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Experimental Poverty Measures Under Alternate Treatments of Medical Out-of-Pocket  
Expenditures: An Application of the Consumer Expenditure Survey

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**Experimental Poverty Measures  
Under Alternate Treatments of Medical Out-of-Pocket Expenditures:  
An Application of the Consumer Expenditure Survey<sup>1</sup>**

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## **Abstract**

This paper presents experimental poverty measures that update those presented in Current Population Report, P60-216, “Experimental Poverty Measures: 1999”. Estimates for 2000 are presented and compared with the official measure. In this paper we emphasize the difference in two of the measures that use Consumer Expenditure (CE) data to estimate medical out-of-pocket expenses. Poverty rates, poverty gaps, and income-to-poverty-threshold ratios are computed and compared across poverty measures for various subgroups, particularly children and the aged. Results show that alternate methods of measuring medical expenses affect our perception of the relative incidence of poverty, the depth of poverty experienced by these groups, and the number of people who are classified in extreme poverty (those with family income below one-half of the poverty threshold).

## **Background**

The official measure of poverty in the United States has been in place since the 1960s and has served to inform many policy debates. However, this measure itself is often the focus of criticism from scholars and policy makers alike. In her book, *Drawing the Line*<sup>2</sup>, Patricia Ruggles described alternative concepts of poverty and methods for measuring poverty; she also proposed methods to update and revise the current official poverty threshold and resource definitions. In response to this work, the Joint Economic Committee held Congressional hearings in the early 1990s. These hearings lead to the formation of the National Academy of Sciences (NAS) Panel on Poverty and Family

Assistance. The goal of the panel was to examine the current official measure of poverty in the United States. In 1995 this panel of scholars published their findings in a report titled *Measuring Poverty: A New Approach*<sup>3</sup>.

In general, the NAS panel report proposed eight broad sets of recommendations which focus on the following: (1) adopting a new poverty measure; (2) setting and updating the poverty threshold; (3) adjusting the threshold; (4) defining family resources; (5) identifying needed data; (6) highlighting other issues related to poverty measurement; (7) relating poverty measurement to assistance programs; and (8) linking states' needs to the panel's proposed measure. The panel stated that poverty thresholds should represent a budget for food, clothing, shelter (including utilities) and a small amount for other needs. Family resources would be defined – consistent with the threshold concept – as the sum of money income together with the value of near money benefits minus expenses that cannot be used to buy goods and services in the threshold budget. The panel also stated that,

*The U.S. Office of Management and Budget should adopt a revised poverty measure as the official measure for use by the federal government. Appropriate agencies, including the Bureau of the Census and the Bureau of Labor Statistics, should collaborate to produce the new thresholds each year and to implement the revised definition of family resources.*<sup>4</sup>

The basic criteria for developing the poverty measure, according to this NAS panel, were that it should be understandable and broadly acceptable to the public, statistically defensible, internally consistent, and operationally feasible.

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<sup>2</sup> Ruggles, 1990.

<sup>3</sup> Citro and Michael, 1995

<sup>4</sup> Citro and Michael, p. 5.

In response to the panel's report and recommendations, research was undertaken by staff within the Bureau of Labor Statistics (BLS) and the Census Bureau. Their work has resulted in several papers and conference presentations that reproduced the panel's work and examined underlying assumptions and measurement issues.<sup>5</sup>

Building on this joint research, the Census Bureau released two reports that presented several variations of alternative methods of measuring who is poor based on the recommendations of the NAS panel – July 1999 with results for the years 1990-97 (Short et al., 1999) and October 2001 with results from 1999 (Short, 2001a). The second Census Bureau report included improved methods for measuring individual elements of experimental measures and further refined the concepts outlined in the NAS panel report. In particular, the second report examined two new methods for handling medical out-of-pocket expenses (MOOP): accounting for them in experimental thresholds, or subtracting these expenses from family resources. The treatment of medical out-of-pocket expenses in a poverty measure proved most controversial in the discussion that followed the release of both the panel's and the Census Bureau's first reports<sup>6</sup>.

Since medical spending is the focus of continuing debate over poverty measurement, this study utilizes the same experimental poverty measure as the second Census report, but presents results for the year 2000.<sup>7</sup> These measures and resulting poverty rates are contrasted with the current official poverty

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<sup>5</sup> Early work includes Johnson, Shipp, Garner, 1997 and Garner et al., 1998. These and other working papers are available on census poverty measurement website <http://www.census.gov/www/hhes/povmeas.htm>.

<sup>6</sup> See for example, "Open Letter on Revising the Official Measure of Poverty", 2000.

measure. The official poverty measure indicated that 11.3 percent of all people had income below the official poverty threshold in 2000. The experimental measures result in slightly higher rates overall and indicate differences by socio-demographic subgroups.

### **Medical out-of-pocket spending (MOOP)**

Medical out-of-pocket expenditures include those for health insurance premiums, medical services, drugs, and medical supplies. The method that the NAS panel used to value these expenses in a poverty measure using survey data is somewhat complex. Data from the 1987 National Medical Expenditure Survey (NMES) were used to develop a model that assigned the occurrence of such expenditures and the amount spent. Once these amounts were assigned to families, then the aggregate amount assigned across all families was adjusted to match benchmarks developed from the Health Care Financing Administration's National Health Accounts.<sup>8</sup> The adjusted amounts of MOOP were then subtracted from income as a necessary expense, before comparing family resources to poverty thresholds. Note that this step introduced some inconsistency in a complete poverty measure in that no other component in the panel's measure was adjusted to match independent aggregate estimates. That is, while other elements in the panel's proposed poverty measure suffer from non-sampling error, such as the underreporting of income or benefits, they are nevertheless unadjusted in the poverty measures reported here, as they are in the official measure. This inconsistent treatment likely resulted in an

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<sup>7</sup> See Short, 2001a, for details of methods.

