

Misclassification in an experimental poverty measure

A test of poverty misclassification using data from the Consumer Expenditure Survey does not support the contention that medical needs must be treated differently from other needs in the measurement of poverty

Richard Bavier

Among the recommendations and proposals set forth in a 1995 National Research Council (NRC) panel report on measuring poverty,¹ perhaps the most controversial was the treatment of medical needs. The panel proposed poverty thresholds that reflected needs for food, clothing, shelter, and “a little more.” However, the panel concluded that medical needs vary too much to be included in poverty thresholds. Instead, each individual family’s medical out-of-pocket spending is to be subtracted from the family’s actual income and the remainder compared against a poverty threshold that includes nothing for medical needs.² The panel also proposed the development of a companion “medical care risk index” to “monitor people’s risks of incurring medical care costs that exceed their ability to pay.”³

According to the NRC panel, if medical needs were included in the new thresholds it proposed, “it would be very easy to make an erroneous poverty classification.”⁴ The distribution of medical expenditures is more skewed than the distribution of expenditures for food, shelter, and clothing.⁵ The panel believed that including typical amounts for medical needs in new poverty thresholds, as it recommends for other needs, would lead some researchers to misclassify as not poor some families that need very expensive medical care and to misclassify as poor other fam-

ilies that happen to need no medical care during the year.

The NRC panel’s report did not try to estimate how much misclassification would result from including something for medical needs in the poverty thresholds.⁶ This article derives such an estimate, using Consumer Expenditure (CE) survey data. The panel recommended the continued use of income as the measure of economic resources in classifying poverty. By contrast, in what follows, expenditures are used as the measure of economic resources in order to perform the misclassification tests.⁷ As described in more detail subsequently, misclassification is measured when medical out-of-pocket spending is subtracted from adjusted total outlays and the remainder is compared against a threshold that includes nothing for medical out-of-pocket spending. Then the same misclassification test is performed when shelter expenditures are subtracted from adjusted total outlays and are compared against a threshold that includes nothing for shelter. Tabulated results show that

1. Including medical needs in a new poverty threshold does indeed misclassify some families, as the NRC panel warned.
2. The misclassification that results from including medical out-of-pocket spending needs in the poverty thresholds is compa-

Richard Bavier is a policy analyst at the Office of Management and Budget, Washington, DC. The views expressed in this article are the author’s personal views and do not represent the views of either the Office of Management and Budget or the current Administration.
E-mail: RBavier@omb.eop.gov

nable to the misclassification that results from including shelter needs.

The matter is significant because the NRC proposal to subtract each family's medical out-of-pocket spending from income in classifying poverty would impose a significant burden on producers and users of poverty statistics. If, however, including out-of-pocket medical needs in a new poverty threshold does not lead to more misclassification than does including other needs, then it may not be necessary to impose these substantial costs.

Research sample

Household out-of-pocket medical expenditures often do not occur uniformly over the year. Consequently, the distribution of such medical expenditures in quarterly data, the period used most by the Bureau of Labor Statistics in its publications of expenditure data, is much more skewed among households than is the distribution of annual medical expenditures. For example, among units from three CE survey panels that provided four quarters of expenditure data over the period 2000–02, 7 percent of units had zero medical out-of-pocket spending over four quarters. By comparison, analysis of a sample that included quarterly expenditures from all second interviews (the first interview at which expenditure data are collected) from the same 2000–02 CE survey found 20 percent with no medical out-of-pocket spending in the quarter. Because the poverty measure being examined here is an annual measure, the research sample is limited to 2000–02 CE consumer units that provided four quarters of interview expenditure data ($n = 11,871$).

At present, the CE survey does not include longitudinal weights. To reflect sample design effects, the sample weight from the last of the four interviews for each unit is employed. Replicate weights provided by the Bureau of Labor Statistics on public-use files are employed for all estimates of standard error. The research sample does not reflect the population at any actual point in time, although it may be thought of as a probability sample gathered over 3 years.

As with other panel surveys, sample loss in the CE survey is significant, and selecting only those who remain in the sample introduces bias. Table 1 compares the distribution of the four-quarter CE sample with another CE sample that includes the second interview of all 2001-panel consumer units (again, the first interview in which expenditure data are collected), when sample loss would be minimized. The distributions differ by the reference person's age and marital status and by the size of the unit. The four-quarter research sample is older and more likely to be married (and so not living alone) than the second-interview sample.

