methods for measuring noncash benefits, and to develop and test a general assessment approach for evaluating future proposals. In October 1986, GAO responded in a report (GAO/PEMD-87-7BR) to the first two areas of the request.

In the present report, GAO presents its general assessment approach and illustrates its application to a single method (the market value method) across several benefit areas (food, housing, medical care) and a single benefit area (medical care) across two methods (market value and recipient value).

Background

In response to congressional interest, the Census Bureau has developed three experimental methods for placing cash values on noncash benefits. The methods differ primarily in whether the cash value assigned to a benefit is based on what it would cost to buy the benefits (market value method), what it is worth to the recipient (recipient value method) or what percentage of a poor family's budget is spent on the benefit (poverty budget share method). The Census Bureau publishes annually the national poverty rates that result from applying these three methods. Depending on the income definition and valuation method used, adding "cashed out" benefits to the official cash-only data reduces the poverty rate and can change the reported income distribution among the poor.

The Census Bureau's methods have generated many concerns. GAO previously abstracted 23 central issues, based on 66 specific concerns, including those identified by the Census Bureau and experts at its December 1985 conference on the measurement of noncash benefits. Many of the concerns involved possible effects, and few had been examined empirically for the actual magnitude of the problems identified. Of the 23 issues, 21 could be subjected to such tests. GAO examined 11 of these within the time and data available.

Results in Brief

GAO found that although there were many criticisms and concerns raised about methods for valuing noncash benefits, no general systematic approach to assessing these methods was available. Therefore, GAO developed an assessment approach that can be applied to methods using income-based definitions of poverty.

GAO's three-part evaluation approach calls first for the identification of specific concerns with a given method in terms of each of five questions: (1) What is the basis for defining income? (2) Are the methods valid? (3) Do the values that are assigned accurately represent the benefits that are received? (4) What is the quality of the data and analytic procedures used to derive benefit values? (5) Are definitions used consistently across key steps of poverty measurement? Second, an empirical examination of these concerns is conducted, using as indicators changes in poverty rates, the identification of subgroups differentially affected, an index of dispersion of changes in poverty-gap distributions, and the average assigned benefit. The third part of the approach brings together the conceptual and empirical results in an overall judgment about the method being evaluated.

The execution of this approach revealed the importance of doing this kind of empirical assessment. GAO found that 10 of the 11 issues examined empirically have sizable effects and 8 of these were in the direction of either reclassifying persons as nonpoor or misclassifying persons out of poverty when in fact they were not. These analyses also show that blacks, persons in families headed by women, and the elderly are particularly likely to be affected by these problems. Since the Census Bureau does not publish information about the size and direction of such effects in its estimates, policy analyses using the Census Bureau's estimates can be misleading as to how many people, and who, are no longer considered to be poor as a result of the inclusion of noncash benefits.

Principal Findings

Market Value Method

GAO's analysis of the market value method revealed three types of problems. First, conceptual choices about which benefits to include in the definition of income can affect the poverty rate by as much as 4.7 percentage points, reclassifying up to 11 million persons as no longer in

poverty. Because the Bureau of the Census offers no theoretical rationale for these decisions, it is not possible to say which definition of income is most appropriate for measuring poverty. However, GAO's statistical evidence strongly suggests that some decisions do not reflect improvements in the measurement of the economic well-being of the poor. For example, when medical care is included in the income definition using the market value method, many can be reported as catapulted out of poverty. (See pages 38-40.)

Second, GAO's analyses show that the validity of the method and accuracy of the benefit values that are assigned are influenced by methodological choices in carrying out poverty calculations. The Census Bureau's choices influence the poverty rate by 0.9 to 1.2 percentage points, reclassifying an estimated 1.7 to 2.5 million more individuals as no longer in poverty relative to other legitimate methods based on different decision rules.[1] (See pages 42-47.)

Third, methodological flaws resulting from problems of data quality—such as the misreporting of participation in the food stamp program—overestimate the poverty rate by as much as 0.6 percentage points (about 1.4 million persons nationally misclassified as poor). However, errors stemming from inaccuracies in the way benefits are derived and assigned underestimate the poverty rate by as much as 2.1 percentage points (about 4.1 million persons nationally misclassified as nonpoor). Further, adjustments to account for invalidity in the methods used to establish poverty thresholds could decrease the poverty rate by 3.2 percentage points (affecting 7.5 million persons nationally) or increase it by as much as 6.6 percentage points (affecting 15.4 million persons nationally). The analyses also revealed differential subgroup effects, increased dispersion (that is, there was a disruption in persons' relative positions within the poverty gap distribution), and generally higher benefit levels with the Census Bureau's methods. (See pages 40-42 and 46-48.)

Medical Benefits

For the market value method, when the empirical effects of selected conceptual and methodological choices under the five assessment questions were aggregated, about 3 million persons were found to be reclassified as poor, as compared to the Census Bureau's poverty estimates using the same method. Differential subgroup effects, increased dispersion, and generally higher benefit levels were found for the market

[1]Projected national poverty estimates are reported for illustrative purposes only and are based on results from four states (California, Georgia, Michigan, and Tennessee).

value method. For example, the average medical benefit imputed to individuals by the Census Bureau was $2,454 in 1982, while GAO's composite figure was $957. (See page 50.)

GAO examined several methodological flaws related to the valuation of medical benefits under the recipient value method. These included problems with the validity of the method and selectivity bias. The aggregate empirical effect of these flaws misclassified about 260,000 persons nationally, with no notable dispersion problems. Differential subgroup effects and generally higher benefit values with the Census Bureau's recipient value method were, however, noted. (See page 57.)

Recommendations

GAO recommends that the secretary of the Department of Commerce direct the director of the Census Bureau to conduct a more comprehensive examination of the problems with the Census Bureau's valuation methods, especially those involving medical benefits, giving full consideration to GAO's assessment approach. GAO also recommends that the Census Bureau fully disclose in its publications the magnitude of the effects of these problems.

Agency Comments and GAO's Response

The Department of Commerce, commenting on a draft of this report, commended GAO for providing useful quantitative information on poverty estimates based on different, legitimate methods for valuing noncash benefits. However, they believe that differences between the GAO and the Census Bureau estimates should not be viewed as over- or underestimates of poverty. GAO maintains that some of the problems that were detected are produced by biases in the measurement process. GAO distinguishes between differences resulting from choices involved in conceptual definitions and computational procedures and those resulting from methodological flaws. Based on measurement theory, the latter produce estimates that are known to bias poverty statistics. In some cases, these biases overestimate or underestimate the measured level of poverty.

Department of Commerce comments and GAO's responses are contained in chapter 5 and appendix VII.

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Abbreviations

CPS	Current population survey
GAO	General Accounting Office
HCFA	Health Care Finance Administration
ISDP	Income Survey Development Program
OMB	Office of Management and Budget
USDA	Department of Agriculture

Introduction

Every year, the Office of Management and Budget (OMB) establishes the annual income figures that officially define poverty in the United States—that is, OMB states a threshold below which people are "poor" and above which they are "not poor." Shortly thereafter, the Bureau of the Census determines the percentage of families and individuals whose incomes are below this "poverty line." The figure it reports is the official poverty rate for the United States.[1]

The official poverty rate is used as a barometer of the nation's economic and social well-being. That is, a rise in the number who are poor is often interpreted as reason for concern, a decline as evidence of progress. Local poverty rates are a key factor in the allocation formulas of some federally funded programs. The Maternal and Child Health Services block grants and the Head Start program are among them. The poverty lines are also used to determine an individual's eligibility for social programs, including WIC, or the Special Supplemental Food Program for Women, Infants, and Children.

The income that officially defines poverty has been measured since 1964 in terms of cash income only. It includes earned income: wages, salaries, income derived from rents, interest, and so on and cash transfers from government assistance programs. Public and private noncash benefits are not included in the calculation. However, federal assistance to the poor has increasingly taken the form of noncash benefits. Food stamps, school lunches, housing assistance, and Medicare and Medicaid are among them. In 1960, nearly 75 percent of all federal public assistance was in the form of cash. In 1985, cash accounted for only about 25 percent.

Today, therefore, there is considerable interest in reexamining and possibly revising the way poverty is officially measured in this country. In 1980, the Congress urged the Census Bureau to develop a method of placing a cash value on noncash benefits and to include this value in its annual estimate of the number of persons in poverty. In 1982, the Census Bureau published estimates of poverty that it had based on three experimental methods for valuing noncash benefits. These are referred to as the "market value," "recipient value," and "poverty budget share" methods.

[1]OMB establishes the poverty lines by annually updating the thresholds developed by Orshansky (1964) according to changes in the consumer price index. For 1984, OMB had 48 thresholds, each one established for a different configuration of family size and composition.

The market value method takes the value of noncash benefits to be equal in cash to what it would cost a person to buy the same goods and services in the private market. The recipient value method attempts to state a beneficiary's own valuation of benefits. That is, the recipient value is intended to be equivalent to the cash that a person would give in trade for a noncash benefit. The poverty budget share method limits noncash benefit values to the observed consumption levels of corresponding goods and services of people who are not receiving public assistance but who are near the poverty line. (These three methods and their history are explained further in appendix II.)

Adding to the official cash-only income measure a cash value for benefits derived by any one of these methods can reduce the reported poverty rate notably. In 1985, for example, 14.0 percent of the population was below the poverty line, according to the official cash-only method, but this figure fell to between 12.8 percent and 9.1 percent, according to the Census Bureau's experimental methods. That is, depending on the valuation method, between 2.7 million and 11.5 million fewer people were identified as poor when cash values for food, housing assistance, and medical assistance were added to income. The question is whether the different estimates accurately represent the well-being of the poor—and, therefore, constitute improvements in how poverty data are reported—or are merely the result of factors associated with the methods and do not, after all, indicate a real change in the poverty rate.

Objectives, Scope, and Methodology

Objectives

The House Committee on Post Office and Civil Service and its Subcommittee on Census and Population asked us to examine the Census Bureau's experimental valuation methods and the poverty estimates resulting from their application. Specifically, we were asked to

1. examine methods that have been applied in the past to assessing changes in poverty indicators and thresholds;

2. analyze, in depth, the technical aspects of alternative ways of valuing noncash benefits, particularly health benefits, including those in the

"Smeeding formulas" (that is, the Census Bureau's experimental methods); and

3. develop and test an approach for assessing future changes to the poverty indicators and thresholds; identify what is important in reviewing new indicators to ensure a full, fair, and adequate evaluation of changes; and specify the questions that should be asked of those who propose new indicators, particularly about the evidence they present for their proposals.[2]

We were asked to provide preliminary reports on our study, which we did in hearings before the Subcommittee on Census and Population and in two briefing reports in April and October 1986.[3] On October 31, 1985, in testimony before the Subcommittee on Census and Population, we reported that our review of the poverty measurement literature revealed that

1. 52 conceptual and technical concerns had been raised about poverty measurement in general and about the Census Bureau's methods of valuing noncash benefits in particular and

2. much of the discussion on measuring poverty had been devoted to conceptual and technical concerns about proposed valuation methods, about the definition of income, and about the poverty threshold.

Despite this extensive list of concerns, little or no empirical testing had been performed to establish exactly how the Census Bureau's experimental methods would affect the nation's statistics on poverty.

At the request of the Committee on Post Office and Civil Service, we attended the Census Bureau's December 1985 conference on the measurement of noncash benefits, to which it had invited persons with strong technical and nontechnical interest in income and poverty data. We analyzed the concerns that were raised about the Census Bureau's methods, recorded potential solutions offered to existing problems, identified measurement principles, and documented suggestions for future

[2]We agreed with the congressional requesters to combine the second and fourth questions in the March 18, 1985, request letter (reprinted in appendix I) into the one task indicated.

[3]U.S. General Accounting Office, Noncash Benefits: An Evaluation of the Census Bureau's Measurement Conference, GAO/PEMD-86-8BR (Washington, D.C.: April 17, 1986), and Noncash Benefits: Initial Results Show Valuation Methods Differentially Affect the Poor, GAO/PEMD-87-7BR (Washington, D.C.: October 24, 1986).

research. In our April 1986 report, we identified 14 conceptual and technical concerns about the Census Bureau's methods that were raised at the conference in addition to the 52, bringing the total to 66 concerns, and we restated some important general principles the experts used to support their concerns. Most of these concerns had also not been examined empirically, leaving unknown the magnitude and direction of their influence on the statistics on poverty.

In our October 1986 report, we gave our preliminary empirical findings on the influence of selected conceptual and technical issues. We clustered the 66 concerns into 23 issues and empirically assessed the influence of 6 issues that encompassed 16 of the 66 concerns. We selected 6 that we could quantify and analyze in a timely fashion. They represented important concerns raised in the literature and at the Census Bureau's conference, and they were predominantly about valuing medical benefits (that is, Medicare and Medicaid).

We reported empirical analyses that showed that aspects of the Census Bureau's experimental methods yield estimates of poverty that are affected by artifacts of the methods themselves rather than by the situation of the poor:

1. Conceptual choices of what to include in the definition of income can not only alter the reported distribution of income among the poor but also reclassify millions of poor persons as "no longer in poverty."

2. Technical choices, some of which also appear to be methodological errors associated with the valuation methods, can similarly result in the reclassification of millions of persons in or out of poverty.

3. Particular subgroups of the population—most strikingly, households headed by single women—are affected in different ways by these conceptual and technical matters.

Our earlier reports addressed the first question that was posed to us (approaches used in the past for assessing poverty indicators). In this report, we answer the remaining questions. In particular, we identify important questions that should be asked about poverty indicators, describe in detail the approach we developed for evaluating changes in the measurement of poverty, and complete our analyses of the conceptual and technical aspects of the Census Bureau's methods for valuing noncash benefits.

Scope

In the evaluation approach we developed, we specify procedures for conducting a full, fair, and adequate evaluation of alternative ways to measure poverty that include the cash value of noncash benefits. We applied the approach to the Census Bureau's market value and recipient value methods. We did not apply it to the poverty budget share method, because the data we needed for empirical analyses were not available.

We define "full, fair, and adequate evaluation" in the following ways. By full evaluation, we mean that the evaluative framework is comprehensive; that is, it considers all aspects of estimates of poverty and all the relationships between the components of the process of estimating poverty (see chapter 2).

How poverty should be defined is controversial. Researchers, policymakers, and others interested in statistics on poverty agree uniformly on few issues in this area. A fair evaluation ensures that all relevant issues are treated in a balanced fashion and that a broadly representative group of researchers, policymakers, and other persons interested in poverty measurement are involved in identifying important issues.

Some issues can have a great influence, whereas others have only a small effect. An adequate evaluation is capable of distinguishing—in objective terms—between sound proposals and weak ones. Prior efforts to assess changes in the poverty indicator have raised dozens of concerns about the Census Bureau's procedures and valuation methods but have largely not provided empirical evidence of magnitude or direction. It is difficult to know whether the concerns are important or not.

To develop an adequate approach for assessing proposed changes, we assumed that current and future—as yet unknown—proposed changes have a certain degree of similarity. Given the models of poverty measurement that have already been developed, we believe that several generic issues are likely to persist. And, since we derived our evaluation questions from general measurement theory and practice, we believe that our approach is meaningful, even though it is general and not tied exclusively to the Census Bureau's experimental methods.

Specifically, the scope of this report is limited to a discussion of income-based conceptualizations of poverty. They occupy most of the discussion in the literature. We have not emphasized other conceptualizations of poverty—psychological, sociological, cultural, legal—and the issues surrounding them, largely because the official and experimental poverty

measurement strategies are based on income. In appendix III, however, we briefly discuss some of the other ways of defining poverty.

Methodology

There are, generally speaking, three steps in developing any assessment approach. The first is to specify the evaluation questions to be asked. The second is to identify the measures in which the answers will be phrased. The third is to develop procedures for getting from the questions to the answers.

In specifying the evaluation questions, our main problem was selecting the right level of generality. Questions devoted to specific concerns about the Census Bureau's three experimental valuation methods might have little utility for reviewing proposals for other methods; broader questions might require considerable additional work to apply. To deal with this problem, we reviewed measurement theory, practice, and experience; consulted with experts in measurement and poverty assessment (they are listed in appendix IV); and attempted different ways of framing our questions to see how well they reflected the concerns we found about the Bureau's three methods.

When we identified the measures for answering the questions, our problems included their conceptual and technical soundness, their interpretability for a general audience, and the availability of information. To deal with these problems, we reviewed prior work on how to assess methods of valuing noncash benefits, consulted with experts, examined various data bases, and conducted numerous analyses applying various measures.

To develop procedures for getting from the questions to the answers, we examined how others have assessed methods of valuing noncash benefits, reviewed the aspects of their procedures that seemed to have facilitated or impaired their progress in reaching consensus on the methods, talked with the experts in the formulation of procedures, and applied generally accepted principles of evaluation methodology.

With these three steps, we developed our assessment approach. We took an additional step: we tested its feasibility by applying it in two different ways. First, we tested it with one valuation method: the Census Bureau's market value method. Second, we tested it with one benefit—medical care—with both the market value and the recipient value methods. Within our time constraints and given available data, we examined six additional issues beyond those addressed in our earlier report (GAO/

PEMD-87-7BR), covering a total of 11 issues. Table 1.1 summarizes the issues we examined under each of these tests.

Table 1.1: Issues Examined Under the Market Value Method and Medical Benefit Valuation[a]

Issue	Market value method	Medical benefit valuation
1. Inclusion of noncash benefits in definition	•	•
2. Sharability of noncash benefits	•	•
3. Validity of the poverty threshold	•	
4. Consistent use of enrollees or recipients in noncash benefit valuation	•	•
5. Capping extraordinary benefit values	•	•
6. Use of the average benefit value for imputation	•	
7. Misreporting program participation	•	
8. Consistency of income and poverty threshold tax bases	•	
9. Use of a complete income stratification for benefit imputation		•
10. Selectivity bias		•
11. Use of a consistent definition of household income		•

[a]Issues are described in detail in chapters 3 and 4 and in appendixes V and VI.

For these tests, we used eight data sources: the 1983 and 1985 annual March supplements and the 1983 posttax data from the Census Bureau's current population survey (CPS); 1982 detailed administrative Medicare data and 1982 Medicaid data for California, Georgia, Michigan, and Tennessee from the tape-to-tape project of the Health Care Finance Administration; 1972-73 consumer expenditure survey data; 1984 data from the food stamp program from the U.S. Department of Agriculture; and data on participation in the food stamp programs from the 1979 longitudinal survey of the income survey development program. (In appendix VI, we describe our analyses in detail.) The results of these applications of our evaluation approach indicate whether specific conceptual and technical concerns about the Bureau's methods are important or not, by showing the magnitude and direction of their effect on estimates of poverty. They also permit a judgment about the feasibility of our method, by showing how it can be used.

Finally, although we did not plan this in our activities, we identified still other unanswered questions about the Census Bureau's experimental methods and some concerns regarding data availability. We discussed

them with experts and reviewed them in terms of generally accepted measurement practices.

Report Organization

In chapter 2, we present our general approach for examining methods of measuring poverty. We also summarize what we have learned about the specific concerns arising from the Census Bureau's experimental methods for valuing noncash benefits.

In chapter 3, we present the results of our empirical tests of the market value method. In chapter 4, we present the results of our empirical tests of the market value and recipient value methods of valuing medical care. In chapter 5, we offer conclusions and a recommendation. The Department of Commerce's comments on a draft of our report are presented, along with our responses, in chapter 5 and appendix VII.

A General Approach for Assessing New Valuation Methods

Measurement Issues

Since its introduction in the mid-1960's, the official poverty statistic has been surrounded by controversy. Much of this controversy is rooted in issues associated with the way poverty is defined and, in turn, measured. This has prompted several alternatives to the official poverty definition and statistics. As we have noted, interest in valuing noncash benefits has not only accentuated these controversies but also contributes additional measurement issues that must be addressed in evaluating methods of measuring poverty. Our previous work has identified 66 specific concerns raised about the Census Bureau's methods for valuing noncash benefits. These concerns vary considerably, ranging from fundamental questions about the appropriateness of valuing benefits and altering the official poverty thresholds to highly technical matters about how calculations should be carried out. To date, there has been no systematic assessment of methods for valuing noncash benefits. The extensive list of problems appears to be ad hoc, with no logical priority, ordering, or frame of reference.

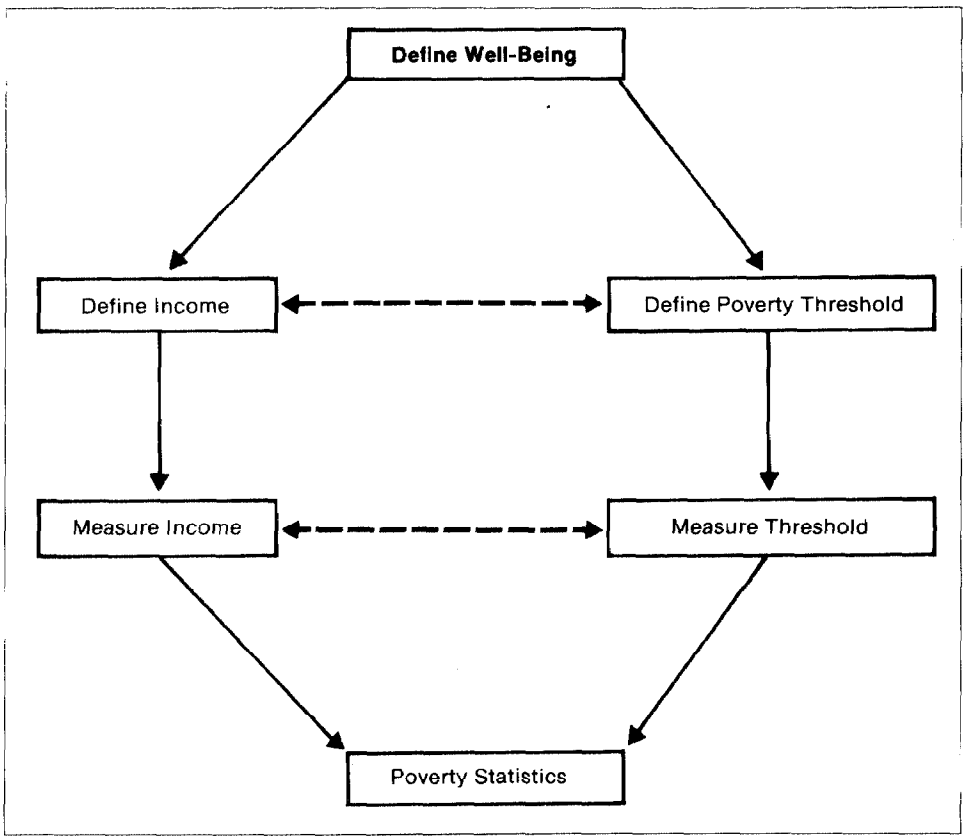
In order to provide a general framework for specifying the types of questions that we believe should be asked about methods for measuring poverty when the value of noncash benefits is included, we first provide an overview of the components that make up a poverty statistic and the measurement issues that are implied. With this framework in mind, it is possible to identify the questions that should be asked about valuation methods in order to derive a full, fair, and adequate assessment of the valuation methods.

