

# **The Supplemental Poverty Measure**

## **A Joint Project between the Census Bureau and the Bureau of Labor Statistics**

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## Introduction

The Census Bureau released a report in November of 2011 with Supplemental Poverty Measure (SPM) estimates for calendar year 2010. This report represented a joint effort between the Census Bureau and the Bureau of Labor Statistics (BLS). BLS has responsibility for developing expenditure-based SPM poverty thresholds using the Consumer Expenditure Survey (CE). The Census Bureau is responsible for preparing geographic adjustments for the thresholds, estimating component parts to produce a measure of resources, creating an economic unit of analysis and computing poverty statistics using the Current Population Survey Annual Social and Economic Supplement (CPS). The Census Bureau also prepares a report that summarizes poverty statistics for the total US population as well as population subgroups and a public use data file that contains the components of the SPM for outside researchers to analyze. Both the BLS and the Census Bureau are tasked with conducting research on methodological improvements to the various components of the SPM.

In March of 2010, an Interagency Technical Working Group on Developing a Supplemental Poverty Measure (ITWG) listed suggestions for a new measure that would supplement the current official measure of poverty.<sup>1</sup> The ITWG was charged with developing a set of initial starting points to permit the Census Bureau, in cooperation with the 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 calculated with five years of 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 change in expenditures on this basic bundle of goods at the 33rd percentile of the expenditure distribution.
- *SPM family resources* should be defined as the value of cash income from all sources, plus the value of in-kind 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. In-kind benefits include nutritional assistance, subsidized housing, and home energy assistance. 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).

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<sup>1</sup> For information, see ITWG, *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure* (Interagency), March 2010, available at <[www.census.gov/hhes/www/poverty/SPM\\_TWGObservations.pdf](http://www.census.gov/hhes/www/poverty/SPM_TWGObservations.pdf)>, accessed September 2011.

Poverty Measure Concepts: Official and Supplemental		
	Official Poverty Measure	Supplemental Poverty Measure
Measurement Units	Families and unrelated individuals	All related individuals who live at the same address, including any coresident unrelated children who are cared for by the family (such as foster children) and any cohabitators and their relatives (SPM Resource Units)
Poverty Threshold	Three times the cost of minimum food diet in 1963	The 33 <sup>rd</sup> percentile of expenditures on food, clothing, shelter, and utilities (FCSU) of consumer units with exactly two children multiplied by 1.2
Threshold Adjustments	Vary by family size, composition, and age of householder	Geographic adjustments for differences in housing costs and a three parameter equivalence scale for family size and composition
Updating thresholds	Consumer Price Index: All items	Five year moving average of expenditures on FCSU
Resource Measure	Gross before-tax cash income	Sum of cash income, plus in-kind benefits that families can use to meet their FCSU needs, minus taxes (or plus tax credits), minus work expenses, minus out-of-pocket medical expenses

The ITWG stated further that the official poverty measure, as defined in Office of Management and Budget (OMB) Statistical Policy Directive No. 14, will 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.” In addition to specifying the nature and use of the SPM, the ITWG laid out a research agenda for many of the elements of this new measure. They stated:

*As with any statistic regularly published by a Federal statistical agency, the Working Group expects that changes in this measure over time will be decided upon in a process led by research methodologists and statisticians within the Census Bureau in consultation with BLS and with other appropriate data agencies and outside experts, and will be based on solid analytical evidence.*

Among the elements designated by the ITWG for further development were in-kind benefits in the thresholds, geographic adjustments for price difference across areas, work related expenses other than childcare, and medical out-of-pocket expenses. We also include a discussion of joint research on the housing tenure adjustments to the SPM thresholds. The ITWG based its suggestions on earlier National Academy of Sciences (NAS) recommendations (Citro and Michael, 1995) for improving the current official measure. The elements noted for further research were:

#### *In-kind benefits in the SPM thresholds*

The ITWG stated, “So far as possible with available data, the calculation of FSCU should include any in-kind benefits that are counted on the resource side for food, shelter, clothing and utilities. This is necessary for consistency of the threshold and resource definitions.”

#### *Geographic adjustments to the SPM thresholds*

The Census Bureau, in consultation with BLS and other relevant data agencies, should do this using the best available data and statistical methodology and these may change over time. They stated that the American Community Survey (ACS) data appear to be the best data currently available, from which one can create a housing price index based on differences in quality-equivalent rental prices of housing across areas. The ITWG further noted that future work may provide price data that can be used to measure inter-area price differentials on more items than housing alone.

#### *Work-related expenses*

The ITWG noted that work expenses include both standard expenses associated with commuting as well as child care. These expenditures can be thought of as subtractions from earnings, and they should be accounted for in order to calculate a “net wage” that indicates the resources families actually have to spend from their work income. Out-of-pocket expenses for childcare are collected with new questions added to the CPS ASEC in 2010. For other work expenses, the groups suggested that the Census Bureau should investigate the comparative advantages and disadvantages of trying to measure actual expenses versus assigning an average amount to all working adults and that measuring actual work expenses is more attractive if other work expenses are highly variable across families.

#### *Medical out-of-pocket expenses*

As outlined by the NAS panel, medical out-of-pocket expenses (MOOP) should be subtracted from income in calculating the resources available to a family. Accounting for out-of-pocket medical expenditures in this way assures that dollars spent on medical care are not considered available to purchase food or shelter. Self-reported out-of-pocket medical expenses were collected in the CPS for the first time in 2010. These appear to be reasonably reliable for statistical adjustment purposes. It has been argued in the past that an adjustment to MOOP should be made for the uninsured, who may be spending less than is customary because they lack health insurance and cannot pay for health services. The Census Bureau should investigate the pros and cons of such an adjustment and its computation. If policy changes make health insurance coverage more broadly available, those without insurance are more likely to have preferred this status. In this case, an adjustment for lack of insurance seems less attractive. They noted further that, “It is important to emphasize that this approach does nothing to estimate the value of medical care that families are receiving relative to their needs. Additional and improved measures of the affordability of medical care and/or the quality of medical care which

U.S. families receive may be highly useful and important, but these are different statistics and will need to be separately developed and funded.”

#### *Adjusting thresholds for housing tenure*

While not explicitly identifying this as a specific area for research, adjusting thresholds for housing tenure was described by the ITWG as an initial and relatively simple starting place. Earlier joint work between BLS and Census had investigated a rental equivalence approach to account for housing cost differences in a poverty measure. This included replacing out-of-pocket owner shelter expenditures in the thresholds with rental equivalence and adding net rental income to resources. This approach seems superior but is sensitive to methods used to impute these values on both sides. Further investigation of these methods and comparison to the initial methodology could prove useful.

This paper will describe briefly summarize some results from the first report issued last November. Then we will describe the elements noted above for additional research, the current methods and procedures, any additional research done since the ITWG document was released, and any future work that we are currently planning on these topics. We hope to elicit insights on ongoing work and suggestions for further research, and, in particular, ideas for joint work that might be undertaken across agencies.

### **SPM report**

The research Supplemental Poverty Measure report released in November of 2011 laid groundwork for developing a new poverty measure for the United States to supplement the current official measure. Estimates presented used data from the 2005 quarter two to 2011 quarter one CE Interview Component and the CPS 2010 and 2011 ASEC and refer to calendar years 2009 and 2010. The results illustrate differences between the official measure of poverty and a poverty measure that includes in-kind benefits as income and subtracts nondiscretionary expenses that must be paid. The SPM also employs a new poverty threshold that BLS updates with information on expenditures for food, clothing, shelter and utilities. Results showed higher SPM poverty rates than the official measure for most groups (Table 1 reproduced from Short, 2011).

In addition, the distribution of people in the total population and the distribution of people classified as poor using the two measures were examined. Results showed a higher proportion of several groups were poor using the SPM relative to the official measure. These groups were adults aged 18 to 64 and 65 and over, those in married-couple families or with male householders, Whites, Asians, the foreign born, homeowners with mortgages, and those with private health insurance. The shares of the poverty population were also higher with the SPM for those residing in the suburbs and in the Northeast and West.