Because consumer units may change composition over the course of a year, individuals living in a unit during the quarter for which expenditures are recorded may not be the same ones present and counted at the last interview.⁸ To check for any bias that could result from the movement of persons into and out of sample units, the key calculations were replicated with a subsample created to eliminate most consumer units that changed their composition. The results were nearly identical to those presented later in this article.

The quality of CE survey medical expenditure data appears to be sufficient for satisfying the poverty misclassification tests subsequently presented.⁹ Table 2 compares mean medical out-of-pocket spending amounts for the same demographic subgroups in the CE four-quarter research sample and the public-use file for the 2000 Medical Expenditure Panel Survey, a survey designed specifically to measure health expenditures. The public-use file for the Medical Expenditure Panel Survey did not include amounts that households spent for health insurance premiums, so mean household expenditures from that survey are compared against total medical expenditures minus health insurance premiums in the CE survey.

If the CE survey and the Medical Expenditure Panel Survey displayed different patterns of mean medical expenditures across population subgroups, we would be less confident about subtracting CE medical out-of-pocket expenditures in the tests of misclassification that are to follow. However, when health insurance premiums are excluded from medical out-of-pocket expenditures in the CE data, mean amounts (in 2000 dollars) of such expenditures that remain are reasonably close to household spending in the benchmark Medical Expenditure Panel Survey.

Measures of family need

The NRC panel proposed to vary its new poverty thresholds by the number of adults and children in the family, as well as geographically. In the discussion that follows, variations in threshold by these or other family characteristics will be termed variation by *family type*. By contrast, measures of need that vary for each individual family will be said to be *family specific*. The panel concluded that needs for food, clothing, shelter, and “a little more” could be measured by *family type* in its proposed thresholds. However, because medical needs vary so much, the panel proposed that they be treated as *family specific*. Nothing would be included in the new thresholds for medical needs, but individual families' actual medical out-of-pocket spending would be deemed to reflect the families' needs and would be subtracted in full from actual income before the remainder was compared against the new thresholds. In the panel's view, including

Table 1. Distribution of consumer units in Consumer Expenditure (CE) survey panels

Category	2000-02 CE survey with four quarters		2001 CE survey interview 2	
	Percent of column	Standard error ¹	Percent of column	Standard error ¹
Sex of unit head:				
Male	51.8	1.0	51.4	0.8
Female	48.2	1.0	48.6	.8
Race of unit head:				
White	84.7	.8	83.9	.6
Black	11.3	.4	11.7	.2
Other	4.0	.6	4.4	.5
Age of unit head, years:				
Up to 21 .....	.9	.2	3.2	² .5
22 to 44	38.0	.5	41.7	² .3
45 to 54	21.6	.4	20.2	² .3
55 to 59	8.1	.3	7.7	.2
60 to 64	6.9	.3	6.0	² .2
65 to 74	12.6	.3	10.9	² .2
75 and older	12.0	.2	10.3	² .1
Family size:				
One	25.9	.7	28.4	² .5
Two	32.3	.7	31.5	.5
Three	16.1	.4	15.4	.3
Four	14.9	.5	14.5	.3
Five	6.8	.3	6.6	.2
More than five	2.5	.2	2.2	.1
Number of children:				
Zero	64.4	.5	64.4	.4
One	14.4	.4	14.6	.4
Two	13.7	.4	13.5	.3
Three	5.2	.3	5.3	.2
More than three	1.6	.2	1.6	.1
Number in unit 65 years or older:				
Zero	72.4	.4	76.0	² .3
One	18.7	.5	16.5	² .4
Two	8.8	.3	7.4	² .2
More than two .....	.1	.0	.1	.0
Marital status of unit head:				
Married	58.0	.8	53.5	² .5
Formerly married	28.5	.8	28.5	.7
Never married	13.5	.6	18.0	² .6
Education of unit head:				
Under age 25	2.7	.3	6.6	² .6
Did not finish high school	15.4	.6	14.7	.5
Earned high school diploma	28.6	.8	27.0	.6
Some college	26.3	.8	25.8	.6
College degree	27.0	.8	25.9	.6
Receipt of welfare by unit	1.6	.2	1.1	² .1
Work limitation of unit head or spouse	3.5	.2	6.7	² .3
Region:				
Northeast	19.8	.5	19.5	.4
Midwest	23.5	1.0	23.7	.5
South	35.9	.9	34.9	.6
West	20.8	.9	21.9	.8

¹ Standard errors are from replicate weights.

² Significantly different at 90-percent confidence level.

