

The Supplemental Poverty Measure: Examining the Incidence and Depth of Poverty in the U.S. Taking Account of Taxes and Transfers in 2010

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The Research SUPPLEMENTAL POVERTY MEASURE: 2010

Introduction

The current official poverty measure was developed in the early 1960s, and only a few minor changes have been implemented since it was first adopted in 1965 (Orshansky, 1963, 1965a, 1965b; Fisher, 1992). This measure consists of a set of thresholds for families of different size and composition that are compared to a resource measure to determine a family's poverty status. At the time they were developed, the official poverty thresholds represented the cost of a minimum diet multiplied by three (to allow for expenditures on other goods and services). Family resources were defined for this measure as before-tax money income.

Concerns about the adequacy of the official measure have increased during the past two decades (Ruggles, 1990), culminating in a Congressional appropriation for an independent scientific study of the concepts, measurement methods, and information needs for a poverty measure. In response, the National Academy of Sciences (NAS) established the Panel on Poverty and Family Assistance, which released its report titled *Measuring Poverty: A New Approach* in the spring of 1995, (Citro and Michael, 1995). Based on its assessment of the weaknesses of the current poverty measure, this NAS panel of experts recommended a measure that better reflects contemporary social and economic realities and government policy. In their report, the NAS panel identified several major weaknesses of the current poverty measure.

- *The current income measure does not reflect the effects of key government policies that alter the disposable income available to families and, hence, their poverty status.* Examples include payroll taxes which reduce disposable income, and in-kind public benefit programs such as the Food Stamp Program that free up resources to spend on nonfood items.
- *The current measure does not take into account variation in expenses that are necessary to hold a job and to earn income-- expenses that reduce disposable income.* These expenses include transportation costs for getting to work and the increasing costs of child care for working families resulting from increased labor force participation of mothers.
- *The current measure does not take into account variation in medical costs* across population groups depending on differences in health status and insurance coverage and does not account for rising health care costs as a share of family budgets.
- *The current poverty thresholds use family size adjustments that are anomalous and do not take into account important changes in family situations,* including payments made for child support and increasing cohabitation among unmarried couples.
- *The current poverty thresholds do not adjust for geographic differences in prices across the nation,* although there are significant variations in prices across geographic areas.

In response to these weaknesses, the NAS panel recommended changing the definition of both the poverty thresholds and family resources that are compared with those thresholds to determine poverty

status. One of the goals of the NAS panel was to produce a measure of poverty that explicitly accounted for government spending aimed at alleviating the hardship of low-income families. Thus, taking account of tax and transfer policies, such as the food stamp program and the earned income tax credit (EITC), the measure can show the effects of these policies on various targeted subgroups, for example, families with children. The current official measure, which does not explicitly take account of these benefits, yields poverty statistics that are unchanged regardless of many of these policy changes.

In 1999 and in 2001, the Census Bureau released reports that presented a set of experimental poverty measures based on recommendations of the 1995 NAS panel report (Short et al. 1999, Short, 2001). Some additional variations on that measure were included in order to shed light and generate discussion on the various dimensions included in the proposed revision. Comparisons were made across various demographic subgroups in order to illustrate how their poverty rates were affected by the different measures. That work suggested that with these new measures a somewhat different population would be identified as poor than is typically described by the official poverty measure. This new poverty population would consist of a larger proportion of elderly people, working families, and married-couple families than are identified by the official poverty measure.¹

In March of 2010 an Interagency Technical Working Group listed suggestions for a Supplemental Poverty Measure (SPM). The Interagency Technical Working Group was charged with developing a set of initial starting points to permit the U.S. Census Bureau, in cooperation with the Bureau of Labor Statistics (BLS), to produce the SPM that would be released along with the official measure each year. Their suggestions included:

The *SPM thresholds* should represent a dollar amount spent on a basic set of goods that includes food, clothing, shelter and utilities (FCSU), and a small additional amount to allow for other needs (e.g., household supplies, personal care, non-work-related transportation). This threshold should be developed by the Bureau of Labor Statistics with expenditure data for families with exactly two children using Consumer Expenditure Survey data, and it should be adjusted (using a specified equivalence scale) to reflect the needs of different family types and geographic differences in housing costs. Adjustments to thresholds should be made over time to reflect real growth in expenditures on this basic bundle of goods at the 33rd percentile of the expenditure distribution.² For consistency in measurement with resources, the thresholds should include the value of non cash benefits.³

SPM family resources should be defined as the value of money income from all sources, plus the value of near-money benefits that are available to buy the basic bundle of goods, FCSU, minus necessary expenses for critical goods and services not included in the thresholds. Near-money benefits include nutritional assistance, subsidized housing, and home energy assistance.

1 These experimental poverty measures have been updated regularly and are available at <http://www.census.gov/hhes/povmeas/methodology/nas/index.html>.

2 Bureau of Labor Statistics (2011, January), Experimental poverty measure website. <http://www.bls.gov/pir/spmhome.htm> (accessed: April, 2011).

