The Supplemental Poverty Measure: Examining the Incidence and Depth of Poverty in the U.S. Taking Account of Taxes and Transfers **in 2011**

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Thanks are extended to the many individuals who assisted in the research on developing the first supplemental poverty measure for the U.S. The views expressed in this research, including those related to statistical, methodological, technical, or operational issues, are solely those of the authors and do not necessarily reflect the official positions or policies of the Census Bureau, or the views of other staff members. The author accepts responsibility for all errors. This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress. This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone more limited review than official publications.

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.

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 March 2010, an Interagency Technical Working Group (ITWG) listed suggestions for a Supplemental Poverty Measure (SPM). The Interagency Technical Working Group developed 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.

The ITWG stated that the official poverty measure, as defined in Office of Management and Budget (OMB) Statistical Policy Directive No. 14, would not be replaced by the SPM. They noted that the official measure is sometimes identified in legislation regarding program eligibility and funding distribution, while the SPM will not be used in this way. The SPM is designed to provide information on aggregate levels of economic need at a national level or within large subpopulations or areas and, as such, the SPM will be an additional macroeconomic statistic providing further understanding of economic conditions and trends.

The ITWG report describes a poverty measure that is based largely on the NAS Panel's recommendations, with deviations reflecting more recent research and suggestions from the ITWG. Particular emphasis is on internal consistency between the thresholds and resources. The NAS Panel noted: "It is important that family resources are defined consistently with the threshold concept in any

poverty measure."[1] The SPM, as defined by the ITWG, is an internally consistent poverty measure that is based on spending "outflows" and money "inflows." Spending outflows, or outlays[2] are those for basic needs only: food, clothing, shelter, utilities, and other basic necessary goods and services. Resources include money income from all sources plus the value of near-money benefits that help the family meet spending needs, less necessary expenses, like work-related expenses and taxes that must be paid. A family is designated as poor if its annual money inflow, net of necessary expenses, falls below the threshold level of money outflow.[3]

The SPM does not take account of assets that may be used to meet necessary expenses. Assets can add to the resources that are used to meet basic needs, so some analysts advocate counting them in measuring poverty. Others may argue that many assets are not very liquid or suggest that poor families have so few assets that including them would not change poverty measures much. If our purpose is to target families who are in need, then it is clear that families with no assets are worse off than those who have some. On the other hand, families who have incurred large debts are more vulnerable to financial trouble than those who have not. The NAS panel discussed a "crisis definition of resources." This definition included those assets families have on hand that could be converted to cash to support current consumption. They suggested that this "crisis definition" is only relevant for a very short-term measure of poverty, because, in their words, "…assets can only ameliorate poverty temporarily."[4] They suggested that it is important, however, to develop measures of the distribution of wealth and to examine the relationship between asset ownership and poverty status. While spending down assets can enhance income to make ends meet, servicing debt can be a drain on family income that would otherwise be sufficient to purchase basic necessities. [5]

In November of 2012 the Census Bureau released the second report on research on the SPM. That report showed poverty estimates for calendar year 2011 using the official definition and the SPM. The report compared the poverty population using the two measures, showing poverty rates, distributions of income-to-poverty ratios, and state level poverty estimates. The focusing on the SPM the report showed the effects of program benefits and nondiscretionary expenses on SPM rates as well as changes between 2010 and 2011.

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1 Citro and Michael, 1995, p. 9

2 For the BLS definition of expenditure outlays, see Rogers and Gray, 1994.

3 See Garner and Short, 2010, for further discussion of measurement consistency.

4 Citro and Michael, pp. 214-218.

5 Interest payments on mortgages are included in SPM thresholds as a part of shelter costs, while income from assets, such as interest and dividends, are included in cash income. Short and Ruggles (2005), examined methods of taking account of net worth in experimental poverty measures using the Survey of Income and Program Participation.

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 cohabitors and their relatives.	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 33rd 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[6]. The relative measure is most commonly used in developed countries to measure poverty. It uses information about 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.

6 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).