Components of Poverty Assessment

As shown in figure 2.1, poverty statistics that are reported depend in general on specific, interrelated steps involving the definition and measurement of key attributes. Central to the measurement process is the specification of a conceptual definition of the attribute to be measured. Within the poverty measurement arena, the target attribute usually reflects some representation of well-being. This could be broadly construed to mean "happiness" or "wealth" or more narrowly defined in economic terms (for example, cash income).

Other measurement issues flow from the initial specification of a conceptual definition of well-being. In other words, to derive a poverty statistic, it is necessary to define two additional elements beyond the concept of well-being: a specific definition of what is meant by well-being in terms of a definition of some poverty attribute and a minimum standard for that attribute (that is, the threshold) that determines poverty status. Each of these definitions requires further specification in

Figure 2.1: The Key Steps in Measuring Poverty



operational—that, is measurement—terms, as shown in the third row of figure 2.1. The last step in the poverty measurement process contrasts the measured attribute against the measured threshold to provide a direct determination of poverty.

General Sources of Concern Based on Measurement Principles

The goal of measurement is to translate conceptual variables (for example, well-being) into operational terms in such a way that what is actually observed (measured) mirrors what was intended as closely as possible. Good measures correspond well; poor ones do not. What is evident from figure 2.1 is that several steps intervene between the specification of the conceptual definition of what we intend to measure and the statistic that is reported (for example, the poverty rate that indicates the percentage of persons below an established level of well-being).

That is, well-being is translated into a working definition of income, which is then translated into a concrete, observable measure (for example, a household survey). It is rare that these translations are perfect: usually error and distortion are present. The central question is, How adequately do the measurement procedures reflect the concepts of interest? To answer this question fully requires a precise definition of what the measurement system is supposed to assess.

Further, there are at least three ways in which actual measures can deviate from the conceptual variables of interest: methodological artifacts, the methodological choices of analysts that can lead to slippage between what was intended and the output from a measurement process, and inconsistency in definitions across key elements of the poverty measurement process.

Conceptual Definitions

In measurement terms, precise definitions of the primary conceptual definition of well-being provide a basis for assessing the adequacy of secondary conceptual definitions (for example, income or the threshold) and methodological procedures within the poverty measurement system. Without this logical framework, it is not possible to ascertain the validity of a measurement scheme. Rather, in the absence of a clear understanding of what the goals of the measurement process are, critical choices—like how to define income—are not bounded by logical constraints imposed by conceptual definitions. This limits the assessment of the adequacy of the methods to determining the consequences of the choices that are made. Critical questions like "Does this method represent an improvement in how well-being and, in turn, poverty are measured?" cannot be answered directly.

Methodological Artifacts

Regardless of the presence of a well-defined set of conceptual definitions, the research procedures that are used to measure key attributes in the poverty calculations (for example, how income is determined) can influence the validity of the results that are obtained. Systematic methodological flaws (for example, a poorly designed survey or the use of inadequate analytical procedures) can be interjected into the measurement process by the researcher or the respondent (who can, for example, misreport income). As a case in point, measuring household income through an annual survey is likely to systematically omit resources—for example, the failure of respondents to recall earnings from part-year employment or their unwillingness to report income stemming from the underground economy. Relying on only the income that respondents are

willing to report can systematically distort estimates of well-being. Unsystematic errors are also possible. These do not bias the results; rather, they decrease the precision of the results.

Methodological Choices

The process of translating complex states like well-being or poverty into measurable terms is also influenced by numerous computational decisions that have to be made as part of the research process. For many of these decisions, theory is simply too imprecise to serve as a guide. They are left to the discretion of the analyst. Different analysts can make different—and equally justifiable—decisions that can have important consequences for the values that are derived. From an assessment perspective, just as theory is too imprecise to guide actions, it is also likely to be of little use in determining which computational options are appropriate. It is important to know how sensitive a measure is to differences in such choices.

Consistency

The derivation of poverty statistics depends on two separate elements—the definition of income and the threshold. This raises the possibility that definitions can be inconsistent. For example, the poverty threshold is defined as the amount of money that is necessary for a minimally sufficient existence, adjusted for the size and composition of a family. Thresholds were originally established by calculating the amount of money and proportion of a family's budget that was spent on food. The ratio of food expenses to family budget was determined to be one third. Assuming that all other expenses were covered by the remaining two thirds, the threshold was set by multiplying food expenses by a factor of three (the reciprocal of one third).

Disposable income (that is, income after taxes) is implied by this definition of the threshold. However, the official poverty rate is based on income levels before taxes have been deducted. These two definitions are inconsistent. Sound measurement practice argues for not comparing "apples and oranges." Other inconsistencies can occur when conceptual definitions are translated into operational terms.

Five General Questions

Five general questions can be drawn from the preceding discussion. We believe these questions should guide evaluations of methods for measuring poverty when the value of noncash benefits is included:

1. What is the basis for defining income?

2. Are the methods valid?

3. Do the values that are assigned accurately represent the benefits that are received?

4. What is the quality of the data and analytic procedures used to derive benefit values?

5. Are definitions used consistently across key steps of poverty measurement?

Basis for Defining Income

A critical aspect of any effort to value noncash benefits involves the basis for determining which of the many benefits provided by the government or private employers should be counted in the definition of income. Judging the adequacy of decisions about which benefits to include depends on how well-being is viewed. In a paper presented at the Census Bureau's conference on measuring noncash benefits, Ellwood and Summers provide an illustration of the issues that should be considered in defining income when noncash benefits are included. They argued that

> "if the goal of measurement is to reflect the distribution of well-being, measured in dollars, then it makes no difference whether or not people are provided with cash which they use to purchase goods or whether they are directly provided with goods. As such, the appropriate measure of income is the sum of cash income and the amount which people would be willing to pay for all other goods and services that are provided." (Ellwood and Summers, 1985, p. 5)

This definition of well-being has certain implications for the definition of income that is chosen. Specifically, as noted by Ellwood and Summers, in capturing the concept of "overall well-being," there is almost no limit to which noncash benefits could be included as income. For example, publicly supported recreation facilities, police protection, and public schools all influence well-being and could be included under this definition. While there is very little interest in including all forms of public benefits (or all employers' privately provided benefits), the breadth of this definition illustrates the importance of understanding the rationale behind the income definition.

A logical framework implied by a more specific definition of well-being was provided by Ellwood and Summers in the same paper. They proposed that income should reflect the distribution of potential material

well-being. This definition focuses on a particular sphere of well-being—namely, material consumption. Such a definition provides a criterion for determining which benefits should be included. For example, the Ellwood and Summers definition implies that a benefit ought to be included if it provides for immediate material consumption (such as food stamps) or if the benefit frees other resources (such as housing assistance) that can be used for material consumption. In contrast, the value of police protection, which does not provide for immediate material consumption or free resources, would not be included.

This illustrates how, from a measurement perspective, a clear rationale for defining income makes it possible to examine whether (1) benefits have been included that the definition implies and (2) operational procedures are consistent with these definitions.

Validity of the Method and Its Components

In its work on the valuation of noncash benefits, the Census Bureau recognized that no single method could be relied upon to assign dollar values to benefits. For assessment purposes, a key question is the extent to which a method measures what it purports to measure. That is, does the recipient value method (as reported), for example, actually measure what individuals are willing to pay for the noncash benefit they receive? As we noted above, several points in the measurement process are open to methodological flaws and methodological decisions can affect the correspondence between what was measured and what was intended. When the correspondence is low, the method is less valid.

As we saw in figure 2.1, poverty assessment involves multiple components. The procedures used to establish the poverty threshold should be as valid as the procedures for defining and measuring income.

Accuracy of the Method

Deriving a new measure of income that includes the value of noncash benefits requires several operational steps that should be examined. In particular, the value of most noncash benefits with the exception of food stamps, to be assigned to individuals or families has to be estimated from extant data (for example, administrative records or consumer expenditure surveys). These types of estimates rely on assumptions that may not be accurate. The values that are estimated must be examined to see that they represent the benefit levels that are received. The valuation technique may be flawed if it does not properly represent all components of the conceptual definition of income.

For noncash benefits—for example, medical care—how the benefit is conceived of as contributing to overall well-being influences the way it is measured, although this may not correspond with the level of well-being experienced by the individuals to whom the value is assigned. Further, particular measures or the methodological procedures themselves may be flawed by irregularities in data collection, processing, and analysis.

Quality of Data and Analytic Procedures

The quality of the data and the analytic procedures used in the method must be examined to see that they do not influence the poverty estimates. Data collection problems (such as misreported income and program participation) and errors in the way numbers are calculated may systematically affect estimates of poverty. These problems can arise from methodological flaws that result from procedural errors, or they may stem from choices that are made in the analysis.

Consistency

Since the measurement of poverty entails several interdependent steps—each likely to rely on different data sources, collected by diverse agencies responsible for the programs involved—a valuation method must be examined to see that conceptual and operational definitions are consistent from step to step and across components (for example, income and poverty threshold definitions).

The Three-Part Procedure

In practice, the assessment of a method for valuing noncash benefits can be conducted in three discrete parts. The first part entails the clarification of specific issues identified by asking our five questions. The second part involves determining empirically whether these actually make a difference. To answer these empirical questions, we have outlined four quantitative indicators that can be used to determine the effects of flaws and choices on poverty measures. The last part of the assessment process pertains to rendering a decision about the method.

1. Identify the Issues

The particular issues that could be raised under the five general questions about a proposed method differ from method to method. Identifying specific strengths and weaknesses pertaining to questions of income definition, validity, accuracy, analytic quality, and consistency requires a close examination of a method's conceptual and technical features. Four tactics can be used.

Methodological Review

A common strategy for assessing the soundness of a method is to systematically review its measurement, data collection, and analytic procedures. In the Census Bureau's original paper on the valuation of noncash benefits, it relied heavily on this strategy. It identified 36 aspects of the technical procedures across the three experimental valuation methods that it said may distort or otherwise bias the resulting statistics. In this case, a panel of experts on poverty, mostly economists, conducted the review.

Synthesis of Multiple Reviews

Some experts argue that it is better to make a broader, more comprehensive assessment by extending the systematic methodological review through multiple, independent methodological reviews.[1] When we identified 66 concerns about the Census Bureau's experimental methods for valuing noncash benefits, we examined more than 100 documents that discussed the strengths and limitations of the Census Bureau's methods. We were able to produce a list of unduplicated issues and concerns expressed by a broad range of experts in the field (see appendix V).

Reanalysis

We noted in our report on the Census Bureau's conference that the majority of the commentaries on the Census Bureau's methods are concerned with conceptual aspects. Little attention has been focused on its computations, partly because it is very difficult to discover computational shortcomings by simply reviewing general descriptions of methodological procedures. Experts recommend reanalysis of the method's statistical and computational procedures.[2]

Multiple Perspectives

As we noted in chapter 1, a fair method of evaluating methods for measuring poverty requires information from the persons who have a stake in how poverty is conceptualized. Besides providing substantive knowledge about the appropriateness of a valuation method, having this information helps identify other measurement-related problems. For example, experts at the Census Bureau's conference raised many substantive issues related to poverty measurement that led others to question such properties as the validity of the official poverty measure.

[1]Thomas D. Cook and Charles L. Gruder, "Metaevaluation Research," Evaluation Quarterly, 2:1 (February 1978), pp. 1-26.

[2]Robert F. Boruch, Paul M. Wortman, and David S. Cordray, Reanalyzing Program Evaluations: Policies and Practices for Secondary Analysis of Educational and Social Programs (San Francisco, Calif.: Jossey-Bass, Inc., 1981).

Properly conducted, balanced methodological reviews, syntheses, and reanalyses can highlight the strengths and limitations of a valuation procedure. However, this requires information from not only experts but also those with a vested interest in the poverty measure to ascertain the extent to which their concerns are empirically important.

2. Examine the Issues Empirically

An adequate assessment of proposals for altering poverty indicators requires distinguishing—in objective terms—between sound proposals and weak ones. A review can identify limitations in a method's procedures, but only empirical evidence on the direction and magnitude of bias will tell whether the bias is serious enough to affect the results. The empirical assessment of a valuation method can vary from a full-scale examination of alternative methods that derive national estimates to a small-scale study that depends on subnational data to probe the consequences of a problem. In our October 1986 report, we relied on data from some states because national data were not available. Regardless of the type of empirical examination, however, the influence of methodological problems can be assessed with four different types of indicator: changes in poverty rates, identification of subgroups differentially affected, dispersion of changes in poverty-gap distributions, and the average assigned benefit.

Choosing indicators for assessment hinges on what one means by "adequate poverty measure." We suggest three general criteria. A measure is methodologically inadequate if it leads to serious distortions in classifying individuals, if it erroneously affects groups differentially, or if it erroneously affects those who would otherwise be eligible for specific amounts of benefits.

Changes in Poverty Rates

If we assume that it is possible to find a distribution of true values that represent the actual benefit amounts persons received, a distortion-free valuation method would closely approximate this distribution. That is, the procedures used to measure the key concepts within the valuation method should not systematically influence the classification of an individual's status in or out of poverty.

To assess the influence of a specific problem identified for a given valuation method, we might examine the change in poverty rate when the problem is present and when it has been controlled or corrected. For example, suppose the market value method includes the value of food stamps and the resulting poverty rate is 12.0 percent. Suppose that we

suspect that participation in the program is not accurately reported, a methodological flaw that potentially distorts the income measure. In our empirical analysis, we correct for the misreporting of program participation and derive a new poverty rate of 11.5 percent. The difference in the two rates can be interpreted as the influence of misreporting. In the national population, a difference of half of 1 percent in the poverty rate translates into about 1 million persons.

A change in the poverty rate can also be used to examine the influence of conceptual choices, such as how income is defined. In an example like the one above, the poverty rate excluding the benefit would be used as the basis for comparison. For instance, the effect of adding the market value of medical care could be assessed by contrasting the poverty rate calculated from a definition of income that added to cash income only food and housing benefits with the rate calculated from a definition that included food, housing, and medical benefits. In this instance, a change in the poverty rate does not necessarily reflect a methodological bias; rather, it indexes the extent to which the choice of what to include in the definition of income influences the poverty rate. The rate is readily converted into a number of persons who would be reclassified in or out of poverty.

Effects on Different Subgroups

How methodological shortcomings affect different subgroups of the population said to be in or out of poverty can also be examined. We can identify the subgroups that are differentially affected by an adjustment in measurement procedures by computing how a baseline poverty rate for each subgroup (for example, a rate using one of the Census Bureau's experimental methods) differs from the rate resulting from an alternative method. Then we can look at the differences in rates for each subgroup versus the difference for all cases. If any one of these subgroup differences is significantly larger by statistical standards than the difference for all cases, we conclude that the subgroup is "differentially affected."

For example, assume the overall poverty rate including food, housing, and medical benefits by the market value method is 9.8 percent. Assume further that a bias is identified in the way medical benefits are currently valued and an alternative to the market value method is developed that adjusts for the bias. Say that the overall poverty rate including food, housing, and medical benefits using the new method is 10.8 percent. The effect of correcting for the bias in the way medical benefits are valued for all cases is thus to increase the poverty rate by 1.0 percentage

points. Next assume the poverty rate including food, housing, and medical benefits for some subgroup is 12.0 percent, and the rate for the subgroup including food, housing, and the new method that corrects the bias in the medical benefit is 14.2 percent. The effect of correcting for the bias in the way medical benefits are valued for the subgroup is to increase the poverty rate by 2.2 percentage points. The difference in the effect of correcting the bias in the medical benefits between the subgroup and all cases is 1.2 percentage points (2.2 percent minus 1.0 percent).

Using statistical techniques, we can determine the probability of obtaining a difference in effect of this size from our sample when in fact there is no difference in the population. If the probability is less than 5 chances in 100, we say that the effect of correcting the bias in medical benefits is larger for the subgroup than for all cases (that is, the subgroup is differentially affected by the bias).

A differential effect can occur for at least three reasons. First, the change in benefit values from the use of an alternative method may be larger for the subgroup than for all cases. For example, the change in medical values after correcting for bias in the proposed method may be larger, on the average, for that subgroup than the change in values for all persons with medical coverage.

Second, the subgroup may have a higher rate of coverage for the benefit being adjusted in the poverty measurement process. For example, persons in a certain subgroup may be more likely to be covered by Medicaid than in the entire population, so alterations in valuing medical benefits would have a greater likelihood of affecting the subgroup.

Third, the distribution of certain groups may be more concentrated around the poverty line than in the overall distribution. For example, suppose a subgroup is assigned the same medical value as all cases and has the same likelihood of having medical coverage. If the distribution of cases in the subgroup is more closely packed around the poverty line than in the overall distribution of cases, an adjustment of medical benefits would tend to have a greater effect on the poverty rate of the subgroup.

Alterations of Income Distribution

When noncash benefits are added, the reported incomes of persons said to be in poverty can change with respect to the poverty line in at least three ways:

1. With a small increase in income, persons with incomes just below the poverty line can be moved just over the poverty line.

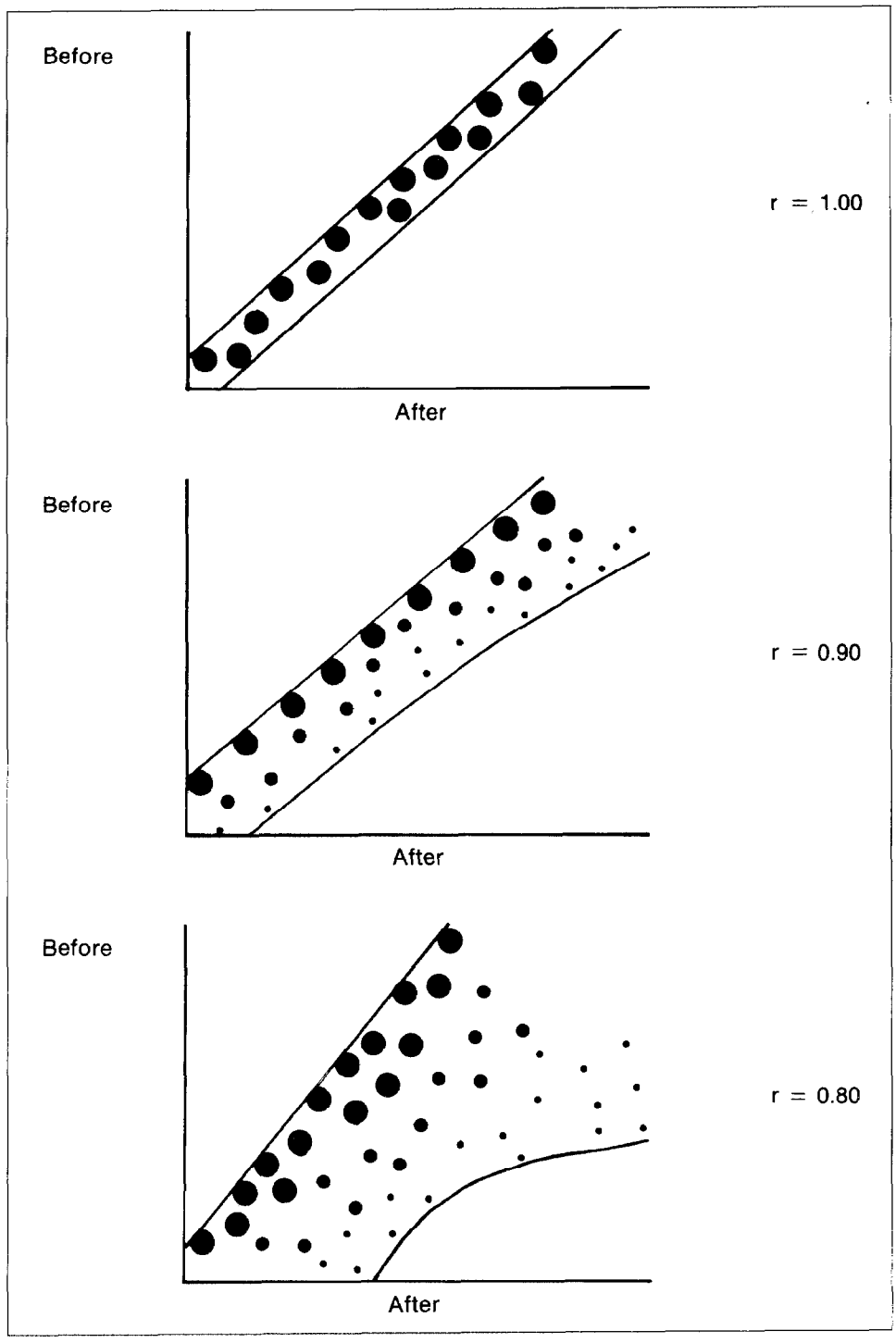
2. With a substantial increase in income, some persons with incomes below the poverty line can be moved closer to but not over the poverty line.

3. With an enormous increase in income, persons with incomes well below the poverty line can be moved over the poverty line.

It is possible to compare the income distributions of the poor before and after the inclusion of a particular noncash benefit by using "poverty gaps." A poverty gap is the difference between the resources the official poverty measure specifies for a poor person and the resources the person actually possesses. For example, if an individual has an annual income of $3,000 and the official poverty threshold for this individual is $4,500, the poverty gap is $1,500. Stated differently, $1,500 would be needed to eliminate the gap and bring this individual up to the poverty line.

Several summary statistics have been proposed for describing the distribution of income. The principal purpose of examining the effects of adding noncash benefits to the income distribution is to identify the patterns of change, and for this we use graphic presentations and summary statistics that index changes in relative standings. For example, the three general patterns in figure 2.2 can be summarized in terms of the correlation between poverty gaps before and after the inclusion of a benefit. A perfect correlation, or $r = 1.0$, means that the relative rank ordering of individuals within the poverty gap distributions has been maintained. More dispersion may be introduced by including a benefit, and the correlation departs from 1.0 to 0.9 or 0.8, for example. In other words, the lower the correlation, the greater the dispersion.

Figure 2.2: Three Illustrations of Income Dispersion From Adding Noncash Benefits



Despite the substantial differences in the patterns of change depicted in the figure, the correlations of 1.0, 0.90, and 0.80 are all relatively high by normal measurement standards, principally because most persons maintain their relative positions in the poverty gap distributions. That is, either they do not receive the benefit or they experience a small change in their benefits.

Our index of dispersion introduced by a benefit is thus the correlation of poverty gaps before and after the inclusion of the benefit. Since we are interested in patterns of change around the poverty line, we compute this correlation for the population in poverty before the inclusion of the benefit.