3 The thresholds used in this study do not include these values. Research is ongoing to impute values to the CE data for this

Necessary expenses that must be subtracted include income taxes, Social Security payroll taxes, childcare and other work-related expenses, child support payments to another household, and contributions toward the cost of medical care and health insurance premiums, or medical out-of-pocket costs (MOOP).⁴

Poverty Measures: Official, Supplemental, and Relative			
	Official Poverty Measure	Supplemental Poverty Measure	Relative Poverty
Measurement Unit	Families and unrelated individuals	All related individuals who live at the same address, any co-resident unrelated children who are cared for by the family (such as foster children), and any cohabitators and their children.	Household
Resource Measure	Gross before-tax money income	Sum of cash income, plus any federal government in-kind benefits that families can use to meet their food, clothing, shelter, and utility needs (FCSU), minus taxes (or plus tax credits), minus work expenses, minus out-of-pocket expenditures for medical expenses.	Disposable Income
Poverty Threshold	Cost of minimum food diet in 1963	The 33 rd percentile of FCSU expenditures of all consumer units with exactly two children	50 % median equivalized disposable income
Threshold Adjustments	Vary by family size and composition	Three parameter equivalence scale Adjust for geographic differences in housing costs using 5 years of ACS data	Square root of household size
Updating thresholds	Consumer Price Index: All items	Five year moving average of expenditures on FCSU	Annual update

This paper presents estimates of the prevalence of poverty in the US, overall and for selected demographic subgroups, for the official and SPM measures. In addition, a third measure is examined for comparison to the SPM. This is a relative poverty measure that is comparable to those used internationally. Relative poverty measures are described in Atkinson et al., (2002) and the second edition of the Canberra Group Handbook on Household Income Statistics (forthcoming)⁵. The relative measure is most commonly used in developed countries to measure poverty. It uses information about

4 For additional information see <http://www.census.gov/hhes/povmeas/publications/working.html>

5 The handbook was prepared by an international Task Force operating under the auspices of the Conference of European Statisticians (CES) and sponsored by the United Nations Economic Commission for Europe (UNECE).

the distribution of household resources and counts as poor those individuals with household income below some percentage of the median of that distribution. The typical resource measure is disposable household income that is equivalized to control for variation in household size. The poverty threshold for this measure, then, represents the central tendency of the resource distribution, and poverty rates based on this measure provide information about the shape and size of the lower tail of that distribution. This measure is presented here to compare measurement properties to those of the SPM.

Poverty Estimates for 2010

The measures presented in this study use the 2011 Current Population Survey Annual Social and Economic Supplement (ASEC) with income information that refers to calendar year 2010.⁶ For the SPM, estimates from new questions about child care and medical out-of-pocket expenses (MOOP) are available and subtracted from income.⁷

The relative measure presented here is based on household disposable income, cash income minus taxes paid. Using income concepts defined by the Canberra Group for disposable income, in kind benefits are not included as income, however, tax credits, such as the EITC are included. Calculations follow recent OECD publications using the square root of family size as an equivalence scale and setting the poverty threshold at 50 percent of the median. That threshold is \$14,783 per adult equivalent for 2010 or \$29,565 for a household consisting of two adults and two children.

<i>Two Adult, Two Child Poverty Thresholds: 2010</i>		
<i>Official Measure</i>	\$	22,113
<i>Relative Measure</i>	\$	29,565
<i>Research Supplemental Poverty Measure*</i>		
<i>Not accounting for housing status</i>	\$	24,343
<i>Owners with a mortgage</i>	\$	25,018
<i>Owners without a mortgage</i>	\$	20,590
<i>Renters</i>	\$	24,391
*Garner and Gudrais, Bureau of Labor Statistics, October 2011.		
http://www.bls.gov/pir/spmhome.htm		

6 The data in this report are from the Annual Social and Economic Supplement (ASEC) to the 2010 Current Population Survey (CPS). The estimates in this paper (which may be shown in text, figures, and tables) are based on responses from a sample of the population and may differ from actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant. All comparative statements have undergone statistical testing and are significant at the 90 percent confidence level unless otherwise noted. Standard errors were calculated using replicate weights. Further information about the source and accuracy of the estimates is available at <www.census.gov/hhes/www/p60_236sa.pdf>.

7 Documentation on the quality of these data is available at see <http://www.census.gov/hhes/povmeas/publications/working.html>

The official ‘Orshansky’ thresholds are used for the official measure presented in the paper, however, unlike published estimates, unrelated individuals under the age of 15 are included here in the poverty universe. For the SPM they are assumed to share resources with the household reference person. The SPM threshold used in this study is a 2010 threshold based on out-of-pocket spending on food, clothing, shelter, and utilities (FCSU). Thresholds use 2006 – 2010 quarterly data from the Consumer Expenditure Survey (CE). Three housing status groups were determined and their expenditures on shelter and utilities produced within the 30-36th percentiles of FCSU expenditures. The three groups are: owners with mortgages, owners without mortgages, and renters.⁸ For consistency in measurement with the resource measure, the thresholds should include the value of non-cash benefits, though additional research continues on appropriate methods. The thresholds used here only include the value of SNAP benefits. The American Community Survey (ACS) is used to adjust the FCSU thresholds for differences in prices across geographic areas.

All three measures use different units of analysis. The official measure of poverty uses the census-defined family. For the SPM, the ITWG suggested that the “family unit” should include all related individuals who live at the same address, as well as any co-resident unrelated children who are cared for by the family (such as foster children), and any cohabitators and their children. This definition corresponds broadly with the unit of data collection (the consumer unit) that is employed for the CE data used to calculate poverty thresholds, and the units are referred to as *SPM Resource Units*. The relative measure shown here uses the household as the unit of analysis. Selection of the unit of analysis for poverty measurement implies assumptions that members of that unit share income or resources with one another.