<sup>8</sup> See Betson, 1995b.

overstatement of the effect of MOOP on poverty rates in the panel's report and the first Census Bureau report that mimicked the panel's approach.

In light of both the conceptual and practical issues raised by this approach, an alternative was proposed to add out-of-pocket needs to the thresholds and not to subtract MOOP from income.<sup>9</sup> Thus, the threshold would include medical out-of-pocket spending along with spending on the commodity bundle of food, clothing, shelter, and utilities. Thresholds could be calculated for family types based on health care spending patterns according to size of family, age of family members, and health insurance coverage status.

The NAS panel did not pursue this alternative because it would require a much larger number of thresholds to reflect different levels of medical care need.<sup>10</sup> They argued that medical care needs differ from the need for food or housing in that not every family requires medical care in a given year, but when they do, the associated costs may be extraordinarily large. Assigning an average expenditure to incorporate medical care needs in the thresholds may overestimate the costs for many families and underestimate the cost for a few families due to the distributional properties of these expenditures. The panel concluded that it would be impossible to capture the actual variation of medical needs by variations in the thresholds and that this could lead to what the panel termed "erroneous poverty classification."

The second Census Bureau report (Short 2001a) presented two new methods of accounting for medical needs. The first was an updated model

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<sup>9</sup> See Bavier, 1998, and a summary of Marilyn Moon's proposal in Citro and Michael, p. 236.

<sup>10</sup> Citro and Michael, 1995, pp. 223-237.

following the panel's procedure. This method used the 1996 and 1997 Consumer Expenditure Survey (CE) to assign values of MOOP to different families<sup>11</sup>. This version of the MOOP model differs in some important ways from the earlier NAS model. These differences were summarized by Betson in a series of recommendations that are made to guide the estimation of this model. The first recommendation is that the MOOP amounts predicted by the model should **not** be calibrated to aggregate totals, as was done in the earlier version. A third order log-logistic model was estimated for each of 42 different family types, based on characteristics such as age, health insurance coverage, family size, race, and income level. Limits were placed on the maximum MOOP amount that could be assigned. No family was assigned a value that exceeds the 99<sup>th</sup> percentile of the MOOP distribution for their respective family type. Estimates from this model were then used to assign values of MOOP to individual families in the CPS. These amounts were estimated for each family and subtracted from family income before determining poverty status, in the measure referred to as MSI -- *MOOP subtracted from income*. The elements of this approach are outlined below.

*The MSI measure.* The MSI measure is conceptually similar to the measure described in the NAS panel's report but with some computational differences. More generally, this measure is constructed in the following way:

Thresholds:

- Thresholds are based on expenditures on food, clothing, shelter and utilities – data from 1998, 1999, and 2000 CE<sup>12</sup>
- The equivalence scale is a three-parameter version<sup>13</sup>

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<sup>11</sup> See Betson, 2001 for complete details.

<sup>12</sup> Garner et al., 1998.



- Geographic indexes are calculated using the Department of Housing and Urban Development (HUD) Fair Market Rents<sup>14</sup>

Resources:

- Use cash income from the March 2001 Current Population Survey (CPS)
- Include the value of food assistance programs (food stamps and school lunches)
- Include the value of housing subsidies
- Include the value of energy assistance (only heating assistance)
- Subtract work-related and child care expenses
- Take account of taxes as modeled in the CPS
- Subtract medical out-of-pocket expenses (MOOP) as modeled using CE data.

The threshold for a two-adult two-child reference family is presented in **Table 1**.

This experimental threshold is slightly higher than the official threshold for this family type.

**Table 1: Poverty Thresholds for a Reference Family of Two Adults and Two Children: 2000**

<b>Official Measure</b>	\$17,463
<b>Experimental without medical</b>	17,884
<b>Experimental with medical</b>	19,549

Source: Authors' calculations of CE data 1998, 1999, and 2000

*MOOP in the threshold (MIT measure)*. The second measure examined in this study computes MOOP differently. This method adds health care out-of-pocket expenditures, as reported in the CE, in the calculation of poverty thresholds for the two-adult two-child reference family. Thus, the thresholds, which typically are based on spending for food, clothing, shelter and utilities, now also include out-of-pocket spending for an additional commodity, health care.

<sup>13</sup> Johnson et al., 1997.

Once the reference family threshold is estimated from CE data, thresholds for families other than the reference family are produced using what we refer to as a 'medical risk index'. These are based on characteristics associated with variations in medical care utilization and cost. These characteristics include among others, family size, age, and health status of member, and health insurance coverage. In the case of the uninsured, an adjustment is made to reflect the likely underutilization of health care by the uninsured<sup>15</sup>. These indexes use median MOOP expenditures from the 1996 Medical Expenditure Panel Survey (MEPS) to compute ratios of MOOP expenditures for different groups varied by the set of characteristics listed to those of the reference family. MEPS data are used since health status data are not collected in the CE.<sup>16</sup> This method is referred to as MIT or *MOOP in the threshold*. Again, unlike the panel's original method, no attempt was made to adjust these dollar amounts to aggregate spending totals. Once MOOP amounts were calculated, they were included in the thresholds, rather than subtracted from income, before determining poverty status. Generally, the MIT measure is calculated as follows;

Thresholds:

- Thresholds are based on estimated expenditures for food, clothing, shelter and utilities, and MOOP from 1998, 1999, and 2000 CE
- The equivalence scale is a three-parameter version and a medical risk index for the MOOP portion of the threshold as estimated from 1996 MEPS
- Geographic indexes are calculated using HUD Fair Market Rents

Resources:

- Cash income from the March 2001 CPS
- Include the value of food assistance programs (food stamps and school lunches)

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<sup>14</sup> Short, 2001b.