Table 2. Mean annual amounts of medical out-of-pocket expenditures, excluding insurance premiums, in 2000 dollars

Category	2000-02 CE survey	2000 Medical Expenditure Panel Survey
Total	\$1,070	\$1,013
Sex of unit head:		
Male	1,140	1,054
Female	995	965
Race of unit head:		
White	1,167	1,095
Black	523	562
Other	648	734
Age of unit head, years:		
Up to 21	310	224
22 to 44	697	689
45 to 54	1,117	1,112
55 to 59	1,262	1,235
60 to 64	1,492	1,272
65 to 74	1,510	1,567
75 and older	1,463	1,637
Family size:		
One	790	657
Two	1,325	1,196
Three	1,092	1,131
Four	1,044	1,169
Five	1,065	1,222
More than five	896	1,560
Number of children:		
Zero	1,132	995
One	988	933
Two	934	1,075
Three	1,024	1,142
More than three	725	1,530
Number in unit 65 years or older:		
Zero	922	842
One	1,303	1,364
Two	1,862	2,175
More than two	2,888	3,099
Marital status of unit head:		
Married	1,339	1,309
Formerly married	838	936
Never married	456	421
Education of unit head:		
Under age 25	337	367
Did not finish high school	795	953
Earned high school diploma	966	1,015
Some college	1,115	1,074
College degree	1,387	1,197
Receipt of welfare by unit	354	285
Work limitation of unit head or spouse	1,066	1,523
Region:		
Northeast	938	1,074
Midwest	1,128	1,075
South	1,085	1,021
West	1,103	893

family-type amounts for medical out-of-pocket spending in the thresholds would lead to too much “erroneous poverty classification.”¹⁰

However, like medical needs, needs for food, clothing, and shelter vary for families with the same numbers of adults and children in the same locality. In other words, needs for items included in the panel’s threshold vary among families in ways not accommodated by variations in those thresholds. For example, feeding and clothing teenaged children cost more than feeding and clothing infants. The housing need, which is the largest component in most families’ budgets, varies as well. The Department of Housing and Urban Development would say that a couple with two teenaged boys would qualify for a two-bedroom apartment, but a couple with a teenaged boy and a teenaged girl would need three bedrooms. Further, housing choices may be constrained by supply. From time to time, the Department estimates the extent to which demand for housing by low-income families exceeds the affordable supply.¹¹ When it does, some families must pay more than the amounts for housing that are implicit in the panel’s thresholds, because more affordable housing is unavailable, and not because they choose to substitute more consumption of housing for other discretionary consumption. The misclassification test will compare the effects of such unaccommodated variation in need for both medical out-of-pocket expenditures and shelter.

Experimental poverty thresholds

To test poverty misclassification, poverty thresholds from a recent Census Bureau experimental poverty report¹² are compared with expenditures in the four-quarter CE research sample described earlier. Table A-11 of that report includes 1999 poverty thresholds for a reference family of two adults and two children.¹³ As described in Appendix A of the report, the thresholds were developed from CE expenditure data in accordance with the NRC panel’s proposal, but with some modifications. One modification in some variations of the experimental thresholds is the addition of family-type amounts for medical out-of-pocket expenditures to amounts for food, clothing, shelter, and “a little more.” The analysis to be presented starts with the reference family threshold of \$19,527 from table A-11, a threshold that reflects spending patterns for CE units for which four quarters of data were available. The table notes that 8 percent of this threshold is deemed to be for medical out-of-pocket expenditures.

For the analysis that follows, this reference family threshold was updated from 1999 to 2000-02 with the CPI-U for All Items and then was divided into a portion for nonmedical needs (92 percent) and a portion for medical out-of-pocket needs (8 percent). The former was varied by a three-

parameter equivalence scale from table A-2 of the Census Bureau report based on the numbers of adults and children in the family. Then the portion of this family-size-adjusted amount that was deemed to be for shelter and utility needs (hereafter, simply “shelter needs”) was varied by State and metropolitan area status, using Department of Housing and Urban Development Fair Market Rent data from table A-4. The panel estimated that 44 percent of its reference family threshold (which included nothing for medical needs) would be for shelter needs. With the addition of medical out-of-pocket expenditures to the experimental threshold, 41 percent of the expanded reference family threshold was deemed to be for shelter needs.

Recognizing that medical needs do not vary among families according to the same pattern as needs for food, shelter, and clothing, the Census Bureau report varied threshold amounts for medical out-of-pocket expenditures by a separate equivalence scale. The estimates that follow vary these threshold amounts by family size, health status, the presence of members aged 65 or older, and health insurance coverage, all in accordance with “risk factors” set forth in table A-10 of the report. (For details on these assignments, see box, this page.)