Table 1 shows the composition of the new SPM unit types. About 7 percent of units change, including units that added a cohabitor, an unrelated individual under 15, foster child aged 15 to 21, or an unmarried parent of a child in the family. Note that some units change for more than one of these reasons. Further, some of the weighting differs due to forming these units of analysis. For all new family units that have a set of male/female partners, the female person’s weight is used as the SPM family weight. For all other new units there is no change.⁹

8 In this measure, subsidized renters are assigned the same threshold as renters and the subsidy that helps them meet that rent is added to income.

9 Appropriate weighting of these new units is an area of additional research at the Census Bureau.

Table 1: Types of SPM Resource Units before and after new unit formation: 2010				
			% of total	s.e.†
Total (000s)		125,070	100.00	
New unit head was this old family type				
	Married couple	58,129	46.48	0.24
	Male head nsp	28,341	22.66	0.18
	Female head nsp	38,601	30.86	0.20
New 'family' type				
Unit did not change				
	Married couple	57,773	46.19	0.24
	Male head nsp	24,216	19.36	0.17
	Female head nsp	34,723	27.76	0.20
	Cohabitors	7,870	6.29	0.10
	Unrelated individual < 15	308	0.25	0.04
	Unmarried parent	252	0.20	0.04
Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.				
For information on confidentiality protection, sampling error, nonsampling error, and definitions, see http://www.census.gov/hhes/www/p60_239sa.pdf [PDF].				
† s.e. obtained using replicate weights (Fay's Method)				

Thresholds are adjusted for the size and composition of the SPM resource unit relative to the two-adult-two-child threshold using an equivalence scale.¹⁰ The relative measure employs the square root of household size as is generally done in OECD publications. The official measure adjusts thresholds based on family size, number of children and adults, as well as whether or not the household is elderly. Orshansky set the official thresholds for the elderly below those of other householders.

Following the recommendations of the NAS report and the ITWG, SPM family resources are estimated as the sum of cash income, plus any federal government in-kind benefits that families can use to meet their food, clothing, shelter, and utility needs, minus taxes (plus tax credits), minus work expenses, minus out-of-pocket expenditures for medical expenses. The research SPM measure presented in this study adds the value of non-cash benefits and subtracts necessary expenses, such as taxes, child care expenses, and medical out-of-pocket expenses. The text box summarizes the additions and subtractions for the SPM measure.

¹⁰ See Betson 1996 and appendix for description of the three-parameter scale.

Resource Estimates

$$\text{SPM Resources} = \text{Money Income from All Sources}$$

Plus:

Supplemental Nutritional Assistance (SNAP)
Free and reduced price school lunches
Supplementary Nutrition Program for Women
Infants and Children (WIC)
Housing subsidies
Low-Income Home Energy Assistance

Minus:

Taxes
Expenses Related to Work
Child Care Expenses*
Medical Out-of-pocket Expenses (MOOP)*
Child Support Paid*

*Items for which data from new CPS ASEC questions are used in the 2010 SPM estimates.

Table 2 provides information on the incidence and value of the additions and subtractions to money income to calculate the SPM. The table shows the percent of all units with the addition or subtraction and the percent of those classified as poor under the official measure. Also shown are the mean amounts for those paying or receiving a benefit, and the aggregate amounts for all units and the official poor.

The table shows that 10.3 percent of SPM Resource Units received SNAP benefits in 2010 and that, on average, they received \$2,922 for the year. The table shows that \$37.6 billion were included as income from SNAP benefits in the SPM poverty measure. For the 37.2 percent of those families classified as poor under the official measure and who received SNAP benefits, a total amount of \$24.2 billion was added to income. As with most of the survey information on income, both cash and non-cash, there is evidence of significant underreporting of transfer receipts in survey data when compared with administrative data (Meyer et al., 2009).

Table 2 also shows that 70 percent of SPM Resource Units incurred an income tax liability before credits. The average amount owed was \$10,572 for 2010. About 16 percent of SPM Resource Units were eligible for the EITC, and they received \$2,075 on average. Calculated payroll taxes show that 76 percent of families paid an average of \$4,978 per year in FICA taxes.

Medical out-of-pocket expenses are also shown. These expenses include the payment of health insurance premiums plus other medically necessary items such as prescription drugs and doctor co-payments that are not paid for by insurance. Table 2 shows that 94 percent of SPM Resource Units had out-of-pocket medical expenses of, on average, \$3,957 for the year 2010.

