

March 1995

POVERTY MEASUREMENT

Adjusting for Geographic Cost-of-Living Difference



General Government Division

B-259782

March 9, 1995

The Honorable James M. Jeffords
The Honorable Joseph I. Lieberman
The Honorable Daniel Patrick Moynihan
United States Senate

Because of your concern that the determination of poverty status does not reflect geographic differences in the cost of living (COL), you asked us to provide information about the statistical data requirements that would be needed to construct a COL index that could be used, at the federal level, to adjust for geographic differences in living costs. The current measurement to determine poverty levels does not take into account geographic differences in COL. You were concerned that the current measure does not adequately recognize that residents of high-cost areas may need higher incomes to adequately meet their basic needs.

Specifically, we agreed to (1) describe the function of market baskets in determining a COL index,¹ including both a uniform national market basket and market baskets that reflect regional differences in consumption; (2) identify methodologies that might have potential for calculating a COL adjustment, including methodologies that researchers and private industry use for comparing costs by geographic areas; and (3) obtain expert opinions on the ability of these methodologies to adjust the poverty measurement for geographic differences in COL. As we agreed with your offices, our work was limited to the technical feasibility of these methodologies. We did not seek to obtain and verify data on the cost of the methodologies, nor did we evaluate whether it would be appropriate to incorporate a COL adjustment into benefit formulas for public assistance programs for the poor.²

¹A market basket is a listing of goods and services that is deemed to represent a particular economic standing or well-being. For example, a market basket used to measure the changes in prices in urban areas comprises all the goods and services consumed by urban households. Goods in that market basket stay the same from one period to the next. The items in a market basket for a COL index, however, change to reflect a constant standard of living from one period to another. A COL index is calculated with price information on the items in a market basket over time. A market basket for poverty determination comprises items defined as those that would constitute a reasonable social minimum for the population.

²At the time when we were doing our work, a panel of the National Academy of Sciences was conducting a broader study on concepts, information needs, and measurement methods for poverty and family assistance. Among its tasks, the panel was to assess and make recommendations on methodologies to adjust for inflation over time and for geographical differences. The panel's report was to be issued by September 1994, but it has been delayed. Therefore, we could not evaluate any recommendations that this panel may make on geographic adjustments for COL.

Background

In 1969, the federal government officially adopted a measure to ascertain how many people across the country had incomes that were inadequate to meet expenses for basic needs. This poverty measure was based on the finding of the U.S. Department of Agriculture's (USDA) 1955 Survey of Food Consumption that, on average, families of three or more persons spent one-third of their income on food. Poverty for a family of three was computed as three times the cost of the economy food plan, the least costly food plan designed by USDA.³ The poverty measure has been updated annually with a COL index to adjust for the change in prices nationwide, but the poverty measure has not been adjusted for differences in prices by geographic area. Thus, in 1993, a family of three with a cash income of less than \$11,522 was considered to be living in poverty, regardless of place of residence.

The concept of geographic COL adjustments of poverty measurement has been seen as problematic. A 1976 report to Congress on the measurement of poverty stated that "one of the most troublesome concepts of poverty measurement" was making adjustments for geographic differences in COL.⁴ It ultimately concluded that unresolved conceptual issues, such as the development of generally accepted market baskets of goods and services representative of the needs of the poor in various geographic areas, and data limitations precluded satisfactory geographic adjustments. More recently, in a 1992 report, we noted that there was insufficient data on which to base geographic adjustments to the measure of poverty.⁵

Some economists contend that adjusting the poverty measure for geographic differences in COL would be inappropriate, irrespective of the methodology used. They say that any such adjustment to reflect regional differences in market baskets would fail to recognize other regional differences that are relevant to a definition of poverty or the needs of the poor. For example, a COL index probably would not reflect differences among geographic areas in the level of support or assistance available to low-income families.

³The original measure was created by adjusting for such factors as family size, sex and age of the family head, number of children under 18 years old, and farm/nonfarm residence. In 1981, distinctions based on sex of the family head and farm/nonfarm residence were eliminated, and additional changes were made for families of nine or more members.

⁴U.S. Department of Health, Education, and Welfare, *The Measure of Poverty: A Report to Congress as Mandated by the Education Amendments of 1974* (Washington, D.C.: U.S. Government Printing Office, Apr. 1976), pp. 81-82.

⁵See *Poverty Trends, 1980-1988: Changes in Family Composition and Income Sources Among the Poor* (GAO/PEMD-92-34, Sept. 10, 1992).

Results in Brief

Market baskets provide the foundation for any measure of COL. Obtaining a consensus on what should go into market baskets for a COL index and on how to keep them current would be difficult. Even if consensus were obtained on the specific items and their quantities to include in market baskets for a COL index, problems would arise in identifying market baskets that reflect a constant standard of living.

We identified 12 methodologies that, in some part, could contribute to an index that potentially could be used to adjust poverty measurement to reflect geographical differences in COL. Some of the methodologies rely on different ways of defining market baskets that could reflect geographic differences, and others employ approaches for adjusting the prices of goods and services in previously defined market baskets. A few of the methodologies both define market baskets and adjust the prices of the items to derive a COL index. Additionally, a few of the methodologies are now used by private industry and the federal government to adjust wages and salaries for geographic differences in COL. Others are solely conceptual methodologies and are not used for such adjustment.

In the collective view of the experts we asked to assess these methodologies, the long-standing problems involved in identifying a method to adjust poverty measurement for geographic differences in COL have not been resolved; data and conceptual problems have prevented any adjustment in the past and continue to do so today. Overall, experts' ratings of the methodologies were mixed. Experts' comments about each methodology's strengths and weaknesses were diverse, and sometimes conflicting.

Scope and Methodology

To address our first two objectives, describing the function of a market basket and identifying potential methods for calculating a COL adjustment, we reviewed the relevant literature on measuring poverty and on geographic adjustment for COL and discussed these issues with specialists. These specialists included individuals associated with poverty measurement or COL data at the Bureau of Labor Statistics (BLS) and the Bureau of the Census, as well as private organizations and academic institutions. On the basis of these reviews and discussions, we identified 12 methodologies that might have potential for adjusting poverty measures to reflect geographic differences in COL. We consider these 12 methodologies to be illustrative for a wide range of potential approaches to determine geographic COL differences, but recognize that the list is not,

and cannot be, exhaustive. (A more detailed account of our scope and methodology is contained in app. I.)

To meet our third objective of obtaining expert opinion on the ability of the methodologies to adjust the poverty measure for geographic differences in COL, we identified experts and asked them to review the methodologies. From our list of more than 40 potential experts compiled during our literature review and initial discussions with specialists, we selected 15 experts to review the methodologies. (See app. II for a list of the selected experts.)

We sent a questionnaire to these experts in which we described each methodology briefly. We asked the experts to review each of the 12 methodologies and to categorize the methodology's potential for use in adjusting the poverty measurement for geographic difference in COL. Additionally, we asked them to discuss the strengths and weaknesses of each methodology. (See app. III for a copy of the information and questionnaire sent to each expert.) All 15 experts responded and we tabulated their ratings for each methodology to determine the ones the experts considered most and least promising. We also analyzed the written responses on strengths and weaknesses.

We did our work in Washington, D.C., between September 1994 and January 1995 in accordance with generally accepted government auditing standards. Because we did not evaluate the policies or operations of any federal agency to develop the information presented in this report, we did not seek comments from any agency.

Market Baskets Are Necessary, but a Uniform National Market Basket Is Neither Used Nor Considered Desirable by Experts

Market baskets of goods and services form the basis for determining a COL index. Of the methodologies we examined that calculate a COL index, none uses a uniform national market basket in which the same quantities of identical goods and services are used in all locations. In fact, these methodologies all used market baskets that have different measures for at least one component—for example, transportation or housing. Several of the experts, in their comments on COL methodologies, said that market baskets for COL indexes should vary to reflect differences in local standards of living.

Market Baskets Are the Foundation of a COL Index

Market baskets of goods and services provide the foundation for determining COL. The composition of the market baskets, such as the items included or the quantity of one item included in relation to other items, affects the dollar values that are determined to represent COL. Conceptually, market baskets for a COL index would accurately reflect differences in tastes, as well as needs, such that an individual would derive equal satisfaction from the various market baskets priced in different geographic locations. For example, food preferences in southeastern states for low-cost cereals, such as rice and corn, lowers COL in these areas, while climatic differences necessitates the expenditures for heating a home and warm clothing and increases the COL in northern states.

Obtaining a consensus on what should go into a COL index's market baskets and on how to update them would be difficult. The method generally preferred by the experts we contacted to determine the items to include in market baskets is to use expert judgment to specify the requirements for physical health and social well-being. But standards have not been identified for the majority of components of a COL index's market baskets. Even if consensus were obtained on the specific items and their quantities to include in a COL index's market baskets, another problem would be how to keep the market baskets up to date to reflect a constant standard of living.

A Uniform National Market Basket Is Not Used in COL Indexes

Of the methodologies we examined that calculate a COL index, all used market baskets that reflected regional differences in standards of needs and/or actual consumption patterns.⁶ Most notably, these methodologies varied in how they determined the housing and transportation components of the market baskets by adjusting for regional variation.

Experts Say That Local Standards of Living Are Necessary in a COL Index's Market Baskets

We received numerous comments about market baskets for a COL index from the experts from whom we solicited assessments of the methodologies. Several experts noted the need to adjust the composition of the market baskets for differences in local standards of living among geographic areas. One expert commented that it is nearly impossible to obtain reliable evidence or credible expert judgments about the

⁶Some of the 12 methodologies that we identified did not actually calculate a COL index, but provided regional estimates of costs with which we calculated regional ratios. These ratios were used to demonstrate geographic differences that might be obtained with the methodologies. In this part of our report on market baskets, we examined only those methodologies that calculated a COL index using a market basket. Those with regional ratios, which did not have market baskets, are excluded in this discussion of market baskets.

composition of market baskets to reflect specific local standards of living. This expert suggested that market baskets should be changed as acceptable standards are developed. The problem of keeping market baskets up to date was noted by other experts in their comments about the use of outdated data and concepts. For example, one expert specifically wanted a child care component to be included in the market baskets.

Methodologies Exist That Potentially Could Lead to a Geographic COL Index

We identified 12 generic methodologies that, in some part, could contribute to the development of a COL index that potentially could be used to adjust the poverty measurement for geographic differences. Four methodologies identified baseline data,⁷ or developed a market basket that could be the basis for constructing a COL index by geographic area. Six methodologies calculated a COL index from existing cost data or a previously defined market basket. Two methodologies developed an original market basket, collected data, and calculated a COL index with those data. Table 1 provides descriptions of the 12 methodologies. (Detailed descriptions of these methodologies are found in app. III.)

⁷Baseline data refer to costs or estimates that could be used to calculate a COL index. These data might identify the cost of several items in a market basket, or of a single item, such as the cost of renting an apartment in the housing data methodology described in appendix III. Baseline data need not include all of the goods and items that comprise a COL market basket.