Changes in Assigned Benefit Levels

The indicators of the influence of conceptual choices and technical problems discussed above reflect what might be termed "macro effects"; they do not show how individual persons might be affected. To fully assess the influence of including noncash benefits, it is useful also to examine the actual amount of a benefit individuals are typically assigned. In assessing the influence of technical problems, the difference in average benefit levels under alternative procedures indexes how individuals are influenced.

Including the information on actual benefits assigned to an individual gives a fuller picture of the effect of a proposed change in the valuation of benefits. For example, a large change in a benefit amount assigned to individuals covered by a program with a small overall enrollment would not necessarily show up as a large change in the poverty rate. However, a relatively small change in the amount assigned to individuals covered by a program with a large overall enrollment could show a relatively large effect on the poverty rate. Providing information on rate and actual benefits assigned to individuals gives a more complete picture of the effect of a proposed change in the way poverty is measured.

3. Make a Summary Judgment

The empirical analyses discussed above help illuminate the consequences of altering the poverty indicator so that a summary judgment can be made about the valuation method. We have identified five key questions about how poverty is estimated. It is possible to examine the problems that are identified for each question. To the extent that all relevant issues are examined for each question, a composite answer could be meaningfully derived for gauging the validity, accuracy, and

quality of the methods underlying the measurement process. This represents the best condition for deriving a summary judgment.

In practice, it is unlikely that this condition will be met, for three reasons. (1) Some issues may not be amenable to empirical investigation. (2) Despite extensive work, the issues that could be meaningfully raised may not all be identified. And (3) some important data may not be available. Thus, a summary judgment is likely to be based on a combination of empirical analyses and reason. As one reaches a judgment, both the magnitude of the effects of a proposed method and its testability should be taken into account.

Determine Magnitude

A principal purpose of empirical analysis is to ascertain whether issues raised about a method for valuing noncash benefits are of sufficient magnitude to warrant concern. As we saw above, in measuring poverty, a seemingly small effect—for example, a shift in the poverty rate of half of 1 percent—reclassifies approximately 1 million persons. Nearly any difference detected by empirical analyses can be justified as important.

A more comprehensive picture of the importance of a methodological problem can be derived by looking across the different analytical tools we have described. A reasonable criterion for a satisfactory method is that the method itself does not dramatically alter the poverty rate for some groups and does not produce changes in the income distribution that cannot be explained by the nature of the benefit that is being valued. With regard to the latter, a method that reclassified the very poorest individuals or families as substantially above the poverty line would not be adequate, even if the aggregate effect of a bias were not detected.

Test the Method

The basic premise of the empirical analyses that we suggest is that it is possible to construct a reasonable (and valid) test of the influence of the problem that has been identified. To the extent that it is not possible to construct such a test, a summary judgment about the validity, accuracy, or quality of a method is limited. We do not propose a magic criterion, such as "50 percent of the identified concerns should be empirically tested." However, the need to rely extensively on theory or reason should signal that the proposed method warrants further investigation.

This completes our description of our method of assessing proposed changes to the poverty indicator. In the remainder of this chapter, we summarize the concerns with the Census Bureau's experimental valuation methods.

Concerns About the Census Bureau's Experimental Valuation Methods

Thirty of the 66 concerns that have been raised about measuring poverty, in general, and about the Census Bureau's methods for valuing noncash benefits, in particular, focus on conceptual aspects; 36 center on technical—principally, computational or operational—matters. About three quarters of the technical concerns (28 of the 36) deal with the role of noncash benefits in the definition of income and the validity of the valuation method used. Similarly, on the conceptual side, nearly two thirds of the concerns (19 of the 30) are related to these two questions.

Appendix V lists the 23 general issues and shows the 66 concerns they cover in relation to our five evaluation questions. In our empirical analyses, we addressed 10 of these 23 issues and 1 issue that was discovered as a result of our analyses. We examined 1 issue associated with the basis for defining income (issue 2 in appendix V), 4 issues associated with the validity of the methods (issues 4, 5, 7 and 9), 3 issues associated with the accuracy of benefit value assignment relative to benefits that are received (issues 13, 14, and 16), 2 issues associated with the quality of the data and analytic procedures used to derive benefit values (issue 21 and the income stratification issue discovered as a result of our analysis), and 1 issue associated with the consistent use of definitions across key steps in poverty measurement (issue 23). These were all the issues on which we could locate adequate data for empirical analysis in the time available. The summary below arranges these 11 issues in relation to our five evaluation questions.

1. What Is the Basis for Defining Income?

Several experts have noted that a definition of income is largely a conceptual choice. Whether it is appropriate cannot be determined from empirical criteria. Nevertheless, the influence of adding benefits to the official, cash-only definition of income can be substantial, and it is important to determine how poverty rates and income distribution may subsequently be altered (see issue 2 in appendix V).

2. Are the Methods Valid?

Underlying this question is the principle that measurement procedures should correspond to the conceptual definition implied by a valuation

method. For example, one concern that has been raised is that the Census Bureau intends the market value method to include the cost of a benefit in the private market but, in actuality, uses government outlays to determine the market value of some benefits. Since this measurement operation does not correspond closely with the conceptual definition, the validity of the method is questioned (see issue 5 in appendix V).

The validity of the recipient value method has also been questioned because to measure benefit values it uses the normal expenditures of a group that may not be comparable with the population subsidized by these benefits (issue 7). The recipient value method is also said to utilize an improper income definition (issue 4).

Finally, the validity of the poverty threshold has been criticized in terms of its use of outdated expenditure patterns for food (issue 9).

3. Do the Values That Are Assigned Accurately Represent the Benefits That Are Received?

For most benefits, the values the Census Bureau's methods ascribe to individuals and families are based on measures derived from such indirect sources as administrative records. This practice leaves open the possibility that a method may assign values to these persons that do not accurately reflect the benefit levels they receive. Specific issues are that the Census Bureau assigns medical benefits under Medicare to all members of a family, despite the fact that some family members cannot benefit directly from them (see issue 14 in appendix V). The Census Bureau has also been criticized for deriving and assigning medical benefits inconsistently (issue 13). Still another concern is the Census Bureau's methods of calculation (issue 16).

4. What Is the Quality of the Data and Analytic Procedures Used to Derive Benefit Values?

The validity of a method may mean little if the data it uses are inaccurate. That is, it is important to know the extent to which a method's procedures are free of systematic and random sources of error. For example, the Census Bureau has to rely on self-reported participation in the Food Stamp program, which allows several sources of inaccuracy. Some persons may systematically underreport participation because of a perceived stigma of receiving assistance; some persons may have received food stamps for a short time and simply failed to recall this in an interview (see issue 21 in appendix V). Other concerns about accuracy have been raised regarding methodological problems associated with the Census Bureau's computational practices (we discuss these in chapter 4).

5. Are Definitions Used Consistently Across Key Steps of Poverty Measurement?

Efforts at measuring poverty have been focused on income, but in devising its methods, the Census Bureau has relied on data that were not collected explicitly for this purpose. This has led to some concern about the inconsistency between definitions of cash income and the definition of income used in deriving the poverty threshold. The inconsistency is that the Census Bureau uses pretax cash income in its experimental valuation methods but the poverty threshold is based on after-tax income (see issue 23 in appendix V).

Summary

Answering the congressional request, we developed a general approach for evaluating proposals to change the poverty indicator that is intended to give a full, fair, and adequate assessment of the proposed changes. Our approach asks five general questions and answers them with a three-part procedure. The first part identifies specific conceptual and technical concerns; the second examines their importance empirically; the third entails a judgment of the overall strengths and limitations of the proposal. After describing our approach in this chapter, we discussed 10 of the 23 issues that encompass the 66 conceptual and technical concerns that have been raised about the Census Bureau's three experimental valuation methods and 1 additional issue we found as a result of our analyses.

An Assessment of the Market Value Method

Noncash Benefits in the Market Value Method

In the Bureau's definition, the market value of a noncash transfer is equal to the private market value of the benefits individuals or families receive. The market value of food stamps is the face value of the food coupons. The market value of public housing is the dollar value of that housing if it were a private rental. The market value of Medicare or Medicaid is the amount of money needed to purchase comparable private health insurance to cover eligible members of the family.

Asking the Five Evaluation Questions

1. What Is the Basis for Defining Income?

The Census Bureau's experimental estimates of poverty include some items that are immediately consumable and some that are not: the value of food stamps, school lunches, rental assistance, housing subsidies, and Medicare and Medicaid. Food stamps, for example, provide individuals with a cash equivalent that can be used to purchase food, which can be consumed. Similarly, housing assistance frees cash for immediate use. However, the Census Bureau has not provided a theoretical or empirical basis for including some items in its income definition. While we cannot examine further the basis of the Census Bureau's choice, we can describe the consequences of these choices.

Table 3.1 shows, not surprisingly, that the reported poverty rate falls when the "market value" of any benefit is added to income. Relative to the official cash-only definition of income, the Census Bureau's market value procedures show that between 3.6 and 11.1 million persons would not have been classified "in poverty" in 1984, depending on the noncash benefit that is included.

Table 3.1: The Consequence of Adding Noncash Benefits to Income in the Market Value Method[a]

Income[b]	Poverty rate	Subgroup especially affected	Dispersion index	Average benefits
Cash	14.4%	•	•	•
Food and housing	12.9	Blacks, Hispanics, persons younger than 18, elderly, persons in families headed by women, unrelated individuals, single women	.90	$715
Food, housing, and noninstitutionalized medical[c]	9.8	Blacks, Hispanics, persons younger than 18, elderly, persons in families headed by women, unrelated individuals, single women	.74	2,505
Food, housing, and all medical[c]	9.7	Blacks, Hispanics, persons younger than 18, elderly, persons in families headed by women, unrelated individuals, single women	.68	2,981

[a]Data are for the nation in 1984.

[b]"Cash" includes cash income only; "food and housing" add to cash income the value of food stamps, school lunches, and rental assistance; "noninstitutionalized medical" adds the value of Medicare and Medicaid services, excluding expenditures for the institutionalized; and "all medical" adds to this the value of Medicare and Medicaid expenditures for institutionalized persons.

[c]Average medical benefit only.

Adding the values for food stamps, school lunches, and housing has a moderate effect, decreasing the poverty rate from 14.4 percent under the official cash-only definition to 12.9 percent, reclassifying about 3.6 million persons as no longer poor. Adding the value of medical benefits to income as cash has a more dramatic effect, almost doubling the number of persons no longer poor, compared to the addition of food and housing benefits alone.

Furthermore, when we compared the change in the distribution of poverty gaps of the poor before and after the inclusion of medical benefits, we found that many persons were "catapulted out of poverty," as figure 3.1 shows. That is, not only were many persons moved out of poverty under the market value method but also some were moved out who had been well below the poverty line before the inclusion of medical benefits. Some rose from $7,000 to $8,000 below the poverty line before medical benefits were added to $5,000 or more above it. Additionally, many of those who were not moved over the poverty threshold were placed substantially closer to it and, thus, would have been notably less eligible for the means-tested benefits that are based on sliding scales in relation to poverty.

Figure 3.1: Poverty Gaps With and Without Medical Benefits in the Market Value Method[a]

Poverty Gaps Without Medical	-$10,000 or more	65	3	10	9	3	3	6										Number of Persons[b]
0 to -$1,000											45	15	21	10	4	2	4	6,211,000
										42	16	22	12	4	1	1	2	5,443,000
									47	14	22	10	3	2	1	1	2	4,416,000
								45	13	19	15	4	1	1			1	3,499,000
-$4,000 to -$5,000							51	11	18	13	4	1	1	1				2,945,000
						55	11	14	9	7	2	1	2	1			1	2,546,000
					52	9	19	10	6	1	1	1					1	1,442,000
				49	6	18	10	8	2	1	2				1		2	1,098,000
			56	3	16	9	6	6	3									837,000
		65	3	10	9	3	3	6										380,000
-$10,000 or more	86	3	4	2	5		1											1,284,000
Poverty Gaps With Medical	-$10,000 or more						-$4,000 to -$5,000					0					-$5,000 or more	

[a] A poverty gap is the amount of income necessary to raise a person's income to the poverty threshold. These data are for the nation in 1984. Percentages in cells may not add to 100 because of rounding.

[b] Total number of persons equals 30,103,000.

2. Are the Methods Valid?

The Validity of the Threshold

One important issue is the validity of OMB's poverty threshold, which the Census Bureau uses to arrive at all its experimental estimates. The official poverty threshold, defined by OMB, assumes that the consumption patterns of 1955 adequately represent those of the 1980's. The specific concern is that the one-third food-to-income expenditure ratio of 1955 is no longer accurate. Some analysts suggest that something closer to a ratio of one fourth is appropriate today.

We examined the effect of using some of the alternative poverty thresholds that appear in the literature, finding that adjusting the poverty threshold multiplier—that is, the inverse of the food-to-income ratio—

has a dramatic effect on the poverty threshold and resulting poverty rate. It should be noted that the Census Bureau, in its publications of the experimental poverty estimates, calculates poverty rates using a multiplier of 3.75 (or 125 percent of the official OMB poverty threshold) as an illustration of the effect of changing the threshold. For each 0.5 change in the threshold multiplier, the poverty threshold for a family of four changes by approximately $1,800 (see table 3.2). Put another way, as the threshold multiplier increases above the official multiplier of 3.0 by 0.5 increments, the poverty rate increases at the rate of about 3.3 percentage points (translating to nearly 7.7 million additional persons classified as poor nationally).

Table 3.2: Adjusting the Multiplier Used to Derive the Poverty Threshold[a]

Alternative threshold multiplier[b]	Poverty rate	Subgroup especially affected	Dispersion index	Average threshold for family of four
2.5	11.2%	Blacks, Hispanics, persons younger than 18, elderly, persons in households headed by women, unrelated individuals, single women, single men	.98	$8,841
3.0[c]	14.4	•	•	10,609
3.5	17.7	Blacks, Hispanics, persons younger than 18, elderly, persons in families headed by women, unrelated individuals, single women, single men	.99	12,377
4.0	21.0	Blacks, Hispanics, persons younger than 18, elderly, persons in families headed by women, unrelated individuals, single women, single men	.96	14,145

[a]Data are for the nation in 1984.

[b]The threshold multiplier is the inverse of the proportion of family income spent on food (for example, a threshold multiplier of 3.0 is the inverse of 0.33, or 1/3).

[c]Official multiplier.

Examining the effect of these adjustments on population groups indicates that these changes in the threshold especially affected the poverty rates of blacks, Hispanics, persons younger than 18, the elderly, persons in families headed by women, unrelated individuals, single men, and single women. That is, relative to the official thresholds, persons in these

groups are particularly likely to be reclassified "in poverty" as a result of increases in the multiplier. These groups are also likely to be reclassified "out of poverty" as a result of decreases in the multiplier. The relative position of poverty gaps before and after the threshold adjustments remains basically unchanged. For all of the remaining analyses we performed, the poverty thresholds were held constant at the official levels.

Measuring Private Sector Costs

Another issue about validity is whether the market value method measures the private sector costs of goods and services. The correspondence between the Census Bureau's conceptual and technical definitions for food benefits is reasonably good (although we discovered technical inadequacies in the estimates of food stamp participation). However, for other benefit areas—especially medical—there is substantial discrepancy. For medical care, the average benefit the government pays does not correspond to insurance payments in the private market, under the Census Bureau's method. To determine the consequences of this discrepancy, we devised a capping procedure that corresponds more closely to private insurance. We used group insurance rates (our procedure is described in appendix VI).

Unless indicated otherwise, the analyses that follow in this chapter are based on data from four states. The states were chosen because of data availability, not because they are necessarily representative of the nation. National projections from these states, therefore, should be interpreted as illustrations of the magnitude of effects if the patterns found in the four states held on a national level.

In table 3.3, we present the effect of capping medical benefits in terms of our statistical indicators. Under the Census Bureau's market value method, calculating it without a cap, the poverty rate was 10.8 percent in 1982 if the value of food, housing, and medical care were included (the data are for the four states where data were available). Capping medical benefits at the group insurance value would move fewer persons out of poverty than the Census Bureau's market value computation would, yielding a poverty rate of 12.0 percent or (projecting nationally) nearly 2.5 million additional persons classified in poverty. The average capped medical benefit value is about half that assigned by the Census Bureau (see column 5 in table 3.3). Moreover, blacks, the elderly, and persons in families headed by women are differentially affected by the inclusion of the cap. That is, relative to the Census Bureau's method, persons in these groups are particularly likely to be reclassified "in poverty" when a cap is placed on medical benefits.

Table 3.3: Capping Market Value Medical Benefits[a]

Alternative computation	Poverty rate	Subgroup especially affected	Dispersion index	Average medical benefit
Bureau's market value method	10.8%	•	.90	$2,454
Capping at the insurance value	12.0	Blacks, elderly, persons in families headed by women	.98	1,233

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the market value of food, housing, and noninstitutionalized medical care.

The relative positions of individual poverty gaps would be affected less by including the capped medical benefit than by the Census Bureau's value, as shown in column 4 of the table. The "dispersion" index indicates less change in the relative positions of individual poverty gaps for the capped method than for the Census Bureau's uncapped method.

3. Do the Values That Are Assigned Accurately Represent the Benefits That Are Received?

For the four states where data were available, we examined three issues related to how the market value method deals with medical benefits: the nonsharability of benefits, or the problem of assigning values only to those who are actually eligible to receive them; the calculation of benefit values; and the calculation and assignment of benefits on a comparable basis.

Nonsharability

Some poor families include elderly persons who receive noncash benefits such as Medicare, which are not sharable with others in the family. Assigning values for these benefits to all members of the family may result in inaccurate estimates of the number of persons in poverty. We developed three alternative computation procedures that adjust for this. (See appendix VI for more details.) As table 3.4 shows, each of the alternatives indicates that fewer persons would have been out of poverty (between some 430,000 and 4,000,000 persons nationally in 1982) than by using the Census Bureau's method.

Table 3.4: Adjusting for Nonsharable Medical Benefits[a]

Alternative computation	Poverty rate	Subgroup especially affected	Dispersion index	Average benefit
Bureau's market value method	10.8%	•	.90	$2,454
Nonsharable lower bound	11.0	Blacks	.90	1,964
Nonsharable individual assignment[b]	12.9	Blacks, persons younger than 18, persons in families headed by women	.98	971
Nonsharable prorated[b]	11.9	Blacks, Hispanics, persons younger than 18, persons in families headed by women	.91	971

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the market value of food, housing, and noninstitutionalized medical care.

[b]Note that the individual assignment and prorated methods assign medical values on an individual rather than a family basis.

The adjustment for medical benefits that are not sharable especially affected the poverty rates of blacks, Hispanics, persons younger than 18, and persons in families headed by women. That is, relative to the Census Bureau's market value method, persons in these groups are particularly likely to be reclassified "in poverty" as a result of adjusting for nonsharable medical benefits. Only one of our alternative procedures, that of individual assignment, would substantially reduce dispersion. For this approach, the dispersion index including medical benefits (.98) is higher than for the Census Bureau's and the other alternatives, whose dispersion indexes are all about .90. The average medical benefit under the alternative procedures ranges from nearly $500 to $1,500 less than the Census Bureau's.

Calculating the Medical Benefit Value

The Census Bureau's market value method for calculating and assigning medical benefits is based on a concept that prevails for private insurance values, so that the average medical benefit is assigned to all who are covered by Medicare or Medicaid or both, even though the actual distribution of medical benefits is very skewed. Many eligible people have no or very low charges, while a few eligible people have extremely high charges. Critics of the Census Bureau's method believe, therefore, that the average is a misleading summary statistic and should not be used for assigning individual benefit values. Defenders of the market value method point out that the average paid benefit is meaningful, in the sense that it represents what a policy would cost each eligible individual if the purpose of the program were simply to break even.

Table 3.5 shows alternative procedures for calculating and assigning a value for Medicare under the market value method. The alternative procedures yield higher poverty rates than the Census Bureau's market value method—ranging in 1982 from 0.5 to 0.9 percentage points higher and translating to between nearly 1 million and 1.8 million additional poor persons nationally. Relative to the Census Bureau's market value method, the elderly, unrelated individuals, and single women are particularly likely to be reclassified "in poverty" as a result of using alternative ways of calculating Medicare benefit values. However, altering the way the benefit value is calculated does not reduce the dispersion: except for the index from the random procedure, which is .84, the dispersion indexes are all about .93, compared to the .90 index for the Census Bureau's method. The four alternative procedures yield lower average benefit values for the noninstitutionalized than the Census Bureau's market value method by between $35 and about $1,400.

Table 3.5: Alternative Ways of Assigning Medicare Benefit Values[a]

Alternative computation	Poverty rate	Subgroup especially affected	Dispersion index	Average medical benefit
Mean (Bureau's market value method)	10.8%	•	.90	$2,454
Median	11.7	Elderly, unrelated individuals, single women	.93	1,010
Trimmed mean using the middle 50% of distribution	11.6	Elderly, unrelated individuals, single women	.93	1,071
Trimmed mean using the middle 80% of distribution	11.3	Elderly, unrelated individuals, single women	.93	1,399
Random assignment	11.3	Elderly, unrelated individuals, single women	.84	2,419

[a]All values for Medicaid benefit are means. The data are from California, Georgia, Michigan, and Tennessee for 1982 and add to cash income the market value of food, housing, and noninstitutionalized medical care.

Calculation and Assignment for Enrollees Versus Recipients

The Census Bureau's market value method calculates Medicaid benefits from the number of persons actually receiving these services and assigns the average value to all who are enrolled in the program. Thus, the benefits assigned to the persons who were enrolled in Medicaid but did not receive any Medicaid services is based on the cost of services to those who actually received Medicaid care. To estimate the consequences of this inconsistency, we based two alternatives on the principle

of comparability. One alternative derives the cost of Medicare and Medicaid for all enrollees and assigns it to all those who are enrolled. The other alternative computes costs for only Medicare and Medicaid recipients and credits this value to those who actually use the health care. Others receive a value of zero. The values are then assigned to individuals and summed across all family members, as in the Census Bureau's method.

As shown in table 3.6, the two alternative procedures yield poverty rates ranging between 0.4 and 0.6 percentage points higher than the Census Bureau's market value method (translating to between nearly 840,000 and 1.1 million additional poor persons nationally in 1982). The subgroup analysis suggests that the Census Bureau's procedure is particularly likely to misclassify blacks, persons under 18, and persons in families headed by women as nonpoor when they are really poor. The dispersion of poverty gap distributions before and after including medical benefits is similar for all three procedures. The average benefit values of the alternative methods for the noninstitutionalized range between roughly $10 and $190 lower than the Census Bureau's value.