Table 2: Noncash Benefits and Necessary Expenses of SPM Resource Units in the CPS: 2010												
	% paid/received				Mean amount (\$)				Aggregate amount (bil\$)			
	All	s.e.†	Poor*	s.e.†	All	s.e.†	Poor*	s.e.†	All	s.e.†	Poor*	s.e.†
SNAP	10.3	0.1	37.2	0.5	2,922	33.1	3,384	49.4	37.6	0.63	24.2	0.52
School lunch	18.4	0.2	25.9	0.5	410	4.0	792	10.5	9.4	0.12	3.9	0.08
WIC	2.9	0.1	9.7	0.3	505	1.4	505	2.2	1.8	0.04	0.9	0.04
Housing subsidy/cap	3.5	0.1	14.7	0.5	4,560	91.7	5,473	117.2	20.2	0.72	15.4	0.63
LIHEAP	3.5	0.1	11.5	0.4	400	6.7	416	10.0	1.8	0.05	0.9	0.03
ETC	15.5	0.2	34.7	0.6	2,075	18.6	2,368	37.0	40.2	0.51	15.8	0.35
+/-												
Taxes before credits	69.5	0.2	11.0	0.3	10,572	108.0	2,055	146.4	918.8	9.70	4.3	0.34
FICA	76.0	0.2	45.7	0.6	4,978	20.9	1,057	19.9	473.2	2.16	9.3	0.22
Work expenses	76.1	0.2	46.0	0.6	1,832	4.4	1,123	10.0	174.4	0.57	9.9	0.18
Childcare	6.3	0.1	4.4	0.2	5,032	81.2	2,085	121.0	39.7	0.85	1.7	0.13
MOOP	94.0	0.1	83.0	0.5	3,957	34.5	1,865	95.4	465.1	4.00	29.7	1.58
Child support paid	2.1	0.1	1.5	0.1	6,742	200.4	3,406	395.9	17.6	0.71	1.0	0.41
* Poverty status of SPM unit head based on official measure												
Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.												
For information on confidentiality protection, sampling error, nonsampling error, and definitions, see http://www.census.gov/hhes/www/p60_239sa.pdf [PDF].												
† s.e. obtained using replicate weights (Fay's Method)												

Table 3 shows poverty rates for the three measures for a number of population subgroups. The percent of the population that was poor using the official measure for 2010 was 15.1 percent (DeNavas et al., 2011). For this study, including unrelated individuals under the age of 15 in the universe results in a rate of 15.2 percent¹¹. The research SPM yields a rate of 16.0 percent for 2010. While SPM poverty thresholds are higher, other parts of the measure also contribute to differences in the estimated prevalence of poverty in the U.S. (see Short, 2011). The poverty rate under the relative measure was 18.3 percent.

For all people, SPM poverty rates are higher than official poverty rates. Poverty rates are highest for the relative measure. Comparing the SPM to the official shows that differences for subgroups include lower poverty rates for children, individuals included in new family units, Blacks, renters, those living in non metropolitan areas, in the Midwest and the South, and those covered by public health insurance. All other groups have higher poverty rates using the SPM measure compared with the official measure.¹²

Comparing the SPM to the relative measure finds almost all rates higher under the relative measure. A few are lower, (Asians, the foreign born, non-citizens, homeowners with mortgages, those residing in the West region, and with private health insurance), or not statistically different (those in male householder families and naturalized citizens). Note the high poverty rates for the elderly under the relative measure as well as the SPM measure compared with the official. This partially reflects that the official thresholds are set lower for elderly households while the other two thresholds do not vary by age.

11 Not statistically different from the official published rate of 15.1 percent.

12 Official* and SPM poverty rates for those in female householder units and the native born are not statistically different.

Table 3: Percent of People in Poverty by Different Poverty Measures: 2010							
	Number*	Official*		Research SPM		Relative Poverty	
	(in thousands)	(percent below threshold)					
		Est.	s.e.†	Est.	s.e.†	Est.	s.e.†
All People	306,110	15.2	0.2	16.0	0.2	18.3	0.2
Age							
Under 18 years	74,916	22.5	0.3	18.2	0.3	23.2	0.4
18 to 64 years	192,015	13.7	0.2	15.2	0.2	15.9	0.2
65 years and older	39,179	9.0	0.3	15.9	0.4	20.2	0.4
Type of Unit							
In married couple unit	185,723	7.6	0.2	9.9	0.2	10.6	0.2
In female householder unit	61,966	28.7	0.5	29.0	0.5	36.6	0.5
In male householder unit	32,224	18.4	0.4	22.7	0.5	22.4	0.5
In new SPM unit	26,197	33.2	0.6	21.0	0.7	24.3	0.8
Race and Hispanic Origin							
White	243,323	13.1	0.3	14.3	0.3	15.9	
White, not Hispanic	197,423	10.0	0.2	11.1	0.2	12.7	0.2
Black	39,031	27.5	0.6	25.4	0.6	32.7	0.7
Asian	14,332	12.1	0.7	16.7	0.6	14.9	0.8
Hispanic (any race)	49,972	26.7	0.5	28.2	0.6	29.6	0.6
Nativity							
Native born	267,884	14.5	0.2	14.7	0.2	17.5	0.2
Foreign born	38,226	20.0	0.5	25.5	0.5	24.0	0.5
Naturalized citizen	16,801	11.4	0.4	16.8	0.5	16.5	0.6
Not a citizen	21,424	26.7	0.6	32.4	0.7	29.9	0.8
Tenure							
Owner	207,290	8.0	0.2	9.7	0.2	10.6	0.2
Owner/Mortgage	138,324	6.0	0.2	8.3	0.2	7.1	0.2
Owner/No mortgage/rentfree	72,180	12.5	0.3	13.3	0.4	18.4	0.4
Renter	95,606	30.5	0.4	29.4	0.4	34.3	0.4
Residence							
Inside MSAs	258,350	15.0	0.3	16.6	0.3	17.7	
Inside principal cities	98,774	19.8	0.4	21.0	0.4	23.1	0.4
Outside principal cities	159,576	11.9	0.2	13.9	0.3	14.3	0.3
Outside MSAs	47,760	16.6	0.4	12.8	0.5	21.4	0.5
Region							
Northeast	54,782	12.9	0.4	14.5	0.4	15.8	0.4
Midwest	66,104	14.0	0.3	13.1	0.3	16.8	0.4
South	113,275	17.0	0.3	16.3	0.3	20.7	0.4
West	71,949	15.4	0.3	19.4	0.4	17.6	0.4
Health Insurance coverage							
With private insurance	195,874	4.8	0.1	7.5	0.1	6.3	0.1
With public, no private insurance	60,332	37.6	0.4	31.7	0.5	44.8	0.5
Not insured	49,904	29.2	0.4	30.7	0.5	33.0	0.5
Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.							
For information on confidentiality protection, sampling error, nonsampling error, and definitions							
see http://www.census.gov/hhes/www/p60_239sa.pdf [PDF].							
Note: Details may not sum to totals because of rounding.							
* Includes unrelated individuals under 15 years of age.							
† s.e. obtained using replicate weights (Fay's Method)							