Short (2012) summarized the values of each element added or subtracted to move from the official measure to produce the SPM. 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 with an addition of subtraction. Also shown are the mean amounts for those paying or receiving a benefit, and the aggregate amounts for all units and the official poor.

**Table 1: Number and Percent of People in Poverty by Different Poverty Measures: 2010**

	Number** (in thousands)	Official**				SPM				Differenc		
		Number		Percent		Number		Percent		Number	Percent	
		Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)			
<b>All People</b>	306,110	46,602	850	15.2	0.3	49,094	908	16.0	0.3	2,492 *	0.8 *	
<b>Age</b>												
<b>Under 18 years</b>	74,916	16,823	378	22.5	0.5	13,622	376.0	18.2	0.5	-3,201 *	-4.3 *	
<b>18 to 64 years</b>	192,015	26,258	556	13.7	0.3	29,235	602.0	15.2	0.3	2,976 *	1.6 *	
<b>65 years and older</b>	39,179	3,520	161	9.0	0.4	6,237	216.0	15.9	0.6	2,716 *	6.9 *	
<b>Type of Unit</b>												
<b>In married couple unit</b>	185,723	14,200	581	7.6	0.3	18,295	622.0	9.9	0.3	4,095 *	2.2 *	
<b>In female householder unit</b>	61,966	17,786	513	28.7	0.7	17,991	552.0	29.0	0.8	206	0.3	
<b>In male householder unit</b>	32,224	5,927	289	18.4	0.8	7,317	308.0	22.7	0.8	1,391 *	4.3 *	
<b>In new SPM unit</b>	26,197	8,690	341	33.2	1.0	5,490	339.0	21.0	1.2	-3,200 *	-12.2 *	
<b>Race and Hispanic Origin</b>												
<b>White</b>	243,323	31,959	698	13.1	0.3	34,747	728.0	14.3	0.3	2,789 *	1.1 *	
<b>White, not Hispanic</b>	197,423	19,819	571	10.0	0.3	21,876	605.0	11.1	0.3	2,057 *	1 *	
<b>Black</b>	39,031	10,741	406	27.5	1.0	9,932	388.0	25.4	1.0	-810 *	-2.1 *	
<b>Asian</b>	14,332	1,737	161	12.1	1.1	2,397	191.0	16.7	1.3	660 *	4.6 *	
<b>Hispanic (any race)</b>	49,972	13,346	420	26.7	0.8	14,088	459.0	28.2	0.9	742 *	1.5 *	
<b>Nativity</b>												
<b>Native born</b>	267,884	38,965	801	14.5	0.3	39,329	845.0	14.7	0.3	364	0.1	
<b>Foreign born</b>	38,226	7,636	288	20.0	0.7	9,765	327.0	25.5	0.7	2,128 *	5.6 *	
<b>Naturalized citizen</b>	16,801	1,910	119	11.4	0.7	2,829	158.0	16.8	0.9	919 *	5.5 *	
<b>Not a citizen</b>	21,424	5,727	263	26.7	1.1	6,936	288.0	32.4	1.2	1,209 *	5.6 *	
<b>Tenure</b>												
<b>Owner</b>	207,290	16,529	565	8.0	0.3	20,205	659.0	9.7	0.3	3,676 *	1.8 *	
<b>Owner/Mortgage</b>	138,324	8,366	389	6.0	0.3	11,419	471.0	8.3	0.3	3,053 *	2.2 *	
<b>Owner/No mortgage/rentfree</b>	72,180	9,036	413	12.5	0.5	9,581	429.0	13.3	0.6	544 *	0.8 *	
<b>Renter</b>	95,606	29,199	740	30.5	0.6	28,093	746.0	29.4	0.6	-1,106 *	-1.2 *	
<b>Residence</b>												
<b>Inside MSAs</b>	258,350	38,650	932	15.0	0.3	42,979	879.0	16.6	0.3	4,329 *	1.7 *	
<b>Inside principal cities</b>	98,774	19,584	585	19.8	0.5	20,748	611.0	21.0	0.6	1,164 *	1.2 *	
<b>Outside principal cities</b>	159,576	19,066	742	11.9	0.4	22,231	738.0	13.9	0.4	3,165 *	2.0 *	
<b>Outside MSAs</b>	47,760	7,951	544	16.6	0.7	6,114	449.0	12.8	0.7	-1,837 *	-3.8 *	
<b>Region</b>												
<b>Northeast</b>	54,782	7,051	327	12.9	0.6	7,969	342.0	14.5	0.6	918 *	1.7 *	
<b>Midwest</b>	66,104	9,246	410	14.0	0.6	8,678	356.0	13.1	0.5	-569 *	-0.9 *	
<b>South</b>	113,275	19,210	577	17.0	0.5	18,503	533	16.3	0.5	-707 *	-0.6 *	
<b>West</b>	71,949	11,094	447	15.4	0.6	13,944	512	19.4	0.7	2,849 *	4 *	
<b>Health Insurance coverage</b>												
<b>With private insurance</b>	195,874	9,336	360	4.8	0.2	14,631	464	7.5	0.2	5,295 *	2.7 *	
<b>With public, no private insurance</b>	60,332	22,694	600	37.6	0.8	19,126	559	31.7	0.8	-3,568 *	-5.9 *	
<b>Not insured</b>	49,904	14,571	408	29.2	0.7	15,337	474	30.7	0.8	766 *	1.5 *	

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\\_238sa.pdf](http://www.census.gov/hhes/www/p60_238sa.pdf) [PDF].

\* Statistically different from zero at the 90 percent confidence level.

\*\* Differs from published official rates as unrelated individuals under 15 years of age are included in the universe.

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

Note: Details may not sum to totals because of rounding.

The table shows that 10.3 percent of SPM Resource Units (see text box for description) 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. The Census Bureau simulates tax liabilities and credit eligibility for individuals in the CPS ASEC.

Medical out-of-pocket 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.

	% 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.†
<b>SNAP</b>	10.3	0.1	37.2	0.5	2,922	33.1	3,384	49.4	37.6	0.63	24.2	0.52
<b>School lunch</b>	18.4	0.2	25.9	0.5	410	4.0	792	10.5	9.4	0.12	3.9	0.08
<b>WIC</b>	2.9	0.1	9.7	0.3	505	1.4	505	2.2	1.8	0.04	0.9	0.04
<b>Housing subsidy/cap</b>	3.5	0.1	14.7	0.5	4,560	91.7	5,473	117.2	20.2	0.72	15.4	0.63
<b>LIHEAP</b>	3.5	0.1	11.5	0.4	400	6.7	416	10.0	1.8	0.05	0.9	0.03
<b>EITC</b>	15.5	0.2	34.7	0.6	2,075	18.6	2,368	37.0	40.2	0.51	15.8	0.35
+/-												
<b>Taxes before credits</b>	69.5	0.2	11.0	0.3	10,572	108.0	2,055	146.4	918.8	9.70	4.3	0.34
<b>FICA</b>	76.0	0.2	45.7	0.6	4,978	20.9	1,057	19.9	473.2	2.16	9.3	0.22
<b>Work expenses</b>	76.1	0.2	46.0	0.6	1,832	4.4	1,123	10.0	174.4	0.57	9.9	0.18
<b>Childcare</b>	6.3	0.1	4.4	0.2	5,032	81.2	2,085	121.0	39.7	0.85	1.7	0.13
<b>MOOP</b>	94.0	0.1	83.0	0.5	3,957	34.5	1,865	95.4	465.1	4.00	29.7	1.58
<b>Child support paid</b>	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](http://www.census.gov/hhes/www/p60_239sa.pdf) [PDF].

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

Other findings from the November release allow us to examine the effects of taxes and in-kind transfers on the poor and on important groups within the poverty population. Since in-kind benefits help those in extreme poverty, there were lower percentages of individuals with resources below half the SPM threshold for most groups than a similar group using the official measure. Most importantly, the SPM allows us to ascertain the effect of policies on estimated poverty rates, unlike the official measure of poverty. The report examined the effect of benefits received from each program and expenses on taxes and other nondiscretionary expenses on SPM rates by removing one element at a time, holding all else constant. This exercise showed that in-kind and tax benefits had important effects lowering poverty rates for children and that medical out-of-pocket expenses had an important effect on SPM rates, overall, and on the well-being of those over 64 years of age (Table 3 reproduced from Short, 2011).