Expenditures

The thresholds just described were compared with appropriate annual expenditure levels from the research sample to determine poverty status and misclassification. The expenditure measure is total outlays,¹⁴ a BLS-derived variable that differs from total quarterly expenditures by including payments of principal for financed homes and vehicles (rather than the full purchase price of financed vehicles in the quarter in which they were purchased).

Outlays summed over four quarters were adjusted to approximate the resource measure proposed by the NRC panel. Besides deducting medical out-of-pocket expenditures from resources, the panel proposed to subtract work expenses, including necessary childcare, and child support paid by a family member to another family.¹⁵ Income taxes are not included in the total outlays variable employed in the measure of economic resources used in this article, so no subtraction is necessary. By contrast, reported Social Security taxes included in the total outlays variable were subtracted. Child support expenditures reported in the CE survey, which do not represent consumption by the sample consumer unit, also were subtracted in full from total outlays.

The Census Bureau experimental poverty report estimated childcare expenditures for families in the March Current Population Survey. For the misclassification test presented here, childcare expenditures reported in the CE survey were used. As proposed by the NRC panel, necessary childcare

expenses were capped at the level of the Federal dependent-care tax credit or the earnings of the unit head or spouse, whichever was lower. Following the method in the NRC and in Census Bureau reports, other work expenses were estimated on the basis of a flat amount, multiplied by the number of weeks the reference person or spouse worked during the preceding year. Work expenses including necessary childcare were subtracted from total outlays on the grounds that the economic resources represented by these expenditures were not available to purchase any of the items included in the poverty thresholds.

The remaining expenditures, termed “adjusted total outlays” in what follows, were deemed to be the total resources available to the consumer unit. The NRC panel recommended that the measure of economic resources not include wealth.¹⁶ However, CE survey data do not permit the identification of expenditures financed by reducing wealth, rather than from current income. So some expenditures financed by a reduction in wealth may be included in this analysis.

Variation in family-type amounts for medical out-of-pocket expenditures in the experimental thresholds

To apply the medical out-of-pocket expenditure “risk factors” from table A-10 of the Census Bureau report to individual consumer units in the CE survey research sample, the health insurance status of the member of the consumer unit had to be determined, as did the size of the unit, the presence or absence of members 65 and older, and the health of the head of the unit. The size of the unit and the presence or absence of members 65 and older were read directly from public-use family interview files. The CE survey does not ask a general health status question, so units were assigned a “fair/poor health” factor from table A-10 on the basis of whether the reference person or spouse reported illness or disability as the reason for not working.

Health insurance status was assigned on the basis of reports of health insurance coverage from detailed expenditure files. These files contain responses to questions about coverage of anyone in the unit by private insurance, Medicare, and Medicaid during the previous 12 months. In the analysis presented here, the responses were supplemented in two ways: if units reported health insurance expenditures, but no coverage, they were deemed to have been covered at some point by private health insurance and assigned the risk factor for that category; if units with members 65 and older reported no coverage and had no annual health insurance expenditures, they were assigned the public health insurance risk factor for their size and health status. Table A-10 has no risk factor for uninsured families with members aged 65 or older, because persons 65 or older usually are eligible for Medicare. In addition, indigent persons 65 or older and receiving Supplemental Security Income usually are eligible for Medicaid coverage, and other noninstitutionalized aged Medicare eligibles may receive Medicaid assistance with Medicare copayments.

Enabling assumption

The last step before an actual test of poverty misclassification can be performed is the presentation of an enabling assumption. Weaker than the panel's assumption that, for purposes of poverty classification, all medical out-of-pocket spending is necessary,¹⁷ this enabling assumption is nonetheless only acknowledged, and not proved, here:

Families are no more likely to make discretionary expenditures on shelter that leave insufficient resources for nonshelter needs than they are to make discretionary medical out-of-pocket expenditures that leave insufficient resources for nonmedical needs.

Of course, both types of poverty-inducing discretionary spending may occur, but it is assumed in this article that one type is no more likely than the other. To estimate poverty misclassification, either medical out-of-pocket or shelter spending that leaves a family with remaining spending below its threshold for other needs will be regarded as nondiscretionary spending.