Comparing the distribution of income with that of SPM resources also allows an examination of the effects of taxes and transfers. Table 4 shows the distribution of income to poverty threshold ratios for various groups. Dividing by the poverty threshold controls income by unit size and composition, though it does so differently across the three measures. Note that the relative measure is already equivalized by household size. In general the comparison suggests that there is a smaller percentage of the population in the bottom of the distributions using the SPM compared to the other two measures.

For most groups, including the value of targeted non-cash benefits in the SPM reduced the percent of the population in the lowest category. This is true for the age groups shown here, except for the elderly. The elderly show a higher percent below half of the poverty line with the SPM. As shown earlier, many of the non-cash benefits included in the SPM are not targeted to the elderly population. Transfers received by the elderly are in cash, especially Social Security payments, and are captured in all three measures. Note that the percent of the elderly with cash income below half their threshold is lower than that of other age groups under the official measure. Subtracting MOOP and adding noncash benefits in the SPM narrows the differences in the percent below half the threshold across the three age groups. On the other hand, both the SPM and the relative measures show smaller percentages with resources four or more times the thresholds. Both of these measures use after-tax income, compared with the official that does not, bringing down the percent with income from the highest category.

Across race groups, the percent below half the poverty threshold is lower using the SPM. Under the official definition 5.6 percent of Whites were in the category, compared with 4.8 percent using the SPM and 4.9 percent using the relative measure.¹³ The percent of Blacks in the lowest category using the official definition was 13.6 percent compared to only 7.8 percent with the SPM. The corresponding percent using the relative measure was not statistically different from the official measure. The percent of Hispanics is also lowest using the SPM measure compared to the other two measures.

The percent in the highest categories also differed across measures. The official measure had the highest percent in this category, 35.8 percent. Both the SPM and relative measures, because they are both after-tax measures, have lower percentages in the category, 17.3 and 13.5 percent respectively. There are also greater percentages below 200 percent of the poverty threshold using the after-tax measures. Using the official definition, 34 percent of individuals had before-tax income below two times the poverty threshold, or \$44,226. This is compared with 47.9 percent for the SPM and 50 percent for the relative measures, both subtracting tax liabilities that bring incomes down from the higher categories. For the relative measure this would be after-tax income below \$59,130. For the SPM this suggests that, after subtracting taxes, MOOP, work expenses and any child support paid, available resources were less than \$48,686 for a two adult-two child unit on average. This is twice the amount that the representative unit spent for food, clothing, shelter, utilities and a little bit more.

13 The percent of Whites below half the poverty threshold is not statistically different for the SPM and the relative measures. The percent Asian below half the poverty threshold is not statistically different for the official and the SPM measures, but is higher for the SPM compared to the relative measure.