Poverty Estimates for 2011

The measures presented in this study use the 2012 Current Population Survey Annual Social and Economic Supplement (ASEC) with income information that refers to calendar year 2011.[7] For the SPM, estimates from new questions about child care and medical out-of-pocket expenses (MOOP) are available and subtracted from income. [8]

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 Organization for Economic Co-operation and Development (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 $15,103 per adult equivalent for 2011 or $30,205 for a household consisting of two adults and two children.

Two Adult, Two Child Poverty Thresholds: 2011

Official Measure	*$*	*22,811*
Relative Measure	*$*	*30,205*
*Research Supplemental Poverty Measure**		
Owners with a mortgage	*$*	*25,703*
Owners without a mortgage	*$*	*21,175*
Renters	*$*	*25,222*

**Bureau of Labor Statistics September, 2012.*

http://www.bls.gov/pir/spmhome.htm

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 2011 threshold based on out-of-pocket spending on food, clothing, shelter, and utilities (FCSU). Thresholds use 2007 – 2011 quarterly data from the Consumer Expenditure Survey (CE). Three housing status groups were determined and their expenditures on shelter and

7 The data in this report are from the Annual Social and Economic Supplement (ASEC) to the 2012 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_243sa.pdf>.

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

utilities produced within the 30-36th percentiles of FCSU expenditures. The three groups are: owners with mortgages, owners without mortgages, and renters.[9] 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 cohabitors and their children. This definition corresponds broadly with the unit of data collection (the consumer unit) that is the unit of data collection for the CE 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.[10]

9 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.

10 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: 2011				
			% of total	s.e.†
Total (000s)		126,970	100.00	
Family type				
	Married couple	59,063	46.5	0.24
	Male head nsp	28,695	22.6	0.18
	Female head nsp	39,212	30.9	0.21
New 'family' type				
	Married couple	58,735	46.3	0.24
	Male head nsp	24,356	19.2	0.17
	Female head nsp	35,144	27.7	0.20
	Cohabitors	8,247	6.5	0.11
	Unrelated individual < 15	275	0.2	0.02
	Unmarried parent	219	0.2	0.02

Source: U.S. Census Bureau, Current Population Survey, 2012 Annual Social and Economic Supplement.
For information on confidentiality protection, sampling error, nonsampling error, and definitions,
see http://www.census.gov/hhes/www/p60_243sa.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.[11] 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.

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.

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

Resource Estimates

SPM Resources = Money Income from All Sources

Plus:	**Minus:**
Supplemental Nutritional Assistance (SNAP)	Taxes
Free and reduced price school lunches	Expenses Related to Work
Supplementary Nutrition Program for Women Infants and Children (WIC)	Child Care Expenses*
Housing subsidies	Medical Out-of-pocket Expenses (MOOP)*
Low-Income Home Energy Assistance	Child Support Paid*

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

Cash benefits are also shown in the table, for example, 28 percent of SPM Resource Units received Social Security benefits in 2011 that is an average of $17,582 per family.[12] Adding across all families, $625.5 billion is reported as income from Social Security benefits. The table shows the percent receiving, average amount received and aggregate amounts for all cash and noncash programs. Similar estimates are shown for only those who are poor. For example, of the 39.7 percent of those families classified as poor under the official measure and who received SNAP benefits, a total amount of $25.8 billion was added to their income.

Table 2 also shows that 69.4 percent of SPM Resource Units incurred an income tax liability before refundable tax credits. The average amount owed was $10,997 for 2011. SPM Resource Units that were eligible for the EITC or the refundable portion of the Child Tax credit received $2,786 on average. Calculated payroll taxes (FICA) show that families with workers paid an average of $3,961 per year.

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 96 percent of SPM Resource Units had out-of-pocket medical expenses of, on average, $4,047 for the year 2011.

The addition of noncash benefits and refundable tax credits, and the subtraction of necessary expenses represent the changes that occur to move from the official poverty measure to the SPM. These additional elements are not accounted for in the official measure. The cash benefits are included as income in the official poverty measure and include Social Security, Supplemental Security Income (SSI), unemployment insurance (UI), payments from the Temporary Assistance to Needy Families (TANF)or other general assistance programs. Also shown are payments in the form of child support received from other households. Child support payments made to other households are only subtracted from the income of the payer in the SPM and are not accounted for in the official poverty measure. As such, child support payments are double-counted overall with the official measure.