	All persons		Under 18 years		18 to 64 years		65 years and older	
	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)
Research SPM	16.0	0.3	18.2	0.5	15.2	0.3	15.9	0.6
EITC	18.0	0.3	22.4	0.5	16.7	0.3	16.1	0.6
SNAP	17.7	0.3	21.2	0.5	16.5	0.3	16.8	0.6
Hsg subsidy	16.9	0.3	19.5	0.5	15.9	0.3	17.1	0.6
School lunch	16.4	0.3	19.0	0.5	15.4	0.3	16.0	0.6
WIC	16.1	0.3	18.3	0.5	15.3	0.3	15.9	0.6
LIHEAP	16.1	0.3	18.3	0.5	15.3	0.3	16.0	0.5
Child support	15.9	0.3	18.1	0.5	15.0	0.3	15.9	0.6
Federal income tax	15.6	0.3	17.9	0.5	14.7	0.3	15.7	0.6
FICA	14.6	0.3	16.3	0.5	13.7	0.3	15.6	0.6
Work expense	14.5	0.3	16.2	0.5	13.7	0.3	15.6	0.6
MOOP	12.7	0.3	15.4	0.5	12.4	0.3	8.6	0.4

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

## SPM METHODOLOGY for selected elements identified by the Interagency Technical Working Group for further research

### SPM Thresholds

SPM thresholds are a function of the sum of expenditures by the overall population for food, clothing, shelter, and utilities, plus “a little bit more” for other basic needs like reading materials, personal care products, and non-work transportation (FCSU). The ITWG recommended using the NAS Panel recommendation for the definition of FCSU. For housing they include expenditures for shelter and utilities. Shelter includes expenditures for mortgages, property taxes, rents, and maintenance and repairs for one’s dwelling. Utilities include expenditures for heating, cooling, and cooking utilities, telephone services, and public services. The housing set of expenditures represents what can be identified as recurring and usual expenditures by the consumer. Operationally, expenditures for shelter and utilities are those reported for the residence where the consumer unit is interviewed. Food expenditures exclude the purchase of alcoholic beverages but they include the purchase of gifts for others living outside the consumer unit. Clothing expenditures include both the purchase of clothing by the consumer unit for its use as well as the purchase of clothing that the consumer unit purchases as gifts for others outside the consumer unit. The food and clothing definitions are the ones used by the NAS Panel and continue to be used for the production of the SPM thresholds.

Only expenditures for consumer units with two children are considered, with their expenditures being limited to around the 33<sup>rd</sup> percentile in the FCSU expenditures distribution. An equivalence scale is applied in order that thresholds can be produced for consumer units with two adults and two children from the estimation sample. The consumer unit with two adults and two children is the reference unit for the SPM threshold. The range around the 33<sup>rd</sup> percentile is defined as within the 30<sup>th</sup> to 36<sup>th</sup> percentiles, inclusive, of FCSU expenditures. The ITWG recommended that housing thresholds be produced for renters, owners with mortgages and owners without mortgages separately. The reasoning is that those groups have different contract expenditures for housing and cannot easily make changes.



Expenditure data for the production of the thresholds is from the Consumer Expenditure (CE) Survey, Interview component. Although the CE is composed of two data collection elements, a personal Interview and record keeping Diary, completely separate samples are used for each component. Only in the Interview are all the expenditures needed for the calculation of the thresholds collected.

Annual SPM thresholds are based on 5 years of CE data. For example, the 2010 SPM thresholds are based on quarterly Interview data from quarter 2 2006 through quarter one 2011. Quarterly data are adjusted to reflect threshold year dollars using the All Items Consumer Price Index for All Urban Consumers CPI-U. However, there is a problem with using the CPI-U for this adjustment in that the definition of owner's shelter is valued differently in the two measures. The SPM is based on owner shelter out-of-pocket expenditures; the CPI-U is based on rental equivalence for owner's shelter. Shelter expenditures and rental equivalence move differently. A more appropriate price index for updating the owner shelter expenditures might be one based on house prices, mortgage costs, and other out-of-pocket components. Such an index does not now exist for the United States.

SPM thresholds for 2005 through 2010 are presented in Table 4. Thresholds with and without distinction by housing tenure are included as well as the share of the thresholds spent on shelter and utilities (Table 4 reproduced from the BLS website (BLS 2012)).

#### ***Including in-kind benefits in thresholds***

Currently the SPM thresholds and resources are inconsistently defined in that in-kind benefits, other than food stamps, are included in resources but not in the thresholds. Research on imputing in-kind benefits to consumer units in the CE has been the focus of research in the past year. The ITWG recommended that thresholds include the same in-kind benefits that are accounted for in resources; however, only limited information on these benefits is available in the CE Interview component. The CE collects information on food expenditures that implicitly include the cash value of benefits from the Supplemental Nutrition Assistance Program (SNAP) but there is no information on other food programs such as the National School Lunch Program (NSLP) or the Women, Infants, and Children Program (WIC). In addition, the CE collects information on whether the rental housing is subsidized and rents paid for these units, but other data are needed so that the value of rent subsidies can be imputed.

In earlier research to impute in-kind benefits, Garner (2010, 2011) used program eligibility guidelines and consumer unit characteristics to impute NSLP and WIC benefits (CE Eligibility Method); the value of subsidized rental units was imputed using rental unit characteristics and geographic variables from the CE, along with Housing and Urban Development (HUD) Fair Market Rents (FMRs).

Recently, Garner and Hokayem (2011, 2012) introduced another method to impute NSLP and WIC benefits to the CE; this is referred to as the CPS Program Participation Method. For this, program participation responses and household characteristics from the Current Population Survey (CPS) are used to model the participation of consumer units in the CE. Imputed CPS-based participation rates for NSLP and WIC are used, along with U.S. Department of Agriculture information on benefits, to assign benefit levels to the CE. Thresholds based on the CPS Program Participation Method were produced for 2009 and compared to thresholds based on the CE Eligibility Method. SPM thresholds were produced by housing tenure types (i.e., owners with mortgages, owners without mortgages, renters) as well as overall.

Results reveal that the CE Eligibility Method overall threshold is higher than the CPS Program Participation Method overall threshold. This is not surprising since the CE threshold is based on eligibility while the CPS threshold is based on program participation. The paired CE and CPS based thresholds are also statistically significantly different from each other for owners with mortgages and for owners without mortgages. When housing tenure thresholds are compared to each other within each method group, statistically significant differences arise for two of the three pairs of thresholds. In particular, the thresholds for owners without a mortgage were found to be different from the thresholds of both owners with a mortgage and renters, while the thresholds for owners with a mortgage and renters did not differ from each other at the significance levels used for testing. No poverty rates using these thresholds have been produced.

Current research is underway to expand the CE Eligibility Method to examine thresholds over time, with changes in benefit levels (Garner and Gudrais, forthcoming 2012). Garner and Gudrais state that during times of economic downturn, consumer spending is expected to contract, even for basic necessities; however, basic consumption needs should not be expected to change very much, if at all. In times of need, individuals and families can apply for government in-kind benefits; these benefits are designed to cover consumption needs when they cannot be purchased due to a lack of resources. Assuming that benefits are available when needed, these researchers define the value of consumption as the sum of out-of-pocket spending for basic needs, plus the value of in-kind benefits for these needs. They hypothesize that consumption is fairly stable over time, regardless of fluctuations in the economy. Using CE Interview data, they compare reported expenditures on FCSU to an estimate of the level of consumption, which also includes the values for in-kind transfers. In-kind transfers are limited to rental subsidies, school lunches and WIC benefits. The comparison is made across years (2005 to 2010), for various ranges of the distribution, and for different demographic groups. Following this preliminary look at spending vs. consumption, SPM thresholds are to be produced with and without in-kind benefits for the same time period to determine the stability of SPM thresholds over time.