Table 1: Brief Descriptions of Methodologies

Methodology	Description
Budgets	Estimates how much families need to spend to purchase the contents of a market basket of goods and services.
Norms	Using existing data and specifically collected data, calculates COL indexes for specific geographic locations by using standards developed by identifying the proportion of income spent on consumer expenditure categories.
Housing data	Estimates average rents of housing in particular geographic areas.
Family budgets	Using data collected to measure inflation, calculates the annual estimates of the cost of purchasing hypothetical market baskets of goods and services that represent lower, intermediate, and higher standards of living.
Consumption data	Calculates the average dollar amount of what families report that they spend in specified expenditure categories, such as clothing, during the period of data collection.
Interarea price index	Develops price index numbers from BLS' pricing and item-characteristics information, assumes equal consumer satisfaction among geographic areas, and allows a direct comparison of relative prices among several geographic areas.
Economic modeling	Develops COL indexes for specific geographic locations by using information published by government agencies and private sources.
Consumer price index	Determines COL index for specific geographic areas by applying annual average price changes to baseline data.
Estimation models	Empirically determines COL indexes for specific geographic areas (such as regions, states, and counties) from baseline data by using statistical procedures.
Local indexes	Using data specifically collected from local price surveys, develops a COL index.
Polling	Uses public opinion survey data to establish a measure of the level of income that people think should represent the poverty line for a family in the respondents' specific community.
Comparable pay	Calculates employers' costs per hour worked for each of the components of labor compensation—wages and salaries and employee benefits.

A few of the methodologies are now used as COL indexes, but most have not been. For example, the norms, local indexes, and economic modeling methodologies are used in the private sector as COL indexes to make geographic COL adjustments for pay and relocation decisions. Until their discontinuance in 1981, estimates from the family budgets methodology

had been used by policymakers to set income eligibility criteria for employment programs and to geographically adjust wages and salaries. Several of the methodologies that identify baseline data are used in ways other than to show differences in COL. For example, USDA uses the consumption data methodology to estimate expenditures on a child, which then are used to determine payments for the support of children in foster families. Many of the methodologies were developed by researchers to develop indexes to reflect COL differences, such as those categorized under the estimation models, interarea price index, and the consumer price index methodologies; but none of these are used to make geographic COL adjustments. (See app. III for detailed descriptions of how the data and indexes from the 12 methodologies are used.)

We identified two additional methodologies but could not locate research that delineated how the methodologies could be implemented to develop a COL index. For example, administrative data from public assistance programs, such as the food stamp program, have been proposed as baseline data for developing a COL adjustment that would indicate the incidence of need within a geographic location. However, in our review of the relevant literature and discussions with specialists, we did not locate appropriate data that could be translated into an index to demonstrate geographic variation. Another approach to identify baseline data for a COL index would be to use information obtained from grocery stores' universal product code scanners. As in the case of administrative program data, we could not locate information that indicated how the product code data could be used to develop a geographic index or ratio.

During the process of obtaining experts' ratings of promise for the 12 generic methodologies we identified, some experts indicated that we had not identified and presented all possible methodologies to make such a COL adjustment. A number of the experts suggested using a combination of several attributes from the methodologies that they reviewed. In addition, they identified four other methodologies that could be considered for doing geographic COL adjustments. One was a modification of the local indexes methodology, and another was a modeling technique to develop regional variables to obtain baseline data. The other two focused on ways to revise the current poverty measurement. One methodology included the most basic levels of shelter and food as the basis for measuring poverty. The other methodology, according to an expert, is what the National Academy of Sciences panel is expected to recommend in its forthcoming report. None of these methodologies was identified by more than one of the experts, however.

We recognize that our list of 12 methodologies is not exhaustive, but consider it to provide a fair overview of the wide range of alternatives. The fact that the experts suggested further methodologies, and that no alternative was proposed by more than one expert, suggests that no agreement now exists among experts as to the best way to adjust the measurement of poverty for geographic differences in COL. This is discussed in the next section.

Experts Differed on the Methodologies' Ability to Make Adjustments

The observation in a 1976 report to Congress that “although there may be geographic differences in the cost of living, there is no known way to make satisfactory geographic adjustments to the poverty cutoffs,”⁸ still seems valid. The experts who we asked to assess the methodologies differed about how best to make adjustments because of numerous data and conceptual problems that they identified. Overall, the experts' ratings of each methodology's promise for geographically adjusting COL were mixed, and our content analysis of the experts' comments about each methodology's strengths and weaknesses yielded diverse and sometimes conflicting perspectives.

Experts Viewed Methodologies as Having Mixed Degrees of Promise

Overall, the experts' ratings of methodologies were mixed. Although the majority of experts rated certain methodologies as showing little or no promise for adjusting the poverty measurement for geographic differences in COL, no clear consensus was observed overall in the ratings the experts gave regarding the methodologies' promise for making adjustments. A majority of the experts regarded local indexes, polling, family budgets, consumption data, and the consumer price index methodologies as showing little or no promise for making adjustments. The comparable pay methodology was found by more than two-thirds of the experts to be not promising at all. (See table 2 for experts' ratings of methodologies.)

⁸U.S. Department of Health, Education, and Welfare, *The Measure of Poverty: A Report to Congress as Mandated by the Education Amendments of 1974*, p. 82.

Table 2: Experts' Ratings of Methodologies

Methodology	Very great promise	Great promise	Moderate promise	Little promise	Not promising at all	Cannot say at this time	Total
Budgets	1	5	6	1	2	0	15
Norms	0	4	5	4	1	1	15
Housing data	1	2	5	4	3	0	15
Family budgets	3	2	2	5	3	0	15
Consumption data	1	3	3	5	3	0	15
Interarea price index	1	2	4	7	0	1	15
Economic modeling	1	2	4	3	1	4	15
Consumer price index	0	2	5	5	3	0	15
Estimation models	0	1	5	4	3	2	15
Local indexes	0	1	4	9	1	0	15
Polling	1	1	1	3	7	1	14 ^a
Comparable pay	0	0	2	2	11	0	15

^aIn one instance, the response was not usable.

Source: GAO analysis.

No methodology was rated by the majority of experts as showing great or very great promise to adjust the poverty measurement for geographic differences in COL. However, three methodologies—budgets, norms, and housing data—received a rating of at least moderate promise by a majority of the experts. The budgets methodology appeared to have the most promise, but less than half of the experts rated it as having great or very great promise.

Experts Identified Strengths and Weaknesses for Promising Methodologies

Our content analysis of the experts' comments on each methodology's strengths and weaknesses showed that the experts shared few common views on any specific methodology. When three or more experts did express a similar comment, it most often concerned a weakness rather than a strength of the methodology being rated. Some experts identified an attribute but expressed different perspectives as to whether it constituted a strength or weakness. Examples of mixed responses included one expert indicating that a strength of a particular methodology was its adaptability for use by government, while another expert characterized the same methodology as not being adaptable for use by government. In some instances, experts agreed about a methodology's attribute—e.g., its

emphasis on children—but differed as to whether the presence of this attribute should be viewed as a strength or weakness. (See figure 1 for strengths and weaknesses of the methodologies.)

Figure 1: Experts' Comments on Strengths and Weaknesses of Methodologies

Attributes	Budgets	Norms	Housing data	Family budgets
General comments				
Feasibility/practicality/sensibility				
Conceptual promise				
Geographic variability		■		
Insightful regarding the relationship between absolute and relative measure of poverty or useful in validating measurement of poverty or COL				
Adaptability for use by the government		■		
Clarity/comprehensive description of methodology				
Cost		■		□
Baseline data				
Quality of baseline data				
Contemporary concepts of consumption or needs	■			□
Relevance to or suitability for low-income families	■	■	■	
Emphasis on children				
Composition of market basket		■	□	■
Available or existing data				
Frequency of updates to baseline data		■		
Substitute measures of COL and/or reflective only of COL differences				
Potential bias of survey respondents				
Data collection controls				
Methodology				
Straightforward and easy to follow or to explain to lay persons	□			
Appropriate measurement for COL adjustment			■	
Expenditure-based data	■			
Health- and social well being-based standards	■			
Adjustments for regional differences in standards	□			
Focus on the major source of variance in the COL			■	
Nonmetropolitan or rural residence				□

Strength
 Weakness
 Mixed responses

Note: At least three experts had to comment on a methodology's attribute for it to be included in this table. For mixed responses, at least one expert cited an attribute as a strength, while another or others rated it as a weakness.

Source: GAO tallies of expert reviewers' comments on strengths and weaknesses of methodologies.

Consumption data	Interarea price index	Economic modeling	Consumer price index	Estimation models	Local indexes	Polling	Comparable pay
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Our content analysis of the experts' comments on the strengths and weaknesses of the three methodologies that received a rating of at least moderate promise by the majority of experts illustrates both the diverse and occasionally contradictory comments of the experts. The strengths of the budgets methodology lie in its representation of low-income families

and its use of health and social well-being standards in the determination of the market basket. However, its eclectic approach of using these standards from various sources, which makes it difficult to explain to laypersons, was viewed as a weakness. Another weakness of the budgets methodology cited by the experts is that it fails to make adjustments for regional differences in transportation and some of the other market basket components. The experts who commented about its use of expenditure data were evenly split between those who viewed this as a strength and those who said it was a weakness. This methodology was viewed as capturing both contemporary and outdated concepts of consumption needs. For example, one expert cited the use of current standards as a strength, whereas other experts cited the use of 1981-based data to determine the importance given to items in the market basket as a weakness.

The norms methodology was generally rated as promising because the COL index was frequently updated. The experts, however, differed in their comments about the methodology. For example, more than one-half of the experts said that the lowest income level for which the index was provided was well above poverty and was therefore unrepresentative of low-income families. Conversely, one expert, noting the degree of variation in income levels provided in the index, described it as “more relevant to the poor than other available sources.” Mixed responses of both strengths and weaknesses were indicated for the (1) appropriateness of the items in the market basket, (2) degree of geographic variation shown in the index, (3) ability of the methodology to be adapted and implemented by the government, and (4) cost associated with such implementation.

The housing data methodology was regarded as strong in its focus on what the experts considered the major source of variation in COL. The fact that housing was the only cost measured was also cited as this methodology's major weakness. As shown in table 3, the experts had mixed views about the representation in the baseline data of families living in poverty. The experts also lacked agreement on whether the housing concepts were appropriate. For example, one expert said the methodology had the “merit of focusing on rents for a specified type of apartment,” while another said that “decent, safe, and sanitary” qualities of housing should be controlled in the measure to prevent downward bias in low-income areas.

Weaknesses Identified for Methodologies With Little or No Promise

A content analysis of the experts' comments revealed that the local indexes methodology had many weaknesses resulting from its price data collection methods, which involve volunteers from chambers of commerce collecting and averaging prices that are representative of purchases of middle-management households in their local areas. This methodology was viewed to be an unsuitable representation of the consumption needs of the poor. Another weakness of the local indexes methodology was its exclusion of nonmetropolitan and rural areas.

The polling methodology was regarded by several experts as a means to validate the measurement of poverty, rather than as an approach to make geographic COL adjustments. These experts said that this methodology provided insight into the relationship between an absolute measure of poverty, such as the current official measure, and a measure that is relative—that is, a measure that changes with growth in the economy or according to society's perception of an adequate level of income. According to the experts' comments, the main weakness of polling was in the quality of the data obtained through a public opinion survey. It was thought that the respondents would be biased in providing their estimates. For example, one expert wrote: "If respondents knew the survey results would be used to adjust poverty thresholds with implications for program expenditures and income taxes, then some may intentionally deflate or inflate their response[s], in their own self-interest." The experts had mixed views about the costs associated with this method; some experts said it would be cost effective, while others said it would be costly.

According to the experts' comments, the main weakness of the comparable pay methodology was its reliance on employers' labor costs. Many experts said that such a measure included influences other than COL and that as a consequence it was inappropriate and an unsuitable substitute for COL, especially as a representation of the needs of the poor. For example, one expert said, "Geographic variations in quality of life affect the relationship between wages/salaries and living costs. Use of employer costs as a measure of living costs would introduce significant regional bias." Many weaknesses, as well as several mixed responses, were noted for the remaining three methodologies—consumption data, family budgets, and consumer price index.