Misclassification tests

Thresholds and expenditures were compared as follows:

- *Medical out-of-pocket expenditures in the threshold (MIT)*, a poverty basket that includes all the items in the NRC panel's threshold proposal plus amounts for medical out-of-pocket expenditures, are compared with adjusted total outlays.
- *Medical out-of-pocket expenditures subtracted (MS)*, the same basket as MIT, but with nothing for medical out-of-pocket expenditures, are compared with adjusted total

outlays minus medical out-of-pocket expenditures.

- *Medical out-of-pocket expenditures in the threshold, with shelter subtracted (MITHS)*, the same basket as MIT, but with nothing for shelter needs, is compared with adjusted total outlays minus shelter.¹⁸

Assuming that units will not make unnecessary medical out-of-pocket expenditures that leave spending on other needs below the threshold level, a unit that is not poor according to MIT, but that is poor according to MS, may be deemed to be misclassified by MIT. In other words, subtracting actual medical out-of-pocket spending left remaining spending below the unit's MS threshold. For purposes of comparison, units classified as poor by MIT, but not by MS, also will be deemed to be misclassified by MIT.¹⁹ Similarly, assuming that units will not spend unnecessarily on shelter to the extent that other spending falls below the threshold, a unit classified as not poor under MIT, but poor according to MITHS, will be judged to be misclassified by MIT.

Table 3 presents results from the preceding exercise. The 1st and 3rd columns show, respectively, the percentage misclassified as not poor under the family-type measure of medical out-of-pocket expenditures used by the MIT threshold and the percentage misclassified as poor under the same measure and threshold. The 5th column shows the total misclassification one way or the other due to including medical out-of-pocket expenditures in the thresholds, and the 6th column shows the net misclassification. The 7th through 12th columns offer a similar presentation, but subtracting shelter spending from both MIT and adjusted total spending. As the NRC panel's report explained, the effect of its proposal to omit medical out-of-pocket expenditures from the thresholds and subtract it from income has the greatest effect on measured poverty among the aged. So table 3 re-

Table 3. "Erroneous poverty classification"

Category	Subtracting medical out-of-pocket expenditures						Subtracting shelter					
	MIT not poor to MS poor = misclassified as not poor	Standard error	MIT poor to MS not poor = misclassified as poor	Standard error	Total erroneous poverty classification	Net rate of change with MS	MIT not poor to MITHS poor = misclassified as not poor	Standard error	MIT poor to MITHS not poor = misclassified as poor	Standard error	Total erroneous poverty classification	Net rate of change with MITHS
All units	1.6	0.2	1.4	0.2	3.0	0.2	2.9	0.3	3.8	0.4	6.7	-0.9
With aged	3.3	.5	2.7	.4	6.1	.6	5.0	.8	5.5	.7	10.4	-5

NOTE: MIT = medical out-of-pocket expenditures in threshold; MS = medical out-of-pocket expenditures subtracted; MITHS = medical out-of-pocket expenditures in threshold, shelter subtracted. MIT includes .08 for medical out-of-pocket expenditures, adjusted by equivalence scale from Kathleen Short, *Experimental Poverty Measures: 1999*, Current Population Reports P60-219 (U.S. Census Bureau, 2001); shelter share in MIT threshold = .41, adjusted by geographic factors from Short, *ibid*.

peats the misclassification test for all units and for those with a member aged 65 or older.

In comparison to misclassification with family-type measures of medical out-of-pocket expenditures, family-type measures of shelter result in significantly more units misclassified as poor (3.8 percent, compared with 1.4 percent) and also more misclassified as not poor (2.9 percent, as opposed to 1.6 percent). The same pattern holds for units with members aged 65 or older. This finding may be surprising in light of the NRC panel's assertion that medical out-of-pocket expenditures vary more than the needs the panel included in its proposed new threshold. To be sure, the coefficient of variation, a measure of relative variation that reflects the relation between a variable's standard deviation and its mean, is larger for medical out-of-pocket spending (114) than for shelter spending (89) in the research sample. Even controlling for family size and minimizing the likelihood of discretionary spending by selecting from the research sample only reference families with adjusted total outlays between 100 percent and 125 percent of their MIT thresholds, one obtains a greater coefficient of variation for medical out-of-pocket spending (93) than for shelter (43). However, the share of the total threshold represented by shelter, approximately 40 percent in this exercise, is much greater than the share represented by medical out-of-pocket expenditures, 8 percent for the reference family. The total variance in the combined needs included in a poverty threshold will be the sum of the variances of the individual needs, minus any covariances. To compare how much of the total variation in threshold needs is due to shelter and how much to medical out-of-pocket spending, the variance or standard deviation is a more appropriate measure than the coefficient of variation. Among reference families in the research sample with adjusted total outlays between 100 percent and 125 percent of their MIT thresholds, the standard deviation in shelter (3,741) is much greater than the standard deviation in medical out-of-pocket expenditures (1,061).