12 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: Noncash Benefits and Necessary Expenses of SPM Resource Units: 2011												
	% 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.†
Social Security	28	0.1	21.5	0.4	17,582	90	8,719	86	625.5	3.9	36.6	0.9
SSI	4.3	0.1	12.4	0.4	8,046	108	6,960	115	44.3	1.0	16.8	0.6
UI	7.5	0.1	6.8	0.3	7,154	94	5,605	206	68.4	1.3	7.5	0.4
Child support received	3.7	0.1	5.7	0.2	5,436	165	3,289	125	25.4	0.9	3.6	0.2
TANF/GA	1.6	0.1	6.6	0.3	3,336	97	3,212	103	6.8	0.3	4.1	0.2
SNAP	10.7	0.1	39.7	0.6	2,873	35	3,328	43	39.0	0.6	25.8	0.5
School lunch	18.1	0.2	26.2	0.5	462	4	845	12	10.6	0.1	4.3	0.1
WIC	3.0	0.1	9.6	0.3	570	2	571	3	2.2	0.1	1.1	0.0
Housing subsidy/cap	3.6	0.1	15.7	0.5	4,750	97	5,670	121	21.7	0.8	17.3	0.7
LIHEAP	3.5	0.1	11.4	0.3	385	8	389	12	1.7	0.1	0.9	0.0
Ref. tax credits	16.5	0.1	35.1	0.5	2,786	25	3,206	54	58.5	0.6	22.0	0.5
+/-												
Taxes before credits	69.4	0.2	11.0	0.4	10,997	113	2,615	440	969.3	10.0	5.6	1.0
FICA	75.5	0.2	45.2	0.6	3,961	18	864	17	379.9	1.9	7.6	0.2
Work expenses	75.6	0.2	45.5	0.6	1,966	5	1,201	10	188.8	0.6	10.7	0.2
Childcare	6.0	0.1	4.0	0.2	5,108	98	2,352	145	39.1	0.8	1.8	0.2
MOOP	94.9	0.1	85.6	0.4	4,047	36	1,683	38	487.8	4.4	28.1	0.7
Child support paid	2.2	0.1	1.5	0.1	6,690	208	3,310	238	18.5	0.8	0.9	0.1

* Poverty status of SPM unit head based on official measure

Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.

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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 2011 was 15.0 percent (DeNavas et al., 2012). For this study, including unrelated individuals under the age of 15 in the universe results in a rate of 15.1 percent[13]. The research SPM yields a rate of 16.1 percent for 2011. 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. The poverty rate under the relative measure was 18.2 percent.

In 2011, there were 49.7 million poor using the SPM definition of poverty, more than the 46.6 million using the official definition of poverty with our universe. For most groups, SPM rates are higher than official poverty rates. Comparing the SPM to the official measure shows lower poverty rates for children, individuals included in new SPM resource units, Blacks, those living outside metropolitan areas, in the Midwest, those covered by only public health insurance, and individuals with a disability. Most other groups have higher poverty rates using the SPM measure rather than the official measure. Official and SPM poverty rates for people in female householder units, native born citizens, renters, and residents of the South are not statistically different.[14] Note that poverty rates for those 65 years of age and over are higher under the SPM measure compared with the official measure. This partially reflects that the official thresholds are set lower for families with householders in this age group, while the SPM thresholds do not vary by age.

Comparing the SPM to the relative measure finds almost all rates higher under the relative measure. A few are lower, (Asians, the foreign born, noncitizens, homeowners with mortgages, those residing in the West region, and with private health insurance, all workers and year-round-full-time workers), or not statistically different (Hispanics, naturalized citizens, less than full-time workers, and individuals without a disability). 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.

Comparing the distribution of income with that of SPM resources also allows an examination of the effects of taxes and transfers compared to the official measure. 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.

13 Not statistically different from the official published rate of 15.0 percent.
14 See Short (2012) for details of official and SPM poverty rate comparisons.