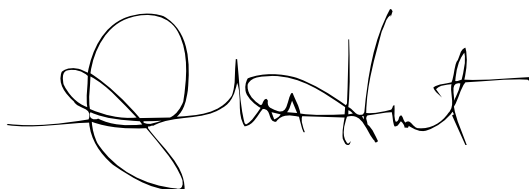
Conclusion

The concept of adjusting the measurement of poverty for geographic differences in COL has been seen as problematic, and remains so. We asked recognized experts to review 12 methodologies that illustrate the range of

alternative approaches to adjust poverty measurement for geographic COL differences, and there was no consensus among these experts that any one methodology was the most promising for making such an adjustment. The fact that several of these experts suggested additional methodologies, but that no additional methodology was suggested by more than one of the experts, suggests to us that a consensus on any one approach does not exist. Where there does appear to be agreement, however, is that several of the methodologies offer little or no promise of appropriately adjusting the measurement of poverty for geographic COL differences. Further, obtaining a consensus on what items should go into a COL index's market baskets to reflect regional differences in consumption would be difficult.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 20 days after its issue date. At that time, we will send copies of the report to the Secretary of Commerce, the Secretary of Labor, the Director of the Office of Management and Budget, and other interested parties. We will also make copies available to others on request.

If you have any questions concerning this report, please call me on (202) 512-8676. Major contributors to the report are listed in appendix IV.

A handwritten signature in black ink, appearing to read 'William M. Hunt', with a large, stylized initial 'W'.

William M. Hunt
Director, Federal
Management Issues

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Abbreviations

BLS	Bureau of Labor Statistics
COL	Cost of living
USDA	Department of Agriculture

Scope and Methodology

To address the first two objectives of this job—describing the function of a market basket in determining a COL index, and identifying potential methods for calculating a COL adjustment—we first reviewed the relevant literature and held discussions with specialists in the field. These specialists included individuals associated with poverty measurement or COL data at the Bureau of Labor Statistics (BLS) and the Bureau of the Census, as well as private organizations and academic institutions. We also included individuals who did not support geographic adjustment of the poverty measurement, as well as those who have proposed methodologies to achieve this objective.

On the basis of our literature review and preliminary discussions with specialists, we described the function of a market basket and identified an initial set of methodologies that might have potential for adjusting poverty measurement for geographic differences in the COL. We grouped similar methodologies into 12 categories and gave a generic name to each. We excluded potential methodologies if they did not identify existing data that could be turned into a geographically adjusted index. Two methods, one based on use of data from administrative records and one relying on data scanning of uniform product codes, were eliminated because they did not meet this criterion.

To meet our third objective of obtaining expert opinion on the ability of these methodologies to adjust the poverty measure for geographic differences in COL, we selected a panel of 15 experts and surveyed them using a data collection instrument that contained brief descriptions of each of the 12 generic methodologies we identified. We asked the panel to review each description and rate each methodology in terms of its promise for use in adjusting the poverty measurement for geographic differences in COL.

The description of each methodology identified data sources, discussed the cost and time needed to develop an index with the methodology, and provided an example of how the calculations would be made and the index could be used. We asked the developer or someone very familiar with each methodology to review our brief description to ensure that it accurately conveyed the essence of the methodology.

We asked the selected experts to rate each methodology on a five-point scale that ranged from “not promising at all” to “shows very great promise,” and then briefly discuss the strengths and weaknesses of the methodology. The experts were also asked to identify any additional

methodology we may have overlooked and provide their views on the major challenges and costs associated with developing COL data that could be used to geographically adjust the poverty measure.

We randomly chose 15 individuals to serve as experts from a candidate list of more than 40 names. To obtain a diverse candidate pool reflective of the different interests involved, we asked for nominations of potential experts from those specialists in the field and representatives of major statistical agencies that we met with during our initial discussions and literature review. To avoid potential conflicts of interest, we excluded individuals from the list who are currently serving on the National Academy of Sciences' Panel on Poverty and Family Assistance or who are political appointees. We recognize that the responses we received reflect only the views of the experts included.

Several of the experts initially selected were unable to participate. We replaced these individuals with alternates from the remaining pool of candidates. (See app. II for a list of the participating experts.)

Before contacting our initial selections, we asked congressional staff and officials from Census, BLS, and the Office of Management and Budget to review the list for balance and to identify any additional experts they believed should be included. No additions were suggested.

The selected experts received a package containing a letter of introduction, an instruction sheet, descriptions of all the methodologies, and response sheets (see app. III). The package was sent on November 14, 1994.

Responses were received from all 15 experts by January 6, 1995. We tabulated the ratings for each methodology to obtain an overall assessment of the experts' opinions of how promising each methodology was for use in adjusting the poverty threshold for geographic differences in COL.

We also did a content analysis of the experts' responses to the strengths and weaknesses question for each methodology. From an initial reading of the responses, we developed a list of cited strengths and weaknesses. We used this list to code the responses of all experts for each methodology. The coding of the responses was verified by a second coder, and a third person checked coding reliability. As a method of focusing our analysis on the recurring comments made by the experts in their discussions of each

methodology's strengths and weaknesses, we adopted a decision rule to report only those comments made by three or more experts for a particular methodology's attribute.

Experts' comments on market baskets were identified separately and were used in our description of the function of the market basket. Additionally, we used experts' general comments on major challenges and costs associated with geographically adjusting poverty measures to illustrate our results.

Experts and Their Affiliations

Mark C. Berger
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AFL-CIO

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Eric Marder Associates, Inc.

Robert Gillingham
Department of Treasury

Haeduck Lee
The World Bank

Richard Muth
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Marilyn Moon
The Urban Institute

Tom R. Rex
Arizona State University

Patricia Ruggles
Joint Economic Committee

Timothy M. Smeeding
Syracuse University

Robert Summers
University of Pennsylvania

Appendix II
Experts and Their Affiliations

Harold Watts
Columbia University

Data Collection Instrument and Descriptions of the Methodologies

This appendix contains copies of the cover letter, instruction sheet, answer sheets, and brief descriptions of the 12 methodologies that we sent to the 15 experts we selected to review the methodologies.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**



**United States
General Accounting Office
Washington, D.C. 20548**

General Government Division

Date

Address

Dear :

As we indicated to you in our recent conversation, the U.S. General Accounting Office, an independent agency of Congress, has been asked to study the potential use, if any, of alternative approaches for adjusting poverty thresholds for geographic differences in the cost of living. First, we would like to thank you very much for agreeing to assist us in this effort.

The enclosure accompanying this letter includes a set of instructions and the descriptions of 12 methodologies that have been developed, or proposed by researchers for geographic cost-of-living adjustments. In accord with the instructions, please review the descriptions of the 12 methodologies and answer the related questions. If we have missed a prominent methodology, please describe it in the space provided and include it in your assessments. Also, we would like your response to one summary question on this topic that appears at the end of the enclosure.

We will take steps to safeguard the privacy of your responses. The number on the response sheets is included only to aid us in our follow-up efforts. All categorical responses will be reported in summary form. If specific comments about methodologies are discussed in our report, we will not include any information that could be used to identify individual respondents. Before releasing this report, we will remove all identifying information from your response sheets so they can no longer be matched with your name.

We would appreciate receiving your response by November 23, 1994. Please return the yellow response sheets and any additional materials you may wish to provide us in the preaddressed envelope. If you have any questions about this request, please contact Kathleen Scholl at (202) 512-7262 or Pam Pavord at (202) 512-4102.

Sincerely,

William M. Hunt
Director, Federal Management Issues

**Appendix III
Data Collection Instrument and
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INSTRUCTIONS FOR COMPLETING METHODOLOGY REVIEW

On the following pages are brief descriptions of 12 alternative methodologies that have been developed or proposed for doing geographic adjustments. Each description is followed by a colored answer sheet. After reviewing each methodology, use the accompanying answer sheet to rate the methodology's promise as an approach to adjusting poverty thresholds for geographic differences in the cost of living. Also, please discuss each methodology's strengths and weaknesses for this purpose in the space provided.

Discussion of the methodology's strengths and weaknesses might address, for example, such things as the basis of the cost-of-living measure, the degree of geographic variation provided by the method, or the cost and feasibility of implementing an adjusted index. The space provided for the discussion of strengths and weaknesses may also be used to provide any other additional comments or observations you may have about the methodology. To aid in our understanding and analysis of your responses, please ensure that any comments, observations, notes, etc. that you may make in the margins of the methodology's description are incorporated into the answer sheet.

Please note, we do not consider these methodologies to be directly comparable. They include alternative approaches to measuring a market basket or baseline data, calculating a cost-of-living index, or both. Also, some methodologies do not currently produce a cost-of-living index and definitions of region are not consistent across the different methodologies. For these reasons, each methodology's rating of promise should be done on the basis of that methodology's individual merits and, to the extent possible, independent of the ratings given to other methodologies.

The final pages of this packet

-- provide space to (1) identify and discuss any other prominent methodologies that could be considered for doing geographic cost-of-living adjustments and (2) make additional comments or observations about the methodologies or this data collection instrument, and

-- poses one summary question concerning geographic adjustment of poverty thresholds.

Please complete and return the yellow response sheets and any other material you may wish to send us in the preaddressed, postage paid envelope provided. If you have any questions about this request, please contact Kathleen Scholl at (202) 512-7262 or Pam Pavord at (202) 512-4102. Thank you for your assistance.

BUDGETS METHODOLOGY

This methodology estimates how much families need to spend to purchase the contents of a market basket of goods and services.¹ An example of the Budgets Methodology is the Basic Needs Budget.²

Overview of Basic Needs Budget

The Basic Needs Budget (BNB) is essentially an update of the Bureau of Labor Statistics' (BLS) Family Budgets program and was proposed by researchers as a means to measure poverty among single-parent families. The BNB defines "basic need" as a standard greater than that required for mere physical survival but well below average consumption patterns. Expenditure amounts are estimated for seven major budget categories: (1) food, (2) housing, (3) health, (4) transportation, (5) clothing, (6) personal care, and (7) child care. Like the BLS Family Budgets, the BNB takes into account federal and state income taxes and Social Security contributions. The BNB has been published but not used.

Where possible, official definitions of expenditure standards are used to estimate the dollar amounts for the major budget categories. The food component is based on the U.S. Department of Agriculture's (USDA) Low-Cost Food Plan, which is based on the consumption patterns of families in the second quartile of per capita food expenditures. The child care standards are based on the Internal Revenue Service's (IRS) maximum allowed expenditures for claiming the child and dependent care tax credit, updated for inflation.

For other categories, official expenditure survey data are used to calculate average expenditures of low-income families. The housing standards are constructed using the monthly rental cost reported in the American Housing Survey, which defines the lowest quartile of the rental distribution of two-bedroom units adjusted by region and location of residence. The health care standards are based on the average premium expenditure for group health insurance for low-income families as reported in the National Health Care Expenditure Survey, plus an allowance for out-of-pocket expenditures. The transportation standards for rural families are based on the average commuting distance in the travel-to-work supplement of the Current Population Survey and the IRS cost per mile rate.³ The budget estimates for clothing and personal care, which represent a small portion of the budget, use the 1981 BLS Family Budget allocations, which have been updated for inflation.

¹Note that this methodology is similar to the Family Budgets methodology. The difference is in the source of the standards used for the consumption categories and that additional consumption categories, such as child care, are included. Also, this methodology does not translate the standards into lists of goods and services as was done in the BLS Family Budgets program.