Table 4 presents the distribution of poverty among consumer units by the sex, race, age, marital status, education, and work limitation of their reference persons and by the unit's size, the presence of children and aged members, the receipt of welfare, and the geographic region in which the unit is located. The table shows that, although, on net, including medical out-of-pocket expenditures misclassifies 0.2 percent of units as not poor, the distribution of poverty according to MIT does not differ significantly from the distribution according to MS. Nor, in table 5, does the distribution of poverty rates.

With different choices (for example, the level for the reference family threshold, the shares of the threshold deemed to be for medical out-of-pocket expenditures and shelter, the geographic adjustments, and various equivalence

scales), levels of both total and net misclassification can be increased or decreased. However, the patterns exhibited in table 3 persist in a wide range of alternatives. Both family measures introduce error, but the differences in misclassification shown in table 3 do not lend support to the contention that medical out-of-pocket expenditures must be estimated with family-specific measures, whereas a combined family-type threshold is sufficient for estimating other needs.

Collateral issues

It is noteworthy that the MS expenditure poverty rates shown in table 5 generally are higher than rates for a comparable experimental measure, NAS/U,²⁰ listed in table 4-3 in the Census Bureau experimental poverty report. This difference is due largely to the use in table 5 of a higher reference family MS threshold than the one used for NAS/U in the Census Bureau report. To generate an MS reference family threshold consistent with the MIT threshold from table A-11 of that report, the misclassification test presented in this article subtracted 8 percent from \$19,527, the share of that threshold which table A-11 indicated was for medical out-of-pocket expenditures. That left an MS reference family threshold of \$17,965, or \$929 greater than the \$17,036 NAS/U reference family threshold underlying the Census Bureau's table 4-3.²¹ When the data in table 5 are rerun with an MS reference family threshold of \$17,036, it is found that poverty rates for units with no members 65 or older are comparable to those in the Census Bureau report.

Less easy to reconcile are the high poverty rates shown in table 5 for units with one or more members 65 or older. In table 4-3 of the Census Bureau report, both official income poverty rates and NAS/U income poverty rates are lower for aged persons than for all persons. Even when the data in table 5 are rerun with the lower reference family threshold, MS expenditure poverty rates for units with members 65 or older are more than twice as high as for younger units.

The difference is similar regardless of whether medical out-of-pocket expenditures are or are not included in table 5, so the higher rates for the elderly shown in that table are not due to higher medical spending among the aged and will not bias the comparisons of MIT and MS that are the central topic of this article. However, the high expenditure poverty rates listed in the table suggest that the distribution of *expenditures* among the aged is different from the distribution of *income* among the aged in ways that are relevant to the measurement of poverty. This phenomenon deserves more exploration than can be given here.

THE ANALYSIS PRESENTED IN THESE PAGES finds that needs for medical out-of-pocket spending may be included in a poverty threshold with misclassification effects that are no more

Table 4. Distribution of units classified as poor when adjusted outlays are compared with experimental thresholds

Category	MIT expenditure poor		MS expenditure poor	
	Percent of column	Standard error ¹	Percent of column	Standard error ¹
Sex of unit head:				
Male	40.8	1.7	40.6	1.4
Female	59.2	1.7	59.4	1.4
Race of unit head:				
White	72.9	2.4	73.7	2.4
Black	20.9	1.7	20.3	1.7
Other	6.1	2.0	6.0	1.9
Age of unit head, years:				
Up to 21	1.4	.4	1.4	.4
22 to 44	27.7	1.6	26.4	1.4
45 to 54	14.3	1.5	13.8	1.5
55 to 59	5.3	.8	5.5	.9
60 to 64	5.6	.7	6.5	.9
65 to 74	18.2	1.4	18.1	1.5
75 and older	27.3	1.3	28.1	1.2
Family size: .				
One	33.0	1.6	33.2	1.4
Two	30.1	1.6	30.5	1.6
Three	13.1	1.3	12.8	1.3
Four	10.7	1.3	10.6	1.2
Five	6.3	.8	5.7	.7
More than five	3.7	.9	3.9	.9
Number of children:				
Zero	69.8	2.0	70.5	1.8
One	10.9	1.5	10.3	1.4
Two	9.2	1.1	8.7	1.0
Three	5.9	.7	5.7	.7
More than three	2.9	.6	3.2	.6
Number in unit 65 years or older:				
Zero	50.9	1.7	50.5	1.4
One	33.6	1.8	33.2	1.6
Two	15.3	1.1	16.1	1.0
More than two .....	.2	.2	.3	.2
Marital status of unit head:				
Married	40.9	1.9	41.8	1.7
Formerly married	42.6	2.1	42.0	1.9
Never married	16.5	1.3	16.2	1.3
Education of unit head:				
Under age 25	3.5	.7	3.3	.6
Did not finish high school	43.4	1.7	43.4	1.6
Earned high school diploma	32.2	1.9	33.2	1.9
Some college	14.2	1.3	13.8	1.3
College degree	6.7	.8	6.3	1.0
Receipt of welfare by unit	5.3	.7	5.4	.8
Work limitation of unit head or spouse	5.2	.6	4.7	.6
Region:				
Northeast	21.4	2.4	20.7	2.4
Midwest	19.4	2.8	19.8	2.8
South	41.9	3.1	42.8	3.1
West	17.3	1.8	16.7	2.0