#### *Housing tenure adjustments to the SPM thresholds*

Following the ITWG guidelines, a base threshold for all consumer units with two children is calculated; from this threshold, separate thresholds are produced for owners with mortgages, owners without mortgages, and renters. For the housing tenure based thresholds, overall shelter and utilities portion is replaced by what consumer units with different housing statuses spend on shelter and utilities. Three housing status groups are determined and their expenditures on shelter and utilities within the 30-36<sup>th</sup> percentiles of FCSU expenditures produced. New questions, first introduced in the 2010 CPS ASEC, are used by the Census Bureau to ascertain the presence of a mortgage in order to assign, in conjunction with other tenure questions, the appropriate threshold to each SPM resource unit.

At the last meeting of the SPM Technical Advisory Board (February 16, 2012), there was a discussion of priorities for next steps regarding thresholds and resources. The top priority for thresholds, as noted by Rebecca M. Blank, was the treatment of housing in the SPM. As noted earlier, SPM thresholds are produced currently with expenditure data and are distinguished based on the shelter and utilities spending specific to owners with mortgages, owners without mortgages, and renters. Resulting thresholds for owners without mortgages are substantially lower than those for owners with mortgages and for renters. However, as with the inclusion of the value of in-kind benefits to the thresholds, would it be more appropriate to account for housing in a similar way as is recommended for in-kind benefits?

**Table 4. Two-Adult-Two-Child SPM Poverty Thresholds: 2005 through 2010**

Supplemental Poverty Measure with FCSU <sup>1</sup>	2005	2006	2007	2008	2009	2010
Overall	\$20,492	\$21,320	\$22,317	\$23,608	\$23,854	\$24,343
Owners with mortgages	\$21,064	\$22,010	\$22,772	\$24,259	\$24,450	\$25,018
Owners without mortgages	\$17,643	\$18,301	\$19,206	\$20,386	\$20,298	\$20,590
Renters	\$20,641	\$21,278	\$22,418	\$23,472	\$23,874	\$24,391
The housing (shelter+ utilities) shares of the SPM thresholds are as follows:						
Overall	0.484	0.488	0.496	0.493	0.494	0.496
Owners with mortgages	0.498	0.504	0.506	0.507	0.506	0.510
Owners without mortgages	0.401	0.404	0.415	0.413	0.405	0.404
Renters	0.488	0.487	0.499	0.490	0.494	0.497

<sup>1</sup> Based on out-of-pocket expenditures for food, clothing, shelter, and utilities. Shelter expenditures include those for principal payments.

These results were produced by Thesia I. Garner and Marisa Gudrais, Division of Price and Index Number Research, Bureau of Labor Statistics, for research purposes only using the Consumer Expenditure Interview Survey. These results are released to inform interested parties of ongoing research and to encourage discussion of work in progress.

*For methodological details regarding the NAS thresholds, see the following:*

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

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 2010.

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, 2001.

*For methodological details regarding the SPM thresholds, see the following:*

*Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure*, March 2010, available at [http://www.bls.gov/pir/spm/spm\\_twg\\_observations.pdf](http://www.bls.gov/pir/spm/spm_twg_observations.pdf)

Garner, Thesia I., "Moving to a Supplemental Poverty Measure (SPM): Research on Thresholds for 2008," presented at the Southern Economic Association Annual Meeting, Atlanta, GA, 2010.

Garner, Thesia I. and Marisa Gudrais, "Supplemental Poverty Measure (SPM): Threshold Issues," [http://www.brookings.edu/~media/Files/events/2011/1107\\_supplemental\\_poverty\\_measure/1107\\_spm\\_garner\\_presentation.pdf](http://www.brookings.edu/~media/Files/events/2011/1107_supplemental_poverty_measure/1107_spm_garner_presentation.pdf)

Source: Division of Price and Index Number Research, U.S. Bureau of Labor Statistics, November 2011

In other words, is it more appropriate to account for what it would cost to meet consumption needs rather than spending needs? If the answer is yes, then methods to account for the value of housing consumption, rather than spending for housing, are needed. If the answer is no, the SPM will be a measure that is derived from consumer spending plus the value of in-kind government benefits. The SPM will be neither a spending threshold measure nor a consumption measure; it will be a combination of both.

This issue of including values for owner-occupied shelter services rather than expenditures has been explored by Garner (2006), Garner and Short (2011), and Short (2005) in earlier publications. The basis of these studies was the poverty measure recommended in *Measuring Poverty: A New Approach* (Citro and Michael, 1995) often referred to as the NAS measure. In these studies, the primary method to account for the value of the flow of services from owner-occupied housing, or consumption, is to replace shelter expenditures with reported rental equivalence as collected in the CE Interview. Different methods have been used to account for the net implicit rent from owner-occupied housing for resources. These include the annual rate of return from home equity, imputed rents (using information from renters to impute rents for owners), and user costs. The 2000 year poverty rate for all persons increased from 12.9 percent using CE out-of-pocket spending to 13.1 percent using rental equivalence and net return to home equity (Garner and Short 2001). See also Garner and Short (2009), Short and O’Hara (2008) and Short et al. (2007) for additional work on accounting for owner-occupied dwelling services in household statistics.

An alternative for the SPM would be to produce one threshold that reflects the rents or rental equivalence for housing. Should we be exploring the use of a different method to account for differences in housing costs? One example would be to produce consumption based thresholds that rely on the full value of rental housing (accounting for rent controlled housing) and for the rental equivalence value of owner-occupied housing.

Including the implicit net rental income from one’s own home raises the question of why not include the implicit income from other assets. The reason is that shelter is included in the thresholds and if owner-occupied shelter is valued in terms of rental equivalence, then the implicit income from this should be included in resources for consistency within the SPM.

### ***Geographic Adjustments to the SPM Thresholds***

Following the ITWG suggestions, the Census Bureau uses the American Community Survey (ACS) to adjust the FCSU thresholds for differences in housing prices across geographic areas. The geographic adjustments are based on five-year ACS estimates of median gross rents for two-bedroom apartments with complete kitchen and plumbing facilities (Renwick, 2011). For each state, a median is estimated for all non-metro areas (48), for each MSA with a population large enough to be identified on the public use version of the CPS ASEC file (264), and for a combination of all other metro areas within a state (46). This results in 358 adjustment factors. Since the indexes represent only housing costs just that part of the SPM thresholds are adjusted. The Census Bureau recommends the use of 3-year averages to compare estimates across states and 2-year averages to evaluate changes in state estimates over time.<sup>2</sup> The

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<sup>2</sup> See *Current Population Survey, 2011 ASEC Technical Documentation*, <[www.census.gov/apspd/techdoc/cps/cpsmar11.pdf](http://www.census.gov/apspd/techdoc/cps/cpsmar11.pdf)>.

Census Bureau plans to add state-level estimates to the 2012 SPM report, when there will be three years of SPM estimates available, and discuss results compared to official state-level poverty estimates.

On April 28, 2011, the University of Kentucky Center for Poverty Research (UKCPR), in conjunction with the Brookings Institution and U.S. Census Bureau, sponsored a research forum entitled *Cost of Living and the Supplemental Poverty Measure*. The goal of the forum was to gather leading economists in a roundtable format (1) to critically evaluate the proposed Census method for geographic adjustment, (2) to offer empirically implementable alternatives to the Census approach (including whether to adjust at all), and (3) to suggest future directions for research on geographic adjustment of poverty thresholds.<sup>3</sup> The ultimate aim of the research forum was to achieve some form of consensus among the experts on whether geographic adjustment was preferable to none at all, and if so, what form that adjustment would take. This would provide guidance to the Census Bureau on the SPM as well as to the Secretary of Health and Human Services as research proceeds on the feasibility of geographic adjustment of poverty guidelines.

Besides the method currently in use by the Census Bureau, other approaches were presented at the forum. One other approach to adjusting thresholds is the development of regional price parities (RPPs). In a joint project between BEA and BLS, Aten et al. (2011) published estimates for portions of the United States outside the BLS areas. Rather than only housing, this index represents geographic differences in the prices of goods for an entire consumer basket of goods and services.<sup>4</sup> The complete set of RPPs were developed using a combination of individual price observations used in the CPI and housing cost estimates from the ACS. CPI price observations were analyzed using hedonic regression models that took into account differences in the characteristics of the items to obtain price levels for each item in each geographic area. These individual price levels were then aggregated into major categories and into an overall price level using the consumer expenditure weights per item per area. To extend the index beyond the 38 areas for which CPI survey data exists to other counties outside metropolitan areas, the authors used data on housing costs from the ACS. Renwick (2009) compared outcomes on thresholds and poverty rates using these and two other indexes, one based on U.S. Department of Housing and Urban Development's Fair Market Rents and an earlier version of the current ACS based index. That study found much wider variation in state level poverty rates using the RPP index relative to the ACS and FMR indexes.