²Trudi J. Renwick and Barbara R. Bergmann, "A Budget-Based Definition of Poverty with an Application to Single-Parent Families," *The Journal of Human Resources*, (Winter, 1993). This methodology was extended to other family types in Trudi Renwick, "Budget-Based Poverty Measurement: 1992 Basic Needs Budgets for American Families," paper delivered at the American Statistical Association Winter Meeting, Ft. Lauderdale, FL, (rev. Mar. 1993).

³Urban and suburban families are assumed to use public transportation.

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Source of Data

As detailed in the previous section, data from many surveys that are conducted by the federal government are used in the estimates for the BNB. These include data from USDA, BLS, IRS, the Bureau of the Census, and the U.S. Department of Health and Human Services. In addition to these surveys, the 1981 BLS Family Budgets and the Consumer Price Index are used in calculating the BNB.

Geographic Information

The BNB was used to calculate poverty thresholds that vary by region and location of residence. The BNB, as published, adjusts housing costs for region and location of residence and varies transportation costs by location.⁴ While the BNB do not adjust other components for regional differences, these could be incorporated.⁵

The following table presents the annual before-tax income required to purchase the goods and services in the BNB for a single parent employed outside the home with two children in 1992 by central city, suburban, and rural areas in the U.S.

Region	Central city		Suburban		Rural	
	BNB	Regional ratio ^a	BNB	Regional ratio ^a	BNB	Regional ratio ^a
Northeast	\$19,751	1.03	\$21,674	1.05	\$20,037	1.06
Midwest	19,088	1.00	20,738	1.00	19,543	1.04
South	19,348	1.01	20,790	1.00	18,841	1.00
West	20,609	1.08	22,298	1.08	19,946	1.06

^aThis is a ratio calculated by GAO of the specific region's estimate in relation to the region with the lowest estimate. Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: Trudi Renwick, personal communication, Oct. 6, 1994.

⁴The BNB can also be adjusted for family type, age and number of children, labor force status of adults, and receipt of private and public noncash benefits. The emphasis of the published research was the differentiation of need based on family type rather than on region and location of residence.

⁵For example, the health care costs are based on national average expenditures for low-income families from the National Health Care Expenditure Survey. Regional averages could be substituted.

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Costs and Time Needed to Develop Cost-of-Living (COL) Index

A COL index that varies by geographic area could be derived with this methodology, which establishes baseline data, but the cost and time needed to develop a COL index are unknown. This methodology uses data that are currently collected by the federal government, but it also uses 1981 BLS Family Budgets data for areas in which no current data or standards exist.

Budgets 3

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Methodology: Budgets

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Budgets

NORMS METHDOLOGY

Using standards that are derived by identifying the proportion of income spent on consumer expenditure categories, this methodology develops cost-of-living (COL) indexes for specific geographic locations. Examples of the Norms Methodology include Living Cost Standards¹ and the Florida Price Level Index.²

Overview of Living Cost Standards

Runzheimer International provides living cost standards and COL indexes for over 350 cities to Runzheimer clients. The living cost standards and COL indexes are provided for "profiles" in which the characteristics of families vary by income level (from \$25,000 to over \$500,000), family size, and housing status (homeowner/renter). The primary application of the living cost standards and COL indexes are to determine differentials by geographic location and to calculate relocation assistance payments for employees who are transferred to different geographic locations. Runzheimer clients include private businesses, state governments, and federal agencies.

Annually, the Runzheimer staff establish national standards for main expenditure components for each profile. To establish the weighting that will be given the expenditure components for each profile, Runzheimer uses information on expenditures by income levels from the Bureau of Labor Statistics' Consumer Expenditure Survey. To establish the standards for the components, Runzheimer researches the size of homes in which employees live, the number and types of automobiles they drive and the goods and services they purchase, at varying income levels. Each year the relationships between the components' standards and weights are evaluated and adjusted if economic or demographic conditions warrant changes. The standards for the various profiles are translated into actual items to be priced. For example, the standard for the housing component for one profile might be a house with 1,800 square feet of living area consisting of 7 rooms including 3 bedrooms and 2 baths.

"Standard City, USA" -- the average cost location -- is established by pricing the national standard for each profile in approximately 156 locations. In collecting price data for each location, identical items are priced (for example, the exact same brand and size of coffee is priced in all locations). Adjustments are made, however, in the shelter component for the typical style and size of housing found in each location. Two calculations are made: (1) living cost standards, which are expressed in dollar amounts, and (2) COL indexes in which Standard City, USA, is set to 100.

In its calculations for the main components Runzheimer uses various methods to make its calculations for the four main components: (1) taxes, (2) transportation, (3) housing, and (4) goods and services.

¹The Runzheimer Plan of Living Cost Standards, Runzheimer International (Rochester, WI: June 1994).

²Gary D. Cooper, "Spatial Price Indices: The Florida Experience." The Review of Regional Studies Vol. 6, No. 2, pp. 36-47.

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Runzheimer developed a tax model to determine annual federal, state, and local income taxes as well as Social Security contributions and sales taxes that are included in the taxation component. The transportation component are costs associated with owning and operating one or more personal automobiles. Each profile specifies particular year, make, and model for the automobiles.

Runzheimer treats the housing component in one of two ways. If the profile is for a renter, the average net cost is based upon quotations obtained from rental agencies and other firms that manage rental properties within each specific location. If the profile is for a homeowner, Runzheimer determines the market value of the standard home as established for the profile. The housing component also contains costs associated with insurance (homeowners or renters) and utility costs. The utility costs are adjusted to reflect the typical total expenditures for heating, cooling, and operation of household appliances in each selected location in the profile.

The goods and services component is comprised of 10 major goods and services categories: (1) food at home, (2) food away from home, (3) tobacco, (4) alcohol, (5) furnishings and household operations, (6) domestic service, (7) clothing, (8) personal care, (9) medical care, and (10) recreation. There are over 150 items that are priced every 6 months. Runzheimer directly collects these prices from three different outlets in each location. The prices are adjusted for any time difference in data collection.

Source of Data

Runzheimer directly collects the data used to calculate the living cost standards and the COL indexes. It also uses data, such as home sales, from others in the private sector who collect the data from various private and public sector sources. Runzheimer also uses the Internal Revenue Service's tax data.

Geographic Information

Runzheimer collects data on more than 2,000 communities and can calculate the living cost standard and COL index for these areas. Runzheimer regularly provides the standards and indexes for over 350 cities to its clients. The listing of the specific cities changes according to the needs of the Runzheimer clients. These cities are also "online" via personal computers to Runzheimer clients who subscribe to its Exactplus program. The following is a listing of a sample of the city indexes for January 1994, which represents the COL for the profile of a single person with an annual income of \$25,000 and who rents an apartment.

Norms 2

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<u>City</u>	<u>COL index</u>	<u>City</u>	<u>COL index</u>
Standard City, USA	100.0		
Birmingham, AL		Hennessey, OK	99.6
sub area B	100.2	Philadelphia, PA	
Tracy, CA	104.1	sub area B1	104.2
Washington, DC		Las Vegas, NV	100.1
sub area B2	104.0	Parlin, NJ	104.8
sub area S3	103.9	Buffalo, NY	105.6
Kissimmee, FL	100.0	Ilion, NY	105.5
Jacksonville, FL	99.8	New York City, NY	
Cartersville, GA	104.6	sub area B2	104.8
New Orleans, LA	99.5	sub area B7	104.8
Bangor, ME	100.1	Sub area B8	104.8
Annapolis, MD	104.0	Rochester, NY	105.2
Springfield, MA	100.2	Syracuse, NY	105.4
Worcester, MA	99.8	Knoxville, TN	104.7
Ann Arbor, MI	99.7	Memphis, TN	105.4
Detroit, MI		Newport, TN	105.4
sub area B2	99.7	Austin, TX	99.9
sub area B3	99.7	Houston, TX	
Columbus, OH		sub area S4	99.7
sub area B	99.8	Anacortes, WA	104.1
Enid, OK	99.6	Seattle, WA	
		sub area S3	105.6

Source: Runzheimer International.

Cost and Time Needed to Develop COL Index

A COL index for over 350 cities has been developed by Runzheimer International. The basic fee is \$345 per location (or per sub area) for one profile. Quantity discounts are available; for example, one profile's index numbers for 100 locations can be purchased for \$26,000.

Norms 3

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Methodology: Norms

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Norms

HOUSING DATA METHODOLOGY

This methodology estimates the average rents of housing in particular geographic areas. An example of the Housing Data Methodology is contained in a working paper by a U.S. Department of Agriculture (USDA) researcher who investigated the amount of interarea variation in rents.¹

Overview of Fair Market Rents Index

Fair Market Rents (FMR) are the amounts that would be needed to rent privately owned, decent, safe, and sanitary rental housing of a modest (nonluxury) nature with suitable amenities. These amounts are calculated for efficiencies and one to four bedroom units by the U.S. Department of Housing and Urban Development (HUD). The FMRs are used to limit the amount of housing assistance provided to low-income families who participate in the Section 8 rental housing program as authorized under the U.S. Housing Act of 1937.

In the USDA study, the FMRs for two-bedroom units were used to construct average FMRs for three sizes of metropolitan areas and nonmetropolitan areas by census region. County data were aggregated such that counties and metropolitan areas within each state that had identical FMRs were combined, resulting in 943 areas -- 359 metropolitan and 584 nonmetropolitan areas.² The average FMRs for metropolitan and nonmetropolitan areas by region were calculated by weighting each area's FMRs by its number of two-bedroom rental units and dividing by the total units in the group. (These mean values are reported in the Geographic Information section of this methodology's description.)

To investigate whether the means are fair representations of rental costs for renters in all parts of each group, the USDA study compared them with the minimum and maximum FMRs within each group. The USDA study also compared FMRs with two other housing cost measures: (1) the housing index from the Florida Price Level Index and (2) rents collected as part of the ACCRA cost-of-living (COL) index. (See the Local Indexes Methodology description for more information about this index.)

Source of Data

The 1980 Decennial Census public use file is the basis for HUD's FMRs calculations. (The 1990 census data were not available when these calculations were made.) The rents are updated to current conditions with the American Housing Survey and area-specific Consumer Price Index information. Each spring HUD publishes proposed FMRs in the Federal Register for public comments. The comments are analyzed to identify areas where the use of these data is not appropriate or where there have been abrupt changes in local markets. Final FMRs are published

¹Linda M. Ghelfi, "Fair Market Rents: What Evidence of Metro-Nonmetro Cost-of-Living Differences Do They Provide?" unpublished working paper, Economic Research Service, USDA.

²Metropolitan areas contain core counties with a city of 50,000 or more or several smaller cities with an urbanized population of at least 100,000. Counties adjacent to core counties are included in metropolitan areas if they are economically and socially integrated with the core counties. Counties not meeting these requirements are nonmetropolitan areas.

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before their implementation on the first day of the new fiscal year, October 1. Data used by the USDA researcher in this example are those provided by HUD for fiscal year 1990.

Geographic Information

Average FMRs for two-bedroom units are provided for the United States overall and four regions by city size for metropolitan areas and by nonmetropolitan areas.³ The mean two-bedroom rents for fiscal year 1990 are as follows:

<u>Geographic area</u>	<u>Metropolitan areas by size</u>						<u>Nonmetropolitan</u>	
	<u>Large</u>		<u>Medium</u>		<u>Small</u>			
	<u>Rents</u>	<u>Regional ratio^a</u>	<u>Rents</u>	<u>Regional ratio^a</u>	<u>Rents</u>	<u>Regional ratio^a</u>	<u>Rents</u>	<u>Regional ratio^a</u>
United States	\$589		\$478		\$437		\$385	
Northeast	618	1.22	546	1.26	534	1.32	478	1.39
Midwest	505	1.00	434	1.00	418	1.03	371	1.08
South	527	1.04	433	1.00	404	1.00	343	1.00
West	680	1.35	548	1.27	522	1.29	482	1.41

^aThis is a ratio calculated by GAO of the specific region's estimate in relation to the region with the lowest estimate. Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: Linda M. Ghelfi, "Fair Market Rents: What Evidence of Metro-Nonmetro Cost-of-Living Differences Do They Provide?" unpublished working paper, Economic Research Service, U.S. Department of Agriculture.