¹ Standard errors are from replicate weights.

medical out-of-pocket expenditures subtracted; MITHS = medical out-of-pocket expenditures in threshold, shelter subtracted.

NOTE: MIT = medical out-of-pocket expenditures in threshold; MS =

Table 5. Distribution of poverty rates when adjusted outlays are compared with experimental thresholds

Category	MIT		MS	
	Poverty rate	Standard error ¹	Poverty rate	Standard error ¹
All units	16.0	0.9	16.2	0.8
Sex of unit head:				
Male	12.6	1.0	12.6	.9
Female	19.6	1.0	19.9	1.0
Race of unit head:				
White	13.8	.8	14.1	.8
Black	29.5	2.4	28.9	2.5
Other	24.8	5.2	24.7	4.6
Age of unit head, years:				
Up to 21	26.2	6.9	27.0	7.0
22 to 44	11.7	1.0	11.2	.9
45 to 54	10.6	1.2	10.3	1.2
55 to 59	10.3	1.7	10.9	1.7
60 to 64	13.1	1.7	15.4	2.1
65 to 74	23.1	1.8	23.3	2.2
75 and older	36.4	2.2	37.9	2.4
Family size:				
One	20.3	1.4	20.7	1.5
Two	14.9	.9	15.3	.9
Three	13.0	1.6	12.9	1.6
Four	11.5	1.5	11.5	1.3
Five	14.8	1.9	13.6	1.7
More than five	24.2	4.9	25.7	4.9
Number of children:				
Zero	17.3	1.0	17.7	1.0
One	12.0	1.9	11.5	1.7
Two	10.7	1.3	10.3	1.2
Three	18.0	2.2	17.5	2.1
More than three	28.5	4.5	32.3	4.2
Number in unit 65 years: or older:				
Zero	11.2	.8	11.3	.7
One	28.7	1.5	28.6	1.6
Two	27.7	2.3	29.5	2.5
More than two	42.4	24.7	50.3	26.1
Marital status of unit head:				
Married	11.3	.7	11.6	.8
Formerly married	23.8	1.6	23.8	1.5
Never married	19.6	1.4	19.5	1.5
Education of unit head:				
Under age 25	20.4	4.1	19.7	3.9
Did not finish high school	45.2	2.3	45.7	2.1
Earned high school diploma	18.0	1.3	18.7	1.4
Some college	8.6	.9	8.5	.9
College degree	3.9	.5	3.8	.6
Receipt of welfare by unit	51.7	4.3	52.8	4.2
Work limitation of unit head or spouse	23.3	3.0	21.6	3.2
Region:				
Northeast	17.3	2.0	16.9	2.1
Midwest	13.2	1.8	13.6	1.8
South	18.6	1.9	19.3	1.8
West	13.3	1.1	13.0	1.3

¹ Standard errors are from replicate weights.

out-of-pocket expenditures subtracted; MITHS = medical out-of-pocket expenditures in threshold, shelter subtracted.

NOTE: MIT = medical out-of-pocket expenditures in threshold; MS = medical

severe than those associated with including needs for shelter. Although imprecision certainly is not desirable in itself, the finding that medical out-of-pocket expenditures do not have to be treated as a special case is good news for two reasons. First, despite Pat Doyle's good work,²² we remain far from being able to implement the NRC panel's recommendation for a "medical care risk index." Without this companion measure, the panel's proposed poverty threshold might not detect the deprivation of families that forego necessary medical care because they cannot afford it. Second, subtracting estimates of each individual family's out-of-pocket medical expenditures as a stage in determining that family's poverty status

would impose a serious practical burden on agencies that produce poverty statistics and analysts who use them. The finding presented here is that there is little empirical evidence justifying any imposition of that burden.