Table 3: Percent of People in Poverty by Different Poverty Measures: 2011							
	Number*	Official*		Research SPM		Relative Poverty	
	(in thousands)	(percent below threshold)					
		Est.	s.e.†	Est.	s.e.†	Est.	s.e.†
All People	308,827	15.1	0.2	16.1	0.3	18.2	0.2
Sex							
Male	151,175	13.7	0.3	15.3	0.3	16.6	0.3
Female	157,653	16.4	0.3	16.9	0.3	19.6	0.3
Age							
Under 18 years	74,108	22.3	0.5	18.1	0.5	23.0	0.3
18 to 64 years	193,213	13.7	0.2	15.5	0.3	16.1	0.2
65 years and older	41,507	8.7	0.4	15.1	0.5	19.1	0.4
Type of Unit							
In married couple unit	186,235	7.4	0.3	10.0	0.3	10.3	0.2
In female householder unit	63,347	29.6	0.8	30.0	0.7	37.8	0.5
In male householder unit	32,307	17.3	0.7	21.9	0.9	22.6	0.5
In new SPM unit	26,939	31.2	1.0	18.8	1.0	21.0	0.7
Race and Hispanic Origin							
White	241,586	12.9	0.3	14.3	0.3	15.7	0.2
White, not Hispanic	195,148	9.9	0.3	11.0	0.3	12.6	0.2
Black	39,696	27.8	1.0	25.7	1.0	32.7	0.7
Asian	16,094	12.3	1.2	16.9	1.3	15.1	0.8
Hispanic (any race)	52,358	25.4	0.8	28.0	1.0	28.7	0.5
Nativity							
Native born	268,851	14.5	0.3	14.6	0.3	17.4	0.2
Foreign born	39,976	19.0	0.7	25.8	0.9	23.6	0.5
Naturalized citizen	17,934	12.5	0.8	18.3	0.9	17.7	0.6
Not a citizen	22,042	24.3	1.1	31.9	1.3	28.3	0.7
Tenure							
Owner	206,718	7.8	0.3	9.7	0.3	10.4	0.2
Owner/Mortgage	136,699	5.8	0.3	8.1	0.3	6.8	0.2
Owner/No mortgage/rentfree	73,418	12.6	0.5	13.1	0.5	18.3	0.4
Renter	98,710	29.8	0.6	29.3	0.6	33.7	0.4
Residence							
Inside MSAs	261,455	14.7	0.3	16.6	0.3	17.5	0.2
Inside principal cities	100,302	20.1	0.6	21.7	0.6	23.3	0.4
Outside principal cities	161,153	11.4	0.3	13.4	0.4	14.0	0.2
Outside MSAs	47,372	17.1	0.8	13.5	0.7	21.6	0.9
Region							
Northeast	55,035	13.2	0.6	15.0	0.6	15.6	0.4
Midwest	66,115	14.1	0.6	12.8	0.5	17.1	0.4
South	115,068	16.1	0.5	16.0	0.6	19.9	0.3
West	72,610	15.9	0.6	20.0	0.7	18.2	0.4
Health Insurance coverage							
With private insurance	197,323	5.0	0.2	7.6	0.2	6.4	0.1
With public, no private insurance	62,891	36.7	0.7	31.3	0.7	44.2	0.4
Not insured	48,613	28.3	0.8	30.9	0.8	32.1	0.5
Work Experience							
Total, 18 to 64 years	193,213	13.7	0.2	15.5	0.3	16.1	0.3
All workers	144,163	7.2	0.2	9.4	0.2	9.2	0.2
Worked full-time, year-round	97,443	2.8	0.1	5.1	0.2	4.7	0.2
Less than full-time, year-round	46,720	16.3	0.5	18.5	0.6	18.4	0.5
Did not work at least 1 week	49,049	32.9	0.7	33.5	0.7	36.5	0.7
Disability Status							
Total, 18 to 64 years	193,213	13.7	0.2	15.5	0.3	16.1	0.3
With a disability	14,968	28.8	1.0	27.6	1.1	35.4	1.1
With no disability	177,309	12.5	0.3	14.5	0.3	14.5	0.3

* Poverty status of SPM unit head based on official measure

Source: U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.

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† s.e. obtained using replicate weights (Fay's Method)

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.