Cost and Time Needed to Develop COL Index

A geographic COL index that varies by four regions, city size, and nonmetropolitan areas could be derived from the HUD FMRs data, but the cost and time needed to develop a COL index are unknown. The FMRs for each county could be used to derive a very geographically detailed COL index, but the cost and time needed to develop such a COL index are also unknown.

³Detailed information about the states contained within the regions and what specific population sizes denoted large, medium, and small cities was not provided in this study.

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Methodology: Housing Data

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Housing Data

FAMILY BUDGETS METHODOLOGY

This methodology calculates annual estimates of the cost of purchasing hypothetical "market baskets" of goods and services that represent lower, intermediate, and higher standards of living. An example of the Family Budgets Methodology is the U.S. Bureau of Labor Statistics' (BLS) annual autumn Family Budgets estimates.¹

Overview of BLS' Family Budgets Estimates

The BLS Family Budgets methodology was developed in the late 1940s in response to a congressional mandate to determine "what it costs a worker's family to live in the large cities of the United States" and to measure the relative living costs among these cities.² The most recent series of BLS Family Budgets was published from 1966 through 1981. The series was terminated in 1981 because of funding constraints. The budgets represented the costs of three hypothetical lists of goods and services that were specified in the mid-1960s to portray three relative standards of living, described as lower, intermediate, and higher. The budgets were styled for the traditional four-person family and for a retired couple.

The traditional family budgets are for a precisely defined urban family of four -- a 38-year-old husband employed full time, a nonworking wife, a boy of 13, and a girl of 8. After about 15 years of married life, the family is settled in the community, and the husband is an experienced worker. The family has, for each budget level, average inventories of clothing, house furnishings, major durables, and other equipment. The budgets pertain only to an urban family with these characteristics; no budgets are available for rural families. Also, the budgets are not intended to represent a minimal level of adequate income or a subsistence level of living, nor do they indicate how families spend or should spend their money.

A detailed description of the methodology appears in a report by the Expert Committee on Family Budget Revisions.³ Family Budgets were developed from a variety of estimation techniques. Two standards of adequacy were used to develop the specifications for food at home and housing. Specifications for many of the remaining components of the family budget were developed using data from the BLS 1960 to 1961 Consumer Expenditure Survey. A statistical procedure was used to estimate the quantities of goods and services making up the market baskets; however, the procedure was effective for only a limited number of components. As a result, quantities of items for many of the components were based on "discretionary decisions made by BLS staff" that followed a criterion that the results be "reasonable in comparison with

¹BLS, "Family Budgets," *Monthly Labor Review*, July 1982, pp. 44-46.

²Mark K. Sherwood, "Family Budgets and Geographic Differences in Price Levels," *Monthly Labor Review*, Apr. 1975, pp. 8-15.

³Expert Committee on Family Budget Revisions, *New American Family Budget Standards*, Institute for Research on Poverty, Special Report Series No., 30, University of Wisconsin-Madison (May 1980), pp. 17-22 and 25-34.

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observed expenditure patterns and with past values or shares in the Family Budget."⁴

The Family Budgets data were used in many ways, such as income eligibility criteria for employment programs and as differentials to determine geographic wage and salary adjustments.

Source of Data

BLS updated the Family Budgets estimates annually with the Consumer Price Index by applying price changes for individual areas from autumn to autumn to the appropriate budget costs for each main class of goods and services.

Geographic Information

BLS' Family Budget estimates were for over 2 decades the most widely used measures available for comparing geographic differences in living costs for families. Costs were estimated for twenty-five metropolitan areas and four nonmetropolitan regions.⁵ The market baskets that were constructed were not identical for all areas. Because the market baskets varied among areas, the budgets might be interpreted as measures of geographic cost-of-living (COL) differences. However, to use the standard budget index as a measure of differences in interarea COL would require a strong assumption about consumer preferences, namely that a consumer would be equally satisfied with any of the baskets.

The 1981 Family Budget estimates for an urban family of four in the lower level of living are as follows:

<u>Geographic area</u>	<u>Estimate</u>	<u>Index</u>
Urban United States	\$15,323	1.00
Metropolitan areas	15,481	1.01
Nonmetropolitan areas	14,619	.95
Northeast		
Boston, MA	\$16,402	1.07
Buffalo, NY	14,710	.96
New York-Northeastern NJ	15,705	1.02
Philadelphia, PA-NJ	15,593	1.02
Pittsburgh, PA	15,116	.99
Nonmetropolitan areas	15,160	.99

⁴Loc. cit., p. 33.

⁵Costs were estimated for 39 metropolitan areas from 1966 through 1978, then 25 metropolitan areas from 1979 through 1981.

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<u>Geographic area</u>	<u>Estimate</u>	<u>Index</u>
North Central		
Chicago, IL-Northwestern IN	\$15,587	1.02
Cincinnati, Ohio-KY-OH	15,110	.99
Cleveland, Ohio	15,176	.99
Detroit, MI	15,107	.99
Kansas City, MO-KS	14,925	.97
Milwaukee, WI	15,505	1.01
Minneapolis-St. Paul, MN	15,118	.99
St. Louis, MO-IL	15,112	.99
Nonmetropolitan areas	14,852	.97
South		
Atlanta, GA	\$14,419	.94
Baltimore, MD	15,315	1.00
Dallas, TX	14,392	.94
Houston, TX	14,810	.97
Washington, DC-MD-VA	16,702	1.09
Nonmetropolitan areas	13,741	.90
West		
Denver, CO	\$15,093	.98
Los Angeles-Long Beach, CA	16,618	1.08
San Diego, CA	15,690	1.02
San Francisco-Oakland, CA	17,080	1.11
Seattle-Everett, WA	17,124	1.12
Honolulu, HI	20,319	1.33
Anchorage, AK	22,939	1.50
Nonmetropolitan areas	16,410	1.07

Source: Bureau of Labor Statistics.

Cost and Time Needed to Develop COL Index

BLS issued its last release of Family Budgets for Autumn 1981. According to BLS, in 1981 the expenditure data on which the budgets were based were then 20 years old, and the continuation of the program would have required a revision of concepts, more expenditure data, and extensive collection of price data, for which funding was not available. The time and costs it would take to redevelop Family Budgets that could be used to develop a COL index are unknown.

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Methodology: Family Budgets

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Family Budgets

CONSUMPTION DATA METHODOLOGY

This methodology calculates the average dollar amount of what families report that they spend in specified expenditure categories, such as clothing, during a survey's period of data collection.

Examples of the Consumption Data Methodology include the U.S. Department of Agriculture's (USDA) Expenditures on a Child Estimates¹ and the Prevailing Family Standard as proposed by the Expert Committee on Family Budget Revisions.²

Overview of USDA's Expenditures on a Child Estimates

The USDA provides estimates of expenditures on a child from birth through age 17 by husband-wife families for three income groups.³ Expenditures on a child are estimated for major budgetary components of housing, food, transportation, clothing, health care, child care and education, and other miscellaneous goods and services. The estimates are used by lawyers and judges in determining child support awards in divorce cases as well as in cases involving the wrongful death of a parent. These estimates also are used to determine payments for the support of children in foster families. Educators and others, such as financial planners, use the estimates to assess life insurance needs and to plan for expenses associated with parenthood.

Multivariate analysis is used to estimate household and child-specific expenditures from data on husband-wife families with two children; controlling for income level, family size, and age of the younger child. Regional estimates are derived by controlling for region. After the overall expenditures are estimated, the total amounts are allocated among the family members. Supplemental information from other sources is used to assist in determining allocations among the family members for household-level expenses. The USDA food plans are used to allocate food. Data from the National Medical Expenditure Survey are used to allocate health care expenses; and data from a U.S. Department of Transportation study are used to estimate transportation costs associated with employment activities, which are not related to expenses on a child and are therefore deducted from household expenses.

Source of Data

Data used to estimate expenditures on a child are from the Consumer Expenditure Survey, which is administered by the Bureau of Labor Statistics (BLS), U.S. Department of Labor. About 5,000 households are interviewed each quarter over a 1-year period. Each quarter is deemed an independent sample by BLS, bringing the total number of households in one survey year to

¹Expenditures on a Child by Families, 1993. USDA (Hyattsville, MD: Family Economics Research Group, Agricultural Research Service, 1994).

²Harold W. Watts, "Special Panel Suggests Changes in BLS Family Budget Program," Monthly Labor Review. (Dec. 1980), pp. 3-10.

³Estimates are also provided for single-parent families but are not included here because the sample size is too small to allow differentiation by region.

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approximately 20,000 households. USDA annualizes the quarterly expenditures and the sample is weighted using BLS' weighting methods to reflect the U.S. population. The base year for the estimates is 1990 and the estimates are updated every year using the Consumer Price Index (CPI). Income levels are updated with the all-items category of the CPI, and each expenditure is updated using the CPI for the corresponding item. Regional estimates are updated using the regional CPIs.

Geographic Information

Estimates are provided for urban areas in four regions,⁴ rural areas throughout the United States as well as for the United States overall for husband-wife families. Urban areas are defined as Metropolitan Statistical Areas (MSA) and other places of 2,500 or more persons outside an MSA; rural areas are defined as places of less than 2,500 persons outside an MSA.

The 1993 estimates of total cost of child rearing from birth through age 17 for families in the lowest income group are as follows:

<u>Geographic area</u>	<u>Estimate</u>	<u>Regional ratio^a</u>
United States	\$ 97,710	
Urban West	107,040	1.18
Urban Northeast	102,180	1.13
Urban South	95,730	1.06
Urban Midwest	90,660	1.00
Rural	93,570	1.03

^aThis is a ratio calculated by GAO of the specific region's estimate in relation to the region with the lowest estimate (urban midwest). Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: U.S. Department of Agriculture.

Cost and Time Needed to Develop Cost-of-Living Index

A geographic cost-of-living (COL) index that varies by four urban regions and rural areas could be derived from the current USDA estimates of expenditures on a child, but the cost and time needed to develop it are unknown. The estimates of expenditures on children are rebased approximately every 3 to 5 years and updated annually by the USDA; therefore, there would be no additional cost to the federal government if these estimates were used as baseline data for a COL index.

⁴For a listing of the states within the urban regions see Expenditures on a Child by Families, 1993, pp. 17-20.

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Methodology: Consumption Data

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Consumption Data

INTERAREA PRICE INDEX METHODOLOGY

This methodology develops price index numbers from the Bureau of Labor Statistics' (BLS) pricing and item characteristics information. The methodology assumes equal consumer satisfaction between geographic areas and allows a direct comparison of relative prices among several geographic areas.

Only BLS has developed interarea price index estimates with the Interarea Price Index Methodology.¹

Overview of BLS' Interarea Price Indexes

BLS has published interarea price indexes from consumer price index (CPI) data for July 1988 through June 1989 for several commodity and service categories representing about 85 percent of the average household budget in 1988.² These budget category indexes, however, cannot be aggregated into an "all-items" interarea index. Therefore, they are treated as separate indexes until BLS finds a solution that does not violate the theoretical assumptions on which the indexes are based. The BLS interarea price indexes are not used for a specific purpose and carry the status of experimental indexes until BLS determines a method to estimate variances for the indexes. Currently, BLS cannot determine the accuracy of the interarea price indexes.