It is a goal of government assistance programs that apply a means test for eligibility to accommodate family-specific variation in need, and some, such as the Food Stamp Program, do by making adjustments to countable income for unusually high actual expenditures for shelter and medical care. However, for the statistical measure of poverty, family-type measures of medical needs introduce no more errors than do family-type measures of other needs that are included in poverty thresholds. □

Notes

¹ Constance P. Citro and Robert T. Michael, eds., *Measuring Poverty: A New Approach* (Washington, DC, National Academy Press, 1995).

² *Ibid.*, pp. 223–37.

³ *Ibid.*, p. 237.

⁴ *Ibid.*, p. 224.

⁵ Table 4-1 in the panel's report includes a distribution of medical out-of-pocket spending. Table 1500, "Composition of consumer unit: annual means, standard errors and coefficient of variation, Consumer Expenditure Survey, 2003," produced by the Bureau of Labor Statistics and on the Internet at www.bls.gov/cex/2003/stnderror/cucomp.pdf, illustrates the greater relative variation in medical spending than in spending for food or shelter.

⁶ The panel's report notes, "The original thresholds implicitly allowed for some out-of-pocket medical care expenditures in the multiplier, but not for the fact that such costs differ substantially by people's health status and other characteristics" (Citro and Michael, *Measuring Poverty*, p. 68).

⁷ The panel recommended that the Department of Labor assess the costs and benefits of expanding the CE survey with an eye toward eventually generating official poverty statistics based upon expenditures rather than income (*Ibid.*, p. 292).

⁸ Income and poverty data from the Annual Social and Economic Supplement to the Current Population Survey (CPS) also reflect a disconnect between the reference periods of their demographic and economic variables. The demographic unit reflects persons present as of the March survey date, whereas the reference period for most income questions is the preceding calendar year.

⁹ E. Raphael Branch, "The Consumer Expenditure Survey: a comparative analysis," *Monthly Labor Review*, December 1994, pp. 47–55.

¹⁰ Citro and Michael, *Measuring Poverty*, p. 224.

¹¹ *A Report on Worst Case Housing Needs in 1999: New Opportunity Amid Continuing Challenges* (U.S. Department of Housing and Urban Development, 2001).

¹² Kathleen Short, *Experimental Poverty Measures: 1999*, Current Population Reports p60–216 (U.S. Census Bureau, 2001).

¹³ Like the current thresholds, the NRC panel's thresholds were estimated for families. For the analysis set forth in this article, the threshold parameters were applied to all persons in a CE consumer unit, regardless of whether they were or were not related.

¹⁴ John M. Rogers and Maureen B. Gray, "CE data: quintiles of income vs. quintiles of outlays," *Monthly Labor Review*, December 1994, pp. 32–37.

¹⁵ Citro and Michael, *Measuring Poverty*, p.10.

¹⁶ *Ibid.*, pp. 214–18.

¹⁷ *Ibid.*, pp. 388–89.

¹⁸ For correspondence with the use of CE data in the panel's report and in the Census Bureau experimental poverty report, the sum of spending on shelter plus utilities was subtracted from adjusted total outlays. Other necessary housing costs, such as the cost of furnishings and maintenance, are presumed to be included in the multiplier to provide "a little more" for unspecified needs.

¹⁹ The enabling assumption adopted earlier allowed that, under specific circumstances, the presence of medical need may be inferred from the presence of medical out-of-pocket expenditures. However, because families may not be able to afford necessary medical care, the absence of medical need cannot be inferred from the absence of medical out-of-pocket expenditures.

²⁰ The NAS/U, a modification of a measure from the National Academy of Sciences report, is not standardized to match the official poverty rate.

²¹ Short, *Experimental Poverty Measures*, table A-1. Note that subtracting 8 percent of the MIT level of \$19,527 is an approximation to make the MIT and MS thresholds comparable for this exercise. To produce a threshold figure without medical out-of-pocket expenditures, in accordance with the National Academy of Science approach, would involve recalculating median expenditures without medical out-of-pocket spending.

²² Pat Doyle, "Who's at Risk? Designing a Medical Care Risk Index," Poverty Measurement Working Paper (U.S. Bureau of the Census, 1997), on the Internet at www.census.gov/hhes/poverty/povmeas/papers/mcrindex.html.