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 4.7 percent using the SPM and 5.0 percent using the relative measure. [15] The percent of Blacks in the lowest category using the official definition was 13.0 percent compared to only 7.9 percent with the SPM. The corresponding percent using the relative measure was 13.6. 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, 35.1 percent. Both the SPM and relative measures, because they are both after-tax measures, have lower percentages in the category, 17.7 and 14.5 percent respectively.

There are also greater percentages below 200 percent of the poverty threshold using the after-tax measures. Using the official definition, 34.5 percent of individuals had before-tax income below two times the poverty threshold, or $45,622. This is compared with 48.1 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 $60,410.

For the SPM this result suggests that, after subtracting taxes, MOOP, work expenses, and any child support paid, available resources were less than $50,444 for a two adult-two child unit that rents, less than $51,406 for owners with mortgages, or less than $42,350 for owners without mortgages. These dollar amounts are twice the SPM thresholds.

15 The percent of White not Hispanics 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, 2011										
	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	6.7	0.2	8.4	0.2	19.4	0.3	30.5	0.3	35.1	0.4
Children	10.3	0.4	12.0	0.4	22.3	0.5	29.1	0.5	26.3	0.5
Nonelderly Adults	6.3	0.2	7.4	0.2	17.0	0.3	30.2	0.4	39.1	0.4
Elderly	2.3	0.2	6.5	0.4	24.9	0.7	34.2	0.8	32.2	0.8
White	5.6	0.2	7.3	0.2	18.6	0.3	30.9	0.4	37.7	0.4
White, not Hispanic	4.5	0.2	5.5	0.2	15.9	0.3	31.4	0.4	42.8	0.5
Black	13.0	0.8	14.8	0.8	23.6	0.9	28.6	0.9	20.1	0.9
Asian	5.5	0.8	6.8	0.9	16.9	1.3	29.6	1.5	41.2	1.7
Hispanic Origin	10.6	0.5	14.9	0.7	29.6	0.9	28.7	0.8	16.2	0.6
SPM										
All People	5.2	0.2	10.9	0.3	32.0	0.4	34.2	0.3	17.7	0.3
Children	5.1	0.3	13.0	0.5	38.8	0.6	31.6	0.6	11.4	0.4
Nonelderly Adults	5.5	0.2	10.1	0.3	29.3	0.4	35.3	0.4	19.9	0.3
Elderly	4.3	0.3	10.8	0.5	32.4	0.7	33.6	0.8	18.9	0.7
White	4.7	0.2	9.5	0.2	30.2	0.4	35.8	0.4	19.7	0.3
White, not Hispanic	4.0	0.2	7.0	0.2	26.8	0.4	39.1	0.4	23.1	0.4
Black	7.9	0.6	17.8	0.9	40.6	1.0	25.6	1.0	8.1	0.6
Asian	5.9	0.7	11.0	1.1	32.2	1.6	33.8	1.6	17.0	1.2
Hispanic Origin	7.7	0.5	20.4	0.9	44.7	1.0	21.6	0.8	5.6	0.4
Relative										
All People	6.2	0.1	11.9	0.1	31.8	0.2	35.5	0.2	14.5	0.2
Children	9.0	0.3	14.0	0.3	35.8	0.4	31.2	0.3	10.0	0.2
Nonelderly Adults	5.8	0.1	10.3	0.7	29.4	0.2	37.6	0.2	16.8	0.2
Elderly	3.4	0.2	15.7	0.3	36.1	0.4	33.0	0.5	11.8	0.3
		.								
White	5.0	0.1	10.7	0.2	31.4	0.3	37.2	0.2	15.7	0.2
White, not Hispanic	3.9	0.1	8.6	0.2	29.1	0.3	40.1	0.3	18.3	0.2
Black	13.6	0.5	19.1	0.6	34.8	0.6	26.0	0.6	6.5	0.3
Asian	5.1	0.5	10.0	0.9	27.9	1.0	38.2	0.9	18.8	0.8
Hispanic Origin	9.4	0.3	19.3	0.5	41.4	0.5	24.6	0.5	5.3	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 α=0 and to a normalized poverty gap if α=1. Normalizing the gaps controls for the problem encountered above and allows us to compare gaps across the three measures. When α =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.[16] 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.17 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 SPM[18]. 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, and children. 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.