Among the recommendations from this research forum was that including some form of adjustment to the SPM thresholds for geographic differences in cost of living is preferable to no adjustment. They also encouraged new sponsored research on constructing a geographic price index for a constant-quality basket of goods and services that accounts for the entire FCSU threshold bundle.

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3 The experts commissioned for the forum were (in alphabetical order): David Albouy, Assistant Professor of Economics, University of Michigan, Dan Black, Professor and Deputy Dean of Public Policy, University of Chicago, Angus Deaton (Keynote Speaker), Dwight D. Eisenhower Professor of Economics and Public Affairs, Princeton University, Edward Glaeser, Fred and Eleanor Glimp Professor of Economics, Harvard University, Barry Hirsch, W.J. Urey Chair of the American Workplace, Georgia State University, Edgar Olsen, Professor of Economics, University of Virginia, Stuart Rosenthal, Maxwell Advisory Board Professor of Economics, Syracuse University.

4 The BEA/BLS index includes items that are not included in the SPM thresholds – education, recreation and medical spending but these three combined represent only 18 percent of the index.

## SPM resources

### *Necessary expenses subtracted from SPM resources: Work-related expenses*

The ITWG suggested that further research on this topic and a refinement of methods would be valuable. Going to work and earning a wage often entails incurring expenses, such as travel to work and purchase of uniforms or tools. For work-related expenses (other than child care) the NAS panel recommended subtracting a fixed amount for each earner 18 years of age or older. Their calculation was based on 1987 Survey of Income and Program Participation (SIPP) data that collected information on work expenses in a set of supplementary questions. More specifically, the SIPP collects information on work-related expenses from people who had at least one employer in the reference period. Three types of expenses are identified by the SIPP: annual work-related expenses, such as union dues, licenses, permit, special tools, or uniforms, the number of miles usually driven to and from work in a typical week, for people who do some driving to work, and other expenses incurred in getting to and from work, such as bus fares or parking fees, in a typical week. The IRS federal reimbursement rate for mileage is used to convert mileage to expenses.

The NAS panel calculated 85% of median weekly expenses —\$14.42 per week worked for anyone over 18 in the family in 1992. Total expenses were obtained by multiplying this fixed amount by the number of weeks respondents reported working in the year. The NAS panel argued that, since many families make other sacrifices to minimize work expenses (e.g., move near work, work opposing shifts) and these other costs would not be reflected in reported expenses, it would be better to use a fixed dollar amount. The most recent available data are used to calculate median weekly expenses for updating the SPM. Estimates for the 2010 SPM used data from wave 4 of the 2008 panel of SIPP. The number of weeks worked, reported in the CPS ASEC, is multiplied by the 85% of median weekly work-related expenses for each person to arrive at annual work-related expenses. The ITWG suggested that further research on this topic and a refinement of methods would be valuable.

Another aspect of transportation expenses in the SPM has also been raised. Before publishing the first estimates of the SPM, the Census Bureau released a Federal Register notice concerning the forthcoming plans.<sup>5</sup> A large number of comments were received. The broad categories that public comments addressed included both the geographic adjustments and commuting costs. There was concern that transportation costs vary with different geographical areas, including urban/rural, cross metropolitan, and transit-rich/non-transit-rich areas as do commuting expenses for mass transit/personal vehicle usage, as well as access to public transportation, and/or vehicle availability. The suggestion has been made that commuting costs may vary across geographic areas and should be considered in addition to housing costs when constructing geographic adjustments.

Rapino et al. (2011) addressed this topic. This research examines the appropriateness of applying a flat amount, the federal mileage reimbursement rate, for commuting costs by investigating geographic variation in average commuting expenses for automobile commuters across 100 urban areas, regions, and divisions, as defined by the U.S. Census Bureau. They used two methods: (1) state gas prices and (2) federal mileage reimbursement rate to value mean travel time data from the ACS with average speed estimates for different urban areas. This research found that these two methods produce significantly different cost estimates and that there is significant geographic variation in commuting costs.

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<sup>5</sup> *Federal Register* notice (Vol. 75, No. 101, p. 29513) was issued on May 26, 2010, soliciting public comments regarding specific methods and data sources in developing the SPM.

Further work at the Census Bureau expenses will take advantage of information derived from several ACS questions related to the work commute and work schedule. Separate commuting cost estimates can be calculated for the two most dominant transportation modes, automobile commuters and public transportation commuters. Average annual commuting costs for those who drove to work can be calculated for U.S. metropolitan areas using data from the 2006-10 5-year ACS where *daily travel distance* would be twice the one-way calculated Euclidean distance between the worker's residence block centroid and workplace block centroid with a *travel distance inflation factor* to account for underestimates of travel distance using a Euclidean measure. For workers who commuted by automobile (car, truck, or van), cost estimates are calculated based on the distance travelled, number of weeks worked per year, and the federal mileage reimbursement rate (or some other). For workers who commuted by transit, estimates would be based on the average adult transit fare for their regional transit market and the number of weeks worked per year. Annual commuting cost for transit would be twice the average one-way adult transit fare for a metro area as reported by the American Public Transportation Association (APTA) in the 2011 Public Transportation Fare Database. The reported number of weeks worked for workers 16 years of age and older who did not work at home could be used to construct a geographic adjustment for commuting costs. An average annual cost estimate could be calculated for each worker record in the ACS file. These individual records would be used to derive annual commuting cost estimates for individual geographic areas. This method would not allow, however, individual assignments of commuting costs in the CPS ASEC or include other work expenses, such as parking, tolls, uniforms, tools and so on.

#### ***Necessary expenses subtracted from SPM resources: Medical out-of-pocket expenses (MOOP)***

The ITWG recommended subtracting medical out-of-pocket expenses from income, following the NAS panel. The NAS panel was aware that expenditures for health care are a significant portion of a family budget and have become an increasingly larger budget item since the 1960s. These expenses include the payment of health insurance premiums plus other medically necessary items such as prescription drugs and doctor copayments that are not paid for by insurance. Subtracting these "actual" amounts from income, like taxes and work expenses, leaves the amount of income that the family has available to purchase the basic bundle of goods (food, clothing, shelter, and utilities (FCSU) and a "little bit more"). That panel also recommended that a separate measure be constructed, a medical care risk index, that would measure the risk of having no or inadequate health insurance coverage. A current Committee on National Statistics panel, "Measuring Medical Care Risk in conjunction with the New Supplemental Poverty Measure," is drafting their final report.

Concerning MOOP spending, the NAS panel recommended subtracting observed spending from income to determine poverty status in the SPM. However, because the uninsured have lower medical services utilization, and MOOP spending, their spending will reflect unmet needs relative to the insured's spending—resulting in downward pressure on the poverty rate in the SPM for the uninsured relative to the insured, *ceteris paribus*. Recognizing this aspect of the SPM, the Interagency Technical Working Group (ITWG) recently recommended investigating the pros and cons of implementing an "adjustment" for the uninsured that accounts for such differential spending and its effect on poverty measurement.

Caswell and Short (2011) conducted a study in response to the ITWG and offered two distinct approaches in how MOOP spending is incorporated into measuring poverty. First, it extended the method developed in Caswell and O'Hara (2011) to estimate counterfactual distributions of non-premium and premium MOOP spending for the uninsured, intended to reflect the correlation of spending of their insured counterparts. Specifically, this research improved that method by taking into

account the type of insurance coverage—private coverage versus Medicaid/CHIP—of the donor (i.e., control) for predictive mean matching models of non-premium MOOP spending. Second, this work considered an additional counterfactual environment that incorporated key features of the Patient Protection and Affordable Care Act (PPACA), scheduled to be implemented in 2014, in assigning counterfactual premium values to hypothetical health insurance units (HIU) of the uninsured. These two counterfactual environments were therefore intended to represent levels of MOOP spending corresponding to satisfied medical care need of the uninsured, in terms of poverty measurement.