Table 3.6: Assigning Medical Benefit Values Comparably[a]

Alternative computation	Poverty rate	Subgroup especially affected	Dispersion index	Average medical benefit
Bureau's market value method	10.8%	•	.90	$2,454
Consistently use enrollees	11.2	Blacks, persons younger than 18, persons in families headed by women	.92	2,445
Consistently use recipients	11.4	Elderly, persons in families headed by women	.90	2,267

[a]Data are for California, Michigan, Georgia, and Tennessee in 1982 and add to cash income the market value of food, housing, and noninstitutionalized medical care.

4. What Is the Quality of the Data and Analytic Procedures Used to Derive Benefit Values?

In large-scale surveys like those the Census Bureau relies on, data quality can be adversely affected in many ways. One pervasive way is the misreporting of program participation. (Misreporting income is also a serious problem.) The Census Bureau's experimental market value method uses the current population survey reports of the total value of food stamps received to derive their cash value. The Census Bureau also obtains an independent estimate of the value of food stamps through a

technique that does not depend on survey respondents' recall. The Census Bureau has found that the current population survey's respondents reported only about 72 percent of the value of food stamps actually distributed. However, the Census Bureau does not correct for the misreporting.

Using national data, when the Census Bureau's market value method is corrected for misreported food stamps, the poverty rate falls 0.6 percentage points (from 12.9 to 12.3 percent), translating to nearly 1.4 million fewer poor persons. That is, the Census Bureau's market value method misclassifies persons as poor when they are actually nonpoor. Failure to make the correction has especially affected the poverty rates of persons younger than 18 and persons in families headed by women. The average food stamp amount under the Census Bureau's method is $1,339. This analysis, from our October 1986 report, did not include an assessment of dispersion or changes in average benefit levels.[1]

5. Are Definitions Used Consistently Across Key Steps of Poverty Measurement?

The tax bases the Census Bureau uses in defining income and OMB uses in determining the thresholds affect the experimental methods. By definition, cash income in the official poverty measure and all the Census Bureau's experimental methods is pretax income, but OMB's poverty thresholds are based on a posttax definition of income. To examine the effect of this inconsistency, we adjusted the 1982 cash-only income measure for various types of tax and compared it to the 1982 official poverty threshold.

Adjusting the official cash-only definition of income for federal and state individual income taxes, taxes for federal retirement payroll and the Federal Insurance Contribution Act, and property taxes as well as the earned income tax credit raised the 1982 national poverty rate from 15.0 to 16.6 (translating to nearly 3.8 million additional poor persons). Said another way, the official poverty measure misclassifies persons as nonpoor when they are actually poor. The average tax paid by poor families in 1982 was $317. Failure to adjust for taxes especially affected the poverty rates of blacks, Hispanics, persons younger than 18, unrelated individuals, and single women. That is, the subgroup analysis suggests that the official poverty measure is particularly likely to misclassify persons in these groups as nonpoor when they are actually

[1]See U.S. General Accounting Office, Noncash Benefits: Initial Results Show Valuation Methods Differentially Affect the poor, GAO/PEMD-87-7BR (Washington, D.C.: October 24, 1986).

poor. The relative positions of individuals in the poverty gap distribution remained fairly constant before and after taxes were included.

Summary

The Census Bureau's experimental market value method is open to many potential weaknesses and, as a result, the estimates it produces are questionable, especially when medical benefits are included. Under each of our evaluative questions, we found at least one issue suggesting that the method is flawed. The effect these issues have on the poverty rate and the distribution of the income of the poor and "near poor" varies—many are large enough to change individual poverty status dramatically. Others are small and have little effect on individual poverty status.

Specifically, in answer to our first evaluation question, we found that the Census Bureau has not yet developed a conceptual definition of well-being that allows for systematic decisions about the benefit areas to include in the definition of income. Given the substantial effect that including benefits such as medical care has on the poverty rate, it is essential that a definition be developed. Further, using our dispersion index, we found that the Census Bureau's market value method has a substantial effect on the poverty gap distribution, dramatically altering the poverty status of many persons when there is little evidence to suggest their actual level of well-being has improved.

In answer to our second question, about validity, the results are mixed. While the correspondence between what the Census Bureau claims to be measuring and what in practice it measures is relatively high for some benefit areas (for example, food stamps), for other areas, there is substantial discrepancy (especially medical benefits). The validity of the poverty threshold is also at issue: when it is adjusted for recent estimates of the food-to-income ratio, the poverty rate is substantially higher.

Our third question concerns the extent to which assigned benefits accurately reflect the benefits individuals and families receive. Here, each of our analyses shows the effects of inadequacies in the Census Bureau's method. For example, alternative adjustments for the nonsharability of medical benefits change the poverty rate from 10.8 percent to as much as 12.9 percent, reduce the average benefit level by 60 percent, and show that, in particular, blacks, children, and individuals in families headed by women are reclassified as no longer in poverty under the Census Bureau's market value method. One alternative also decreased the

dispersion in the distribution of poverty gaps after the benefit is included.

On our fourth question, the quality of the data and analytic procedures, our analyses were limited to the issue of misreporting participation in the Food Stamp program. Correcting for this problem reveals that the Census Bureau's method overestimates poverty, nationally, by 0.6 percentage points. The poverty rates of persons under 18 and persons in families headed by women were especially affected by the correction.

Finally, with respect to the fifth evaluation question, concerning the consistency of the method relative to the other dimensions of poverty assessment, our analysis shows that the 1982 poverty rate was 1.6 percentage points higher when a consistent, posttax measure of income is used.

Applying the Approach to Medical Care Benefits

In the valuation of noncash benefits, there is great controversy about whether or not to include in the definition of income the value of medical benefits, the largest noncash form of public assistance. Of all the noncash benefits examined by the Census Bureau, medical benefits have the greatest effect on the poverty rate, regardless of the valuation technique. Beyond deciding whether to include medical benefits lie issues of just how medical benefits should be valued and assigned to individuals.

The Market Value Method

In chapter 3, we presented four concerns specific to medical benefits: measuring private sector costs, nonsharability, calculating the medical benefit value, and the comparability of groups for calculating and assigning benefits. In table 4.1, we summarize the results for alternative solutions to these concerns and a composite alternative to the Census Bureau's current market value method for medical benefits. The table shows that the Census Bureau's computation procedures for the market value method may underestimate the extent of poverty by as much as 1.5 percentage points (nearly 3 million persons nationally) and may differentially affect the poverty rates of select groups.

Table 4.1: A Composite of Selected Adjustments to Computing Medical Benefits in the Market Value Method[a]

Alternative computation	Poverty rate	Subgroups especially affected	Dispersion index	Average medical benefit
Bureau's market value method	10.8%	•	.90	$2,454
Capping the insurance value	12.0	Blacks, elderly, persons in families headed by women	.98	1,233
Nonsharable lower bound	11.0	Blacks	.90	1,964
Consistently use enrollees	11.2	Blacks, persons younger than 18, persons in families headed by women	.92	2,445
Composite[b]	12.3	Blacks, elderly, persons in families headed by women	.98	957

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the market values of food, housing, and noninstitutionalized medical care.

[b]Includes capping at the insurance value, nonsharable lower bound, and consistently using enrollees.

In short, relative to the Census Bureau's market value method, all these alternatives increase the national poverty rate and assign lower average benefit values to individuals. Further, some groups—in particular,

blacks, the elderly, and persons in households headed by women—are particularly likely to be reclassified as in poverty.

In summary, the chapter 3 analyses indicate that the market value method has some serious methodological flaws. They are accentuated when the aggregate consequences in a benefit area such as medical benefits are considered. However, the issues we examined do not exhaust all issues associated with the market value method. Therefore, the method may have additional flaws of various magnitudes.

The Recipient Value Method

In the Census Bureau's definition of the recipient value, the cash value of a noncash benefit is equal to the beneficiary's own valuation of it. Theoretically, it is equal to the amount of cash that would make the recipient feel just as well off as the noncash benefit. For Medicare and Medicaid, the Census Bureau measures the recipient value as the average normal expenditure of persons at similar income levels who do not receive Medicare and Medicaid. We present data here for our questions 1, 2, and 4. We did not examine any of the concerns specifically on the valuation of medical benefits in the recipient value method for questions 3 and 5 because adequate data were not available.

What Is the Basis for Defining Income?

The Census Bureau has not provided a conceptual basis for including medical benefits in the income definition for the recipient value method. That is, no rationale is given for the elements that are included in the definition of income for this method. However, as in our analyses of issues for the market value method, it is still useful to examine the consequences of the Census Bureau's choices. Therefore, we determined the extent to which including medical benefits in the recipient value method changes statistical indicators of poverty. As seen in table 4.2, there is a substantial change.

Table 4.2: The Consequences of Adding Noncash Benefits to Income in the Recipient Value Method[a]

Income[b]	Poverty rate	Subgroups especially affected	Dispersion index	Average medical benefit
Cash	14.4%	•	•	•
Food and housing	13.2	•	•	•
Food, housing, and noninstitutionalized medical	12.4	Blacks, elderly, persons in families headed by women, unrelated individuals, single women	.99	$704
Food, housing, and all medical	12.2	Blacks, elderly, persons in families headed by women, unrelated individuals, single women	.99	765

[a]Data are for the nation in 1984.

[b]"Food and housing" adds to cash income the recipient values of food stamps, school lunches, and rental assistance; "noninstitutionalized medical" adds the value of Medicare and Medicaid services, excluding expenditures for the institutionalized; and "all medical" adds to this the value of Medicare and Medicaid expenditures for institutionalized persons.

The national poverty rate drops 0.8 percentage points in 1984 (translating to approximately 2 million fewer persons in poverty) from 13.2 percent when the values for only food and housing are included in the definition of income to 12.4 percent when the definition includes the values for food, housing, and noninstitutional medical benefits. Relative to the Census Bureau's recipient value method including food and housing, blacks, the elderly, persons in families headed by women, unrelated individuals, and single women are particularly likely to be reclassified "out of poverty" as a result of including noninstitutional medical benefits. Unlike in the market value method, there is no change in the relative positions of individuals in the distribution of poverty gaps before and after medical benefits are included; the dispersion index is .99, indicating very little change.

Are the Methods Valid?

We found three empirically testable concerns related to the validity of the recipient value method with regard to medical benefits: the use of market value data, selectivity bias, and the definition of household income used in assigning medical benefits.

The Use of Market Value Data

An example of discrepancy between the conceptual definition and measurement—that is, invalidity—is clearly seen in the recipient value

method. This method is intended to assess the beneficiary's own valuation of a benefit—that is, its utility—but utility is a difficult concept to establish. Acknowledging this difficulty, the Census Bureau has substituted a simpler method for establishing utility—the identification of normal expenditures at different income levels. The Census Bureau's procedure is therefore only an approximation to the theoretical notion underlying the recipient value method. For medical benefits, the values the Census Bureau uses were derived from the 1972-73 consumer expenditure survey. This means that the computation, which is based on expenditures, may misrepresent the utility an individual might ascribe to the benefits.

Establishing utility is also subject to a variety of technical shortcomings. In particular, the normal expenditures that are used to estimate the value of medical benefits are derived from individuals who do not receive these benefits but have incomes similar to those who do. Since these individuals are likely to be in different circumstances from those who do receive Medicare and Medicaid, the values the Census Bureau uses may be biased—that is, they may be larger or smaller than the true recipient value.

Selectivity Bias

The Census Bureau has itself raised the issue of selectivity bias in its approach to measuring recipient value. Selectivity bias results when information from one group of persons is used to develop estimates for another group. For medical care, using an unsubsidized group to develop estimates for a subsidized group may result in biased estimates. This is what the Census Bureau did when it used the 1972-73 consumer expenditure survey to develop values for medical benefits.

Since the data necessary to obtain a direct estimate of the differences between subsidized and unsubsidized individuals are not available in this survey, we could not analyze the consequences of selectivity bias directly. Instead, we employed a simulation method in which we asked how much of a difference selectivity bias would make if we assumed different degrees of error in the direction of either raising or lowering the value of the medical benefits. It should be noted that other model errors may also contribute to the misestimates. We examined the consequences of both increases and decreases, ranging from 10 to 25 percent, which we believe reasonably bracket the selectivity bias. We show the results in table 4.3.

Table 4.3: Adjusting for Selectivity Bias in Medical Benefits[a]

Alternative computation	Poverty rate	Subgroups especially affected	Dispersion index	Average medical benefit
Recipient value method	12.0%	•	.99	$1,150
Medical benefit values				
Decrease				
10%	12.2	None	.99	1,049
25%	12.3	Blacks, elderly, persons in families headed by women, unrelated individuals, single women	.99	885
Increase				
10%	11.9	Blacks, Hispanics elderly, persons in families headed by women, single women	.99	1,245
25%	11.7	Blacks, Hispanics, elderly, persons in families headed by women, unrelated individuals, single women	.99	1,378

[a]Data are for the nation in 1984 and add to cash income the recipient values of food, housing, and noninstitutionalized medical care; analyses include full income stratification in medical benefit value assignment.

Decreasing medical benefit values by 25 percent increases the poverty rate by 0.3 percentage points in 1984 (nearly 660,000 additional poor persons) and reduces the average medical benefit by $265. Increasing benefits by 25 percent lowers the rate by 0.3 percentage points and increases the average benefit by $228. The simulated corrections for selectivity bias do not disrupt the relative position of individual poverty gaps before and after the inclusion of medical benefits. We found blacks, Hispanics, the elderly, persons in families headed by women, unrelated individuals, and single women differentially affected. That is, the subgroup analysis suggests that relative to our method of increasing medical benefits to correct for selectivity bias, the Census Bureau's recipient value method (which does not correct for selectivity bias) is particularly likely to misclassify persons in these groups as nonpoor. Persons in these groups are also particularly likely to be misclassified poor when the Bureau's recipient value method fails to correct for selectivity bias by decreasing medical benefits beyond 10 percent.

This indicates that quite large degrees of selectivity bias—up to a 25-percent change in medical benefits—have a relatively small effect on poverty rates and virtually no effect on dispersion. Certain groups are, however, differentially affected.

This analysis assumes that the average normal expenditures of the unsubsidized group have been correctly estimated. Because the Census Bureau had to rely on data that were not collected explicitly for assigning a cash value to noncash benefits, it had problems deriving the values of health care for the unsubsidized group. For example, people whose health benefits are partially provided by employers were included in the unsubsidized group, but the value of these benefits was not included in the calculation of normal expenditures. Therefore, the estimate of the average normal expenditure of an unsubsidized group is probably too small.

The Definition of Household Income in Assigning Medical Benefits

Using the data from the 1972-73 consumer expenditure survey, the recipient value method calculates normal expenditure values for unsubsidized persons of different combinations of characteristics. The characteristics are household income, age, the disability status of the householder, and household size. Household income is defined to include cash plus the market value of food stamps. The normal expenditure values are then adjusted to current price levels by the medical component of the consumer price index and are assigned to subsidized cases in the current population survey. Household income used in assigning these values is defined as cash plus the market value of food, housing, and medical benefits (including medical expenditures for the institutionalized). Higher income levels tend to have higher normal expenditure values for medical care.

Some analysts argue that a definition of household income that uses the market value for all benefit areas overestimates the value of medical benefits and, hence, leads to the Census Bureau's underestimating the poverty rate. We examined an alternative definition of income used by the consumer expenditure survey—that is, household income defined as cash plus the market value of food stamps only.

As shown in table 4.4, using the alternative household income definition raises the poverty rate in 1984 by 0.2 percentage points (nearly 500,000 additional poor persons) relative to the Census Bureau's recipient value method. The alternative assigns lower average medical benefits to individuals and has no effect on dispersion. The poverty rates of blacks, the

elderly, persons in families headed by women, and unrelated individuals are differentially affected by the adjustment. That is, the Census Bureau's recipient value method is particularly likely to misclassify persons in these groups as nonpoor when they are really poor.

Table 4.4: Adjusting the Income Cell Definition Used in Assigning Recipient Value Medical Benefits[a]

Alternative computation	Poverty rate	Subgroups especially affected	Dispersion index	Average medical benefit
Recipient value method	12.0%	•	.99	$1,150
Adjusted income cell definition	12.2	Blacks, elderly, persons in families headed by women, unrelated individuals	.99	1,072

[a]Data are for the nation in 1984 and add to cash income the recipient values of food, housing, and noninstitutionalized medical care; analyses include full income stratification in medical benefit value assignment.

What Is the Quality of the Data and Analytic Procedures Used to Derive Benefit Values?

In replicating the Census Bureau's estimates, we identified an issue that had not previously been raised. As noted above, the recipient value method is intended to assign different medical values to people in different categories defined by household income, the age of the householder, and household size. We found that the income stratification was not actually being used in assigning benefits. Only the medical values associated with the lowest income bracket were used. Thus, all persons with the same household size and a householder of the same age were assigned the same benefit, regardless of their household income.

In order to examine the effect of this problem, we replicated the Census Bureau's recipient value procedures by using the Census Bureau's full income stratification. As shown in table 4.5, this lowers the poverty estimates for 1984 by 0.4 percentage points (nearly 800,000 fewer poor persons). This change also increases the average medical benefit assigned to individuals. Further, relative to the Census Bureau's recipient value method, the adjustment differentially affects the poverty rates of blacks, the elderly, persons in families headed by women, unrelated individuals, and single women. That is, the Census Bureau's recipient value method is particularly likely to misclassify persons in these groups as poor when they are really nonpoor. However, there is no noticeable change in the distribution of poverty gaps.

Table 4.5: The Effects of Using Full Income Stratification in Assigning Recipient Value Medical Benefits[a]

Alternative computation	Poverty rate	Subgroups especially affected	Dispersion	Average medical benefit
Recipient value method	12.4%	•	.99	$704
Full income stratification	12.0	Blacks, elderly, persons in families headed by women, unrelated individuals, single women	.99	1,150

[a]Data are for the nation in 1984 and add to cash income the recipient values of food, housing, and noninstitutionalized medical care.

We computed the composite consequences of these issues. The composite effect, in table 4.6, is to increase the number of persons in poverty by 0.1 percentage point (about 250,000 additional poor persons). The average medical benefit increases by about $120, and dispersion is unaffected. These adjustments differentially affect the poverty rates of the elderly and persons in families headed by women. That is, persons in these groups are particularly likely to be misclassified as nonpoor under the Census Bureau's recipient value method.

Table 4.6: A Composite of Selected Adjustments to Computing Medical Benefits in the Recipient Value Method[a]

Alternative computation	Poverty rate	Subgroups especially affected	Dispersion index	Average medical benefit
Recipient value method	12.4%	•	.99	$704
Composite[b]	12.5	Elderly, persons in families headed by women	1.00	825

[a]Data are for the nation in 1984 and add to cash income the recipient values of food, housing, and noninstitutionalized medical care.

[b]Includes using the full income stratification, adjusting the income cell definition, and decreasing the medical value by 25 percent for selectivity bias.

Summary

In general, the market value method is weak on a number of issues related to defining and measuring medical benefits. The method calculates and assigns Medicaid benefit values by using noncomparable groups. It assigns medical values to all members of a family, regardless of whether they actually benefit from them. It assigns to all persons in specific risk categories a benefit value by using a questionable statistic. It does not cap extraordinary medical benefit values. The combined effect of our alternative solutions to these issues is to raise the poverty rate by 1.5 percentage points—that is, nationally, about 3 million more

persons would be classified as poor relative to the Census Bureau's calculations.

We found that the recipient value method has flaws that can distort the classification of persons in or out of poverty. Specifically, the medical benefit values it assigns to individuals are based on an erroneous income stratification. Further, the household income definition it uses to classify individuals into income strata for benefit assignment is cash income plus the market value of all noncash benefits (food, housing, and medical benefits). Medical benefit valuation under the recipient value method is also subject to selectivity bias. Alternative solutions to the concerns examined have, however, only a small composite effect on the poverty rate.

Conclusions, Recommendations, and Agency Comments and Our Response

Conclusions

We examined the effect of conceptual and methodological choices associated with the Census Bureau's market value method on poverty estimates. The effects ranged from lowering the poverty rate from the official rate of 14.4 percent to 9.7 percent (translating to 11.1 million persons reclassified as nonpoor) to raising the poverty rate above the Census Bureau's experimental market value estimate of 10.8 percent to 12.9 percent (translating to 4.0 million persons reclassified as poor).

The effect of corrections for technical errors in the market value method ranged from lowering the poverty rate from the official rate of 14.4 percent to 11.2 percent (translating to 7.5 million persons misclassified by the official poverty measure as poor) to raising the poverty rate from the official rate of 14.4 percent to 21.0 percent (translating to 15.4 million persons misclassified by the official poverty measure as nonpoor).

With regard to the valuation of medical benefits, the range of effects of conceptual and methodological choices was the same as for the market value method. That is, the 1984 official cash-only poverty rate was lowered from 14.4 percent to 9.7 percent when income was defined as cash plus the market values for food, housing, and medical benefits. The reason for this is that the market value method yields the lowest poverty estimates across the three experimental valuation methods, particularly when medical benefits are included in this income definition. (By comparison, the 1984 recipient value poverty estimate is 12.2 percent when income includes cash plus the value of food, housing, and medical benefits.)

Technical errors associated with the valuation of medical benefits using the recipient value and market value methods increased the poverty rate from the Census Bureau's market value estimate of 10.8 percent to as high as 11.4 percent (translating to 1.4 million persons misclassified by the Census Bureau's market value method as nonpoor) and decreased the poverty rate from the recipient value estimate of 12.4 percent to as low as 12.0 percent (translating to nearly 800,000 persons misclassified by the Census Bureau's recipient value method as poor).

Some of these problems, such as the failure to use the full income stratification for medical benefit assignment in the recipient value method, could be corrected immediately. Others, such as the calculation and assignment of medical benefits under the market value method, require better data or alternative calculation methods. Still others, such as the conceptual choices, cannot be resolved immediately and require further study.

We believe we have presented the kind of work that the Census Bureau could have usefully conducted prior to publishing its experimental estimates of poverty. The Census Bureau identified more than 30 issues associated with its experimental valuation techniques in its first publication of the alternative estimates of poverty. It was careful to point out what it thought were the likely effects of the issues. However, this did not constitute enough information to determine the importance of the issues. Empirical evidence, in addition to perceived importance, constitutes useful information for the evaluation of poverty measurement procedures. In developing the valuation techniques, the Census Bureau should have taken more analytic care, especially in light of the experimental nature of its estimates.

The Census Bureau's publications of the alternative estimates of poverty are useful to readers who want to know the procedures the Census Bureau followed in arriving at its estimates of poverty. However, the publications offer only limited assistance to those who want to replicate the procedures and resulting estimates. Most seriously, the publications do not give adequate warning of the magnitude of differences in estimates resulting from conceptual and technical concerns with the estimation of noncash benefits.