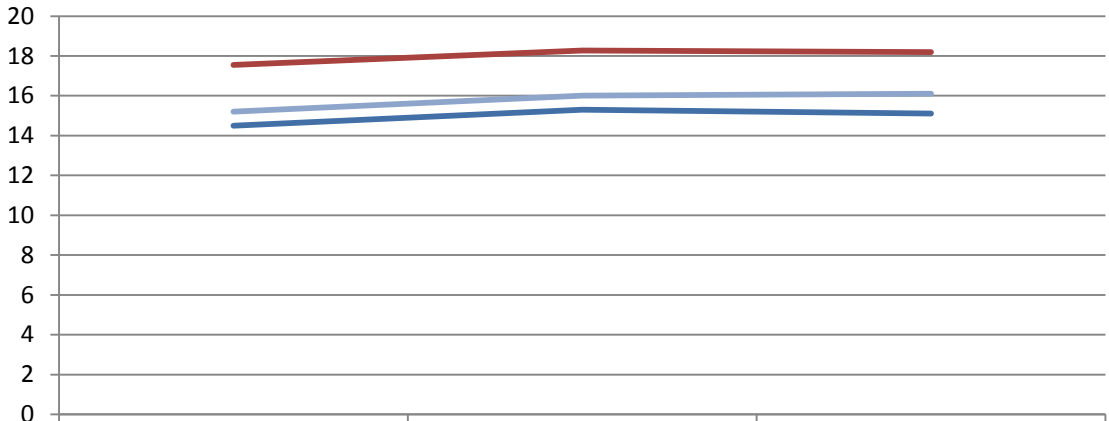
16 For these calculations all negative incomes are set to zero.
17 The gaps using the official and the relative measure are not statistically different.
18 The gaps for children and nonelderly adults are not statistically different using the SPM.

Table 5: FGT Indexes 2010						
	Official*		Research SPM		Relative Poverty	
	Est.	s.e.†	Est.	s.e.†	Est.	s.e.†
FGT0: Head count index	15.1	0.2	16.1	0.2	18.2	0.2
FGT1: Poverty gap normalized	7.5	0.1	6.4	0.1	7.5	0.1
FGT2: Squared poverty gap	5.4	0.1	4.2	0.1	4.7	0.1
Children						
FGT0: Head count index	22.3	0.5	18.1	0.5	23.0	0.3
FGT1: Poverty gap normalized	11.1	0.2	6.7	0.1	9.9	0.2
FGT2: Squared poverty gap	7.8	0.2	3.8	0.1	6.4	0.2
Nonelderly Adults						
FGT0: Head count index	13.7	0.2	15.5	0.3	16.1	0.2
FGT1: Poverty gap normalized	7.0	0.1	6.6	0.1	6.8	0.1
FGT2: Squared poverty gap	5.1	0.1	4.4	0.1	4.4	0.1
Elderly						
FGT0: Head count index	8.7	0.4	15.1	0.5	19.1	0.4
FGT1: Poverty gap normalized	3.1	0.1	5.7	0.2	6.0	0.2
FGT2: Squared poverty gap	2.0	0.1	3.7	0.1	3.1	0.1
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)						

Poverty rates over time

Finally, we show the official measure, the SPM, and the relative poverty measure over the three years for which we have estimates. As noted earlier, the estimates differ from those previously published due to implementation of Census 2010 based population controls and other changes to the tax calculator. Figure 7 shows the official measure and the SPM across the three years.

Figure 7: Poverty Rates using the Official Measure and the SPM: 2009 to 2011



	2009	2010	2011
Official	14.5	15.3	15.1
SPM	15.2	16.0	16.1
Relative	17.6	18.3	18.2

Source: Current Population Survey, 2010, 2011, and 2012 Annual Social and Economic

Summary

This paper expands on information about estimates of a Supplemental Poverty Measure for the U.S. reported earlier (Short, 2012). Estimates presented here are based on the CPS 2012 ASEC and refer to calendar year 2011. 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).

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