Table 4: Percent of People by Ratio of Income/Resources to Poverty Threshold, 2010										
	less than 0.5		0.5 to 0.99		1.0 to 1.99		2.0 to 3.99		4 or more	
	Est.	s.e.†	Est.	s.e.†	Est.	s.e.†	Est.	s.e.†	Est.	s.e.†
Official*										
All People	6.8	0.1	8.4	0.1	18.8	0.2	30.2	0.2	35.8	0.2
Children	10.4	0.3	12.1	0.3	21.4	0.3	29.2	0.3	26.8	0.3
Nonelderly Adults	6.3	0.1	7.4	0.1	16.3	0.2	29.8	0.2	40.2	0.3
Elderly	2.5	0.1	6.5	0.2	25.6	0.5	34.0	0.5	31.4	0.5
White	5.6	0.1	7.5	0.2	17.9	0.2	30.7	0.2	38.2	0.3
White, not Hispanic	4.4	0.1	5.7	0.1	15.6	0.2	31.0	0.3	43.4	0.3
Black	13.6	0.5	13.9	0.5	23.9	0.5	28.5	0.6	20.1	0.5
Asian	5.9	0.5	6.2	0.5	16.2	0.8	27.8	0.9	43.9	1.1
Hispanic Origin	11.1	0.4	15.6	0.4	28.0	0.5	29.3	0.5	16.0	0.4
SPM										
All People	5.4	0.1	10.7	0.2	31.8	0.3	34.8	0.4	17.3	0.2
Children	5.3	0.2	12.8	0.2	38.6	0.6	32.5	0.5	10.8	0.4
Nonelderly Adults	5.5	0.1	9.7	0.1	29.0	0.3	36.2	0.4	19.6	0.3
Elderly	4.6	0.2	11.3	0.3	33.1	0.7	32.5	0.8	18.5	0.7
White	4.8	0.1	9.5	0.2	30.2	0.4	36.3	0.4	19.2	0.3
White, not Hispanic	4.0	0.1	7.1	0.2	26.8	0.4	39.6	0.5	22.4	0.4
Black	7.8	0.4	17.7	0.5	40.9	1.1	26.7	0.9	7.0	0.4
Asian	6.2	0.5	10.6	0.7	31.6	1.7	34.2	1.8	17.4	1.2
Hispanic Origin	8.6	0.3	19.6	0.5	44.3	0.8	22.2	0.8	5.4	0.3
Relative										
All People	6.3	0.1	12.0	0.2	31.7	0.2	36.5	0.2	13.5	0.2
Children	9.1	0.2	14.1	0.3	35.8	0.4	32.1	0.3	8.9	0.2
Nonelderly Adults	5.7	0.1	10.3	0.2	29.2	0.2	39.2	0.3	15.7	0.2
Elderly	3.8	0.2	16.4	0.4	36.5	0.5	31.6	0.4	11.8	0.3
White	4.9	0.1	10.9	0.2	31.3	0.2	38.2	0.3	14.7	0.2
White, not Hispanic	3.9	0.1	8.8	0.2	28.9	0.3	41.4	0.3	16.9	0.2
Black	13.9	0.5	18.9	0.5	35.4	0.6	26.5	0.6	5.4	0.3
Asian	5.4	0.5	9.5	0.6	27.3	1.0	38.2	1.0	19.6	0.9
Hispanic Origin	9.7	0.3	19.8	0.6	41.0	0.6	24.5	0.5	4.9	0.2
Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.										
For information on confidentiality protection, sampling error, nonsampling error, and definitions										
see http://www.census.gov/hhes/www/p60_239sa.pdf [PDF].										
Note: Details may not sum to totals because of rounding.										
* Includes unrelated individuals under 15 years of age.										
† s.e. obtained using replicate weights (Fay's Method)										

Poverty gaps are another way to examine poverty measures. They can measure, not just the prevalence of poverty in a population, but also the intensity and severity. Following previous work on experimental poverty measures (Short et al., 1998), we can look closer at the average poverty gaps and the distribution of income or SPM resources among those in the poverty population by using a different index. Foster et al. (1984) proposed a class of poverty measures (the Foster-Greer-Thorbecke (FGT) indexes) that examines these elements more closely. These measures take the form

$$P_{\alpha}(y, z, \alpha) = \frac{1}{n} \sum_{i=1}^q \left(\frac{z_i - y_i}{z_i} \right)^{\alpha}$$

where P is the FGT poverty measure, α is a measure of poverty aversion (a larger α gives greater emphasis to the poorest poor), Y is a vector of income in increasing order, and z_i is the poverty line for person i . The index is calculated where the poverty gap is positive, or $(z_i - y_i) > 0$.

This class of measures has several attractive features. First it collapses to the head count ratio if $\alpha=0$ and to a normalized poverty gap if $\alpha=1$. Normalizing the gaps controls for the problem encountered above and allows us to compare gaps across the three measures. When $\alpha=2$ the index is sensitive to the distribution of incomes among the poor. As α increases, more weight is placed on those households or individuals with the lowest incomes. Thus, the weights are based on a notion of relative deprivation experienced by poorer households.

Table 5 lists these poverty statistics for the official, the SPM, and the relative measure.¹⁴ The FGT poverty measures, computed for persons, show the poverty rates or headcount ratios we have presented earlier. The normalized poverty gap, FGT1, is lower for the SPM than either of the other two measures reflecting the enhanced income for those at the bottom of the distribution by including noncash benefits. Of the three measures only the SPM accounts for these benefits. The table also shows normalized poverty gaps by age group. Using these measures, gaps are lowest for children and non-elderly adults with the SPM¹⁵. Gaps are lowest for the elderly under the official measure, and highest for the elderly using the relative measure. The measure of severity, FGT2, suggests a lower concentration of poor at the very bottom of the distribution using the SPM for all persons, children, and non-elderly adults. This result suggests that the intensity of poverty is softened by the addition of in-kind transfers to the income of the needy for these groups, and that this effect is captured in the SPM, and not in the official or relative poverty measures presented here.

¹⁴ For these calculations all negative incomes are set to zero.

¹⁵ The gaps for children and nonelderly adults are not statistically different.