The Census Bureau's estimates are widely cited in discussions of trends in poverty and of the effects of various policies. They have been used in this way, for example, by the current administration. We did not empirically assess every concern that has been raised about the Census Bureau's proposed methods, but we found that 10 of the 11 issues we did examine had sizable effects, and 8 of these issues associated with the Census Bureau's methods defined persons "out of poverty" by either reclassifying them as nonpoor or misclassifying them as poor when they were not poor. We also found that blacks, persons in families headed by women, and the elderly were particularly likely to be "defined out of poverty" by the Census Bureau's methods.

The Census Bureau does not publish information about the size and direction of such problems in its estimates, although it notes that problems may exist. Further empirical analysis and more information are needed to confirm the extent of these problems and to identify problems that have not been critiqued in detail.

In light of these conclusions, we offer the following recommendations.

Recommendations

We recommend that the secretary of the Department of Commerce direct the director of the Census Bureau to conduct a more comprehensive examination of the problems with the Census Bureau's valuation methods, especially those involving medical benefits, giving full consideration to the assessment approach we have developed. We also recommend that the Census Bureau fully disclose in its publications the magnitude of the effects of these problems.

Agency Comments and Our Response

The Department of Commerce, commenting on a draft of this report, commended it for its useful quantitative information on poverty estimates based on several legitimate methods for valuing noncash benefits. (A copy of the Department of Commerce letter is in appendix VII.) However, the department believes that differences between our estimates and those of the Census Bureau should not be viewed as over- or underestimates of poverty. We maintain that some of the problems we detected are produced by biases in the measurement process. We distinguish between differences that result from choices in conceptual definitions and computational procedures and differences that result from methodological flaws. Based on measurement theory, the latter produce estimates that are known to bias poverty statistics. In some cases, such bias will overestimates or underestimates the measured level of poverty.

The Department of Commerce reviewers objected to our use of the expression "proposed methods," indicating that the Census Bureau has developed the three methods but has not proposed them as alternatives to the official method of measuring income and poverty. We removed all reference to "proposed methods." Instead, we acknowledge the developmental status of the Census Bureau's techniques for valuing noncash benefits by referring to them as "experimental methods."

The Department of Commerce reviewers also noted that some of our issues could be viewed alternatively, therefore potentially altering our estimates. For example, they pointed out that in the nonsharability analysis, if a family were the unit of analysis, then the receipt of medical benefits might free funds that the family would otherwise have to pay out. This would mean that the family unit would have a greater amount of cash or discretionary income for other purchases. The reviewers also pointed out that the medical-benefits cap that we used in assigning medical benefit values is too low if the elderly are excluded. We acknowledge these comments and suggest that the next important step is actually to test alternative strategies on indicators such as those presented in this report.

Request Letter

Congress of the United States
House of Representatives
Washington, D.C. 20515

March 18, 1985

Honorable Charles A. Bowsher
Comptroller General
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Bowsher:

During the past year, the House Subcommittee on Census and Population has devoted considerable attention to monitoring the Census Bureau's review and re-evaluation of the poverty index. Following hearings conducted last year, an issue of emerging concern was the evaluation methods by which proposed changes to the poverty indicator would be assessed. To address this concern, the Subcommittee asked the General Accounting Office's Program Evaluation and Methodology Division to conduct a study to:

-- examine methods that have been applied in the past to assessing changes in poverty indicators and thresholds;

-- develop and test an evaluation methodology appropriate for assessing future changes, i.e., a methodology that will be applicable for assessing cross-cutting effects in health, welfare, agriculture, housing and other programs which would be affected by changes in poverty indicators and thresholds;

-- analyze, in depth, the technical aspects of alternative ways of valuing non-cash benefits, particularly health benefits, including those proposed in the "Smeeding formulas"; and

-- identify what is important, in reviewing proposed new indicators to assure a full, fair, adequate evaluation of changes proposed; that is, specify the questions that should be asked of those proposing new indicators and about the evidence presented for these new indicators and thresholds.

Honorable Charles A. Bowsher
March 18, 1985
Page 2

The subcommittee, under Congressman Garcia's tenure has demonstrated a continued interest in the analysis that is currently being conducted by the Program Evaluation and Methodology Division. It would, therefore, be helpful to have a briefing on your work to date, and to receive the findings of your full review as soon as possible. If you have any questions, please call Lillian Fernandez, subcommittee staff director, on 225-6295.

Sincerely,

William D. Ford
Chairman
Committee on Post Office
and Civil Service

Robert Garcia
Chairman
Subcommittee on Census and
Population

James V. Hansen
Ranking Minority Member
Subcommittee on Census and
Population

RG/WF/JH/mml

Bureau of the Census Methods for Valuing Noncash Benefits

Valuation Concepts Applied by the Bureau of the Census

Acknowledging that there is no generally agreed-upon way of quantifying noncash benefits, the Bureau of the Census has developed three alternative valuation approaches. These are the market value, recipient value, and poverty budget share methods.[1]

Market Value

The market value of an in-kind transfer is equal to the private market value of the benefits received by an individual or family. For example, in the case of food stamps, the market value is equal to the dollar value of food coupons.

Recipient Value

The recipient value is intended to capture the program beneficiary's own valuation of the benefit. This method is also known as the cash equivalent method. Theoretically, it is equal to the amount of cash it would take to make the recipient feel just as well off as with the noncash benefit. The primary assumption underlying the use of this method is that the receipt of noncash benefits sometimes distorts consumption patterns and, therefore, may add less to a recipient's economic well-being than an equal dollar value cash transfer. If so, the benefits should be valued at less than their market value to accurately reflect their contribution to economic well-being.

In theory, the recipient value or cash equivalent value could be estimated by assigning to each recipient a utility function embodying his or her tastes and preferences, together with the knowledge of the market prices which the recipient faces.[2]

Poverty Budget Share Value

The third valuation method developed by the Bureau of the Census is the poverty budget share. This approach represents a different type of valuation technique, linking the value of noncash benefits directly to the current poverty measurement method. The poverty budget share is not strictly a measure of the valuation of noncash benefits; rather, it is a method for including such benefits in the determination of a person's poverty status. The poverty thresholds are intended to represent the amount of money that would, if spent wisely, be sufficient to meet the

[1] These descriptions were adapted from U.S. Bureau of the Census, Estimates of Poverty Including the Value of Noncash Benefits—1984, technical paper 55 (Washington, D.C.: U.S. Government Printing Office, 1985), pp. 2-4.

[2] A utility function is a theoretical construct that represents the relative value a consumer places on any combination of goods and services that he or she might receive.

basic needs of a family or single person. This approach places a limit on the value of a benefit that is equal to the amount spent on corresponding goods or services by unsubsidized families and single persons at the poverty level. For example, if a person participates in the Medicaid program, then the method will assign a value to Medicaid benefits that is no greater than the amount spent on medical care by people near the poverty level who are not receiving medical care benefits. This is consistent with a presumption that recipients cannot use "extra" amounts of a noncash benefit to meet their basic needs for other types of goods and services.

Benefit Areas and Valuation Methods

In its original work, the Bureau of the Census used the three valuation methods to derive alternative values for benefits in three assistance areas—food, housing, and health care. As shown in table II.1, crossing the three valuation approaches with the three assistance areas yields nine combinations or valuation tasks. At the conceptual level, the valuation tasks for a given approach are clearly similar across the various assistance areas/programs for which values are to be estimated.

Table II.1: Definitions and Illustrations of Three Conceptual Approaches

	Benefit area		
Approach	**Food**	**Housing**	**Medical**
Market value	$ needed for private purchase of food received by household members	$ needed for private rental of a public housing unit (or for subsidized portion of unit) a household lives in	$ needed to purchase private health insurance for household members that would equal the value of Medicare and Medicaid
Recipient Value	$ that would give a recipient the same level of well-being or utility as a noncash transfer such as food stamps or school lunch	$ that would give a recipient the same level of well-being or utility as the housing transfer	$ that would give a recipient the same level of well-being or utility as Medicaid and Medicare
Poverty budget share	$ usually spent for food by people near the poverty threshold that cannot exceed the value assigned by the market value method	$ difference between subsidized rent and the estimated nonsubsidized rent that persons at or near the poverty threshold could afford	$ spent on medical care by households with money income approximately equal to the poverty level

Supplementing cash income data with a variety of existing data on program participation, program costs, and consumer expenditures, the Bureau of the Census has demonstrated how the three valuation approaches can be used to produce alternative income estimates and

poverty rates.[3] At present, the Bureau calculates these alternative poverty rates by basing them on OMB's official poverty thresholds. In other words, the thresholds, which are based on cash income requirements for minimal subsistence, have not been modified; the current valuation techniques are simply methods of altering the income measures.

Each year, beginning in 1982 (for 1979 forward), the Bureau of the Census has published an official poverty rate and 10 alternative rates that take into account noncash assistance. These poverty rates vary with two factors:

1. the method of valuing these noncash benefits—that is, the market value, the recipient value, and the poverty budget share methods, and

2. the definition of income used—that is, cash income only, cash plus food and housing assistance, or cash plus food, housing, and medical assistance (the latter calculations are made both including and excluding institutional medical benefits).

In 1985, the 10 poverty rates generated by varying these two factors ranged from a low of 9.1 percent (when the market value method is used and the income definition includes food, housing, and medical assistance as well as cash income) to a high of 14.0 percent (when only cash income and cash transfers are considered).

Procedures for Estimating the Value of Noncash Benefits

For all assistance areas, information on the recipients of assistance is obtained through the same large-scale survey that is used to measure cash income: the March current population survey, which the Bureau of the Census conducts. In the March version of this survey, the Bureau interviews a nationally representative sample of about 60,000 households to determine their characteristics, income level and income components, and program participation. Questions for estimating the receipt of noncash assistance were added in 1979, some referring to services and subsidies during the previous calendar year.

In the instance of food stamps, a report of the actual value of the benefit (that is, the face value of food stamps received) is obtained in this survey. However, various other data sources and a variety of analytic procedures are used to estimate dollar values for housing, medical, and

[3]U.S. Bureau of the Census, Estimates of Poverty Including the Value of Noncash Benefits: 1979, technical paper 50 (Washington, D.C.: 1980).

other selected food benefits. The specific data sources and procedures called into play vary, depending on the valuation method used and the assistance area being valued. The most salient features of the Bureau's procedures are summarized in table II.2. In each benefit area, a number of programs must be considered; this substantially complicates the operationalization of poverty rate estimation when accounting for noncash benefits.

As highlighted by table II.2, within a given valuation approach, distinct procedures and data sources are used to value the different kinds of benefits. With the market value method, for example, the data sources and procedures for valuing school lunches differ from those used for valuing housing benefits. For estimating the annual value of school lunches received by each child who (according to the March survey) "usually" ate a hot lunch at school during the previous calendar year, the data source is the national government cost information provided by the Department of Agriculture's Food and Nutrition Service.

The analytic procedure used for each price category ("established" or "reduced") is to average the national costs across all children participating in that category of the school lunch program. In contrast, when the market value method is used to quantify housing assistance, the data source is the annual housing survey, and the analytic procedures involve the prediction, based on regression analysis, of market value rents for subsidized units included in the annual housing survey, followed by the subtraction of rent actually paid by the occupants of those units, to yield estimated market value subsidies. This is followed by a "cell-matching" procedure to assign the estimated market value subsidies to the members of the CPS sample who reported having received housing assistance.

To illustrate how these procedures are applied in deriving an income value for a single family, consider a family of four, consisting of a grandmother, a single mother, and two school-age children. When income is defined to include all three assistance areas, this family's income might consist of $5,000 in cash income plus the value of food stamps as well as free school lunches, a housing subsidy, and medical care for the grandmother.

With the market value method, the face value of food stamps received by the family is counted as reported in the CPS. However, other data sources are required for the remaining assistance areas:

Table II.2: The Operationalization of Three Conceptual Approaches

	Benefit area		
Approach	**Food**	**Housing**	**Medical[a]**
Market value	The face value of food stamps received by all household members; the total $ value reported in the current population survey; the average annual government cost per child from Food and Nutrition Service national administration data and recipiency data in the CPS	Regression estimates of the private rental value of each subsidized housing unit minus rent actually paid for the units from the annual housing survey sample; market value for subsidies transferred via cell-matching to similar CPS households in subsidized housing units	Medicare and Medicaid or the average annual government cost annually per person for each program by state and basic risk group (e.g., elderly, disabled); HCFA and Health and Health and Human Services data for individual states; recipiency reports on the CPS
Recipient value	For food stamps and school lunches, normal expenditures are calculated from a sample of households (not including those receiving food stamps in USDA's food commodity program; the average normal expenditure is less than the average food stamp amount (market value), the value equals the average normal expenditure; if this is greater than the average food stamp amount, recipient value equals market value	Normal housing expenditures calculated from a sample of unsubsidized household units with incomes less than $20,000 drawn from the current annual housing survey are matched to similar subsidized CPS households; if the average market value rent is less than the average market value, recipient value equals the average normal expenditure less the rent actually paid by the group; if this is greater than the market value, the recipient value equals the difference between the normal expenditure and the subsidized rental payment	Normal expenditures for (1) those younger than 65 covered for part of their medical care by employer contributions and (2) those 65 covered by Medicare only; data from 1972-73 consumer expenditure survey; if the average normal expenditure is less than the market value amount for Medicaid and Medicare, then the recipient value equals this value; if it is greater than the average market value for Medicare and Medicaid, then the recipient value equals the market value amount
Poverty Budget share	The smaller of 1/3 the current poverty level for the household or the combined market value of food stamps and school lunches for the household; the ratio 1/3 is taken from the original definition of the poverty threshold and is not based on the amount poverty- level families spend for food	Rent actually paid is subtracted from the smaller of the market rent of the housing unit or the poverty budget share housing limit; market rent is based on current data and the housing limit is the current poverty threshold times the housing- expenditure-to-income ratio developed from the 1960-61 consumer expenditure survey	The smaller of (1) the medical-expenditure-to-income ratio as developed from the 1960-61 consumer expenditure survey times the appropriate household poverty threshold or (2) the combined market value of Medicare and Medicaid for the household of the covered person

[a]Separate estimates are made for institutional care expenditures for all valuation methods.

- average values for school lunches are based on administrative data from the Food and Nutrition Service,
- an estimate of the family's housing subsidy is based on regression analyses of data from the annual housing survey, and
- a medical insurance value is based on the average Medicare-Medicaid expenditures for the recipient's risk group in the state, as defined by HCFA.

If one of the other valuation methods is used, it would be necessary to use all these data sources plus survey data on consumer expenditures. Specifically, if the recipient value method were used, data from the consumer expenditure survey would be employed in order to establish "normal expenditures" for comparable families for food and medical care. The Bureau of the Census has used this survey's 1972-73 data in producing the recipient value poverty rates since 1979. If the poverty budget share method were used, the survey's data would also be used in order to calculate, for each benefit area, the ratio of comparable expenditures to total income in poverty-level family budgets. The Bureau of the Census has used 1960-61 consumer expenditure survey data in producing the alternative poverty budget share poverty rates since 1979. It does this because data from before the Medicaid program began are needed for accurate poverty budget share estimation.

Alternative Concepts of Poverty Measurement

Our report focuses on poverty measurement issues associated with variations of the official, income-based poverty definition. However, alternative approaches to the definition of poverty can lead to different poverty measurement strategies. Some attention will be given to these approaches here.

Social and Psychological Measures of Poverty

The social-indicators movement has generated a wide range of quality-of-life measures. Many are intended to capture the type of poverty discussed in chapter 1. However, the dimensions of these alternative conceptualizations differ from the economic dimensions of the current definition in that they rely on other indicators. Purely subjective survey-based indicators exist. Some reflect attempts to quantify general "happiness" or "well-being." In this case, some level of happiness or well-being could be established to differentiate those who are "poor" in terms of happiness or well-being. Others focus more specifically on self-perceived material circumstances.

Other "psychological" measures have been suggested that attempt to capture motivation level or appropriateness of goal-related behavior. At least one observer has suggested that a psychological poverty index might be constructed from such measures.

Some observers have focused on more objective social statistics as poverty indicators. One proposed quality-of-life index incorporates infant mortality rates, life expectancy, and literacy rates in an aggregate measure of deprivation. Additional indicators such as housing conditions, overcrowding, malnutrition, illness rates, and crime rates have also been suggested as elements of a social welfare index analogous to the poverty rate. Most of these proposed measures are intended to foster comparisons between groups or to assess changes over time rather than to classify individuals or families. Some of them are primarily intended for the assessment of the intensity of poverty in less developed countries; however, others have been devised for the United States and other relatively affluent countries.

Economic Measures of Poverty

Economic indicators of poverty such as the official definition and the Census Bureau's experimental procedures generally compare some measure of available resources with a minimum standard for such resources. Within this framework, many conceptual choices are open: What kinds of resources should be counted and how? How should a standard be chosen? We briefly summarize thinking on these questions.

Resource Measurement

The official poverty measurement process includes only cash income among the resources measured; the Bureau's experimental alternatives also include certain noncash government benefits. The inclusion of other important categories of resource has also been discussed.

Imputed Rent

A family that owns its own home in full is far better off economically than a family with the same cash income that must make rental payments on a comparable home. This argues for including the imputed rent to owner-occupied homes in the measurement of resources (a similar case has been made for other forms of personal property, such as automobiles).

Wealth

Some experts argue that wealth itself increases the economic well-being of a household. For example, economic assets provide insurance against future shortfalls and permit more flexible timing of outlays. Furthermore, wealth, as well as income, can be used for current or future consumption.

Government Services

In principle, an individual's "share" of many government services might be counted among the resources contributing to his or her well-being. In some cases, where the value of services provided varies widely among otherwise similar individuals, an argument for taking such services into account seems strong.

Other Nonmarket Resources

These include, prominently, time available for household tasks, child care, and "leisure" pursuits.

Consumption Measures

The issues above might be interpreted as questions about what to include in income. An alternative consumption-based measure of resources has also been proposed. It is argued that consumption is a better indicator of economic well-being than income is for many groups: the old who may consume accumulated wealth, college and professional students who have low current incomes but can borrow to consume future earnings, and those in occupations where incomes fluctuate widely.

Many issues could arise in developing a consumption-based poverty standard that parallel issues relevant to an income-based standard.

Should medical care be counted as consumption? What about work-related expenses, such as child care? Would interest payments be counted? Would noncash government benefits be included?

Poverty Thresholds

A wide range of opinions also exists on the appropriate standards for classifying individuals or families in or out of poverty. "How high should the standard be?" is only the most obvious question. Disagreement also exists on the rationale for choosing or revising a standard, on the extent to which standards should vary according to individual circumstances, and even on whether there should be one or multiple types of standards.

Subsistence

The starkest approach is to set the poverty standard at the minimum income level needed for survival. As usually implemented, this approach sets the poverty level of income at just enough to avoid acute malnutrition. This approach is relevant to some less developed countries but is not generally seen as appropriate for the United States and other modern industrialized nations.

Absolute Versus Relative Standards

An absolute standard of poverty is fixed over time; the level of material well-being that corresponds to the poverty line does not change as the average level of material well-being in the society changes. The current U.S. poverty standard is an absolute standard.

In contrast, relative standards of poverty link the poverty standard to the community's affluence. A "purely relative" definition of poverty sets the standard at some percentile of the income distribution; with such a measure, the poorest X percent of the population are in poverty by definition. A "quasirelative" measure sets the standard at X percent of median income (50 percent is the value most often suggested). With this type of standard, the percentage of the population in poverty can decline only when the income distribution becomes more equal.

It is argued that an absolute standard declines in relevance as society becomes wealthier and that the sense of deprivation that is an important component of poverty depends on the income of others. However, relative standards do not foster comparison of living levels over time.

An absolute standard that is periodically "rebased" to current income levels is one possible alternative. Some analysts have also suggested an

intermediate approach, in which a 10-percent increase in real incomes would imply an increase in poverty thresholds of less than 10 percent but greater than zero. The latter approach, it is suggested, is consistent with the evolution over time in popular and political perceptions of what it is to be poor.

Needs Versus Welfare Level

Some contrast is present in the literature between analysts who attempt to define the poverty threshold in terms of "needs" and those who proceed from the concept of a minimum welfare or utility level. In particular, the former are more likely to focus on the cost and consumption of specific commodities (food, housing, medical care, and so on) in constructing a poverty standard.

Standards Based on Community Norms

Several approaches have been proposed that use survey data to estimate the income level deemed adequate in a given society. For example, respondents may be asked, "How much money does a family of four need to make ends meet in your community?" or "If you had an annual income of X dollars, would you feel (1) delighted, (2) pleased, . . . , (6) terrible?" One approach uses results from across the income scale to develop some index of what the average respondent considers just enough to get by. Other analysts suggest that the more affluent members of a community have unrealistically high estimates of what is needed to get by; these analysts attempt to locate the point on the income scale where average respondents rate an income equal to their own as barely adequate. Yet another approach focuses on ascertaining the level of consumption for each major commodity that is perceived as just enough—for example, how many square feet of housing per family member, how much meat in the diet, and what level of access to medical and dental care are perceived as the decent minimums—and then prices a market basket that corresponds to those norms.

Multiple Standards

Conventional poverty measures compare a single aggregate measure of family resources with a single standard of need. It has been proposed that resources should be compared to needs of several kinds—medical care and housing needs have been mentioned—and that a family should be counted as poor if found to be poor by any of these measures. Alternatively, separate rates might be reported for each type of poverty (such as percentage medically needy, percentage unable to afford adequate housing, or percentage unable to afford an adequate diet).

Other Economic Indicators of Poverty

In light of the many difficulties involved in accurately measuring and assigning income or expenditures, indicators of economic hardship that are not subject to such difficulties have been proposed. One approach singles out such experiences as being unable to pay for necessary dental care or having the gas turned off for nonpayment as more direct indicators of economic hardship. These might be aggregated in several ways to form a hardship index.

While most poverty measurement strategies seek some indicator of material deprivation, other concepts of poverty have also been put forth. The notion of an attitudinal measure of poverty has been mentioned. In some contexts, it may also be relevant to refer to "legal poverty" or "political poverty" experienced by those who are denied equal access to the legal or political systems. In principle, any factor that places sufficient constraints on an individual or a family's possible choices might be incorporated in a definition of poverty.

Experts Consulted

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Marilyn Moon, American Association for Retired Persons

Frederick Mosteller, Harvard University

Mollie Orshansky, private consultant

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Lee Sechrest, University of Arizona

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Bruce Spencer, Northwestern University, and National Opinion Research Center

Carol Weiss, Harvard University

Roberton Williams, Congressional Budget Office

Issues Related to Measuring Poverty and the Value of Noncash Benefits

In prior reports, we have identified over 60 concerns raised by poverty experts about measuring poverty and valuing noncash benefits. These issues have been abstracted into 23 general poverty measurement issues. This appendix discusses these issues in relation to the five evaluation questions described in chapter 2. The individual concerns are listed at the end of this appendix. How they correspond to each issue is designated by their number, in parentheses, following each issue. The Bureau's methods to which the issue applies are indicated by an abbreviation following the parentheses. The abbreviations that appear in parentheses are as follows: CM = computational concern; CN = conceptual concern; OP = operational concern. The abbreviations for the methods are as follows: All = all methods; MV = market value; PBS = poverty budget share; RV = recipient value. The 10 issues that we examined empirically are indicated by an asterisk.