<sup>15</sup> See Banthin et al., 2001 for more details on this method.

<sup>16</sup> Other options using the CE are presented in Banthin et al. 2001.

- Include the value of housing subsidies
- Include the value of energy assistance (only heating assistance)
- Subtract work-related and child care expenses
- Take account of taxes as modeled in the CPS

The threshold for this measure is also shown in **Table 1**, with the official poverty threshold and experimental threshold without medical expenses. As expected, the threshold that includes MOOP is higher than that without.

Mean values of MOOP assigned by the two different methods are shown in an appendix table for different family types. While the two methods assign different amounts to different families, the key difference between the two methods is that MSI models health expenditures (MOOP) based on individual family characteristics, while MIT fixes the level for all families with certain specific characteristics.

Finally, we note that the second Census Bureau report included a third method. This approach to valuing medical expenses combined the two approaches described above into a single measure. This combined approach included the addition of a MOOP value in the thresholds but also subtracted a *net* MOOP amount from family income. The discussion here focuses only on the two separately estimated methods in order to establish more clearly the differences in the two methods.

### **Experimental poverty rates**

Poverty rates based on these measures are presented in **Table 2** along with the official poverty rate. The estimated poverty rate using the MSI measure was 12.2 percent in 2000. The MIT measure yields a poverty rate of 12.7

percent. While both of the new experimental measures result in similar poverty rates for all people that are slightly higher than the official rates, including MOOP in a poverty measure and the method by which that is done have important effects on the poverty rates of different population subgroups.

**Table 2: Poverty Estimates for All People Using Official and Experimental Poverty Measures 2000**

	Number (1,000)	Percent
<b>Official Measure</b>	31,054	11.3
<b>MSI</b>	33,739	12.2
<b>MIT</b>	34,960	12.7

Source: March 2001 Current Population Survey

*Demographic subgroups.* Using the poverty measures described above, this section examines the differential incidence of poverty for various socio-economic and demographic subgroups. **Table 3** shows poverty rates under the official and the two experimental poverty measures for various demographic groups.

Poverty rates by age group show higher rates for adults using the experimental measures, especially for the elderly (see **Figure 1**). Child poverty rates, 16.1 percent under the official measure, are about the same under the MIT measure, 15.9 percent, but considerably lower under the MSI measure, 14.6 percent. The non-elderly adult poverty rate increases modestly from 9.4 with the official measure to 10.4 under the MSI measure and 11.0 percent with the MIT measure. The poverty rate for people 65 years and over is higher, 10.2 under the official measure, compared with 14.2 and 16.6 percent under the MIT and the MSI measures respectively.

Differences in poverty rates between the official and the experimental measures are explained by all of the elements included in an experimental measure. Average family amounts added and subtracted from income to move from the official to the experimental measures are shown in **Figure 2** for selected subgroups. In that figure one sees the higher average benefits received, including tax credits (EITC), and the lower MOOP amounts for children relative to the elderly. The combination of these results in increased poverty rates for the elderly using the experimental measures relative to the official measure.

**Table 3. Poverty Rates by Selected Characteristics, 2000**

	Official Measure	MSI	MIT
<b>All Persons</b>	11.3	12.2	12.7
<b>Age</b>			
Children (<18)	16.1	14.6	15.9
Adults, 18-64	9.4	10.4	11.0
Elderly, 65+	10.2	16.6	14.2
<b>Race/Ethnicity</b>			
Non-Hispanic White	7.5	8.5	8.6
Black	22.0	20.6	21.3
Hispanic	21.2	24.2	26.3
<b>Family Type</b>			
Married-couple	5.6	6.9	7.2
Male-headed (no spouse present)	14.8	17.3	17.6
Female-headed (no spouse present)	25.7	25.1	25.8
<b>Number of workers</b>			
No workers	33.2	35.4	33.8
One or more workers	8.0	8.7	9.5
<b>Region</b>			
Northeast	10.3	12.9	13.2
Midwest	9.5	9.0	9.3
South	12.5	12.2	12.5
West	11.9	14.9	15.8
<b>Metropolitan Area</b>			
Central city	16.1	17.6	18.4
In metro, not central city	7.8	9.8	10.2
Nonmetropolitan area	13.4	10.8	10.8