Table 5: Poverty Gaps**: 2009 (dollars)						
	Official*		Research SPM		Relative measure	
	Est.	s.e.†	Est.	s.e.†	Est.	s.e.†
All People	9,017	87.2	8,523	95.4	10,737	93.8
Children	11,051	70	9,555	143.1	13,181	140.2
Nonelderly Adults	8,285	83	8,471	98.8	10,279	97.1
Elderly	4,855	140.9	6,257	132.9	6,076	116.6
Race/ethnicity						
White, not hispanic	7,872	82.5	7,675	120.9	9,273	134.9
Black , not hispanic	9,582	142.8	7,782	200.9	11,717	204.6
Hispanic origin	10,062	140.3	9,804	203.7	12,011	181.5
Source: U.S. Census Bureau, Current Population Survey, 2010 Annual Social and Economic Supplement.						
For information on confidentiality protection, sampling error, nonsampling error, and definitions, see http://www.census.gov/hhes/www/p60_238sa.pdf [PDF].						
† s.e. obtained using replicate weights (Fay's Method)						
* Includes unrelated individuals under 15 years of age.						
* *Gaps are calculated across individuals (see Atkinson p.115)						

Summary

This paper expands on information about estimates of a Supplemental Poverty Measure for the U.S. reported earlier (Short, 2011). Estimates presented here are based on the CPS 2011 ASEC and refer to calendar year 2010. Results showed poverty rates for the official poverty measure, the *research SPM*, and a *relative measure of poverty*. The *research SPM* resulted in slightly higher poverty rates than the official measure for most groups, the relative poverty rates were the highest. In addition, the distribution of people in the total population and the distribution of people classified as in poverty using the two measures were examined.

Findings show that the SPM allows us to examine the effects of taxes and in kind transfers on the poor and on important subgroups of the poverty population. As such, there are lower percentages of the SPM poverty populations in the very low resource categories than we find using the other measures. Because noncash benefits help those in extreme poverty, there were lower percentages of individuals with resources below half the SPM threshold. FGT indexes showed lower poverty gaps and poverty severity using the SPM than either the official or the relative measures. These findings are similar to those reported in earlier work using a variety of experimental poverty measures that followed recommendations of the NAS poverty panel (Short, 1999, 2000, and 2001).

References

(Many of the unpublished Poverty Measurement working papers and presentations listed here are available at: <http://www.census.gov/hhes/povmeas/publications/working.html>)

Atkinson, A., Cantillon, B., Marlier, E. and Nolan, B. (2002). *Social Indicators: The EU and Social Inclusion*. Oxford: Oxford University Press.

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

Bishaw, Alemayehu, "Adjusting Poverty Thresholds Based on Differences in Housing Costs: Applications in the American Community Survey," poster presentation prepared for the Population Association of America Annual Conference, April 2009.

Caswell, Kyle and Brett O'Hara, "Medical Out of Pocket Spending in the SPM," presented at the Annual Meeting of the Allied Social Science Associations (ASSA) in Denver Colorado, January 3, 2011 in the Society of Government Economists Session (SGE). Poverty Measurement Working Paper, Census Bureau, 2011..

Caswell, Kyle and Kathleen Short, Medical out-of-Pocket Spending of the Uninsured: Differential Spending and the Supplemental Poverty Measure, Poverty Measurement Working Paper, Census Bureau, 2011.

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

DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith, U.S. Census Bureau, Current Population reports, P60-238, *Income, Poverty, and Health Insurance Coverage in the United States: 2009*, U.S. Government Printing Office, Washington DC, 2010.

Fisher, Gordon M. 1992 The development and history of the poverty thresholds. *Social Security Bulletin* 55(4) (Winter):3-14.

Foster, James, Joel Greer, and Erik Thorbecke, "A Class of Decomposable Poverty Measures," *Econometrica*, 52(3), May, 761-776, 1984.

Garner, Thesia I. , "Developing Thresholds for the Supplemental Poverty Measure," presented at the Annual Meeting of the Allied Social Science Associations (ASSA) in Denver Colorado, January 3, 2011 in the Society of Government Economists Session (SGE). Poverty Measurement Working Paper, Census Bureau, 2011.

Garner, Thesia I., "Note on Standard Errors and Other Relevant Statistics of Experimental Poverty Thresholds Produced at the Bureau of Labor Statistics: 2006 to 2008," Bureau of Labor Statistics (BLS) Working Paper 436, March, 2010.

Garner, Thesia I. and Kathleen S. Short, "Creating a Consistent Poverty Measure Over Time Using NAS Procedures: 1996-2005," Review of Income and Wealth, Series 56, Number 2, June 2010a.

Garner, Thesia I. and Kathleen S. Short, "Combining Surveys for Poverty Measurement," paper presented at the 31st Conference of the International Association for Research on Income and Wealth," August 2010b.

Garner, Thesia and Charles Hokayem, "Supplemental Poverty Measure Thresholds: Imputing Noncash Benefits to the Consumer Expenditure Survey Using Current Population Survey." Presented at the Joint Statistical Meetings, Miami, August 2011.

Grall, Timothy, "A Comparison of Child Support Paid from CPS and SIPP," Poverty Measurement Working Paper, Census Bureau, 2010.

ITWG, Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure (Interagency), March 2010, available at http://www.census.gov/hhes/www/poverty/SPM_TWGObservations.pdf

Johnson, Paul, Trudi Renwick, and Kathleen Short, "Estimating the Value of Federal Housing Assistance for the Supplemental Poverty Measure," Poverty Measurement Working Paper, Census Bureau, 2010.

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.