Question 1

What is the basis for defining income?

Issue 1

The official definition of cash income is incomplete. For example, assets, adjustments for work expenses, capital income savings and debt interest, and underground income are not included. (CN16, CN17, CN31, OP26), All

Issue 2

The inclusion of noncash benefits alters the definition of income. The poverty indicator should include noncash benefits in the income definition on a rational and consistent basis (for example, whether the benefit frees up resources or provides for immediate material consumption). (CN07, CN08, CN29), All*

Question 2

Are the methods valid?

Issue 3

The current income-based definition of poverty ignores other conceptualizations of well-being (such as consumption, subjective, and sociocultural). (CN11, CN19), All

Issue 4	The Census Bureau definition of recipient value is a weak approximation of utility and it misrepresents benefit worth. This misestimation stems, in part, from the calculation of the normal expenditures of recipients at a resource level equal to cash income plus the market value of all types of noncash benefits. (CN04, CN05, CN24, OP04, OP07, CM01, CM02), RV*
Issue 5	The market value method as developed by the Bureau overvalues benefits. In the case of medical benefits, an unreasonably large benefit does not enhance the overall budget of the person by a corresponding amount, but when it is added to cash income, it may inappropriately reclassify persons as nonpoor. (CN01, CN02, CN03, OP01, OP24, OP25, CM07), MV*
Issue 6	The Census Bureau definition of poverty budget share value is incomplete. (CN06, CN25), PBS
Issue 7	Estimates of normal or average expenditures on goods and services by subsidized consumers for use in the valuation of noncash benefits are derived by assuming that the benefit value is equal to the normal expenditures on goods and services by unsubsidized consumers with similar characteristics. A selectivity bias results when the groups are not equivalent in every respect except the benefit receipt. (OP05, OP06), RV*
Issue 8	The poverty threshold currently accounts for medical care as some proportion of the 2/3 nonfood expenditures of the poor. To the extent that the elderly must spend a greater portion of their income on medical care, the current threshold underestimates the number of poor persons, especially the elderly poor. Critics argue that if noncash benefits are added to cash income for purposes of measuring poverty, the poverty threshold should be adjusted. The adjustments discussed center on the issue of adding the value of the noncash benefits to both sides of the poverty measurement equation (that is, income and threshold). (CN13, CN21), All
Issue 9	The current poverty thresholds are based on data from a 1955 survey that found that on the average families of three or more spent one third

of their after-tax income on food. To the extent that the survey did not capture the expenditures of poor households then or expenditure patterns have changed or both, the poverty thresholds and poverty budget share method are inaccurate. (CN22, CN23, OP17, OP19), All*

Issue 10

The poverty threshold is currently adjusted annually by the consumer price index. The index is based on the consumption of goods and services of the average consumer, not the poor. This adjustment misestimates the real consumption of the low-income population and therefore results in a misestimate of the poor. (CN14), All

Issue 11

Depending upon where a person lives, since the poverty thresholds for a family of a given size are the same throughout the country, without regard to differences in living costs, persons in similar situations living in different parts of the country may in fact be classified differently. (CN20), All

Issue 12

The current poverty statistics (the poverty rate) ignore income fluctuations around the poverty line and do not capture how poor the poverty population is. (CM04), All

Question 3

Do the values that are assigned accurately represent the benefit levels received?

Issue 13

Many eligible people do not receive benefits. Obtaining imputed values by dividing total benefit outlays by the number of recipients overestimates the value of the benefit when applied to all people eligible and underestimates the value actually received by some. Crediting people who actually did not receive any benefits with an average value would overestimate the income of those people. A related issue involves poverty estimates that include the imputed value of benefits for populations not included in the estimate (such as institutionalized or deceased persons). This practice can result in estimates that do not accurately reflect the poverty population. (CN10, OP03, OP13, OP20, OP21), RV*

Issue 14

Many poor households include elderly persons who receive noncash benefits such as Medicare. Benefits of this kind are not sharable with others

in the household. Assigning values for these noncash benefits to all members of the household who cannot benefit directly from them underestimates the number of poor persons and poor families. (CN30, OP16), MV*

Issue 15

The total value of noncash benefits is not an additive function but rather less than that; for each additional benefit, the value to the recipient may be less because there is less flexibility in the family budget. Furthermore, equivalence scales for family size and composition may not adequately reflect need differences. (CN26, CN32), RV

Issue 16

In the Census Bureau's estimates of the numbers of persons in poverty under alternative definitions of income, the calculations utilize the average value for medical benefits received by the recipient population. Given that this distribution includes many very high values and zero expenditures, the summary measure used does not accurately reflect the typical value and tends to overvalue the medical benefit. In calculating the value of housing subsidies for the poor, the Census Bureau, using the market value method, derived negative values for 20 percent of the cases. These negative values were disregarded in the calculation of the average subsidy value. This truncation of the distribution of subsidy values inflates the average value. (CM05, CM06), MV*

Question 4

What is the quality of the data and data analytic procedures used to derive benefit values?

Issue 17

There are groups of people who are not covered on the decennial census or the current population survey. One group not covered and important to the estimates of poverty is the homeless. (OP22), All

Issue 18

Income is misreported on surveys. For some groups, income misreporting is widespread. To the extent that income misreporting occurs for the poor population, poverty rates are inaccurate. (OP14), All

Issue 19

Many poor persons suffer from temporary periods of income deficiency. In order to mitigate the effects of temporary income deficiency, poor persons claim benefits for periods shorter than 1 year. Since income is

measured on an annual basis, part- and full-year program participation are not distinguished in the current population survey for most programs. This practice leads to an overestimate of the part-year participant's income and an underestimate of the number of persons in poverty. (CN18, OP18, OP23, OP27), All

Issue 20

The accuracy of the poverty estimates depends on the data used in producing those estimates. To the extent that the data are obsolete or of poor quality, the poverty estimates will be inaccurate; the results can be over- or underestimates. (CN27, OP08, OP09, OP10, OP11), All

Issue 21

Program participation is misreported on surveys. To the extent that income resulting from program participation is not counted in the calculation of income for poverty measurement purposes, the poverty estimates will be inaccurate. (OP15, CM03), All*

Issue 22

Medical benefits (Medicare and Medicaid) are difficult to measure. (CN15, CN28, OP02, OP12), All

Question 5

Are definitions used consistently across key steps of poverty measurement?

Issue 23

Comparing an income measurement based on pretax income to an income threshold (such as the poverty threshold) based on posttax income, as is currently done, is inconsistent and inappropriately classifies too few people as impoverished. (CN09, CN12), All*

Conceptual Concerns

1. Market value method overvalues benefit worth, especially medical benefits for the elderly.

2. Medical market values for the elderly "eliminate" the elderly from counts of the poor in some states.

3. Market value method lacks "caps" (limits) for need/benefit categories (especially medical).

4. Recipient value method undervalues transfers relative to income.

5. Recipient value method overestimates benefit worth because normal expenditures calculated are at a resource level that equals money income plus the market value of all types of noncash transfers.

6. Poverty budget share captures the "substitution" effect, not the "income" effect, of in-kind benefits.

7. Public or government noncash benefits should or should not be included in official definition of income.

8. Private noncash benefits should or should not be included in the official definition of income.

9. Calculations of income should be on a pretax (or posttax) basis.

10. Medicaid expenditures for institutionalized populations should or should not be included in the income of the noninstitutionalized.

11. Absolute definitions of poverty ignore the well-being of the poor relative to national norms.

12. Poverty thresholds should be consistent with income definitions.

13. Current food-to-income "multiplier" is not appropriate when noncash benefits are included in the income definition.

14. Consumer price index does not adequately reflect changes in cost of living for average low-income persons.

15. Changes in medical costs may be independent of changes in services.

16. Assets are not included in the official definition of income.

17. Adjustments for work expenses, leisure, and so on are not included in official definitions of income.

18. Lifetime income should or should not be a basis for the official income definition.

19. Current definitions of poverty ignore other conceptualizations (consumption, subjection, sociocultural).

20. A single national threshold may be less appropriate than a set of separate thresholds for geographic areas.

21. Medical needs of the elderly should be included in threshold for the elderly.

22. Same valuation methods should be used to (a) determine need and (b) value noncash income.

23. Official minimum-needs standards may be inaccurate and out of date.

24. The recipient value method (utility function) is not meaningful for medical benefits that maintain a subset alive but provide zero net benefit.

25. The appropriate poverty budget share values are undefined because many people (not all poor) receive uncompensated medical care.

26. Receipt of noncash benefits is not an additive function but rather less than that; for each additional benefit, the value to the recipient may be less because there is less flexibility in the family budget.

27. To the extent that federal noncash benefits substitute for previous state and local charitable programs, public hospitals, and so on, postnon-cash-benefit income is overestimated relative to prenoncash-benefit income.

28. Medicare includes an allowance to hospitals for capital equipment, new buildings, and the training of interns and residents, which is assigned to only the aged who qualify for Medicare.

29. Pension benefits should or should not be treated as income when they are received as opposed to when they are accrued.

30. Attributing benefits to households when the benefits really accrue to individuals can distort the income or poverty classification of individuals, pushing all members of the household over the poverty line instead of a subset of the household.

31. Capital income, savings, and debt or interest are not adequately or consistently counted.

32. Equivalence scales for family size and composition may not adequately reflect need differences.

Operational Concerns

1. Insurance value is used for medical benefits (versus services consumed).

2. Medical goods comparable to Medicare and Medicaid are difficult to identify in the private market.

3. Persons categorically eligible but not enrolled are not accounted for when the "population at risk" is estimated as persons ever enrolled or covered under Medicaid.

4. Normal expenditures are a weak approximation of a utility function.

5. Family cell-matching procedure used to estimated normal expenditure risks selectivity bias.

6. Constructing an adequate counterfactual group is difficult.

7. Recipient value method assumes that benefits in excess of normal expenditures have a value of zero.

8. Consumer expenditure survey data used for recipient values are of poor quality.

9. 1960-61 consumer expenditure survey data used to calculate poverty budget share values are out of date.

10. Quantity and quality of available benefit data are questionable.

11. Quality of HCFA Medicaid data is poor.

12. No adjustment is made for Medicaid benefit difference by race or residence.

13. Private as well as public school children were counted in current population survey as participants in the schoollunch program.

14. Income is underreported in the current population survey.

15. Program participation is underreported in the current population survey.

16. Household versus family should or should not be used as income unit.

17. Multiplier used to calculate threshold may be inaccurate under current consumption patterns.

18. Time period for which income is measured (short-term, long-term) may affect results.

19. "Market basket" has been restricted to private goods and services.

20. All persons receiving cash assistance have been counted as "recipients" of Medicaid, regardless of whether they have received benefits or say they are covered.

21. Medical benefits paid to deceased persons are included in the average benefit value assigned to recipients.

22. Current population survey population coverage may not be adequate

23. For most programs, the current population survey data make no distinction between part-year and full-year participation.

24. Medical market values determined by the Census Bureau's procedures underestimate the true market cost of private health insurance.

25. The insurance approach to valuation of noncash benefits treats Medicaid as if it were a gift of an all or nothing insurance policy. Enrollees are not afforded the option of selecting a less generous policy with the balance received in cash.

26. The underground economy and underground income are currently excluded from the official measures.

27. The CPS data establish household and family membership at the time of the survey interviews, whereas income data refer to the previous calendar year.

Computational Concerns

1. Variance of normal expenditures is suppressed in cell-matching approach (limitation of number of cells).

2. Some regression R^2 values are low (for example, medical values for persons under 65 years old; $R^2 = 0.07$).

3. Imputation methods—for missing data and benefit value—may not be adequate for poverty population.

4. Current poverty rate ignores the extent of income fluctuations around the poverty line.

5. Average, mean medical benefit may be less appropriate than alternative measure of central tendency.

6. Negative values for housing subsides were assigned a value of zero (truncation).

7. Current methods of valuing Medicaid as an insurance policy differ from private insurance practices—that is, family policies cost the same, regardless of the number of children.

Technical Description of Alternative Computations

This appendix describes the issues we examined in this report and provides more detailed descriptions of the procedures we followed in our analyses. It also provides supplementary information on the procedures. For each analysis reported in chapters 3 and 4, we present the change in the overall poverty rate, identify subgroups especially affected, present the average benefit assigned to individuals, and note an index of dispersion for poverty gaps before and after the inclusion of the benefit. In this appendix, we supplement this information by presenting poverty rates for all subgroups for each alternative procedure and by presenting additional information on the benefit amounts assigned.

The five basic evaluation questions raised in this report are (1) What is the basis for defining income? (2) Are the methods valid? (3) Do the values that are assigned accurately represent the benefits that are received? (4) What is the quality of the data and analytic procedures used to derive benefit values? and (5) Are definitions used consistently across key steps of poverty measurement? Below, we present detailed descriptions of alternative computations for each issue analyzed for our evaluative questions in chapter 3 and 4.

Market Value Method

What Is the Basis for Defining Income?

Issue 2 is that the official poverty indicator is based on an income definition that includes only cash income. Given the substantial increases in noncash assistance provided to the poor, experts in poverty measurement have suggested that the income definition be expanded to include the value of noncash benefits that the poor receive. We replicated the Bureau's poverty estimates, using current poverty measurement procedures. In chapter 3, we focused on the market value method. We reproduced the Bureau's estimates for the following income definitions: cash only; cash plus food and housing benefits; cash plus food, housing, and noninstitutional medical benefits; cash plus food, housing, and medical benefits including expenditures for the institutionalized.

Table 3.1 presents the basic results of these analyses. Table VI.1 gives the specific poverty rates for each alternative income definition for each subgroup we examined. Table VI.2 gives additional information on the benefits assigned.

Table VI.1: Poverty Rates When Adding Noncash Benefits to Income in the Market Value Method[a]

Subgroup	Cash only	Food and housing	Food, housing, and noninstitutionalized medical	Food, housing, and medical including institutional
All	14.4%	12.9%	9.7%	9.8%
White	11.5	10.5	8.1	8.0
Black	33.8	28.8	21.3	20.5
Hispanic	28.4	25.5	20.2	19.9
Persons younger than 18	21.5	18.9	15.2	14.9
Persons 65 and older	12.4	10.5	3.0	2.6
Persons in families	13.1	11.6	9.0	8.8
Persons in married-couple families	8.3	7.6	6.1	6.0
Persons in families maintained by women with no husband	38.4	32.8	24.3	23.6
Unrelated individuals	21.8	19.8	14.2	13.8
Male	18.7	17.9	14.9	14.7
Female	24.4	21.5	13.5	13.1

[a]Data are for the nation in 1984.

Table VI.2: Summary Statistics on Adding Noncash Benefits to Income in the Market Value Method[a]

Alternative computation procedure	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Food and housing	$715	$1,178	$125	$10	$9,503	$16,407
Medical, excluding institutionalized	2,505	1,553	2,064	272	17,635	61,398
Medical, including institutionalized	2,981	2,470	2,202	281	32,823	73,797

[a]Data are for the nation in 1984.

A point important to note about medical benefits in this table is that the mean for medical benefits is substantially larger than the median (including or excluding institutionalized care). This suggests that the imputed distribution of market value medical benefits is skewed, with large values in the upper tail of the distribution. Indeed, the maximum medical value assigned by this method is very large, especially when institutional care is included (the maximum value is $32,823).

Are the Methods Valid?

Capping

Issue 5 is that under the Census Bureau's proposed market value method, average medical benefits are calculated and assigned to all

eligibles in an array of risk categories. Once the values are assigned to individuals, the medical benefit values are added across all members of a family and assigned to each individual so that each person has a family medical benefit for the calculation of poverty estimates.

For example, assume five members of a family individually receive $2,000, $2,000, $1,000, $0, and $0. The family medical benefit, which is assigned to each member of the family in the poverty calculation, is the sum of the individual values, or $5,000. This procedure can result in very large medical values, especially in family units in which a large number of person are covered by Medicare or Medicaid or both. When expenses for institutional care are excluded, the maximum medical value assigned to a family in the current population survey sample in 1984 is $17,635, it is $32,832 when institutional expenses are included.

We used a representative value for the cost of a family health insurance policy as a cap on the market value of medical benefits for families. We assume that these benefits cannot be worth more to a family than the cost of a "typical" insurance policy.

The major source for our estimate of an insurance value is published data from the 1977 national medical consumer expenditure survey. Unlike more recent surveys, this one collected family-level data for both beneficiary and employer payments for health insurance. However, because the published results contain a limited amount of detail, we made some adjustments and approximations.

Medicare beneficiaries require much more modest private insurance coverage than individuals without Medicare eligibility. We used data for families with at least one family member who is not on Medicare and has private insurance coverage. The mean cost of coverage for families with two or more members (including employer and other nonbeneficiary contributions) was $998.

However, 9 percent of those families had only nongroup coverage. Because the nongroup policies typically offer more restricted benefits, and persons with health problems may be denied coverage, or offer coverage only at prohibitive prices, it appears inappropriate to compare them with Medicare or Medicaid. The derivation of the family insurance value, therefore, involved the following steps:

First, we calculated the ratio of group insurance premiums to nongroup insurance premiums. The raw data for all consumer units (families and

unrelated individuals) were adjusted to correct for differences in the populations covered by each type of insurance. In particular, those with only nongroup insurance are more likely to be poor or near poor and more likely to be single than are those with group insurance. Both numerator and denominator were adjusted to the values expected if each population had characteristics midway between those of the "group" and "nongroup" populations.

Next, we derived the ratio of group insurance premiums for families to those for individuals. Values for all private insurance were adjusted to reflect the percentage of each population holding only nongroup insurance and the adjusted group and nongroup insurance ratio.

Next, we adjusted the average 1977 value of group insurance premiums for all consumer units downward (about 10 percent) to correspond to the more representative median value of coverage rather than the mean. Next, the resulting value was adjusted to 1982 dollars, using the medical component of the consumer price index.

Then representative group insurance values for families and for unrelated individuals were determined, using the adjusted premium value for all consumer units, the breakdown of these units between individuals and families, and the adjusted family and individual group insurance ratio.

Finally, the value for Medicare and Medicaid was assigned to each individual in the sample by the market value method. However, when the sum of these values over a family exceeded the family insurance value, only the latter was counted as income.

Private group insurance policies may not be comparable to Medicare or Medicaid; it has been suggested that the latter are more generous in their benefits. While a capping approach may avoid assigning to larger families more than they would pay in the private sector, it may also assign to individuals and small families less than they would pay for group insurance, since these groups apparently subsidize larger families to some extent by the typical group rate structure. Table 3.2 presents the basic results of this analysis. Table VI.3 gives poverty rates for all subgroups and table VI.4 gives additional information on benefit amounts assigned.

Table VI.3: Poverty Rates When Capping Market Value Medical Benefits[a]

Subgroups	Bureau's market value method	Cap at insurance value
All	10.8%	12.0%
White	9.5	10.3
Black	21.1	25.2
Hispanic	20.1	21.0
Persons younger than 18	15.9	17.6
Persons 65 and older	4.5	7.0
Persons in families	9.8	11.0
Persons in married-couple families	6.9	7.7
Persons in families maintained by women with no husband	24.6	27.6
Unrelated individuals	15.6	17.5
Male	15.8	16.8
Female	15.4	18.0

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the value of food, housing, and noninstitutionalized medical care.

Table VI.4: Summary Statistics for Medical Benefits When Capping Market Value Medical Benefits[a]

Alternative computation procedure	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Bureau's market value method	$2,454	$1,434	$2,091	$273	$13,174	$11,260
Cap at insurance value	1,233	330	1,423	273	1,551	5,754

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982.

Validity of the Poverty Threshold Multiplier

Issue 9 is that the poverty threshold that is currently used as the official income standard for classifying persons in or out of poverty is derived as the product of the cost of the 1961 economy food plan times a multiplier that is the inverse of the food-to-income ratio derived from the 1955 survey of food consumption. This value is adjusted yearly by the consumer price index. Based on the 1955 survey, it was determined that one third of the average family budget was spent on food, so the multiplier for the economy food plan was set at 3.0.

One of the key criticisms of the poverty threshold today, in light of noncash benefits available to the poor and changes in expenditure patterns, is the applicability of the 1955 food-to-income ratio and, hence, the multiplier used in setting the poverty threshold. Some analysts believe that

Table VI.5: Poverty Rates When Adjusting the Multiplier Used in Deriving the Poverty Threshold[a]

	Multiplier			
Subgroup	**2.5**	**3.0 or current**	**3.5**	**4.0**
All	11.2%	14.4%	17.7%	21.0%
White	8.7	11.5	14.6	17.6
Black	28.1	33.8	38.6	44.1
Hispanic	22.8	28.4	33.5	38.6
Persons younger than 18	17.6	21.5	25.2	28.9
Persons 65 and older	7.1	12.4	17.9	23.9
Persons in families	10.3	13.1	16.0	19.0
Persons in married-couple families	6.1	8.3	10.9	13.6
Persons in families maintained by women with no husband	32.5	38.4	43.2	48.0
Unrelated individuals	16.1	21.8	27.4	32.6
Male	14.6	18.7	23.0	27.0
Female	17.3	24.4	31.0	37.2

[a]Data are for the nation in 1984.

because of changes in expenditure patterns and the availability of noncash benefits, the multiplier today is on the order of 3.0 to 4.0; others believe it is less than 3.0.

We altered the multiplier to levels suggested in the poverty measurement literature as being more appropriate. We performed separate analyses using multipliers of 2.5, 3.0 (official), 3.5, and 4.0. In each case, we compared cash income to the adjusted threshold to determine poverty status. The basic results of this analysis are presented in table 3.3. Table VI.5 presents poverty rates for each subgroup we examined, using the different poverty thresholds.

Do the Values That Are Assigned Accurately Represent the Benefits That Are Received?

Nonsharability

Issue 14 is about the fact that the Census Bureau's market value method for including medical benefits in income sums the Medicare and Medicaid values of all family members and adds this value to sharable family income (cash and food and housing benefits). Each individual is judged

to be in or out of poverty in a comparison of this total family income to the poverty threshold for a family of that size.

In the addition of the sum of the medical benefits of all family members to income, some individuals may be moved out of poverty by benefits they cannot use. For example, a grandmother who is covered by Medicare cannot share these benefits with other family members in her household (such as her son, daughter-in-law, or grandchild), but by the current method, her medical benefit is "shared" and may move all the family members out of poverty. We developed three methods to estimate the number of people moved out of poverty by nonsharable medical benefits: the nonsharable lower bound method, the individual assignment method, and the prorated method.