Source: March 2001 Current Population Survey

Figure 1: Poverty Rates by Age

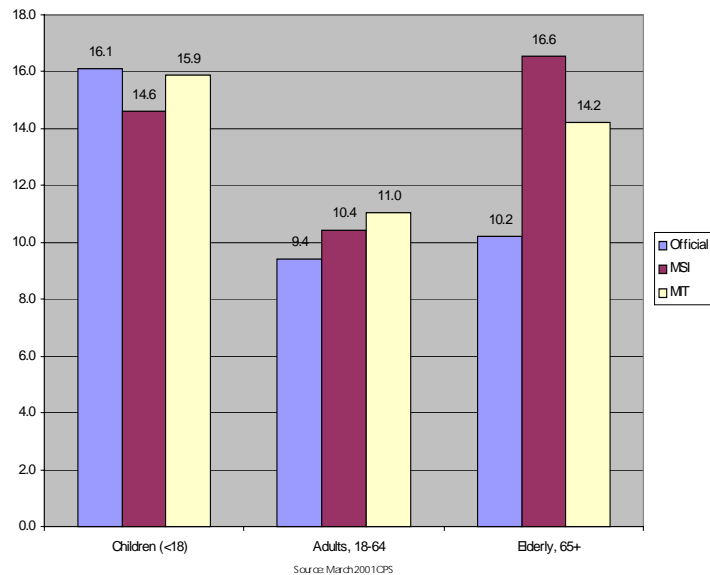
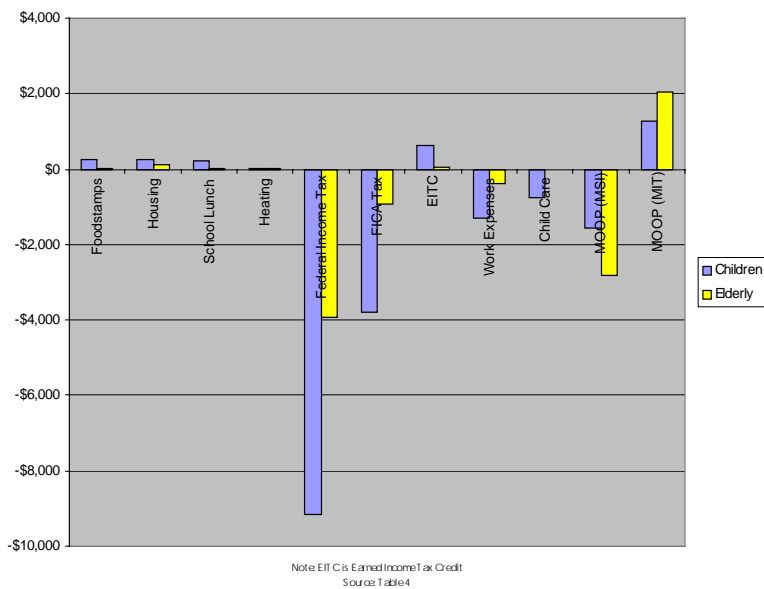


Figure 2: Mean Transfer Benefits and Expenses



Differences in poverty rates between the two experimental measures are only explained by different treatments of MOOP. While average values for MOOP are lower for most subgroups that we examine under the MIT method, this method likely errs by assigning the same values to all in a given group. This results in the imputation of too large a value to too many families, and too small a value to the few families who actually face large MOOP expenses.

Experimental poverty rates also differ by race and ethnicity. Experimental poverty rates are higher than official poverty rates for Non-Hispanic Whites and Hispanics, though slightly lower for Blacks. The rates tend to be lower for Blacks due to a combination of factors, including higher receipt of some near-cash transfers and slightly lower work-related expenses and taxes paid. Differences in average amounts of these elements are shown in **Table 4** by race and Hispanic origin.

Accounting for non-cash transfers also affects the incidence of poverty by family type. When poverty rates by family type are examined, one sees increases moving from the official to the experimental measures among persons in married-couple and male-householder (unmarried) families, and little change among female-householder families. Married-couples tend to receive less near-cash transfer income and have higher work-related and medical expenses than the other family types (see **Table 4** for average amounts).

As expected, the experimental measures (which include geographic adjustments) result in poverty rates that differ by region and by metropolitan/non-metropolitan status. As highlighted by the change in the poverty rates between

**Table 4: Mean Family Amounts across Individuals, 2000 (dollars)**

	All	Official Poor	Near Poor	Children	Adults	Elderly	White	Black	Hispanic	No Workers	1+ Workers
Foodstamps	117	750	248	252	76	33	83	314	231	264	95
Housing	142	978	346	270	93	116	85	473	293	460	94
School Lunch	103	322	256	229	68	9	87	190	254	65	109
Heating	6	28	25	10	5	6	5	11	5	15	5
Federal Income Tax	-9,075	-20	-101	-9,159	-10,031	-3,936	-9,711	-4,496	-3,887	-1,144	-10,271
FICA Tax	-3,475	-438	-979	-3,807	-3,827	-931	-3,611	-2,379	-2,770	0	-4,000
EITC	319	1,147	1,257	624	245	41	276	559	795	0	368
Work Expenses	-1,230	-460	-771	-1,312	-1,361	-374	1,242	-1,096	-1,364	0	-1,416
Child Care	-377	-162	-305	-746	-292	-8	-367	-468	-429	0	-434
MOOP (MSI) <sup>a</sup>	-1,762	-551	-753	-1,563	-1,643	-2,818	-1,824	-1,419	-1,281	-1,987	-1,729
MOOP (MIT) <sup>b</sup>	1,323	851	1,102	1,256	1,210	2,053	1,340	1,201	1,203	1,443	1304
	<b>Married Couple</b>	<b>Female Householder</b>	<b>Northeast</b>	<b>Midwest</b>	<b>South</b>	<b>West</b>	<b>Central City</b>	<b>Suburbs</b>	<b>Non-metro Territory</b>		
Foodstamps	62	309	117	92	120	136	198	64	138		
Housing	48	439	239	98	100	171	287	82	88		
School Lunch	98	154	89	86	106	126	135	81	115		
Heating	4	14	11	9	3	4	8	4	10		
Federal Income Tax	-11,933	-2,621	-10,651	8,709	-8,414	-9,151	-7,647	-11,235	-5,254		
FICA Tax	-4,333	-1,607	-3,736	3,668	-3,184	-3,513	-3,002	-3,985	-2,787		
EITC	238	627	284	252	337	389	410	263	335		
Work Expenses	-1,455	-787	-1,240	-1,281	-1,184	-1,242	-1,155	-1,299	-1,154		
Child Care	-415	-369	-434	-346	-352	-398	-372	-410	-292		
MOOP (MSI) <sup>a</sup>	-2,042	-1,313	-1,883	-1,824	-1,715	-1,674	-1,533	-1,894	-1,753		
MOOP (MIT) <sup>b</sup>	1,476	1,090	1,345	1,341	1,318	1,293	1,235	1,365	1,341		

<sup>a</sup>Average out-of-pocket expenditure subtracted from resources.

