

Constructing and Benchmarking the Supplemental Poverty Measure in the Panel Study of Income Dynamics

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Background

Poverty is an important individual and family economic outcome of interest to demographers, policymakers, and researchers in a variety of fields. However, the traditional method used to measure poverty in the United States – the official federal poverty line (FPL) – is widely recognized as inadequate. The FPL has been criticized for failing to account for the impact of taxes and non-cash benefit policies, work-related expenses, geographical differences in living costs, and modern patterns of family formation (Citro & Michael, 1995; Blank, 2008). The National Research Council / National Academy of Sciences issued recommendations for addressing these shortcomings in the federal poverty measure in 1995 and 2005 (Citro & Michael, 1995; Iceland, 2005), and these recommendations formed the basis for a new Supplemental Poverty Measure (SPM) announced by the U.S. Census Bureau and Bureau of Labor Statistics in 2011 (ITWG, 2010; Short, 2011).

The SPM was initially implemented in the Census Current Population Survey (CPS). Researchers at the Census Bureau and in academia have also worked to implement the SPM in the American Community Survey (ACS) and more recently in the Survey of Income and Program Participation (SIPP) (Short & Garner, 2012). Another important nationally representative dataset frequently used to study the demographics of poverty and the association of poverty with other life outcomes is the Panel Study of Income Dynamics (PSID) (PSID, 2012). Moreover, unlike the Census datasets in which the SPM has already been implemented, the PSID is a long-term longitudinal panel study and contains comprehensive data on health, wealth, child development, and other topics, making it a broader research resource. The PSID contains data on family poverty status calculated using the official federal poverty line. However, the Supplemental Poverty Measure is a much-improved measure of poverty compared to the FPL, and thus constructing the SPM in the PSID can facilitate better-grounded research on poverty, associated outcomes, and the impact of anti-poverty policies using PSID data. This paper describes a method for calculating SPM poverty status in the PSID, examines population rates of SPM poverty using PSID data for the time period from 1998 to 2008, and will benchmark the PSID-generated SPM poverty rates against rates calculated using data from the CPS.

Though the focus is the Supplemental Poverty Measure, this paper also describes a method for constructing a precursor to the SPM, developed by the Census Bureau and Bureau of Labor Statistics as an earlier alternative poverty measure, the NAS-FCSU measure. The NAS-FCSU is included because it is somewhat easier to implement in the PSID than the SPM, and official Census data is available to benchmark the rates for the years 1999 to 2009. Poverty rates calculated in the PSID using the SPM and the NAS-FCSU measures are also compared to rates calculated using the official FPL poverty measure.

Data

Poverty status under the Supplemental Poverty Measure (and the NAS-FCSU measure) is calculated by summing a specified set of cash and in-kind family resources, subtracting specified necessary expenses, and comparing the resulting amount to a specified threshold amount designed to reflect necessary basic expenditures for food, clothing, shelter, and utilities, adjusted for family composition as well as for housing status and geographic location (in the SPM only) (Short, 2011).

Until recently, SPM thresholds were only available from the Census and Bureau of Labor Statistics for the years 2005 forward, limiting the usefulness of implementing the SPM in the longitudinal Panel Study of Income Dynamics, which only collects family income data every other year. However, a forthcoming paper from the BLS includes SPM thresholds back to 2002 (Garner & Gudrais, 2012), and an independent team of researchers at Columbia University is currently working to estimate historical SPM thresholds for prior years (Fox et al., 2012). Thus this paper makes use of the BLS-produced thresholds for 2008, 2006, 2004, and 2002, plus the thresholds produced by the Columbia team for 2000 and 1998, in order to construct SPM poverty status and rates in the PSID across an 11-year timeframe. Official Census thresholds for the NAS-FCSU measure are used for the same timeframe (U.S. Census, 2009).

Thresholds are adjusted and family resources are calculated using a broad set of variables from the PSID. Though it is widely known that the PSID contains detailed information about cash income and benefits, it is perhaps less widely known that the PSID also contains reasonably detailed information about a variety of near-cash and in-kind benefits such as food stamps and WIC, household expenses such as child care and medical spending, as well as housing status. Thus the PSID contains directly reported values for many of the resource inputs to the SPM, reported receipt and/or sufficient information to directly estimate values for the remaining inputs, as well as data on housing tenure, location of residence, and family composition needed to assign and adjust SPM thresholds. It is therefore feasible to construct the SPM in the PSID with minimal imputation of input variables. Full data needed to calculate SPM poverty status are available in the PSID beginning with survey year 1999 (corresponding to family income for calendar year 1998), and the PSID conducts biennial data collection. Thus this paper examines SPM poverty in the PSID for the years 1998 (n=14,679), 2000 (n=14,990), 2002 (n=15,270), 2004 (n=15,768), 2006 (n=16,006), and 2008 (n=16,546) (the most recent year for which data are available). NAS-FCSU poverty is examined for the same timeframe.

Methods

The basic method for calculating SPM poverty status was modeled on the procedures described in the most recent comprehensive Census Bureau publication on the SPM (Short, 2011), with exceptions as described below.

To calculate SPM poverty status, one of three thresholds was first assigned to each family based on housing tenure, or whether the family owns their home with a mortgage, owns without a mortgage, or rents. PSID variables for housing tenure and mortgage were used to assign the appropriate threshold. The portion of the threshold allocated to housing expenditures was then adjusted to account for geographic differences in cost of living. Census SPM procedures make this adjustment through matches to rent estimates from the American Community Survey for specific Metropolitan Statistical Areas, but the PSID public-use data file does not contain MSA-level geographic data. Thus an alternative method was used for geographic adjustment based on the average Fair Market Rents published by the U.S. Dept. of Housing and Urban Development, for metro and non-metro areas by state, modeled on a method used in prior Census Bureau experimental poverty measures (Short, 2001).