Nonsharable Lower Bound Method. This method uses the same general procedure as the Bureau's proposed market value method, with one exception. Persons who are not covered by either Medicare or Medicaid are not moved out of poverty by the inclusion of medical benefits. This procedure adjusts for people with no medical coverage who are moved out of poverty by the inclusion of medical benefits of other family members. It does not adjust, however, for individuals with small medical values who are moved out of poverty by the large medical benefits of other family members. It represents a "lower bound" on the number of people affected by nonsharable medical benefits.

Individual Assignment Method. For a more inclusive alternative, we added each individual's medical benefit separately to sharable family income and compared this value to the family's poverty threshold. Individuals with large medical benefits would have a greater likelihood of being moved out of poverty than individuals with small medical values.

For example, consider a family consisting of a grandmother receiving $2,000 cash income and $2,000 of Medicare benefits; her daughter, who receives $4,000 cash income and $700 of Medicaid benefits; and a grandchild, who receives no cash income and $300 of Medicaid benefits (individual Medicaid benefits can differ because several risk groups are used in the assignment process). Assume further that the poverty threshold for a family of three with an elderly member is $7,500. Under the Bureau's proposed market value method, $9,000 would be assigned to all members of the family for comparison with the poverty threshold, and all three family members would be treated as being out of poverty. The individual assignment method takes the total family cash income of

$6,000 and, for each member of the family, adds to it their medical benefits. In this case, the grandmother would have a new total income of $8,000, the daughter would have a total income of $6,700, and the child would be assigned a total income of $6,300. These incomes would then be compared to the poverty threshold for a family of three with an elderly member. In this case, only the grandmother would be classified as out of poverty.

Note that this method mixes levels of aggregation. Individual medical values are added to family income and a comparison is made to family thresholds. In an attempt to address this inconsistency, we also used the prorated method.

Prorated Method. In this method, all values are for individuals. Each individual's income is obtained by dividing the family's sharable income equally between the family members and adding to this amount the individual's medical benefit. In determining individual thresholds, we first obtained each individual's share of the nonmedical component of the family threshold by a three-step procedure. (1) we obtained an estimate of the medical component of the family threshold by multiplying the poverty budget share proportion for medical expenditures by the family threshold (the poverty budget share proportion for medical gives the proportion of income spent on medical expenditures by persons around the poverty line). (2) We subtracted the medical component from the family threshold. And (3) we divided the remaining amount equally between the family members. Then, to each individual's share of the nonmedical component of the family threshold, we added an estimate of how much an individual around the poverty line normally spends on medical expenses (obtained by multiplying the poverty budget share proportion for medical expenses for a single person by the threshold for a single person). Finally, we determined poverty status by comparing the individual income to the individual threshold.

For example, in the family described above, the prorated method would add to each individual's part of the sharable family income ($6,000 divided by 3, or $2,000) each individual's medical benefits. Hence, for poverty-classification purposes, the grandmother would have a total income of $4,000, the daughter's income would be $2,700, and the grandchild's total income would be $2,300. These incomes would then be compared to a new poverty threshold calculated for each individual. Table 3.3 presents the basic results of this analysis. Table VI.6 gives poverty rates for all subgroups we examined and table VI.7 gives additional information on benefit amounts assigned.

Table VI.6: Poverty Rates When Adjusting for Nonsharable Medical Benefits[a]

Subgroup	Bureau's market value method	Nonsharable		
		Lower bound	Individual assignment	Prorated
All	10.8%	11.0%	12.9%	11.9%
White	9.5	9.6	10.9	10.5
Black	21.1	21.9	27.3	23.8
Hispanic	20.1	20.3	22.5	22.3
Persons younger than 18	15.9	16.2	20.5	19.9
Persons 65 and older	4.5	4.5	5.4	3.9
Persons in families	9.8	10.1	12.2	11.1
Persons in married-couple families	6.9	7.0	8.4	8.1
Persons in families maintained by women with no husband	24.6	25.4	31.8	27.3
Unrelated individuals	15.6	15.6	15.6	15.6
Male	15.8	15.8	15.8	15.8
Females	15.4	15.4	15.4	15.4

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the value of food, housing, and noninstitutionalized medical care.

Table VI.7: Summary Statistics on Medical Benefits When Adjusting for Nonsharable Medical Benefits[a]

Alternative computation procedure	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Bureau's market value method	$2,454	$1,434	$2,091	$273	$13,174	$11,260
Nonsharable						
Lower bound	1,964	1,673	1,739	0	13,174	11,260
Individual assignment	971	868	809	0	4,365	11,280
Prorated	971	868	809	0	4,365	11,280

[a]Data are for California, Georgia, Michigan, and Tennessee in 1982.

Calculating the Medical Benefits Values

Issue 16 is about how the Census Bureau's market value method obtains the values to assign to persons covered by Medicare and Medicaid by calculating mean expenditures. Specifically, it obtains Medicare values by dividing an estimate of total Medicare reimbursements by the total number of people enrolled in the program (supplemental medical insurance premiums are also deducted). Note, however, that the distribution of Medicare reimbursements is severely skewed. A small proportion of the enrolled population receives a large proportion of the total amount reimbursed.

For example, as table VI.8 shows, 5 percent of the elderly population covered by Medicare in California in 1982 received approximately 56 percent of the total payments for the elderly. The value of the mean can be severely affected by the presence of a few cases with very large reimbursements. Therefore, other computational procedures may produce substantially different values to assign to those covered by Medicare.

Table VI.8: Individual Distributions of Medicare Reimbursements to the Elderly in California in 1982

	Persons		Amount reimbursed	
Reimbursement category	Number	Percent	$	Percent
0	867,791	33.5	0	0
1-99	316,480	12.2	15,348,000	0.3
100-299	411,520	15.9	77,152,000	1.6
300-499	197,760	7.6	76,676,000	1.6
500-999	196,760	7.6	138,074,000	2.9
1,000-1,499	81,500	3.1	99,811,000	2.1
1,500-1,999	54,280	2.1	94,546,000	2.0
2,000-2,999	86,000	3.3	214,357,000	4.5
3,000-4,999	119,900	4.6	468,394,000	9.7
5,000-7,499	78,340	3.0	480,859,000	10.0
7,500-9,999	51,620	2.0	447,245,000	9.3
10,000-14,999	57,160	2.2	696,199,000	14.5
15,000+	75,060	2.9	2,003,932,000	41.6
Total	**2,593,931**	**100.0**	**4,812,593,000**	**100.1**

Source: Health Care Finance Administration, Medicare Program Statistics (Washington, D.C.: U.S. Government Printing Office, 1984).

We obtained distributions of 1982 Medicare enrollments and reimbursements in four states (California, Georgia, Michigan, and Tennessee) for the elderly and disabled risk groups from HCFA. We used five procedures to assign values from these distributions to individuals identified on the CPS as covered by Medicare: mean, median, trimmed mean using the middle 50 percent of the distribution, trimmed mean using the middle 80 percent of the distribution, and random assignment.

- Mean. This procedure is the Bureau's current market value method. Within each state risk group category, the mean reimbursement per enrollee is computed for the year and is assigned (minus supplemental medical insurance premiums) to those identified as covered by Medicare.

- Median. We computed the median reimbursement per enrollee for each state risk group category and assigned these values (minus supplemental medical insurance premiums) to those covered by Medicare on the CPS.
- Trimmed mean using the middle 50 percent of the distribution. We removed the 25 percent of the cases with the largest reimbursements and the 25 percent with the smallest reimbursements, and then we computed the mean reimbursement for the remaining 50 percent of the cases. We calculated these trimmed means for each state risk group category and assigned the values (minus supplemental medical insurance premiums) to those covered by Medicare on the CPS.
- Trimmed mean using the middle 80 percent of the distribution. This procedure is the same as the one above, but we trimmed out the top and bottom 10 percent of the cases and computed the mean reimbursement on the remaining 80 percent.
- Random assignment. We assigned Medicare values randomly so our imputed distributions would match HCFA's reimbursement distributions, which give the number of people who received Medicare reimbursement in 1982 in various ranges and the total amount paid to persons with reimbursements in the range. For each state risk group, we computed the proportion of Medicare enrollees who received reimbursements in each range and the average reimbursement in the range. We determined the number of weighted CPS cases that would be necessary to reproduce the proportions in each of HCFA's reimbursement categories. We then randomly assigned CPS cases covered by Medicare to the reimbursement categories and gave the category mean (minus supplemental medical insurance premiums) as their value for Medicare.

In each procedure, we assigned the same Medicaid values as those the Bureau used in the 1982 calculations, so our different procedures simply reflect changes in the way the value of Medicare is calculated. After assigning the Medicare and Medicaid values to individuals, we followed the Census Bureau's procedures by summing individual medical values over the entire family and adding this value to family income (including the values for food and housing benefits) in the poverty calculation.

The basic results of this analysis are presented in table 3.4. Table VI.9 gives the specific poverty rates for each alternative for each subgroup we examined. Table VI.10 gives additional information on the benefits assigned. Note that negative values can occur in several of the analyses.

Table VI.9: Poverty Rates Under Alternative Ways of Assigning Medicare Benefit Values[a]

Subgroup	Mean under Bureau's market value method	Mean	Trimmed mean: Middle 50% of distribution	Trimmed mean: Middle 80% of distribution	Random distribution
All	10.8%	11.7%	11.6%	11.3%	11.3%
White	9.5	10.3	10.3	10.0	10.0
Black	21.1	22.8	22.6	21.9	22.3
Hispanic	20.1	20.4	20.4	20.3	20.3
Persons younger than 18	15.9	16.2	16.1	16.1	16.1
Persons 65 and older	4.5	11.0	10.7	8.1	8.3
Persons in families	9.8	10.3	10.3	10.1	10.1
Persons in married-couple families	6.9	7.3	7.3	7.1	7.1
Persons in families maintained by women with no husband	24.6	25.5	25.4	25.2	25.3
Unrelated individuals	15.6	19.0	18.9	17.5	17.6
Male	15.8	16.8	16.8	16.4	16.3
Female	15.4	21.0	20.7	18.4	18.8

[a]All values for Medicaid benefits are means. The data are for California, Georgia, Michigan, and Tennessee in 1982 and add to cash income the value of food, housing, and noninstitutionalized medical care.

Table VI.10: Summary Statistics for Alternative Ways of Assigning Medicare Benefit Values

Alternative computation	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Mean (Bureau's market value method)	$2,454	$1,434	$2,091	$273	$13,174	$11,260
Median	1,010	1,251	730	−309	7,258	3,281
Trimmed mean						
Middle 50% of distribution	1,071	1,226	755	−96	7,258	3,612
Middle 80% of distribution	1,399	1,129	1,089	273	7,258	5,438
Random imputation	2,419	4,344	1,383	−509	36,251	11,370

[a]All values for Medicaid benefits are means. The data are for California, Georgia, Michigan, and Tennessee in 1982.

In using the median and trimmed mean for Medicare, we find values for certain state-risk combinations are small enough so that subtracting the supplemental medical insurance premium yields negative values. In random imputation, a value of zero would be assigned for Medicare for persons imputed to be nonrecipients, and subtracting the supplemental medical insurance premium yields negative values.

As noted above, our analyses simply reflect adjustments in the way the value of Medicare is calculated. We would expect differences between the current approach and the alternative approaches to be more pronounced if Medicaid values were also adjusted. We were able to obtain individual distributions of Medicaid enrollments and reimbursements for California from HCFA in order to get some idea of the magnitude of this difference. Table VI.11 gives the poverty rates for each approach when applied to Medicare values only and when applied to Medicare and Medicaid values. As expected, differences from the current method are more pronounced when the adjustments are also applied to Medicaid. Differences between the current approach and the alternative approaches are all more than three times larger when Medicare and Medicaid are adjusted, compared to Medicare only.

Table VI.11: Alternative Ways of Assigning Medicare and Medicaid Benefit Values[a]

Alternative computation	Adjust Medicare only[b]	Adjust Medicare and Medicaid
Mean (Bureau's market value method)	9.6%	9.6%
Median	10.1	11.8
Trimmed mean		
Middle 50% of the distribution	10.1	11.7
Middle 80% of the distribution	9.8	11.0
Random imputation	9.9	10.6

[a]The data are for California in 1982 and add to cash income the value of food, housing, and noninstitutionalized medical care. [b]Medicaid values are means.

Noncomparable Benefits and Assignment for Enrollees and Recipients

Issue 13 is that the Bureau's market value method for calculating and assigning the value of medical benefits is not consistent. Values for Medicare are calculated on the basis of administrative data on the number of Medicare enrollees and the values are assigned to Medicare enrollees on the CPS, but values for Medicaid are calculated on the basis of administrative data on Medicaid recipients and are assigned to Medicaid enrollees on the CPS.

We obtained data from HCFA on 1982 rates of Medicare and Medicaid receipt in California, Georgia, Michigan, and Tennessee. We recalculated the medical imputation so that the calculation and assignment of values would be consistent: first we used only enrollees, and then we used only recipients. Table VI.12 summarizes the results.

Table VI.12: Calculating and Assigning Medicare and Medicaid Values

	Bureau's market value method	Use only enrollees	Use only recipients
Medicare			
Calculate	Enrollees	Enrollees	Recipients
Assign to	Enrollees	Enrollees	Recipients
Medicaid			
Calculate	Recipients	Enrollees	Recipients
Assign to	Enrollees	Enrollees	Recipients

First, we calculated and assigned Medicare values only for enrollees, as is currently done. However, using the Medicaid recipient rates we obtained from HCFA, we recalculated Medicaid values on the basis of the number of enrollees rather than recipients, as is currently done, and assigned these values to enrollees identified in the CPS.

Then, using HCFA administrative data on Medicare recipient rates, we recalculated the Medicare values on the basis of the number of recipients rather than enrollees, as is currently done. We used the Medicaid values that are based on recipients in the current method. We assigned these values to a subset of the enrolled cases as identified in the CPS. Persons enrolled in Medicare or Medicaid who did not receive a medical benefit cannot be identified in the CPS. Therefore, we assigned nonrecipiency randomly, as follows: for each state and risk group, we computed the Medicare and Medicaid recipient rates from the HCFA data, determined the number of weighted CPS cases necessary to produce these rates, and assigned CPS cases as Medicare or Medicaid nonrecipients randomly basis.

In each approach, after assigning the Medicare and Medicaid values to individuals, we followed the Census Bureau's procedures by summing an individual's medical values over the entire family and adding this value to family income (including food and housing benefits). The basic results of this analysis are in table 3.5. Table VI.13 gives the specific poverty rates. Table VI.14 gives additional information on the assigned benefits.

Table VI.13: Poverty Rates When Assigning Medical Benefit Values Comparably[a]

Subgroup	Bureau's market value method	Use only enrollees	Use only recipients
All	10.8%	11.2%	11.4%
White	9.5	9.8	9.9
Black	21.1	22.6	22.4
Hispanic	20.1	20.8	20.7
Persons younger than 18	15.9	16.8	16.8
Persons 65 and older	4.5	4.5	5.9
Persons in families	9.8	10.3	10.3
Persons in married-couple families	6.9	7.2	7.1
Persons in families maintained by women with no husband	24.6	26.1	26.7
Unrelated individuals	15.6	15.6	16.4
Male	15.8	15.8	15.9
Female	15.4	15.5	16.8

[a]Data are for California, Michigan, Georgia, and Tennessee in 1982 and add to cash income the value of food, housing, and noninstitutionalized medical care.

Table VI.14: Summary Statistics on Assigning Medical Benefit Values Comparably[a]

Alternative computation procedure	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Bureau's market value method	$2,454	$1,434	$2,091	$273	$13,174	$11,260
Use only enrollees	2,445	1,360	1,739	206	12,512	10,620
Use only recipients	2,267	1,850	2,139	−278	18,090	10,660

[a]Data are for California, Michigan, Georgia, and Tennessee in 1982. Note that negative values can occur in the analysis where we consistently use recipients. In this procedure, persons who are covered by Medicare but treated as nonrecipients are assigned a value of zero for Medicare. The basic imputation involves subtracting supplemental medical insurance premiums from the Medicare value, so a negative medical value can occur for those covered by Medicare and treated as nonrecipients

What Is the Quality of the Data and Data Analytic Procedures Used to Derive Benefit Values?

Under issue 21, the misreporting of food stamps is recognized as a problem in the CPS. Respondents to the annual March supplement of the CPS are asked to report food stamp receipt and amounts for the previous calendar year. But although the Bureau allocates values for CPS respondents who do not answer the question on food stamps, it does not impute values to correct for misreporting. The Bureau has indicated that the total value of food stamps reported by CPS respondents accounts for only about 72 percent of the independent estimate from the Income Survey Development Program (ISDP), partly because of the passage of time and imperfect recall. (In ISDP, interviews with respondents were

repeated every 3 months, including questions about food stamp participation in the previous 3 months.)

The total dollar shortfall indicated above may derive from misreporting the receipt of stamps or amounts received or both. USDA projects a figure of roughly 35 million food stamp recipients annually, based on USDA's monthly administrative figure and on a 1979 longitudinal survey that provides data on the annual-to-monthly participation ratio. These figures greatly exceed the CPS estimate, which is about 20 to 21 million annually.

Using USDA's projection approach, we calculated a 1984 projection for food stamp recipients of 35.7 million and further estimated the numbers receiving food stamps for 1-3 months, 4-6 months, 7-11 months, and 12 months in 1984. As table VI.15 shows, this analysis revealed that the shortfalls in CPS reporting were severe to moderate for part-year recipients (the first three groups). We theorized that such persons might no longer be receiving food stamps and might therefore have forgotten or neglected to report them. By contrast, we found relatively little overreporting for the 12-month group. It seemed likely that these persons might have received food stamps for the majority of the previous calendar year and were perhaps still receiving them and so rounded off their report to full-year receipt.

Table VI.15: Estimates of Food Stamp Receipt by Duration in 1984

	Millions of persons receiving food stamps				
Data source	**1-3 months**	**4-6 months**	**7-11 months**	**12 months**	**Total**
USDA and ISDP[a]	9.8%	4.9%	9.1%	11.9%	35.7%
CPS[b]	2.8	2.6	2.2	12.5	20.1

[a]U.S. Department of Agriculture and 1979 longitudinal survey of the Income Survey Development Program.

[b]Current Population Survey.

Our procedures were designed to insure that (1) the total number of recipients would match projections based on USDA monthly data and the ISDP month-year participation ratio, (2) the distribution of the duration of food stamp receipt would match reports from ISDP, (3) households would be assigned dollar values from the full distribution of similar households that reported food stamp receipt, and (4) the households would be similar to reported households in terms of poverty status and size.

Specifically, our first step was to select a sample of "imputee" households from among CPS households that reported no receipt of food stamps during 1984. The size of this sample was determined by our estimate of the shortfall selected randomly in such a way that the households would resemble households that reported food stamp receipt in terms of poverty status and size. That is, the sample was stratified for poverty status and household size. Our second step was to randomly assign households to the three part-year monthly duration groups, according to the shortfall calculated for each group. The third step—accomplished separately for each group—was to identify "donor" households that had reported receiving food stamps so that their reports of the dollar value could be assigned to similar households. Rather than assigning cell means, we gave each donor household's individual food stamp value an equal chance of assignment to each similar household. In this way, the distribution of food stamp values was preserved and possible distortions from the use of cell means were avoided.

Similar procedures were used to select a much smaller sample of households reporting 12-month food stamp receipt and to assign these households new dollar values from the distribution of households reporting 7-11 months of food stamp receipt. Having completed these procedures, we tallied the total dollar values that had been reported and imputed for food stamps. Comparing this total dollar value to USDA administrative totals for food stamps issued, we found that 100.8 percent of the total dollar value had been accounted for. Therefore, we did not make further adjustments.

We concluded that there was no need to change the dollar values or amounts assigned to or reported by individual households. Finally, for households containing more than one family, we prorated the assigned dollar values according to the size of the component subfamilies. Family incomes reflecting the food stamp imputations could then be determined and new poverty rates calculated.

Are Definitions Used Consistently Across Key Steps of Poverty Measurement?

Issue 13 is that the official poverty measure compares a measure of resources defined as pretax cash income to a resource standard or threshold based on posttax income. The Census Bureau has simulated the payment of taxes by cases in the March 1983 CPS for individual federal income taxes, including the earned income tax credit; individual

Table VI.16: Poverty Rates Based on Pretax and Posttax Income[a]

Subgroup	Official pretax income	Posttax income
All	15.0%	16.6%
White	12.0	13.6
Black	35.6	37.9
Hispanic	29.9	32.3
Persons younger than 18	21.9	24.1
Persons 65 and older	14.6	16.2
Persons in families	13.6	15.2
Persons in married-couple families	8.9	10.4
Persons in families maintained by women with no husband	40.6	42.4
Unrelated individuals	23.1	25.6
Male	18.8	20.6
Female	26.6	29.6

[a]Data are for the nation in 1982.

state income taxes; property taxes on owner-occupied housing; and payroll taxes, including the Social Security payroll tax and the federal employee retirement tax.[1]

The Census Bureau assigned federal, state, and payroll taxes on the basis of tax-filing units. Some complex family structures could contain more than one tax-filing unit. In such cases, we defined the family unit as it is defined in poverty measurement procedures and combined the taxes paid by all tax-filing units in the family. In the Census Bureau's simulation, property taxes in owner-occupied housing were assigned at the household level. We assigned these taxes only to members of the householder's family. In multifamily households, property taxes were not assigned to members of unrelated subfamilies or to unrelated individuals. We computed the total taxes paid by each family unit, subtracted the taxes from family income, and used this posttax income measure in the poverty calculation. Poverty rates for each subgroup we examined are presented in table VI.16. Paid taxes under our alternative computation procedure were $317 mean, $639 standard deviation, $53 median, minus $500 minimum, $19,703 maximum, and $4,997 million aggregate. (These numbers are for the nation in 1982 and include families in poverty using either pretax or posttax income.)

[1]U.S. Bureau of the Census, "After-Tax Money Income Estimates of Households: 1982," series P-23, no. 137, Current Population Reports (Washington, D.C.: U.S. Government Printing Office, 1984).

In summary, these eight issues have bearing on the calculation of poverty rates under the market value method. It should be noted that inconsistency between the tax basis for the income and threshold definitions is a generic issue relevant to the official definition and to all the Census' Bureau's methods. Similarly, the generic issue of the misreporting of program participation affects all the Census Bureau's methods.

Medical Benefits

Because the Committee expressed a special interest in the medical area, much of our work involved looking at variations to the current market value and recipient value methods for assigning medical benefits. Below, we present detailed descriptions of the methods the Census Bureau currently employs for valuing Medicare and Medicaid benefits.

Market Value Method

The Census Bureau's market value method for including medical benefits (excluding benefits for the institutionalized) proceeds in four steps, as follows.