Using the two aforementioned uninsured MOOP spending adjustments, the study investigated possible changes in SPM poverty rates. First, the authors tested whether the SPM incorporating the non-group uninsured adjustment is different from the “base” SPM that makes no adjustment for the uninsured. Second, they tested whether the SPM estimates incorporating the uninsured adjustment reflecting key features of the PPACA differed from the base SPM. And finally, they tested for differences in SPM poverty estimates over the two different uninsured adjustment methods. This work was intended to shed light on how SPM rates change when it is assumed that the uninsured have met medical needs via the private non-group market, or alternatively in the health care reform environment in 2014. Results showed that poverty rates using both uninsured adjustments increase compared to the “base” SPM which incorporates only observed MOOP spending. The non-group uninsured adjustment raised SPM rates higher than the PPACA adjustments. This result suggested that, without accounting for health care needs in the SPM for the uninsured, changes resulting from the PPACA would likely register an increase in poverty rates, all else the same. This result reflects the fact that only expenditures are captured in the SPM and not met needs. A complementary medical care risk index would capture the benefit from increased insurance coverage.

## Other ongoing work

### Taxes

The NAS panel and the ITWG recommended that the calculation of family resources for poverty measurement should subtract necessary expenses that must be paid by the family. The measure subtracts federal, state, and local income taxes, and Social Security payroll taxes (FICA) before assessing the ability of a family to obtain basic necessities such as food, clothing, and shelter. Taking account of taxes allows us to account for eligibility for the federal or state earned income tax credit (EITC) and other tax credits. The CPS ASEC does not collect information on taxes paid or credits received but relies on a tax calculator to simulate tax liabilities. These simulations include federal and state income taxes, and social security payroll taxes. These simulations also use a statistical match to the Statistics of Income (SOI) microdata file of tax returns. There are some efforts to explore using NBER TAXSIM rather than maintaining a separate tax calculator.

The Census Bureau is conducting research to incorporate the newly reported information in the CPS ASEC on family relationships and expenses. Webster (2011) describes these new methods. Research to be presented at the Joint Statistical Meetings in August 2012 further improves these tax calculations. Webster (forthcoming) discusses estimates of federal and state taxes, including estimates of several tax credits. Analysis of the SPM shows that the tax credits, in particular the EITC, are very effective at pulling people above the poverty line. These results rely on accurately calculating and assigning credits. One key step in this process is constructing tax units from the members of sampled households. This paper compares estimates of tax credits across different methods of forming tax units, and evaluates how these credit estimates compare to each other. These estimates will also be compared to what is reported in tax returns using IRS aggregate data. One further study takes advantage of the CPS/IRS exact



match study to examine the performance of the tax simulator described above in assigning EITC benefits based on ethnicity. This research suggests that over-assignment of these credits is greater for Hispanic than non-Hispanic tax units.

### **Extending SPM to other surveys**

Recommendations of the U.S. National Academy of Sciences (NAS) released in 1995 to improve the official measure of poverty included using SIPP as the basis of a revised measure of poverty. This *Recommendation 5.1* stated that the SIPP should become the basis of official US income and poverty statistics as it collects most of the elements of information required to fully estimate the recommended poverty measure (Citro and Michael, 1995). As they noted, the SIPP is well designed for this purpose. Earlier work (Short, 2003) employed these data for such estimates. This research shed light on estimates of resources based on the CPS ASEC and the inherent limitations in the use of those data for such a complex measure. Updating this work will be part of the research effort for the SPM. Other lines of research will include working to incorporate an SPM using the ACS. While more restricted in the available information than the CPS ASEC, these data allow estimates for smaller areas of geography than other data sets. The goal in this work is to prepare a limited but nationally consistent SPM for smaller localities.

### **Survey of Income and Program Participation**

Short (2003) described the challenge of measuring poverty in the CPS relative to measuring the SIPP where most SPM elements are collected. Questions in the SIPP that collect items such as MOOP, child care, and child support paid, were used as a starting point for including new questions in the CPS ASEC in 2010. The focus of this study was on the different design and collection methods of each element of an experimental poverty measure and shows that there are important effects on our poverty estimates.

Beyond examining measurement differences from using different surveys there are additional reasons to reproduce the SPM in the SIPP. The presence of information about assets and liabilities and material hardship would allow an examination of the poverty measures that incorporate wealth or analyses of correlations with other measures of economic wellbeing such as material hardship or levels of household debt (see Short, 2005, and Short and Ruggles, 2005, for earlier work with NAS-type poverty measures using SIPP.)

A proposed paper for 2013 American Economic Association meetings summarizes work supported by the Census Bureau. John Iceland and Patricia Ruggles will provide poverty estimates from the 2004 panel of the SIPP using 2004 calendar year data. The SIPP is a longitudinal survey and this paper will provide a framework for future researchers measuring poverty spells and transitions into and out of poverty using the SPM. This study will also serve as guidance to the Census Bureau to estimate the SPM in redesigned SIPP set for production in 2014.

### **American Community Survey**

For official poverty estimates for state and sub-state geographic units, the Census Bureau recommends the use of the American Community Survey (ACS). For this reason, and others detailed below, the Census Bureau is endeavoring to implement an SPM measure using the ACS. The SPM estimates released in November 2011 used the CPS ASEC. Unlike the official definition, the SPM is not easily calculated in other surveys. Therefore, on April 1, 2011, the Census Bureau sponsored a workshop at the Urban Institute on State Poverty Measurement Using the American Community Survey. The workshop participants discussed the challenges involved in using the ACS to produce SPM estimates. The ACS lacks a number of key data elements required to produce SPM estimates. The ACS does not ask whether or not anyone in a household receives housing assistance, participates in the school lunch program,

receives benefits from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) or low-income home energy assistance (LIHEAP). It does not ask the value of Supplemental Nutritional Assistance Program (SNAP, formerly food stamp) benefits. There is no information on medical out-of-pocket expenditures (MOOP), childcare nor child support outlays. Calculation of tax liabilities is hampered by a lack of relevant information on relationships and specific income sources. In addition, the ACS only collects information about relationships of individuals only to the reference person. Therefore it is not possible to identify unrelated subfamilies nor unmarried partners of persons other than the reference person of each household.

Despite these limitations, researchers have been actively involved in exploring ways in which the ACS data can be used to produce NAS-based and/or SPM poverty estimates. The New York City Center for Economic Opportunity has produced NAS-based estimates for 2005 to 2010. Professor Mark Stern, at the University of Pennsylvania, has produced estimates for 2005-2007 using the ACS three-year file for the city of Philadelphia and its metropolitan area. New York State's Office of Temporary and Disability Assistance has presented estimates for the state of New York. The Urban Institute has created a NAS-style measure for Minnesota, Connecticut, Georgia, Massachusetts and Illinois and the Institute for Research on Poverty at the University of Wisconsin has implemented NAS-based measure for the state of Wisconsin.<sup>6</sup>

A paper presented in May at the Population Association of America annual meeting (PAA) describes our first attempt to implement the SPM using the ACS (Renwick et al., 2012). The purpose of this paper is to lay out a proposal for how these data limitations might be overcome to produce SPM estimates using ACS data. The analysis in this paper uses the 2010 ACS Public Use Microdata Sample (PUMS) file. Another paper presented at the PAA conference explores alternative methods of forming resource units, specifically those that rely on the relationship imputations provided by the IPUMS project (Heggeness et al., 2012).