Statistical techniques, termed hedonic regressions, that empirically estimate the implicit prices of the "characteristics" of specific items are used to calculate the interarea price indexes. Hedonic regressions employ three sets of independent dummy variables: one describing the item's physical characteristics (such as weight and color), a second defining the type of outlet in which the item is sold (such as a chain supermarket), and a third defining the geographic area in which the item is sold (such as Milwaukee). The coefficients of the area dummies can be interpreted as bilateral interarea price indexes, with one area arbitrarily chosen as the reference area. These indexes, however, are not transitive.³ For example, the bilateral indexes of the three cities of New York, Baltimore, and Philadelphia cannot be compared from one to another. For instance, the product of the bilateral index of Baltimore to New York and the index of New York to Philadelphia does not equal the direct bilateral index of Baltimore to Philadelphia.

A second procedure is done to make the indexes transitive. It uses the geometric mean of all areas in the sample as the "reference area." This procedure derives a multilateral interarea price index, which allows comparison of the index numbers among the geographic areas within the specific budget category. These multilateral indexes cannot, however, be aggregated into a transitive all-items index or a more aggregate budget category index.

¹Mary F. Kokoski, "New Research on Interarea Consumer Price Differences," *Monthly Labor Review* (July 1991), pp. 31-34. Mary Kokoski, Patrick Cardiff, and Brent Moulton, *Interarea Price Indices for Consumer Goods and Services: An Hedonic Approach Using CPI Data*, U.S. Department of Labor, BLS Working Paper 256 (July 1994).

²Kokoski, Cardiff, and Moulton, loc. cit.

³Transitive means that if a relation holds between the first element and a second element and between the second element and a third element, the relation also holds between the first and third elements.

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Source of Data

Data used to calculate interarea price indexes are from the monthly and bimonthly price quotes obtained for calculating the CPI. One year's supply of price quotes from July 1988 through June 1989 were used in the estimates. Some of the equations used expenditure weights as derived from BLS' Consumer Expenditure Survey. The BLS' CPI housing survey, which collects data on rent from renters and data on implicit or estimated rent from homeowners, was also used for the shelter budget category indexes.

Geographic Information

In constructing the CPI, much detailed information is collected, not only in terms of item prices but also relating to population, sales outlets, and consumer preferences. Prices are collected for a sample of 88 primary sampling units (PSU) in 85 geographic areas. Many of these PSUs correspond to the Metropolitan Statistical Areas as defined in 1983 by the Office of Management and Budget. The 30 largest PSUs, as well as Honolulu and Anchorage, have their own separate sample of prices and published CPIs. An additional 12 areas are aggregates of PSUs and are grouped by census region (northeast, north central, south, and west) and city size (class B - medium size, class C - small, and class D - nonmetropolitan urban areas).

As an example of an interarea price index, the index for alcoholic beverages is shown for 44 urban areas. In computing this index BLS used 9,015 observations and 328 variables (such as the size of the container, calorie content, and alcohol content). This index is for alcoholic beverages purchased for use at home. (The data for alcoholic beverages purchased away from home had too many missing cases and made the estimates biased.)

<u>Area</u>	<u>Index</u>
Anchorage, AK	122.5
Atlanta, GA	111.8
Baltimore, MD	99.4
Boston-Lawrence-Salem, MA-NH	113.1
Buffalo-Niagara Falls, NY	88.5
Chicago-Gary-Lake County, IL-IN-WI	104.9
Cincinnati-Hamilton, OH-KY-IN	93.7
Cleveland-Akron-Lorain, OH	104.1
Dallas-Fort Worth, TX	102.1
Denver-Boulder, CO	95.6
Detroit-Ann Arbor, MI	97.8
Greater Los Angeles, CA	84.4
Honolulu, HI	138.8
Houston-Galveston-Brazoria, TX	109.0
Kansas City, MO -Kansas City, KS	100.2

Interarea 2

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<u>Area</u>	<u>Index</u>
Los Angeles County, CA	95.2
Miami-Fort Lauderdale, FL	111.9
Milwaukee, WI	91.9
Minneapolis-St.Paul, MN-WI	105.4
New Jersey suburbs	101.4
New Orleans, LA	105.1
New York City	101.9
New York-CT. suburbs	110.5
North Central Region, B size PSUs	99.5
North Central Region, C size PSUs	93.9
North Central Region, D size PSUs	96.7
Northeast Region, B size PSUs	104.1
Northeast Region, C size PSUs	102.6
Northeast Region, D size PSUs	102.3
Phila-Wilmington-Trenton, PA-DE-NJ	109.2
Pittsburgh-Beaver Valley, PA	107.5
Portland-Vancouver, OR-WA	86.6
San Diego, CA	83.7
San Francisco-Oakland-San Jose, CA	94.4
Seattle-Tacoma, WA	120.7
South Region, B size PSUs	98.9
South Region, C size PSUs	98.2
South Region, D size PSUs	106.9
St. Louis-East St. Louis, MO-IL	91.0
Tampa-St. Petersburg-Clearwater, FL	67.4
Washington, DC-MD-VA	104.2
West Region, B size PSUs	100.3
West Region, C size PSUs	102.3
West Region, D size PSUs	96.0

Source: Bureau of Labor Statistics.

Cost and Time Needed to Develop COL Index

Interarea price indexes for 10 categories of a household budget have been developed by researchers at BLS. As a result of missing data and other statistical problems, indexes for all categories have not been calculated. Neither has BLS combined interarea price indexes into an all-items index for all of the 44 urban areas in which BLS has provided experimental interarea price indexes. The additional cost to the federal government and the time needed to collect the additional data and to make the needed calculations are unknown.

Interarea 3

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Methodology: Interarea Price Indexes

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Interarea Price Indexes

ECONOMIC MODELING METHODOLOGY

Using information published by government agencies and private sources, this methodology develops cost-of-living (COL) indexes for specific geographic locations. An example of the Economic Modeling Methodology is the Cost-of-Living Differentials.¹

Overview of Cost-of-Living Differentials

BTA Economic Research Institute produces cost-of-living (COL) differentials for more than 3,400 metropolitan areas in the United States and Canada. The COL differentials represent the demand and supply for goods and services that are purchased by employees. The COL differentials for 251 cities are presented in a hardcover report² and on computer diskette with an additional 3,150 cities and suburbs. Human resource managers use the Institute's COL differentials in making personnel and pay decisions.

COL differentials are calculated for four income levels in which all families rent their housing: (1) \$8,864 assumes a single, minimum wage earner living with friends or parents, contributing partial rent, and not owning an automobile; (2) \$24,000 assumes a single parent of one child living in an apartment (900 sq. ft.), holding one or more jobs, and owning an uninsured automobile; (3) \$48,000 assumes two adults filing as a married couple, aged 32, with two jobs, one child, two automobiles, and renting a three bedroom home (1,560 sq. ft.); and (4) \$72,000 assumes two adults filing as a married couple, aged 37, with two jobs, two children, two automobiles, and renting a three-bedroom home (2,200 sq. ft.) with a two-car garage. These rental analyses are reported in an annually released hardcover report.³ Ownership analyses, along with rental analyses, are available on a personal computer diskette.⁴

The economic model used by the Institute is an evolution of the Bureau of Labor Statistics' (BLS) 1981 Family Budgets model. Expenditure patterns for the four income profiles were determined from these BLS data. For example, income in the \$24,000 profile is expected to be expended at the U.S. national average of which 22.1 percent was allotted for housing, 17.7 percent for payroll and income taxes, 41.2 percent for consumables, 9.9 percent for transportation, 4.9 percent for health services, and 4.2 percent for miscellaneous, such as life insurance premiums.

¹ BTA Economic Research Institute. Geographic Assessor (Redmond, WA: 1994).

² BTA Economic Research Institute. The 1995 Geographic Reference Report (Redmond, WA: 1994).

³ Loc. cit.

⁴ Loc. cit.

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Source of Data

The Institute relies on existing databases that can be downloaded into a computer and run in the Institute's economic model. These include data on the cost of goods in grocery and drug stores, group medical rates, gasoline prices, housing prices, rental rates -- data that are available through other databases.

Geographic Information

The following is a listing of a sample of the city indexes for January 1994, which represents the COL for the \$24,000 income profile.

<u>City</u>	<u>COL index</u>	<u>City</u>	<u>COL index</u>
USA, Standard City	100.0		
Birmingham, AL	97.3	Ann Arbor, MI	116.3
Juneau, AK	132.8	Detroit, MI	104.8
Little Rock, AR	96.1	Batesville, MS	95.3
Phoenix, AZ	104.7	Las Vegas, NV	106.9
Los Angeles, CA	123.6	Albany, NY	110.2
Tracy, CA	114.4	Buffalo, NY	106.7
New Haven, CT	114.7	Rochester, NY	111.6
Washington, DC	126.9	Syracuse, NY	110.4
Dover, DE	107.2	Bismark, ND	103.8
Kissimmee, FL	102.5	Columbus, OH	100.6
Jacksonville, FL	99.8	Enid, OK	90.9
Cartersville, GA	95.5	Allentown, PA	105.1
Aiea, HI	145.5	Philadelphia, PA	114.9
New Orleans, LA	96.7	Knoxville, TN	89.3
Bangor, ME	124.0	Memphis, TN	96.0
Portland, ME	118.6	Austin, TX	98.0
Annapolis, MD	112.1	Houston, TX	99.6
Springfield, MA	115.7	Seattle, WA	114.0
Worcester, MA	116.8	Burlington, VT	114.7

Source: BTA Economic Research Institute.

Cost and Time Needed to Develop COL Index

The subscription cost of the renters' COL differentials for 251 U.S. cities is \$289 per year. The cost of the computer software that allows the user to access COL differentials (including home ownership) for over 3,400 North American locations and to adjust the model's assumptions is \$589 per year.

Economic Modeling 2

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Methodology: Economic Modeling

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
 - Shows little promise
 - Shows moderate promise
 - Shows great promise
 - Shows very great promise
-
- Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Economic Modeling

CONSUMER PRICE INDEX METHODOLOGY

This methodology determines cost-of-living (COL) indexes for specific geographic areas by applying annual average price changes to baseline data. An example of the Consumer Price Index Methodology is the State Cost-of-Living Index.¹

Overview of State Cost-of-Living Index

The state COL index is derived from the Bureau of Labor Statistics' (BLS) Family Budgets program and the Consumer Price Index (CPI) for all urban consumers. The 1981 BLS Family Budgets data were used as the baseline data because those are the last published comparative costs across metropolitan areas. The state COL index is calculated in several steps by applying annual average price changes for selected metropolitan statistical areas (MSA), four metropolitan regions, and four nonmetropolitan regions to the 1981 BLS Family Budget index numbers and adjusting these calculations for population distributions. The state COL indexes have been published and have been used by federal legislators to note differences in the COL by states.

First, a metropolitan index number for each of four regions was constructed from the 1981 BLS Family Budgets index numbers as a weighted average of the component MSAs in each region.² For example, in the North Central region, an index of 100.22 was constructed from the eight MSAs listed in that region.

Second, the proportion of the state's population that resided in metropolitan and nonmetropolitan areas was determined. If the state had a metropolitan area for which a family budget index number was published, the metropolitan area was split into two groups: (1) those residing in MSAs for which a family budget number was published and (2) those residing in metropolitan areas that did not have family budget index numbers. For example, 54.5 percent of Minnesota's population was in the published Minneapolis-St. Paul MSA, 12.3 percent of the state's population was in metropolitan areas other than the Minneapolis-St. Paul area, and 33.2 percent of the population resided in nonmetropolitan areas.