<sup>b</sup>Average out-of-pocket expenditures included in threshold.

<sup>c</sup>People classified as "near poor" are those with family income below 125 percent of the poverty threshold.

Source: March 2001 Current Population Survey



the official and the experimental measures, poverty estimates increase in the Northeast and West and decrease in the Midwest and South. Likewise, measures that include geographic adjustments (as the MSI and MIT do) yield higher poverty rates in central cities, and to a less extent in the suburbs, while lower poverty rates result for nonmetropolitan areas.

### **Poverty gaps**

The previous section reports the prevalence of poverty under different poverty measures. While the poverty rate tells us the proportion of a population that is poor, it does not give us information about the depth of poverty in that population. The mean income deficit, or average poverty gap, tells us something about the shortfall of income relative to the poverty threshold, and thus the depth of poverty for various people.

**Table 5** lists mean income deficits, or poverty gaps, under the official measure and under the two experimental measures, the MSI and the MIT measures. These income deficits are calculated by determining who is poor under the given measure, and for those individuals, subtracting their family income from their relevant poverty threshold. When incomes are negative, the deficit is set equal to the poverty threshold, suggesting that no deficit exceeds the measure of need for the basic bundle of goods.

In official Census Bureau publications, income deficits are calculated separately for families and for unrelated individuals. The first two lines of **Table 5** show these calculations for these two groups under the three measures. The third line combines family heads and individuals for simplicity, and the remaining

averages for subgroups are based on this combined group, by characteristic of the family head or the unrelated individual (in effect, unrelated individuals are treated like families consisting of one person). Also see **Figure 3**.

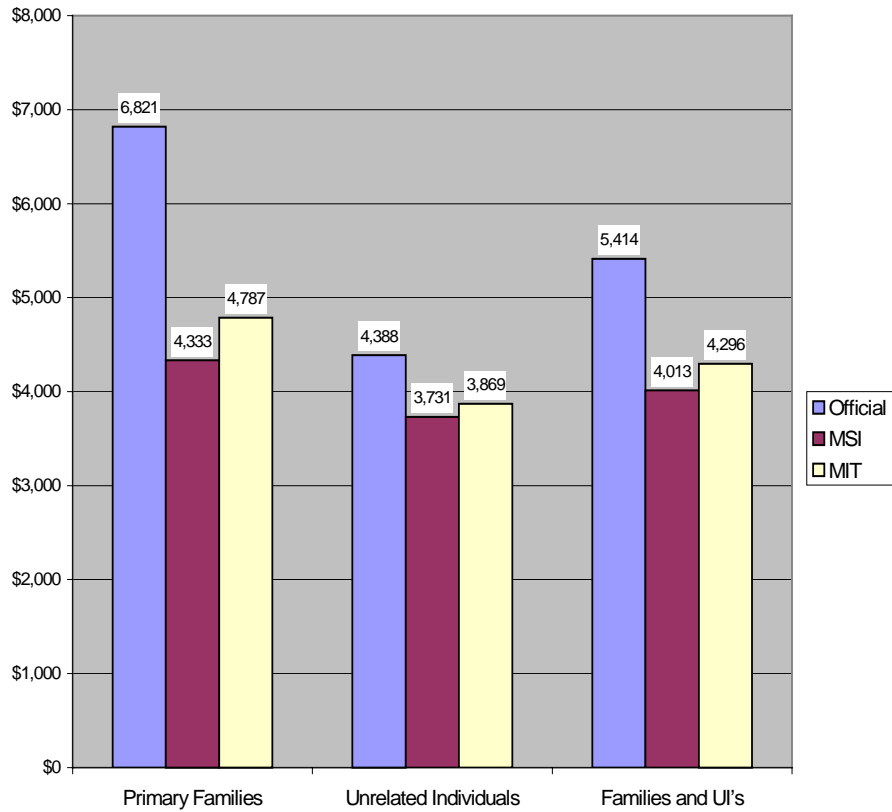
**Table 5: Mean Income Deficits: 2000 (dollars)**

	<b>Official</b>	<b>MSI</b>	<b>MIT</b>
Families	\$6,821	\$4,333	\$4,787
Unrelated Individuals	4,388	3,731	3,869
Families and Unrelated Individuals	5,414	4,013	4,296
Age of head			
18 to 64	5,986	4,249	4,831
65+	2,868	3,173	2,573
White	5,248	3,931	4,184
Black	5,773	4,078	4,438
Hispanic origin	6,258	4,847	5,366
No workers	5,486	4,701	4,701
One or more workers	5,335	3,434	3,951
In family of type:			
Married couple	6,612	4,153	4,578
Male householder	4,968	4,129	4,445
Female householder	5,243	3,889	4,091
Geographic regions:			
Northeast	5,344	4,286	4,607
Midwest	5,398	3,666	3,843
South	5,214	3,718	3,929
West	5,841	4,459	4,893
Metropolitan Area:			
Central city	5,588	4,292	4,638
Not central city	5,496	4,150	4,470
Nonmetropolitan Area	4,972	3,113	3,176

Source: March 2001 Current Population Survey

While the prevalence of poverty may be higher under the experimental measures relative to the official measure, this table indicates that average poverty gaps are much lower for both experimental measures than the official measure. This result holds for all groups shown here, except one (discussed

Figure 3: Mean Income Deficits 2000



below). While the differences between the income deficits are larger or smaller for different groups, in general, the family incomes of poor individuals are closer to the poverty line under the experimental measures than under the official measure. Thus, while subtracting taxes and other necessary expenses from income does move people across the poverty line and into poverty, on average, they are not being moved as far below that line as they would be below the office threshold. Also, including noncash benefits raises the income of many poor families, even if they are not sufficient to raise them out of poverty.