### **DATA quality research for CPS ASEC**

Last year the Census Bureau funded cognitive research on possible improvements to the ASEC income questions, most notably the questions on income from defined contribution pensions, as well as the questions about asset income and means-tested transfers. Field testing of these questions is scheduled for 2013. The overall goal was to develop a viable alternative approach for collecting the ASEC data that will be further tested in the future using an actual CAPI/CATI instrument, and in comparison to the current ASEC instrument. Analysis focused on assessing response errors associated with the instrument. In general, the redesign efforts focused on addressing: comprehension errors resulting from differences in the specific language used to define income sources in the ASEC relative to the language naturally used by sampled participants, across geographic areas, recall errors associated with income sources received at irregular or low frequencies, or received in only small amounts, reporting errors associated with income sources perceived as having an attached social stigma with receipt, such as public assistance and food stamps, item nonresponse, either as a result of proxy reporting (i.e., a household respondent reporting for all adult household members), or lack of knowledge about income source, errors resulting from respondent fatigue, errors reflective of changes in the structure of income sources, such as TANF eligibility, retirement accounts and other assets, since the last ASEC redesign in the early 1990s. Two rounds of cognitive testing, as well as a literature review and data analysis report, serve as the initial components of the Census Bureau's larger testing and development effort for the CPS ASEC instrument.

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<sup>6</sup> For a comparison of the methods used by each of these groups, see Betson et al, 2011.

Two papers are being prepared for the Joint Statistical Meetings in August 2012. The first paper (Hokayem et al., forthcoming) will assess the extent of the bias in poverty rates caused by earnings non-response and the hot deck procedure used to impute missing values. The authors will use a dataset of matched CPS ASEC records to Social Security Detailed Earnings Records (DER) to study the impact of earnings non-response on estimates of poverty. First, the analysis will compare the income responses in the CPS ASEC to the administrative earnings records and provide estimates of poverty treating the administrative data as the “truth.” Treating the administrative data as the “truth” may miss the advantage of survey data which, unlike administrative data, can collect income not reported to employers and income from tips. This analysis will offer a way of assessing the hot deck procedure by determining how much of the difference in the earnings measures is due to imputation, particularly for low-income households. A second paper (Bee, forthcoming) will evaluate the quality of the retirement income data in the CPS-ASEC by matching it to individual microdata from 1099-R forms filed with tax returns in the tax year 2008. Since income data in the CPS-ASEC is used in the calculation of several official economic statistics, we are able to test whether using 1099-R records instead would alter measurements ranging from poverty rates among the elderly to income inequality. This effort may also affect SPM estimates of the poverty for those aged 65 and over.

### **Other SPM-related topics being examined within the BLS**

BLS researchers are also studying other topics related to SPM thresholds. In a study by Garner and Gudrais (forthcoming 2012), the primary focus is to test the sensitivity of assumptions underlying the production of the thresholds. Examples include testing the impact of increasing the years of CE Interview data used for the threshold estimation; the NAS used 3 years of data while the SMP uses 5 years. This change reduces the impact of changes in the economy or improvements in CE methodology on the measure. Improvements in CE methodology in 2007 were mitigated by moving to a SPM based on 5 years of CE Interview data versus one based on 3 years of data. Another tested assumption is the movement from the NAS estimation sample of two adult-two child families to consumer units with 2 children. This change was made to reflect the increasing diversity in household structure. People familiar with the measure have suggested that the estimation sample be expanded to all consumer units, regardless of presence of children in the household. However the ITWP rejected this noting that most government programs are designed to help children. Another option however, would be to test the impact of the threshold of including in the estimation sample all consumer units with any number of children.

Other topics being examined currently at BLS include the impact of using different consumer price indexes to update earlier years of CE data for the production of the SPM thresholds. For SPM thresholds, 5 years of quarterly CE data are used. For example, data from 2006 interview quarter two (April, May, and June) through 2010 quarter one (January, February, March) data are converted to 2010 dollars using the annual all items CPI-U. An alternative would be to adjust quarterly expenditures using quarterly price indexes. In the current research, the impact of using quarterly price indexes and of using category-specific (food, clothing, shelter, and utilities) indexes is being examined.

In the SPM, medical expenditures are subtracted from resources. However, there is a growing interest in SPM thresholds that include medical care expenditures. SPM thresholds that include medical expenditures appear in the Garner and Gudrais study. These SPM FCSUM thresholds will be used by Wheaton (2012) of the Urban Institute in an upcoming report.

## Other BLS work

Other BLS work related to SPM thresholds focuses on definitions of expenditures underlying the measure, the collection of the expenditure data, and the procedures for computing thresholds from expenditures. Future research also includes studying the impact of assuming Interview quarters are independent versus not and the use of a proposed weighting scheme that accounts for attrition in the CE. Examination of what is included in FCSU will also be conducted. For the most part, expenditures made by the consumer underlie the thresholds, regardless if these expenditures are for the consumption needs of the consumer unit. Food expenditures included in the SPM are from the Interview. However, according to the BLS, the better data for food are from the Diary; Diary food expenditures for BLS publications and for the production of the CPI are from Diary data collection.

**Threshold estimation.** Currently quarterly Interview data are pooled together to produce annual thresholds. The underlying assumption is that quarterly expenditures by consumer units are independent. This is the assumption that the BLS makes in its publication of expenditure means and in its production of weights for the CPI. However, expenditures are not independent across quarters. Distributional analyses of expenditures based on the assumption of independence results in different rankings of consumer units than when the interdependence of expenditures across time is considered. Future research includes the production of SPM thresholds that relaxes the assumption of independence. Population weights that account for attrition from one Interview quarter to the next will be applied. The weights will be based on the research of Rawley Heimer, conducted when he was an intern in the BLS Division of Price and Index Number Research in the fall of 2011.

**Expenditure definitions.** Future research includes an examination of the food, clothing, shelter and utilities expenditure definitions and the impact of changes in definitions on the SPM thresholds. The ITWG indicated that SPM thresholds were to be based on the spending of consumer units. The variables currently being used for the SPM thresholds include expenditures for the consumer unit's own consumption and for the consumption of others. Others' consumption spending needs are being counted as the expenditure includes the purchase of gifts of food and clothing for persons outside the consumer unit's members. The assumption underlying the production of the SPM is that what people spend on gifts, they receive the same in return to meet their consumption spending needs. However, research by Garner and Wagner (1991) reveals that this assumption is invalid for many goods; they report that gift-giving is intergenerational, especially for clothing. For example, when consumer units with 2 children (the SPM estimation sample) receive gifts of clothing purchased by grandparents, the consumer unit with children expenditure needs (for their own consumption) will be under-estimated. Violation of the assumption is likely not as dramatic for food as it is for clothing since people who give gifts of food are more likely to be the same people who receive gifts of food.

Spending by consumer units for their owned dwelling or rental units can be identified in the CE; thus, expenditures for shelter and utilities in the SPM thresholds are only for the residence where the consumer unit lives at the time of the Interview. Since shelter and utilities account for the largest share of the SPM, it is likely that changes in the definitions of these commodities will impact the SPM.

**Data collection and source.** Another issue regarding what is included in FCSU has to do with the source of the data. Food expenditures in the Interview are collected using global questions about typical weekly expenditures while the Diary is used to collect all food expenditures in detail. Paulin et al. (2012) report that average annual expenditures for food at home from the Interview are consistently higher than from the Diary, while average annual expenditures for food away from home are

consistently lower in Interview than in Diary. Both food at home and food away from home are consistently selected from the Diary Survey for use in standard published tables. The assumption is that detailed Diary data are more reliable than data collected using global questions. Paulin et al. (2012) report that food away from home expenditures are likely lower in the Interview due to imperfect recall, while expenditures for food at home may be higher; although respondents may accurately report a value spent during a “typical” shopping day, they may not typically shop every week. That is, a family that reports spending \$X in a typical shopping week, but which only shops every other week in a 13-week quarter, is spending on average \$6.5X per quarter on food, but the data will show \$13X spent for the quarter. Research is currently underway in the BLS CE Division to develop a method to impute Diary food expenditures to the Interview. This would enable to BLS to improve accuracy while also reducing respondent burden in the collection of Interview data by dropping questions related to food. With such an imputation, a more refined definition of food could be developed. Interview-collected food at home and food away from home expenditures currently are being considered for replacement with Diary-imputed values.

#### **Production of a SPM using CE data for model development, not the production of poverty statistics.**

Another topic for future research is to produce a simple SPM using the CE data only. This exercise would begin after the CE completes development of its income tax model (see CE data quality section). Such an analysis could enable the BLS, depending upon SPM funding, to refine expenditure questions for goods and services that are subtracted from resources. Such data could provide the Census Bureau with a source to compare their estimation of expenditures that the ITWG recommended be subtracted from resources (i.e., income taxes, work-related expenditures, and medical out-of-pocket expenditures).