Third, the 1981 state COL indexes were calculated by multiplying the population distributions by the corresponding 1981 BLS Family Budgets index numbers. For example, with the family budget index of 97 for Minneapolis-St. Paul, 100.22 for metropolitan areas in the North Central region, and 93 for nonmetropolitan areas, the 1981 state COL index for Minnesota equaled:

$$.545 \times 97 + .123 \times 100.22 + .332 \times 93 = 96.06.$$

¹Herman B. Leonard, *By Choice or By Chance: Tracking the Values in Massachusetts' Public Spending* Pioneer Institute for Public Policy Research (Boston: 1992), App. B.

²Total consumption index numbers were published for urban United States; metropolitan United States; nonmetropolitan United States; 25 metropolitan areas, including Anchorage, AK; and nonmetropolitan areas in 4 regions.

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Fourth, the 1981 state COL indexes were adjusted forward by applying annual average price changes. Price growth rates are calculated from BLS' Consumer Price Index (CPI) and entered into the calculations. Continuing with the Minnesota example and using a price increase of 152.35 percent for Minneapolis-St. Paul MSA between 1981 and 1992, 151.02 percent for the North Central metropolitan areas, and 146.72 percent for North Central nonmetropolitan areas,³ the 1992 state COL index (with 1981 national average = 100) for Minnesota equaled:

$$.545 \times 97 \times 1.5235 + .123 \times 100.22 \times 1.5102 + .332 \times 93 \times 1.4672 = 144.46.$$

Finally, to rebase the index so that the national average for 1992 equaled 100, the state COL was divided by the national average change in prices since 1981. In the cited example, between 1981 and 1992, U.S. urban prices rose 154.3 percent. Dividing the Minnesota COL of 144.46 by 154.3 gives a Minnesota COL index of 93.6, relative to 100 as the U.S. average for 1992.

Source of Data

The baseline data used in this methodology are the total consumption index of comparative costs as reported in the 1981 intermediate level family budget in the BLS Family Budgets program. CPI data from BLS and population data from the Bureau of the Census also were used to construct the state COL indexes.

³The researchers used the regional CPI for size class D, which corresponds to areas with fewer than 50,000 people.

Consumer Price Index 2

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Geographic Information

The state COL indexes for 1992 (national average = 1) are as follows:

<u>State</u>	<u>COL index</u>	<u>State</u>	<u>COL index</u>
Alabama	.92	Missouri	.93
Alaska	1.14	Montana	.95
Arizona	1.00	Nebraska	.93
Arkansas	.90	Nevada	1.00
California	1.04	New Hampshire	1.07
Colorado	.97	New Jersey	1.15
Connecticut	1.13	New Mexico	.97
Delaware	1.04	New York	1.14
District of Columbia	1.07	North Carolina	.91
Florida	.94	North Dakota	.93
Georgia	.91	Ohio	.97
Hawaii	1.29	Oklahoma	.91
Idaho	.94	Oregon	.99
Illinois	1.00	Pennsylvania	1.05
Indiana	.95	Rhode Island	1.12
Iowa	.93	South Carolina	.91
Kansas	.93	South Dakota	.91
Kentucky	.90	Tennessee	.93
Louisiana	.92	Texas	.91
Maine	1.04	Utah	1.00
Maryland	.98	Vermont	1.03
Massachusetts	1.15	Virginia	.96
Michigan	.94	Washington	1.01
Minnesota	.94	West Virginia	.91
Mississippi	.89	Wisconsin	.94
		Wyoming	.95

Source: Herman B. Leonard and Monica E. Friar. "Variations in Costs of Living Across States." Taubman Center for State and Local Government, Harvard University (Cambridge: 1994).

Cost and Time Needed to Develop COL Index

As demonstrated by the researchers, geographic indexes that vary by state have been derived from the 1981 BLS Family Budgets data. The CPI and population data used in the state COL index are published annually by various federal agencies.

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Methodology: Consumer Price Index

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
 - Shows little promise
 - Shows moderate promise
 - Shows great promise
 - Shows very great promise
-
- Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Consumer Price Index

ESTIMATION MODELS METHODOLOGY

This methodology empirically determines cost-of-living (COL) indexes for specific geographic areas (such as regions, states, and counties) from baseline data by using regression models.

The methodology was developed by McMahon and Melton in 1978¹ in which COL indexes for states were derived from Bureau of Labor Statistics' (BLS) Family Budgets data for 44 metropolitan areas (see Family Budgets Methodology description for more information about these data). Regression models were developed for each of four regions to explain differences in COL among the 44 metropolitan areas. The coefficients from the regression models were used as weights and were combined with comparable state level data to establish a state COL index. The state indexes were then normalized so that 100 represented the national average for all states weighted by their population. Examples of the Estimation Models Methodology include Geographical Cost-of-Living Differences,² the Cost of Living by School Districts,³ and the Interstate Cost-of-Living Index.⁴

Overview of Geographic Cost-of-Living Differences

State COL indexes were developed with estimation models that used the 1981 BLS Family Budgets data for 24 metropolitan areas and 4 regional nonmetropolitan areas as the baseline data. First, the family budgets data were extended to a statewide index by using a weighted average of the metropolitan and nonmetropolitan components of the family budgets data. In this procedure the U.S. Bureau of the Census' population data were used to determine the proportion of metropolitan and nonmetropolitan population in each state. Next, the state COL indexes were estimated from 1981 through 1990 with regression estimation models using per capita personal income; value of housing, measured as the median value of an existing one-family home; and percent change in population for the preceding 5 years. The state COL indexes have been published but have not been used.

¹W. W. McMahon and C. Melton, "Measuring Cost of Living Variation," *Industrial Relations* Vol. XVII (Oct. 1978), pp. 324-32.

²Walter W. McMahon, "Geographical Cost of Living Differences: An Update," *AREUEA Journal* Vol. XIX, No. 1 (1991), pp. 426-450. For a discussion of cost differences between metropolitan and nonmetropolitan areas and differences within states, see Walter W. McMahon and Shao-Chung Chang Geographical Cost of Living Differences: Interstate and Intrastate, Update 1991, MacArthur/Spencer Special Series on Illinois School Finance, Series Number 20 (Normal, IL: Illinois State University, 1991).

³Walter W. McMahon, "Intrastate Cost Adjustments" (available from William Fowler, National Center for Education Statistics, R. 410B, 555 New Jersey Ave., N.W., Washington, D.C. 20208).

⁴F. Howard Nelson, "An Interstate Cost-of-Living Index," *Educational Evaluation and Policy Analysis* Vol. XIII (Spring, 1991) pp. 103-111. The baseline data used in this article are the ACCRA COL index. (See the Local Indexes Methodology description for more information about this index.)

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Source of Data

The 1981 BLS Family Budgets were used as the baseline data to estimate the geographic COL index by state. The U.S. Department of Commerce's per capita personal income, state population estimates, and median value of housing from the Decennial Census (1980 data) were used to estimate the COL indexes. The National Association of Realtors' median value of housing data were also used to estimate the COL indexes.

The update of the estimates also includes indexes for metropolitan and nonmetropolitan areas and indexes for the counties in Illinois. To estimate the metropolitan and nonmetropolitan COL indexes, the ACCRA COL data were used as the baseline data (see Local Indexes methodology description for more information about these data). To estimate the COL indexes for the counties in Illinois, per capita income, housing values, and population change for each county were applied to the BLS Family Budgets regression equation.

Geographic Information

The normalized geographic COL indexes by state for 1990 (U.S. unweighted average = 100) are as follows:

<u>State</u>	<u>COL index</u>	<u>State</u>	<u>COL index</u>
Alabama	89.80	Missouri	96.16
Alaska	131.15	Montana	91.74
Arizona	89.50	Nebraska	95.02
Arkansas	88.68	Nevada	96.72
California	119.01	New Hampshire	103.57
Colorado	99.99	New Jersey	120.69
Connecticut	122.89	New Mexico	89.91
Delaware	107.91	New York	111.54
District of Columbia	122.86	North Carolina	97.02
Florida	94.91	North Dakota	91.47
Georgia	92.61	Ohio	96.75
Hawaii	136.17	Oklahoma	92.99
Idaho	89.85	Oregon	95.40
Illinois	102.60	Pennsylvania	100.18
Indiana	95.41	Rhode Island	106.91
Iowa	95.30	South Carolina	89.81
Kansas	95.32	South Dakota	89.91
Kentucky	91.63	Tennessee	91.81
Louisiana	91.05	Texas	94.01
Maine	101.20	Utah	88.21
Maryland	106.07	Vermont	101.32
Massachusetts	118.05	Virginia	108.61

Estimation Model 2

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<u>State</u>	<u>COL index</u>	<u>State</u>	<u>COL index</u>
Michigan	97.91	Washington	99.53
Minnesota	99.93	West Virginia	91.76
Mississippi	86.53	Wisconsin	97.51
		Wyoming	95.14

Source: Walter W. McMahon and Shao-Chung Chang Geographical Cost of Living Differences: Interstate and Intrastate, Update 1991 MacArthur/Spencer Special Series on Illinois School Finance, Series Number 20 (Normal, IL: Illinois State University, 1991), table 3.

Cost and Time Needed to Develop COL Index

As demonstrated by the researchers, geographic COL indexes that vary by state and other geographic areas have been derived from the 1981 Family Budgets data and the ACCRA COL index. The data used in the Estimation Model Methodology are published by various federal agencies. Geographic COL indexes, however, have not been developed for years after 1990 with this methodology using the 1981 BLS Family Budgets data. More recent estimates have been made with this methodology using other baseline data.

Estimation Model 3

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Methodology: Estimation Models

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
 - Shows little promise
 - Shows moderate promise
 - Shows great promise
 - Shows very great promise
-
- Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Estimation Models

LOCAL INDEXES METHODOLOGY

This methodology develops cost-of-living (COL) index numbers from local price surveys.

ACCRA, the association of community and economic development researchers, developed the ACCRA Cost of Living Index, which is constructed to reflect mid-management consumption patterns for goods and services to determine relative differences among urban areas in the cost of maintaining a mid-management standard of living.¹

Overview of ACCRA Cost of Living Index

ACCRA developed the ACCRA Cost of Living Index to measure living cost differences among urban areas throughout North America. It specifically focuses on the cost of maintaining a mid-management standard of living in urban areas. A mid-management executive is a salaried employee who generally holds a supervisory position. Voluntary participants in chambers of commerce and similar organizations collect price data quarterly from establishments normally patronized by mid-management executive households. A review process, in which three researchers examine each report to confirm or correct unusual and other questionable prices, ensures the integrity of the data. The U.S. Bureau of the Census publishes ACCRA data in the Statistical Abstract of the United States.

The ACCRA index consists of six components: (1) grocery items, (2) housing, (3) utilities, (4) transportation, (5) health care, and (6) miscellaneous goods and services. Each component is based on prices for two or more items. The ACCRA index is composed of 60 items. The weights assigned to each item were derived from the Bureau of Labor Statistics' Consumer Expenditure Survey, using the data on the proportional distribution of expenditures by households in which the reference person has a professional or managerial occupation and by households in the upper quintile of income to define expenditure patterns for mid-management households. The ACCRA index does not take into account income taxes, ad valorem taxes, and sales taxes.

Participation in the ACCRA COL index is open to all places within federally designated metropolitan areas and urbanized areas in the United States and census metropolitan areas of Canada.

The reference area with which each urban area is compared is the average for all participating urban areas during a particular quarter. The average for all participating places equals 100, and each participant's index is read as a percentage of the average for all places.