Step 1. The Census Bureau obtains estimates of average benefits paid by Medicare and Medicaid from HCFA. The Medicare values are computed by dividing total paid Medicare benefits by the number of Medicare enrollees separately for each state and Medicare risk group: aged, blind, and disabled. These estimates are reduced by approximately 2 percent to account for Medicare expenditures for the institutionalized. The Census Bureau then assumes that all persons covered by Medicare obtain supplemental medical insurance and deducts the premiums from the Medicare value.

The Medicaid values are computed by dividing total Medicaid benefits paid for the noninstitutionalized by the number of noninstitutionalized Medicaid recipients. This calculation is done separately for each state and Medicaid risk groups: aged, blind, and disabled; nondisabled adults; and nondisabled children.

Step 2. Cases in the CPS noted as being covered by Medicare or Medicaid or both are assigned to risk groups, and the corresponding Medicare and Medicaid values obtained in step 1 are assigned to these cases. If a person is covered by both Medicare and Medicaid, the amount of the supplemental premium is added to the Medicaid value to account for premiums paid on behalf of Medicare beneficiaries by Medicaid.

Step 3. Each individual's medical benefit value is computed by adding his or her Medicare and Medicaid values.

Step 4. The Census Bureau then sums the individual medical values of all family members and adds this sum to family income (including food and housing benefits) in the poverty calculation. Each individual is judged in or out of poverty by comparing the total family income to the poverty threshold for a family of that size.

In this appendix, we have already examined medical benefits under the market value method. The issues are adding the value for selected noncash benefits to the official cash-only income definition (issue 2), capping family medical benefits (issue 5), adjusting benefit values by using comparable benefit derivation and assignment groups (issue 13), adjusting benefit values for nonsharable benefits (issue 14), and using alternatives to assigning the average medical benefit (issue 16).

Recipient Value Method

The Census Bureau's recipient value method for including medical benefits (excluding benefits for the institutionalized) proceeds in five steps as follows:

Step 1. The Census Bureau obtains estimates of normal medical expenditures using data from the 1972-73 consumer expenditure survey. Average expenditures are computed for families with combinations of characteristics defined by age, household income and size, and the disability of the householder. The normal expenditure values for medical care are presented in table VI.17.

Step 2. In CPS, the Census Bureau defines the combinations of characteristics presented in table V.17. Household income is defined as cash plus the market value of food stamps, school lunches, subsidized housing, and medical care (including expenditures for the institutionalized). These income values are adjusted for changes in the consumer price index to account for changes in consumer prices.

Table VI.17: Normal Household Expenditure Values for Medical Care in 1979

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

Source: U.S. Bureau of the Census, Estimates of Poverty Including the Value of Noncash Benefits: 1984, technical paper 55 (Washington, D.C.: U.S. Government Printing Office, 1985), adjusted for changes in the consumer price index to account for changes in consumer prices.

Step 3. Given the combination of characteristics defined in step 2, individuals in the CPS sample are assigned the appropriate; normal expenditure values for medical care in table VI.17; the medical values in the table are adjusted for changes in the medical component of the consumer price index. For example, a person 65 years old in a two-person household with a total income less than $1,250 (in 1979 dollars) would be assigned $637. This value would then be adjusted for change in medical prices.

Attempting to replicate the Census Bureau's procedures, we discovered that the full income stratification in the table is not actually being used. Only the top row is used. For example, any person older than 65 in a two-person household is assigned a value of $637, no matter what the household income. We showed the effect of correcting this omission in table 4.5 and we further discuss it below.

Step 4. The normal expenditure values for medical care defined in table VI.17 are based on average expenditures by households. To be consistent with other components of the poverty calculation, medical values should be assigned by family. To account for multifamily households, the Bureau must make an adjustment. First, a benefit weight should be

computed. This weight is defined as the normal expenditure value assigned in step 3 divided by the total household medical value (including institutionalized persons) from the market value method. The medical value for the family (excluding the institutionalized) is then calculated by multiplying this benefit weight by the family medical value (excluding the institutionalized) from the market value method.

Step 5. The final medical value assigned by the recipient value method is obtained by capping the value obtained in step 4. If this value is larger than the value for the market value method (that is, if the benefit weight is greater than 1.0), the medical value is equal to the value from the market value method.

The medical value obtained from the steps above is added to family income (including food and housing benefits) in the poverty calculation. Each individual is judged in or out of poverty by comparing the total family income to the poverty threshold for a family of that size.

The following is a description of the relevant issues. We examined three issues associated exclusively with the recipient value method: selectivity bias (issue 7), inappropriate income cell definition (issue 4), and incomplete income stratification (no issue number). We also looked at two generic issues: what is included in the income definition (issue 2) and income and threshold tax basis inconsistency (issue 23). We analyzed these issues and their analysis under four of our five evaluation questions.

Defining Income

Issue 2 is that the official poverty indicator is based on an income definition that includes only cash income. Given the substantial increases in noncash assistance provided to the poor, experts in poverty measurement have suggested that the income definition be expanded to include the value of noncash benefits that the poor receive.

In chapter 4, we focused on medical benefits across methods. There, we reported the Census Bureau's poverty estimates for the following income definitions: cash plus the recipient value of food and housing; cash plus the recipient value of food, housing, and noninstitutional medical benefits; cash plus the recipient value of food, housing, and medical benefits, including expenditures for the institutionalized. Table 4.2 gives the basic results of these analyses. Table VI.18 gives specific poverty rates for each income definition for each subgroup we examined. Table VI.19 gives additional information on medical benefits assigned by the

recipient value method. Note that the benefit values derived from this method are not skewed as they are under the market value method. (This pattern holds even when the adjustment that corrects the lack of income stratification in the recipient value imputation is included.)

Table VI.18: Poverty Rates When Adding Noncash Benefits to Income in the Recipient Value Method[a]

	Cash, food, and housing		
Subgroups	**Only**	**And noninstitutional medical**	**And medical including institutional**
All	13.2%	12.4%	12.2%
White	10.7	9.9	9.8
Black	30.1	28.7	28.3
Hispanic	26.0	24.8	24.7
Persons younger than 18	19.4	18.7	18.7
Persons 65 and older	10.8	7.9	7.3
Persons in families	11.9	11.2	11.1
Persons in married-couple families	7.6	7.2	7.1
Persons in families maintained by women with no husband	34.4	32.5	32.3
Unrelated individuals	20.5	18.7	18.2
Male	18.2	17.3	17.1
Female	22.4	19.8	19.1

[a]Data are for the nation in 1984.

Table VI.19: Summary Statistics on Medical Benefits Under the Recipient Value Method[a]

Alternative computation	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Excluding institutionalized	$704	$255	$636	$36	$1,123	$17,946
Including institutionalized	765	249	651	36	1,013	19,513

[a]Data are for the nation in 1984.

Validity

Selectivity Bias. Issue 7 is about the fact that the current recipient value method uses one group to calculate normal expenditures for medical care and then assigns this value to a different group. For example, the normal expenditure values for the population younger than 65 were derived from cases in the consumer expenditure survey not covered by Medicaid. The values derived from this group are then assigned to cases in the CPS identified as being covered by Medicaid. Other analysts have noted that persons enrolled in social programs may differ from persons not enrolled in important ways, so the expenditure patterns of one

group may not adequately represent the expenditure patterns of the other. Selectivity bias reflects the extent to which such groups differ.

To assess the potential range of effect that selectivity bias may have on recipient value poverty estimates, we systematically adjusted the assigned medical values. We began by assuming that those enrolled in Medicare and Medicaid have normal expenditures that are less than those observed in the population used to define the current values. We reduced the values presented in table VI.17 by 10 percent and then by 25 percent and then recomputed the recipient value medical imputation with the new normal expenditure values. Then we assumed that those enrolled in Medicare and Medicaid may have normal expenditures that are greater than those observed for the population used to define the current values. We increased the values in table VI.17 by 10 percent and then by 25 percent. As before, we recomputed the recipient value medical imputation with the new normal expenditure values.

This analysis does not demonstrate the size of the selectivity bias actually present in the current method, but it does illustrate the general magnitude of effect on poverty estimates of a plausible range of group differences (that is, differences as large as plus or minus 25 percent). The basic results of the analysis are in table 4.3. Table VI.20 presents the poverty rates for these alternatives for all the subgroups we examined, and table VI.21 summarizes benefit values assigned.

Table VI.20: Poverty Rates When Adjusting Medical Benefits for Selectivity Bias in the Recipient Value Method[a]

Subgroup	Recipient value method	Medical values decrease		Medical values increase	
		10%	25%	10%	25%
All	12.0%	12.2%	12.3%	11.9%	11.7%
White	9.7	9.8	9.9	9.6	9.4
Black	27.8	28.1	28.5	27.2	27.2
Hispanic	24.3	24.5	24.7	23.9	23.6
Persons younger than 18	18.3	18.5	18.6	18.2	17.9
Persons 65 and older	7.1	7.4	7.8	6.8	6.3
Persons in families	10.9	11.0	11.2	10.8	10.7
Persons in married-couple families	7.0	7.1	7.1	6.9	6.9
Persons in families maintained by women with no husband	31.6	31.9	32.2	31.2	30.7
Unrelated individuals	17.8	18.1	18.5	17.7	17.3
Male	16.9	17.1	17.3	16.8	16.5
Female	18.6	18.9	19.5	18.4	18.0

[a]Data are for the nation in 1984 and add to cash income the value of food, housing, and noninstitutionalized medical care. Analyses include full income stratification in medical benefit value assignment.

Table VI.21: Summary Statistics on Medical Benefits When Adjusting for Selectivity Bias in the Recipient Value Method[a]

Alternative computation	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Recipient value method	$1,150	$434	$1,144	$68	$2,026	$29,372
Medical value decrease						
10%	1,049	398	1,051	61	1,824	26,740
25%	863	338	889	51	1,520	22,527
Medical value increase						
10%	1,245	468	1,237	74	2,229	31,856
25%	1,378	520	1,314	84	2,533	35,330

[a]Data are for the nation in 1984. Analyses include full income stratification in medical benefit value assignment.

The issue of selectivity bias represents the possible difference in the value of health care to subsidized and unsubsidized populations. Related to this is another issue—the fact that the Census Bureau had problems deriving the value of health care in the unsubsidized group.

As noted above, under the normal expenditure concept used in the recipient value method, the value of a benefit is equal to the amount spent for the good or service, on the average, by unsubsidized persons. The average normal expenditure of the unsubsidized group is then assigned as the value of the benefit to subsidized persons. In the case of medical care, the unsubsidized (or counterfactual) group would in principle contain only individuals who pay their own insurance premiums, copayments, and other out-of-pocket health care expenses.

The Census Bureau encountered problems in obtaining relevant counterfactual groups for its calculations. It estimated normal expenditures for medical care from data from the 1972-73 consumer expenditure survey. The sample did not include a sufficient number of unsubsidized persons to generate reliable estimates of normal expenditures. For the population of people 65 and older, virtually everyone was subsidized by Medicare. To deal with this problem, the Census Bureau decided to include persons covered by Medicare in the counterfactual group. However, only data on the respondents' outlays were available, so the average expenditures calculated for this group largely represent expenditures for health care that were not covered by Medicare. These

values do not include expenses that individuals did not have to pay because they had Medicare coverage.

A similar situation occurred for the population younger than 65. Most individuals who are not covered by a public noncash program are covered by some private noncash program, either partly or wholly. Among individuals younger than 65 not covered by Medicaid, employer-provided group health insurance policies are widespread. As before, there were not enough cases in the sample to generate reliable estimates of normal expenditures for a completely unsubsidized population younger than 65. Therefore, the Census Bureau decided to include persons who had partially employer-provided coverage in its counterfactual group. The expenditure data do not include the amount of the employers' contributions, so the normal expenditures of an unsubsidized population are probably underestimated.

For the population not yet 65, we attempted to obtain an estimate of the size of the effect on poverty estimates of omitting the value of partially employer-provided health benefits in the normal expenditure calculation. Using data from the national health care expenditures study, we obtained a rough estimate of the ratio of average health care expenses of individuals including partially employer-provided health benefits to average health care expenses excluding benefits for the poor and "near-poor." Including the employer-provided benefits increased the average benefit value by approximately 24 percent.

This ratio is smaller than we expected. It seems to reflect the fact that while employers on the average pay for well over half of employment-related group insurance, covered families must still pay deductibles, copayments, and fees for services not uncovered, which together constitute a substantial portion of average health care budgets. The exclusion of those with full employer-paid insurance further reduces the weight of employers' contributions. And even when those receiving Medicaid are excluded, many among the low-income population are found not employed or working at jobs that provide no health insurance. If the ratio were calculated for the entire population rather than for the poor and "near-poor," a larger factor would result, but this would overstate the importance of employer expenditures in the normal health care expenditures of those near the poverty line.

We adjusted the average normal expenditure values used in the recipient value medical imputation to account for employer-provided health benefits and obtained new poverty estimates. For the population in

households where the householder is not yet 65, the poverty rate dropped from 12.4 percent using the unadjusted normal expenditure values to 12.2 percent when the expenditure values were adjusted for employer-provided benefits. In addition, Hispanics and persons in households headed by women were especially affected by the adjustment, but there was no effect on dispersion.

Note that our adjustment assumed that the average value paid by employers for this health insurance is equal to the value the policy holds for the recipient. This may not be the case, so our adjustment must be taken as a rough approximation. To the extent that recipients attach a lower value to the benefit, the effects on poverty estimates will be smaller.

Household Income Definition. Under issue 4, the recipient value method assigns different normal expenditure values for cases of different combinations of characteristics. The characteristics used to make this differentiation are age, household income and size, and the disability status of the householder. Table VI.17 presents this categorization. Estimates of normal expenditures for medical care were made from data from the 1972-73 consumer expenditure survey, which defines household income as cash plus the value of food stamps. Household income used in assigning these normal expenditure values to cases in the current population survey includes cash plus the market value of food, housing, and medical benefits (including the institutionalized). Higher income levels tend to have higher normal expenditure values for medical care. Thus, stratifying by cash plus the market value of all food, housing, and medical benefits tends to give to CPS cases medical values that are too large.

We redefined the household income used in assigning normal expenditures for medical care to CPS cases. Instead of calculating household income as cash plus the market value of all benefits, we calculated it as cash plus the market value of food stamps only. Then we followed the Census Bureau's imputation procedure, but we used the new income cell definition. (We also corrected for the lack of income stratification in the Census Bureau's current calculations.) Table 4.4 presents the basic results of this analysis. Table VI.22 presents the poverty rates for all the subgroups we examined, and table VI.23 gives more detail on the actual benefits assigned. As can be seen, on the average, the adjustment for the income cell definition reduced the medical value by $78.

Table VI.22: Poverty Rates When Including Cash and the Market Value of Food Stamps Only in Income Cell Definition of Medical Benefits in the Recipient Value Method

Subgroup	Current with income stratification	Cash plus market value of food stamps income cell definition
All	12.0%	12.2%
White	9.7	9.8
Black	27.8	28.4
Hispanic	24.3	24.6
Persons younger than 18	18.3	18.5
Persons 65 and older	7.1	7.7
Persons in families	10.9	11.1
Persons in married-couple families	7.0	7.1
Persons in families maintained by women with no no husband	31.5	32.2
Unrelated individuals	17.8	18.3
Male	17.0	17.2
Female	18.6	19.3

Table VI.23: Summary Statistics on Medical Benefits When Adjusting Income Cell Definition in the Recipient Value Method[a]

Alternative computation	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Recipient value method	$1,150	$434	$1,144	$68	$2,026	$29,372
Adjusted cell definition	1,072	452	1,060	48	1,992	27,275

[a]Data are for the nation in 1984. Analyses include full income stratification in medical benefit value assignment.

Note that this is an upper bound on the extent to which adjusting household income in the recipient value imputation can affect the medical values assigned. Income in the consumer expenditure survey contains several components of cash income that are not included in CPS (primarily tax refunds). These components could make household income more comparable to CPS household income that includes the market value for all benefits.

The Quality of the Data and Analysis

Incomplete Income Stratification. In the recipient value medical imputation, different normal expenditure values are to be assigned to people with different combinations of characteristics defined by age, household income and size, and the disability status of the householder. The values associated with the combinations are in table VI.17. When we discovered

that only the top row of the table is used assigning medical values to individuals, we included the full income stratification in the assignment of recipient value medical benefits. The basic results of this analysis are in table 4.6. Poverty rates for each subgroup we examined are presented in table VI.24 and additional information on assigned benefits is in table VI.25.

Table VI.24: Poverty Rates Under Full Income Stratification for Medical Benefits in the Recipient Value Method[a]

Subgroup	Recipient value	Full income stratification
All	12.4%	12.0%
White	9.9	9.7
Black	28.7	27.8
Hispanic	24.8	24.3
Person's younger than 18	18.7	18.3
Persons 65 and older	7.9	7.1
Persons in families	11.2	10.9
Persons in married-couple families	7.2	7.0
Persons in families maintained by women with no husband	32.5	31.6
Unrelated individuals	18.7	17.8
Male	17.3	16.9
Female	19.8	18.6

[a]Data are for the nation in 1984 and add to cash income the value of food, housing, and noninstitutionalized medical care.

Table VI.25: Summary Statistics on Medical Benefits Under the Full Income Stratification in the Recipient Value Method[a]

Alternative computation	Mean	Standard deviation	Median	Minimum	Maximum	Aggregate in millions
Recipient value method	$704	$255	$636	$36	$1,123	$17,946
Full income stratification	1,150	434	1,144	68	2,026	29,372

[a]Data are for the nation in 1984.

Consistency

Our analysis of the issue of the inconsistency of income and threshold tax under the market value method discussed above applies as well to the official definition and the recipient value and poverty budget share methods.

Comments From the Department of Commerce

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Administration
Washington, D.C. 20230

JUL 15 1987

Mr. J. Dexter Peach
Assistant Comptroller General
Resources, Community, and
Economic Development Division
United States General
Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

This is in reply to GAO's letter of June 5, 1987 requesting comments on the draft report entitled "Noncash Benefits: Methodological Review of Proposed Valuation Methods Indicate Many Problems Remain."

We have reviewed the enclosed comments of the Under Secretary for Economic Affairs, and believe they are responsive to the matters discussed in the report.

Sincerely,

Kay Bulow

Kay Bulow
Assistant Secretary
for Administration

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Economic Affairs
Washington, D.C. 20230

Mr. J. Dexter Peach
Director
Resources, Community, and Economic
Development Division
General Accounting Office
Washington, D. C. 20548

Dear Mr. Peach:

Thank you for your letter to Secretary Baldrige inviting us to comment on the GAO draft report entitled Noncash Benefits: Methodological Review of Proposed Valuation Methods Indicates Many Problems Remain.

We welcome your review of methods of valuing noncash benefits. The growth in government noncash benefits and in private employers noncash wage supplements makes it important to measure such benefits. The Census Bureau has been in the forefront in conducting research on valuation methods. Its efforts began in 1980 with the collection of recipiency data in the Current Population Survey and in the development of three experimental valuation methods in association with Dr. Timothy Smeeding, a visiting scholar at the Census Bureau under the American Statistical Association Fellowship Program. In December 1985, the Census Bureau sponsored the Conference on the Measurement of Noncash Benefits. The Census Bureau staff continue to conduct research on this topic and they expect to publish a major report in 1988 that will reflect these research efforts.

We commend the GAO for providing useful quantitative information on the resulting estimates of poverty when these estimates include different, legitimate methods of valuing noncash benefits. Differences between the GAO and Census Bureau estimates should not be regarded as "overestimates" or "underestimates" of poverty. Much more research needs to be undertaken, and we look forward to working closely with the GAO as we attempt to develop the most appropriate methods for valuing noncash benefits.

My staff have incorporated technical and editorial changes in the marked-up version of the enclosed draft report. If you have any questions about our comments or need additional information, please contact Mr. Michael S. McKay, Bureau of the Census, on 763-7452.

Sincerely,

Robert Ortner
Under Secretary for
Economic Affairs

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Glossary

Cap	A maximum limiting the cash value assigned to a particular kind of noncash benefit, independent of the value otherwise assigned to a family by the valuation method being used.
Differential Effect	An alteration in the poverty measurement procedure has a differential effect on a population subgroup if the change in the subgroup poverty rate resulting from the alteration is significantly larger by statistical standards than the change in the overall poverty rate.
Dispersion Index	An indicator of the extent to which the relative rank ordering of persons within a poverty gap distribution is maintained after an adjustment in the way poverty is measured. It is represented by the correlation of poverty gaps of individuals before and after the adjustment.
Food Benefits	Food stamps and the school lunch program.
Fungible Benefits	Any noncash benefit (such as food stamps) that allows consumers to raise their consumption of unrelated goods and services by an amount similar to the market value of the benefits, whether or not it can be used directly for immediate consumption.
Housing Benefits	Subsidized housing and rent programs, such as those under sections 8 and 236.
Income Definition	An income definition indicates the resources (cash, cash assistance, noncash benefits) that should be included in generating an appropriate total income value.
Market Value	In principle, the market value of a noncash benefit equals what it would cost to purchase identical goods or services in the private market if they were sold privately. For example, the market value of Medicare should equal the price charged for a private medical insurance policy with services identical to those paid for by Medicare.

Medical Benefits	Medicare and Medicaid.
Nonfungible Benefits	Noncash benefits (such as health insurance) that constrain the consumption of unrelated goods and services because they are not similar to cash.
Nonsharability	An attribute of certain noncash benefits in which only some members of a family can use a benefit while other family members cannot. For example, food stamps are sharable; Medicare and school lunches are nonsharable.
Posttax Income	Income after taxes have been accounted for.
Poverty Gap	The difference between resources prescribed by the poverty threshold and those possessed by an individual.
Poverty Measure	A set of rules for generating some value intended to represent the "amount of poverty" in a population.
Poverty Rate	The percentage of the overall population classified as poor (or in poverty).
Poverty Threshold	Also called the "poverty line," a set of income values (separate values for families of different size and composition) used to classify a family in or out of poverty.
Poverty Threshold Multiplier	The reciprocal of the ratio of food expenditures to total posttax income for all families, currently calculated from the 1955 survey of food consumption expenditures.
Pretax Income	Income before taxes have been accounted for.

Trimmed Mean	The arithmetic average at a distribution of values whose upper and lower segments have been removed or truncated.
Utility Level	In microeconomic theory, a consumer's utility level or level of economic well-being is a function of the goods and services the person consumes. The utility function gives the utility level corresponding to any possible combination of goods and services. The utility of a given cash income (with given prices) is equal to the utility of the most desirable combination of goods and services buyable with that income. The utility of any combination of cash income and noncash benefits is equal to the utility of the most desirable combination that can be acquired by using the noncash benefit and spending the cash income.
Valuation Method	A specific set of procedures for placing a dollar value on a set of noncash benefits.

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