#### **Data Quality and Research<sup>7</sup>**

Much research has been conducted over the years in which CE data quality is the focus. This research includes comparisons of CE to Personal Consumption Expenditure (PCE) data and studies of item and unit non-response. When comparable CE and PCE aggregate expenditures are compared, the ratio of CE to PCE expenditures fell from 84 percent in 1992 to 74 percent in 2010 (Passero et al., 2012). The greatest declines in expenditures were for durables, as opposed to non-durables and services. Ratios for comparable services dropped the least, with a decrease of 10 percentage points. The decline in these ratios suggests evidence of underreporting. The 2010 PCE aggregates, upon which the analysis was based, are preliminary, and according to Henderson (2012) are apt to be revised downward later this summer. Such a revision would show the lingering impact of the recession.

Further evidence of a growing concern with the quality of reported CE data is presented in outside BLS studies, internal methodological studies, and the 2008 internal review of the CE Program. It is hypothesized that data quality is compromised due to survey length and complexity, panel or questionnaire conditioning, increasing telephone administration of a survey originally designed for personal visit interviews, proxy reporting by a single household member, recall effects stemming from a 3-month reference period, and other sources of measurement error.

In 2009 through 2011, CE completed a number of activities under the Gemini Project, which focuses on the CE Redesign. These activities include a report that outlined definitions of data quality for CE and the creation of a research tracking system for the many CE methodological and cognitive issues and tests

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informing plans for the redesign. In 2012, a preliminary proposal for a framework to create quality monitoring metrics built around survey operations was completed.

One important recent study was [Geisen et al. \(2011\)](#). This study, carried out by the Research Triangle Institute (RTI), examined the various factors affecting the availability and accuracy of financial records provided by respondents. Respondents were asked to provide financial records for items reported in a first interview. During the second interview, records were provided for only 36 percent of all items reported in Interview 1. For the items “reported in Interview 1 where a corresponding record was provided in Interview 2, the reported amount matched the record for just over half of the items (53 percent) with a range of 36 to 80 percent, depending on the section of the interview.” RTI reported that participants underestimated expenditures for 37 percent of items reported and overestimated expenditures for 33 percent of the items. This line of work was also the basis for three presentations at the recent 2012 American Association for Public Opinion Research Annual Conference.

In addition to the work just mentioned, several events have been held to collect information about key issues related to the redesign: a Survey Redesign Panel Discussion (January 2010), a Data Capture Technology Forum in March 2010, and a Data Users’ Needs Forum in June 2010. In December 2010, CE and the Council of Professional Associations on Federal Statistics held a CE Methods Workshop where five key topics central to the redesign were discussed: global questions, interview structure, proxy reporting, recall period, and split questionnaire designs.

Under the Gemini Project, a CNSTAT committee is also working on a report focused on redesigning the CE to improve data quality, while reducing respondent burden and maintaining response rates. A report from this committee is scheduled for release in the last half of 2012. Currently, as part of the Gemini Project, the BLS CE and CPI Divisions have been reviewing the requirements that each Division has for the CE.

The desire to improve data quality and the need to cope with expected budget constraints are likely to reduce the survey questions asked of respondents. With a reduction in survey questions asked, it is assumed the quality of CE data will improve. The impact on the SPM is unknown; however, changes in the SPM thresholds would be expected.

Through 2012, the Gemini Project will continue to synthesize findings from information gathering, summarize results from completed research, and plan future research studies. Current research projects or special analyses include: a Bounding Interview Project, a project on Combining Split Questionnaire Files, Diary-to-Interview Imputation Methods, Evaluation of Financial Application Software, Expenditure Grouping Study, Exploratory Burden Index, a project on Survey Length and Telephone Questions, Records Information and Feasibility of Use, and a Web Diary Feasibility Test. Planned CE research studies include an analysis of the Business and Income Screener, Expenditure App Prototype and Feasibility Study, Global Grocery Expenditures Allocation, an Individual Diaries Field Study, and Telephone Administration in Interview 3 and 4. Furthermore, CE plans to contract a study on measurement error. CE is planning to document the current state of knowledge about measurement error for the CE, and develop indicators and/or methods to monitor this survey error source over time, as well as for the Gemini Project.

Other work to improve data quality is the development of an income tax calculator for the CE. The ability to estimate tax information is important for researchers who use the CE survey data. It allows researchers to calculate disposable income and savings rates of consumers, which are important tools

for economic analysis. It further contributes to studies on the effects of taxes on spending. Accurate income tax information is a key component of disposable income and savings rate measures. Historically, the CE has not been able to provide an accurate reporting of taxes paid by the consumer. This is primarily due to a large number of respondents who do not know or refuse to answer the amount they paid in taxes. Since the CE began imputing income in 2004, the problem of non-tax reporting has become more apparent in the publications. Recent statistics for 2009 reveal that about 29 percent of CUs reported at least one member having taxes withheld, 37 percent reported additional taxes paid, and 9 percent reported having received a refund. In comparison to IRS data for 2009, about 84 percent of returns filed received a refund (Henderson et al. 2011).

Because of the importance of income tax data and the unreliability of the current CE income tax data, work has been going on within the BLS to find an alternative way to obtain income tax data at the consumer unit level. Recently published research was conducted by Kumcu (2012) using 2005 CE Interview data. To develop the CE income tax calculator, Kumcu started with the income tax calculator code (for the CPS) given to the BLS by the Census Bureau. This code was edited to reflect the inputs available in the CE and to meet CE data needs. Her analysis produces federal income taxes that are very similar to those produced using a Congressional Budget (CBO) tax model. Staff members within the BLS CE Division are building on Kumcu's calculations with additional code added to create Tax Unit inputs with relevant tax variables, for example, mortgage interest payments, property taxes, medical expenditures, and charitable contributions. Once this stage is completed, the CE will use a tax calculator package created and maintained by the National Bureau of Economic Research (NBER) to calculate federal and state income taxes at the Tax Unit level. The CE will then aggregate the taxes back to the associated Consumer Units. The CE Tax units and CE variables for location, household size, number of children, income amounts and sources, and deductible expenditures will service as inputs to the NBER calculator.

## Questions for the discussants and members of FESAC:

1. The Census Bureau produces the inter-area indexes for the SPM thresholds using the American Community Survey. This index uses rents and utilities paid by households in small geographic areas across the country. Are there suggestions for further joint research across agencies to provide these indexes? Should we adopt another approach such as the joint BLE/BEA work on Regional Price Parities? Or something else?
2. The ITWG recommended investigating methods for taking account of the medical out of pocket expenses of the uninsured. Initial research on this topic shows that using reported expenses understates the needs of individuals who are unable to afford adequate health care. Mandating insurance coverage will result in subtraction of additional MOOP expenses, but no way to capture the benefits of insurance. What future research could address this measurement outcome?
3. Efforts will continue on examining work-related expenses in the SPM. Lacking individually reported data in the CPS ASEC, are there better methods to assign these expenditures? Is there important research that would aid this effort? Are there alternative methods and/or data that we may take into account?
4. By including the value of in-kind benefits in SPM thresholds, we are moving away from a spending based threshold to a consumption based threshold. In other words, the threshold would reflect the “resource” needs of consumers for FCSU and a little bit more. If a purpose of the SPM is to produce a measure of how well off consumers are after taxes and transfers, should the threshold reflect these transfers as well? Or, should the threshold reflect only what consumers must spend, without counting transfers?
5. BLS currently prepares SPM thresholds by housing tenure status. The current approach uses actual reported housing expenditures for the production of the SPM thresholds. An alternative would be to produce one set of thresholds that reflects the rents or rental equivalence for housing and adds a value for net rental income for owner-occupiers to resources. Should we be exploring the use of a different method to account for differences in housing costs?
6. Comments, suggestions, and ideas for future research on any of the other elements of the SPM are encouraged. Are there other elements of the SPM that, in your view, should take higher priority on our research agenda than those listed above? We are particularly interested in proposed joint research across agencies.



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