There is one exception -- the elderly. As shown in **Table 5**, the elderly demonstrate higher mean income deficits under the MSI experimental measure relative to the official measure. While the large MOOP expenses attributed to the elderly contribute greatly to these higher figures, there is an additional factor that explains this difference. The official poverty thresholds are specified to be lower for the elderly than for the non-elderly, while the experimental poverty thresholds make no distinction for age of householder. On the other hand, due to the lower values of MOOP assigned using the MIT measure, the poverty gap for the elderly under that measure is lower than the official measure gap.

### **Income-to-poverty-threshold ratios**

Another gauge of the relative distance of the poor from the poverty level is the proportion below specified fractions of their respective poverty thresholds. This section examines income-to-poverty-threshold ratios under the various measures and does so across the entire income distribution. This exercise illustrates not only the difference in distribution below the poverty line, but across all income levels as the definition of family resources changes.

**Table 6** shows estimates of the percent of people by family income-to-poverty-threshold ratios under the three measures discussed, the official, MSI, and MIT measures. It can be seen that accounting for taxes and transfers in the income measure results in greater percentages of individuals in the middle-income ranges. This is the result of the re-distributional effect of taxes and transfers that are included in the experimental measures.

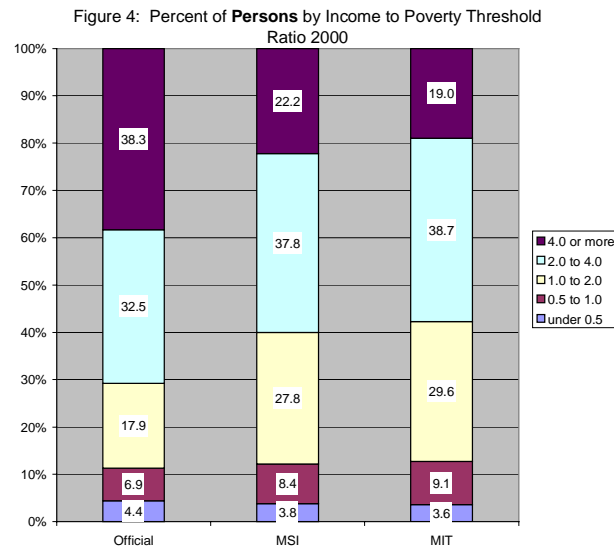
**Table 6: Percent of People by Income-to-Poverty Ratios, 2000**

<b>All persons</b>				<b>White</b>			
	<b>Official</b>	<b>MSI</b>	<b>MIT</b>		<b>Official</b>	<b>MSI</b>	<b>MIT</b>
<b>Less than 0.5</b>	4.4	3.8	3.6	<b>Less than 0.5</b>	3.5	3.4	3.2
<b>0.5 to 0.99</b>	6.9	8.4	9.1	<b>0.5 to 0.99</b>	5.9	7.3	7.9
<b>1.0 to 1.99</b>	17.9	27.8	29.6	<b>1.0 to 1.99</b>	17.0	26.1	27.9
<b>2.0 to 3.99</b>	32.5	37.8	38.7	<b>2.0 to 3.99</b>	32.7	39.0	40.3
<b>4 or more</b>	38.3	22.2	19.0	<b>4 or more</b>	40.9	24.1	20.7
<b>Children</b>				<b>Black</b>			
	<b>Official</b>	<b>MSI</b>	<b>MIT</b>		<b>Official</b>	<b>MSI</b>	<b>MIT</b>
<b>Less than 0.5</b>	6.4	3.9	3.8	<b>Less than 0.5</b>	9.3	6.1	5.7
<b>0.5 to 0.99</b>	9.6	10.7	12.0	<b>0.5 to 0.99</b>	12.7	14.5	15.6
<b>1.0 to 1.99</b>	21.3	33.3	34.1	<b>1.0 to 1.99</b>	24.4	37.8	39.6
<b>2.0 to 3.99</b>	33.3	36.7	36.8	<b>2.0 to 3.99</b>	32.0	30.7	30.1
<b>4 or more</b>	29.3	15.4	13.2	<b>4 or more</b>	21.7	11.0	9.0
<b>Nonelderly Adults</b>				<b>Hispanic</b>			
	<b>Official</b>	<b>MSI</b>	<b>MIT</b>		<b>Official</b>	<b>MSI</b>	<b>MIT</b>
<b>Less than 0.5</b>	3.9	3.6	3.6	<b>Less than 0.5</b>	7.3	6.3	6.1
<b>0.5 to 0.99</b>	5.5	6.8	7.4	<b>0.5 to 0.99</b>	13.9	17.9	20.2
<b>1.0 to 1.99</b>	14.7	24.6	25.9	<b>1.0 to 1.99</b>	30.1	44.1	44.3
<b>2.0 to 3.99</b>	31.6	39.0	40.4	<b>2.0 to 3.99</b>	32.6	25.7	24.4
<b>4 or more</b>	44.3	26.0	22.6	<b>4 or more</b>	16.1	6.0	5.1
<b>Elderly</b>				<b>Female Householder</b>			
	<b>Official</b>	<b>MSI</b>	<b>MIT</b>		<b>Official</b>	<b>MSI</b>	<b>MIT</b>
<b>Less than 0.5</b>	2.2	4.6	2.7	<b>Less than 0.5</b>	10.9	8.6	8.0
<b>0.5 to 0.99</b>	8.0	12.0	11.5	<b>0.5 to 0.99</b>	14.8	16.5	17.9
<b>1.0 to 1.99</b>	27.1	32.5	38.8	<b>1.0 to 1.99</b>	27.2	38.6	40.1
<b>2.0 to 3.99</b>	35.7	33.5	34.0	<b>2.0 to 3.99</b>	29.2	26.6	26.2
<b>4 or more</b>	27.0	17.4	13.1	<b>4 or more</b>	17.9	9.7	7.9