Thresholds are next adjusted for family composition, specifically the number of adults and children in the family unit. The SPM defines the family unit to include all co-resident individuals related by blood or marriage as well as non-married cohabiting partners and their children; this represents a significant departure from the definition of family in the FPL, which excludes cohabitators. The PSID uses a basic definition of family that is very similar to that of the SPM, with cohabitators and their relatives included as part of the family unit.

SPM threshold amounts are adjusted using a three-parameter equivalence scale to account for different economies of scale for families without children, single-parent families, and two-parent families with children. In adjusting the thresholds in the PSID, it is important to consider differences in the way income data for the family unit is reported in the PSID compared to the Current Population Survey (CPS), which was used in designing the SPM. The CPS collects data on prior-year income for all individuals who are part of the family at the time of the survey in March of the following year; thus poverty thresholds are adjusted to correspond to the number of family members at the time of the March survey. The PSID, in contrast, collects data on prior-year income for all family members who were part of the family unit for any part of the prior year, regardless of whether they are still in the family at the time of the survey interview. Income amounts for family members besides the head and wife or cohabiting partner are prorated to match the time that they were present during the year. For consistency with this method of income reporting in the PSID, the SPM thresholds for this paper were adjusted to reflect the prorated number of family members for the year, including part-year family members.

To calculate poverty status, thresholds are compared to family resources, which in the SPM include cash income, minus payroll taxes and income taxes, plus tax credits such as the EITC, plus the value of food stamps (SNAP), WIC, school lunch, heating subsidy (LIHEAP), and housing subsidy. Other expenses subtracted from family resources comprise childcare, an amount for other work-related expenses, child support paid, and medical out-of-pocket expenses. Values for several of these items are directly reported in the PSID, namely cash income, food stamps, heating subsidy, childcare, and medical out-of-pocket spending. Receipt but not amounts are reported for WIC and school lunch; for both, amounts were estimated based on average national benefits from administrative data, paralleling Census SPM procedures. Work-related expenses were estimated based on reported number of weeks worked multiplied by a set weekly expense amount, again directly following Census SPM procedures. Housing subsidy receipt is reported in the PSID, but the Census SPM method for estimating

subsidy value could not be implemented with PSID public-use data. Thus housing subsidy value was estimated as the difference between the housing portion of the threshold and the family rent contribution as calculated from HUD tenant payment rules. Taxes are not directly reported in the PSID, so an external tax calculator – the NBER's TAXSIM calculator (Feenberg & Coutts, 1993) – was used to estimate payroll and income taxes and credits, largely following the procedure for using TAXSIM with PSID data outlined in Butrica and Burkhauser (1997). Census SPM procedures also use a tax calculator to estimate taxes.

Methods for calculating the NAS-FCSU measure followed those outlined in Garner & Short (2008), and are identical to those for calculating the SPM except as follows: thresholds are not adjusted for housing tenure or geographical differences in costs, and resources do not include housing subsidy, school lunch, WIC, or heating subsidy. FPL poverty status was calculated using cash income and FPL threshold variables that are included in the PSID data file.

Preliminary Results

Sufficient data were available to calculate SPM poverty status for 96%-99% of the sample across the six years of data, and NAS-FCSU poverty status was calculated for 97%-99% of the sample.

Population rates of SPM and NAS-FCSU poverty (and FPL poverty for comparison) were then estimated. The PSID utilizes sample weights to account for over-sampling of low-income individuals and sample attrition. Thus poverty rates were estimated using the individual longitudinal weights provided for each year. Poverty rates calculated using the FPL are consistently lower in the PSID than in official Census statistics; PSID researchers generally attribute this difference to more complete income reporting in the PSID (Grieger, Danziger & Schoeni, 2009). Thus SPM and NAS-FCSU poverty rates, as well, are expected to be lower in the PSID than in the CPS. Preliminary results show that NAS-FCSU rates in the PSID are indeed lower than published Census rates, as expected, but follow a similar trend. Benchmark rates for the SPM are not currently available but are expected to become available, as described below.

Ongoing Research

Continuing research for this paper will more closely examine the issue of missing data in the components required to calculate SPM and NAS-FCSU poverty, and will consider options for possibly imputing missing data in order to enlarge the sample for which poverty status can be calculated. Poverty rates for specific subgroups (e.g. by age or race) will also be examined. In addition, SPM poverty rates in the Current Population Survey for the years of interest are currently being calculated by the team of researchers at Columbia, and will be used to benchmark the rates calculated here using PSID data.

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Preliminary Results

Sources: Author's calculations from PSID data; Census Bureau publications

Poverty Rates Using Different Measures and Data Sources, 1998 to 2008

Measure	1998	2000	2002	2004	2006	2008
SPM-PSID	7.98	6.99	8.14	7.97	8.42	8.52
NAS-FCSU-PSID	11.62	10.83	12.10	11.83	13.13	13.94
NAS-FCSU-Census	n/a	12.5	13.4	13.4	13.7	15.7
FPL-PSID	9.76	8.18	9.36	9.40	10.04	9.73
FPL-Census	12.7	11.3	12.1	12.8	12.3	13.2

Poverty Trends Using Different Measures and Data Sources, 1998 to 2008