Jolliffe, Dean & Tiehen, Laura & Gundersen, Craig & Winicki, Joshua, 2003. "[Food Stamp Benefits and Child Poverty in the 1990s](#)," [Food Assistance and Nutrition Research Reports](#) 33833, United States Department of Agriculture, Economic Research Service.

Kreider, Rose, "Increase in Opposite Sex Cohabiting Couples from 2009 to 2010 In the Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS), Families and Living Arrangements Working Paper, <http://www.census.gov/population/www/socdemo/Inc-Opp-sex-2009-to-2010.pdf> , 2010.

MacCartney, Suzanne and Lynda L. Laughlin, "Child Care Expenses in the Current Population Survey (CPS)," Poverty Measurement Working Paper, Census Bureau, 2010.

The Measuring of American Poverty Act of 2009, MAP Act, H.R. 2909, bill introduced in the 111th U.S. Congress by Representative McDermott and a companion bill introduced by Senator Dodd (S. 1625).

Meyer, Bruce, Wallace K.C. Mok and James X. Sullivan, "The Under-Reporting of Transfers in Household Surveys: Its Nature and Consequences", [Harris School Working Paper #09.03](#), July 2009 (revised).

OECD (2008). *Growing Unequal? Income Distribution and Poverty In OECD Countries*. Paris. Available from http://www.oecd.org/document/14/0,3746,en_2649_33933_38910_286_1_1_1_1,00.html

Orshansky, Mollie, 1963 Children of the poor. *Social Security Bulletin* 26(7)(July):3-13.

Orshansky, Mollie, 1965a Counting the poor: another look at the poverty profile. *Social Security Bulletin* 28(1)(January):3-29.

Orshansky, Mollie, 1965b Who's who among the poor: a demographic view of poverty. *Social Security Bulletin* 28(7)(July):3-32.

Provencher, Ashley, 2010. "Units of Analysis in the SPM," Poverty Measurement Working Paper, Census Bureau, 2010.

Provencher, [Unit of Analysis for Poverty Measurement: A Comparison of the Supplemental Poverty Measure and the Official Poverty Measure](#) Presented at the Joint Statistical Meetings, Miami, Poverty Measurement Working Paper, Census Bureau, August 2011.

Rapino, Melanie, Matthew Marlay, and Brian McKenzie, "Research on Commuting Expenditures for the Supplemental Poverty Measure (SPM)," November, 2010. Poverty Measurement Working Paper, Census Bureau.

Rapino, Melanie, Matthew Marlay, and Brian McKenzie, "Research on Commuting Expenditures for the Supplemental Poverty Measure." Presented at the Joint Statistical Meetings, Miami, August 2011.

Renwick, Trudi, "Geographic Adjustments for SPM Poverty Thresholds," presented at the Annual Meeting of the Allied Social Science Associations (ASSA) in Denver Colorado, January 3, 2011 in the Society of Government Economists Session (SGE). Poverty Measurement Working Paper, Census Bureau.

Renwick, Trudi, "Experimental Poverty Measures: Geographic Adjustments from the American Community Survey and BEA Price Parities," 2009 Proceedings of the American Statistical Association, Social Statistics Section [CD-ROM], Alexandria, VA: American Statistical Association: pp.-pp. Presented at the conference in Washington, DC, August 2009.

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

Semega, Jessica and Mousumi Sarkar, "Data on Mortgages in the CPS ASEC," Poverty Measurement Working Paper, Census Bureau, 2010.

Short, Kathleen, "The Research Supplemental Poverty Measure: 2010", U.S. Census Bureau, Current Population Reports, Consumer Income, P60-241, U.S. Government Printing Office, Washington, DC, November 2011.

Short, Kathleen [Who is Poor? A New Look with the Supplemental Poverty Measure](#) (Bureau of the Census), Poverty Measurement Working Paper, Census Bureau, 2011.

Short, Kathleen, "Cohabitation and Child Care in a Poverty Measure," 2009 Proceedings of the American Statistical Association, Social Statistics Section [CD-ROM], Alexandria, VA: American Statistical Association: pp.-pp. Presented at the conference in Washington, DC, August 2009.

Short, Kathleen, "Experimental Modern Poverty Measures 2007," presented in a session sponsored by the Society of Government Economists at the Allied Social Science Association Meetings, Atlanta, Georgia. January 3, 2010, <http://www.census.gov/hhes/www/povmeas/papers.html>

Short, Kathleen, [Alternative Poverty Measures in the Survey of Income and Program Participation](#), Poverty Measurement Working Paper, January 2003.

Short, Kathleen and John Iceland, "[Who Is Better Off Than We Thought?](#) Evaluating Poverty with a Different Measure," Prepared for the Annual Meeting of the American Economic Association, Boston, Mass., January 8, 2000.

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

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, Thesia I. Garner, David Johnson, Martina Shea, "Redefining Poverty Measurement in the US: Examining the Impact on Poverty Incidence and Inequality," paper presented at the 50th Anniversary of the International Association for Research in Income and Wealth, Cambridge, UK, August, 1998.

U.S. Bureau of the Census, Technical Paper No. 50, *Alternative methods for Valuing Selected In-Kind Transfer Benefits and Measuring Their Effect on Poverty*, U.S. Government Printing Office, Washington, DC, 1982.

Webster, Bruce, "Calculating taxes with new data from CPS ASEC," Poverty Measurement Working Paper, Census Bureau, 2011.