Source: March 2001 Current Population Survey

Comparing the official versus the MSI measure shows that a slightly higher percentage of all people – 4.4 versus 3.8 percent – are in extreme poverty (below one-half of the relevant poverty threshold) using the official measure (also see **Figure 4**). Further, while the MSI measure yields a slightly higher percentage of people below the poverty line than the official measure yields, more of those

individuals are above one-half the relevant poverty threshold than are found using the official measure – 8.4 percent using MSI versus 6.9 percent using the official measure. This is as expected from the calculation of poverty gaps and results from the addition of in-kind transfers to family incomes in the experimental measures. The results are similar, though even more pronounced, for the MIT measures relative to the official measure.



The table also shows that this pattern of fewer people in extreme poverty when using the experimental measures holds for most demographic groups including children, Blacks, and Hispanics. The percent of children in extreme poverty as reported with the official poverty measure is 6.4 percent. Under the experimental measures that falls to 3.9 and 3.8 percent.

The one exception is the elderly. Notably, 2.2 percent of the elderly are in extreme poverty under the official measure. Under the MSI measure this rises to 4.6 percent. This result follows from the method used in that measure to value MOOP expenses. However, the MIT measure is much closer to the official measure in this regard.

### **Summary and conclusions**

This paper describes and compares the size and composition of the poverty population under the official poverty measure and two experimental measures of poverty. The major focus is a discussion of methods and data used to estimate medical out-of-pocket expenses.

Results indicate that, while many groups are somewhat more likely to be classified as poor under the experimental measures, the depth of their poverty is less than is generally found under the official measure. Further, income-to-poverty threshold ratios reveal that for several groups, such as children, Blacks, and Hispanics, the percent in extreme poverty is lower under the experimental measures than the official measure.

A few elements in the experimental measures have a particularly important role in changing our perception of who is poor. For one, accounting for health care costs considerably increases the number of people who appear to be struggling to get by. Particularly, it increases the number of elderly who are perceived to be poor, while only slightly affecting the number of poor children and Blacks. Choice of method to account for health care costs has an effect on these estimates. All

statistics shown here, poverty rates, poverty gaps, and income-to-poverty thresholds ratios, are affected by the method chosen to include medical expenses.

A final but important conclusion from this study is that there is much to be learned from a poverty measure that is carefully and explicitly constructed. It allows us to understand more precisely the economic situation of families and individuals. Including government benefits aimed at the most needy within the experimental measures also helps gauge the effectiveness of these programs in improving the lives of low-income families and individuals. With such a procedure one can more carefully ascertain the situation of particular population subgroups that are often specifically targeted for aid. Finally, the experimental measures allow us to more thoroughly understand the costs and economic hardship that individuals and families face and to examine where and how difficulties arise.



**Appendix Table. Medical Risk Factors (with adjustment for uninsured) and Mean Values of MOOP for MSI and MIT Measures**

Characteristics	Medical Risk Factors	MSI Mean Amount	MIT Mean Amount
Reference family	1.00	\$1,853	\$1,349
<b>Families with no elderly members</b>			
Private, 1 person			
Good health	0.42	868	571
Fair/poor health	0.77	933	1,044
Private, 2 people			
Good health	0.89	1,991	1,196
Fair/poor health	1.13	2,143	1,520
Private, 3+ people			
Good health	1.00	1,946	1,352
Fair/poor health	1.26	1,913	1,695
Public, 1 person			
Good health	0.02	438	24
Fair/poor health	0.07	487	93
Public, 2+ people			
Good health	0.03	322	45
Fair/poor health	0.09	403	124
Uninsured, 1 person			
Good health	0.48	235	649
Fair/poor health	0.90	278	1,217
Uninsured, 2+ people			
Good health	1.02	556	1,370
Fair/poor health	1.08	460	1,462
<b>Families with elderly members</b>			
Private, 1 person			
Good health	1.19	2,043	1,606
Fair/poor health	1.31	2,059	1,765
Private, 2+ people			
Good health	1.92	3,045	2,593
Fair/poor health	2.30	3,025	3,096
Public, 1 person			
Good health	0.49	1,978	659
Fair/poor health	0.45	1,841	605
Public, 2+ people			
Good health	0.91	2,845	1,220
Fair/poor health	1.01	2,734	1,367

Source: 1998- 2001 Consumer Expenditure Survey, 2001 Current Population Survey, 1996 Medical Expenditure Panel Survey and Banthin et al., 2001.

## Bibliography

(Many of the unpublished working papers listed here are available at <http://www.census.gov/www/hhes/povmeas.htm>)

Banthin, Jessica S. and Thomas M. Selden (1999), "Accounting for Medical Care Burdens in Poverty Measures," Working Paper, Agency for Healthcare Research and Quality, Rockville, MD. Presented at the American Economic Association meetings, January 2000.

Banthin, Jessica, Thesia I. Garner, and Kathleen Short, "Medical Care Needs in Poverty Thresholds: Problems Posed by the Uninsured." Agency for Healthcare Research and Quality, Presented at the American Economic Association Meetings, January 2001.

Bavier, Richard, "Medical Needs and the Poverty Thresholds", Poverty Measurement Working Paper, Census Bureau, 1998.

Bavier, Richard, "Three False Steps", Poverty Measurement Working Paper, Census Bureau, June 1999.

Bavier, Richard, "Medical Out-of-Pocket Spending in Poverty Thresholds," Poverty Measurement Working Paper, Census Bureau, October 2000.