Source of Data

Voluntary participants are provided with a price data survey form and a specific set of detailed guidelines to ensure that appropriate sample sizes are used and that data collected are representative of mid-management consumption. At least five establishments must be visited for data collection. Each participant is expected to calculate the average price for each item and review the data for errors.

¹ACCRA COST OF LIVING INDEX Comparative Data for 298 Urban Areas, First Quarter 1994. American Chamber of Commerce Researchers Association (Louisville, KY: 1994).

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

Geographic Information

The following is a listing of a sample of the ACCRA composite indexes for the first quarter of 1994, which represents the COL for the profile of a mid-management executive.

<u>Urban Area</u>	<u>Index</u>	<u>Urban Area</u>	<u>Index</u>
ALASKA		UTAH	
Anchorage	127.4	Provo-Orem	98.6
Fairbanks	127.9	Salt Lake City	95.7
Juneau	137.4	Cedar City	93.4
Ketchikan	152.9	Logan	103.6
Kodiak	149.0	St. George	102.0
COLORADO		VIRGINIA	
Boulder	119.4	Bristol	92.0
Longmont	109.5	Lynchburg	92.5
Colorado Springs	98.9	Virginia Peninsula	97.8
Denver	107.8	Richmond	106.6
Lakewood	119.4	Roanoke	95.0
Loveland	94.2	Prince William	115.4
Greeley	93.3	WASHINGTON	
Pueblo	90.3	Bellingham	105.6
Glenwood Springs	111.7	Olympia	107.2
Grand Junction	93.6	Vancouver	102.3
Gunnison	102.4	Richland-Kennewick-Pasco	107.4
DELAWARE		Spokane	108.2
Dover	108.7	Tacoma	103.0
Wilmington	111.8	Yakima	101.5
IDAHO		WEST VIRGINIA	
Boise	105.0	Charleston	96.9
Twin Falls	96.0	Huntington	105.2
ILLINOIS		Martinsburg-Berkeley County	90.9
Bloomington-Normal	103.6	Wheeling	95.9
Champaign-Urbana	101.8	WISCONSIN	
Schaumburg	121.6	Appleton-Neeenah-Menasha	98.0
Quad-Cities	99.3	Oshkosh	104.0
Decatur	93.6	Eau Claire	100.2
Peoria	104.5	Green Bay	97.5

Source: ACCRA.

Cost and Time Needed to Develop COL Index

The ACCRA COL index report is published quarterly. The yearly subscription rate is \$115.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

Methodology: Local Indexes

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
 - Shows little promise
 - Shows moderate promise
 - Shows great promise
 - Shows very great promise
-
- Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Local Indexes

POLLING METHODOLOGY

This methodology uses public opinion survey data to establish a measure of the level of income that American people think should represent the poverty line for a family in the respondent's specific community. An example of the polling methodology is the Public's Poverty Line.¹

Overview of the Public's Poverty Line

In 1989, policy analysts at the Center on Budget and Policy Priorities and the Population Reference Bureau commissioned the Gallup Organization to ask survey respondents the amount of weekly income the respondent would use as a poverty line for a specified family of four in the respondent's community. The weekly income figure was then converted to an annual amount, and the average of these figures was designated as the public's poverty line. The public's poverty line was found to be 24 percent higher than the officially designated poverty threshold.

Source of Data

Data used to determine the public's poverty line were the responses of a representative sample of approximately 1,000 adults polled by the Gallup Organization each month from July through October 1989 to the following question:

People who have income below a certain level can be considered poor. That level is called the "poverty line". What amount of weekly income would you use as a poverty line for a family of four (husband, wife and two children) in this community?

Those who did not respond to this question were eliminated from the analysis, resulting in a final sample size of 3,511 respondents.

Geographic Information

Respondents' perceptions of where the poverty line should be set varied by geographic area, among other factors. These variations can be used to set poverty lines that differ by region and by metropolitan/nonmetropolitan status. (The sample size was too small to set poverty lines by state.) The average poverty line set by the public in each region² is as follows:

¹William O'Hare et al., *Real Life Poverty in America: Where the American Public Would Set the Poverty Line*. A Center on Budget and Policy Priorities and Families USA Foundation Report (July 1990). The authors use this method to assess the adequacy of the level of the official poverty line. They do not suggest that this be the primary method of setting poverty thresholds but call for a general reconsideration of how the poverty line is set.

²The regions are the standard federal regions used in presentations of U.S. Bureau of the Census' income data. For a listing of the states within the regions see William O'Hare et al., endnote 34, p. 46.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

<u>Geographic area</u>	<u>Poverty line</u>	<u>Regional ratio^d</u>
National average	\$15,017	
Northeast	15,486	1.09
Midwest	14,235	1.00
South	14,235	1.00
West	16,790	1.18

^dThis is a ratio calculated by GAO of the specific region's poverty line in relation to the two regions with the lowest poverty line (midwest and south). Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: William O'Hare et al., Real Life Poverty in America: Where the American Public Would Set the Poverty Line, A Center on Budget and Policy Priorities and Families USA Foundation Report (July 1990).

Poverty lines for metropolitan and nonmetropolitan areas within the four regions were also calculated from the survey responses. Metropolitan areas were those designated as metropolitan statistical areas (MSA), as defined by the U.S. Office of Management and Budget. Areas outside MSAs were designated as nonmetropolitan.

<u>Geographic area</u>	<u>Metropolitan</u>		<u>Nonmetropolitan</u>	
	<u>Poverty line</u>	<u>Regional ratio^e</u>	<u>Poverty line</u>	<u>Regional ratio^e</u>
National average	\$15,539		\$13,244	
Northeast	15,695	1.07	13,922	1.11
Midwest	15,069	1.03	12,566	1.00
South	14,652	1.00	12,879	1.02
West	17,155	1.17	15,121	1.20

^eThis is a ratio calculated by GAO of the specific region's poverty line in relation to the region with the lowest poverty line. Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: William O'Hare et al., Real Life Poverty in America: Where the American Public Would Set the Poverty Line, A Center on Budget and Policy Priorities and Families USA Foundation Report (July 1990).

Cost and Time Needed to Develop Cost-of-Living Index

These data could be collected either by contracting with private polling firms or by establishing a separate government survey. The time it would take to develop baseline data that could be used to develop a cost-of-living index is unknown.

Polling 2

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

Methodology: Polling

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. *(Check one.)*

- Not promising at all
 - Shows little promise
 - Shows moderate promise
 - Shows great promise
 - Shows very great promise
-
- Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Polling

COMPARABLE PAY METHODOLOGY

This methodology calculates employers' costs per hour worked for each of the components of labor compensation--wages and salaries, and employee benefits. Only the Bureau of Labor Statistics (BLS) has developed the Employment Cost Index¹ with Comparable Pay Methodology.

Overview of BLS' Employment Cost Index

The Employment Cost Index (ECI) is the most comprehensive and timely measure of change in employer costs for employee compensation for the nation's economy. The ECI was developed by BLS in the early 1970s because economic policymakers needed a timely, accurate, and comprehensive indicator of change in employers' labor costs, free from the influence of employment shifts among industries and occupations. ECI statistics were first published for September to December 1975 and were limited to private industry wage and salary changes by major occupational and industry groups, region, union status, and area size. Over the years, new series were gradually added, such as benefits and the State and local government sector. More recently, the Federal Employees Pay Comparability Act of 1990 (P.L. 101-509, Nov. 5, 1990) specifies that the ECI will be used to adjust pay for General Schedule employees.

Source of Data

The wage, salary, and benefit cost data from which the ECI is computed are obtained from a sample of about 23,000 occupations within 4,400 establishments in the private sector and 8,800 occupations within about 1,300 establishments in state and local government. Data collection is initiated by BLS field economists, who visit the establishments to familiarize them with the ECI and collect information about the firm. Data for quarterly reports thereafter are normally collected by mail or telephone by field economists located in BLS' regional offices. ECI quarterly indexes, 3-month percent change and 12-month percent change, are published in a news release 1 month following the reference months of March, June, September, and December. The related Employee Benefits Survey (EBS) is an annual study of the incidence and detailed characteristics of employer-provided benefits, such as time off, insurance, and retirement programs.

¹U.S. Department of Labor, Employment Cost Indexes and Levels, 1975-93, Bulletin 2434, Sept. 1993. See also, Pam Gisbach, "Employment Cost Index Becoming Versatile Tool for Data Users," Daily Labor Report, Bureau of National Affairs, Nov. 8, 1991. Note that there are two distinct outputs from this survey: the Employment Cost Index (ECI), which measures change over time, and the Employers Costs for Employee Compensation (Cost levels) survey, which provides levels for particular points in time.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

Geographic Information

The geographic coverage of the ECI includes all 50 states and the District of Columbia. Rates of change in wages and salaries are published nationally and by four regions. Statistics are also available for establishments located in metropolitan statistical areas (MSA) and for establishments located in non-MSAs. Employer costs for employee compensation as of March 1994 are as follows:

<u>Geographic area</u>	<u>Costs</u>	<u>Regional ratio^a</u>
United States	\$17.08	N/A
Northeast	20.03	1.33
South	15.05	1.00
Midwest	16.26	1.08
West	18.08	1.20

^aThis is a ratio calculated by GAO of the specific region's cost in relation to the region with the lowest cost (South). Please note that these ratios are not comparable between the methodologies that are presented in the descriptions.

Source: U.S. Department of Labor.

Cost and Time Needed to Develop COL Index

A geographic cost-of-living (COL) index that varies by four regions could be derived from the current BLS ECI, but the cost and time to develop it are unknown. There would be additional costs to extend these estimates beyond the current four-region presentation. The time it would take to develop baseline data for smaller geographic areas that could be used to develop a COL is also unknown.

Comparable Pay 2

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

Methodology: Comparable Pay

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise

 Cannot say at this time

In the space below, briefly discuss the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology or your rating.

Comparable Pay

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

In the space below, please identify and describe any other prominent methodologies that you believe should be considered for doing geographic cost-of-living adjustments to the poverty threshold. Briefly discuss the methodology's strengths and weaknesses for adjusting poverty levels. Also attach or include any supplemental information that you believe would be helpful concerning this methodology.

Description of Methodology:

Using the scale below, please rate this methodology's potential for use in adjusting the poverty threshold for geographic differences in the cost-of-living index. (*Check one.*)

- Not promising at all
- Shows little promise
- Shows moderate promise
- Shows great promise
- Shows very great promise
-
- Cannot say at this time

Briefly describe on the back, the strengths and weaknesses of this methodology's potential for use in adjusting poverty levels. Please include any other comments or observations you may have about this methodology.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

**SUMMARY QUESTION ON ADJUSTING POVERTY THRESHOLDS FOR GEOGRAPHIC
DIFFERENCES IN COST OF LIVING:**

Please identify and discuss what you believe to be the major challenges and costs associated with developing cost-of-living data that could be used to geographically adjust poverty thresholds.

As part of your analysis, please indicate whether such adjusted poverty data would, in your opinion, improve our understanding of who the needy are and where they are located. If so, please explain why. If not, please explain why not.

**Appendix III
Data Collection Instrument and
Descriptions of the Methodologies**

If you have any additional comments on the methodologies described or this data collection instrument, please provide them in the space below.

Major Contributors to This Report

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Related GAO Products

Federal Aid: Revising Poverty Statistics Affects Fairness of Allocation Formulas (GAO/HEHS-94-165, May 20, 1994).

Poverty Trends, 1980-88: Changes in Family Composition and Income Sources Among the Poor (GAO/PEMD-92-34, Sept. 10, 1992).

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