Betson, David, "Effect of Home Ownership on Poverty Measurement," University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, 1995a.

Betson, David, "Poor Old Folks: Have Our Methods of Poverty Measurement Blinded Us to Who is Poor?" University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, 1995b.

Betson, David, "Is Everything Relative? The Role of Equivalence Scales in Poverty Measurement," University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, 1996.

Betson, David, "Imputing Medical Out-of-Pocket Expenditures from NMES Data," University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, December 1997a.

Betson, David, "In Search of an Elusive Truth, 'How Much Do Americans Spend on Their Health Care?' " University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, April 7, 1997b.

Betson, David M., Constance F. Citro, and Robert T. Michael, "Recent Developments for Poverty Measurement in U.S. Official Statistics," *Journal of Official Statistics*, Vol.16, No. 2, 2000.

Betson, David M., "Imputation of Medical Out of Pocket (MOOP) Spending to CPS Records." University of Notre Dame, Poverty Measurement Working Paper, U.S. Census Bureau, February 2001.

Bureau of Labor Statistics, *Urban Family Budgets and Comparative Indexes for Selected Urban Family Budgets and Comparative Indexes for Selected Urban Areas*. USDL 82-139. Washington, D.C., Autumn 1982.

Citro, Constance F., and Robert T. Michael (eds.), *Measuring Poverty: A New Approach*, Washington, D.C.: National Academy Press, 1995.

Dalaker, Joseph and Bernadette D. Proctor, *Poverty in the United States: 1999*, U.S. Census Bureau, Current Population Reports, Consumer Income, P60-210, U.S. Government Printing Office Washington, D.C., September 2000.

Garner, Thesia I., Stephanie Shipp, Geoffrey Paulin, Kathleen Short, and Charles Nelson, "Poverty Measurement in the 1990s," *Monthly Labor Review*, March 1998, pp. 39-61.

Garner, Thesia I., and Patricia Rozaklis, "Owner-Occupied Housing: An Input For Experimental Poverty Measurement Thresholds", Presented at the American Economic Association meetings, January 2001.

Iceland, John, "The 'Family/Couple/Household' Unit of Analysis in Poverty Measurement", U.S. Census Bureau, Poverty Measurement Working Paper, August 22, 2000.

Iceland, John and David Ribar, "Childcare Expenditures in a New Measure of Poverty", Paper presented at the annual meeting of the Population Association, Washington, D.C., March 2001.

Institute for Research on Poverty, "Revising the Poverty Measure," *Focus*, Volume 19, Number 2, Spring 1998.

Johnson, David, Stephanie Shipp, and Thesia I. Garner, "Developing Poverty Thresholds Using Expenditure Data," in *Proceedings of the Government and Social Statistics Section*. Alexandria, VA: American Statistical Association, August 1997, pp. 28-37.

Malpezzi, Stephen, Gregory Chun and Richard Green, "New Place-to-Place Housing Price Indexes for U.S. Metropolitan Areas, and Their Determinants: An Application of Housing Indicators," *Real Estate Economics*, 26(2), Summer 1998, pp. 235-75.

Mills, Robert J., *Health Insurance Coverage: 1999*, U.S. Census Bureau, Current Population Reports, Consumer Income, P60-211, U.S. Government Printing Office Washington, D.C., September 2000.

Moulton, Brent R, "Interarea Indexes of the Cost of Shelter Using Hedonic Quality Adjustment Techniques," *Journal of Econometrics*, 86(1), 1995, pp. 181-204.

"Open Letter on Revising the Official Measure of Poverty, " Conveners of the Working Group on Revising the Poverty Measure, August 2, 2000.

Ruggles, Patricia, *Drawing the Line--Alternative Poverty Measures and Their Implications for Public Policy*, Washington, D.C.: Urban Institute Press, 1990.

Short, Kathleen, Martina Shea, David Johnson, and Thesia I. Garner, "Poverty-Measurement Research Using the Consumer Expenditure Survey and the Survey of Income and Program Participation," *American Economic Review*, Vol. 88, No. 2, May 1998, pp. 352-356.

Short, Kathleen, Thesia Garner, David Johnson, and Patricia Doyle, *Experimental Poverty Measures: 1990 to 1997*, U.S. Census Bureau, Current Population Reports, Consumer Income, P60-205, U.S. Government Printing Office, Washington, DC, 1999.

Short, Kathleen, *Experimental Poverty Measures: 1999*, U.S. Census Bureau, Current Population Reports, Consumer Income, P60-216, U.S. Government Printing Office, Washington, DC, 2001a.

Short, Kathleen, "Where We Live: Geographic Differences in Poverty Thresholds," U.S. Census Bureau, Poverty Measurement Working Paper, January 2001b.

Social Security Administration, *Annual Statistical Supplement, 1997*, U.S. Government Printing Office, Washington, D.C., December 1997.

U.S. Census Bureau, *Measuring the Effect of Benefits and Taxes on Income and Poverty: 1979 to 1991*, Washington, D.C., August 1992.

U.S. Census Bureau, *Measuring the Effect of Benefits and Taxes on Income and Poverty: 1992*, Washington, D.C., September 1993.

U.S. Department of Health and Human Services, "Low Income Home Energy Assistance Program: Report to Congress for Fiscal Year 1995," August 1997.

U.S. General Accounting Office, *Poverty Measurement: Adjusting for Geographic Cost-of-Living Difference*, GAO/GGD-95-64, March 1995.

Wolfe, Barbara, "Incorporating Health Care Needs into a Measure of Poverty: An Exploratory Proposal," *Focus*, Volume 19, Number 2, Spring 1998, pp.29-31.