

# Understanding Income-to-Threshold Ratios Using the Supplemental Poverty Measure

---

## *People with Moderate Income*

**Kathleen Short and Timothy Smeeding**

**8/21/2012**

SEHSD Working Paper Number 2012-18

The views expressed in this research, including those related to statistical, methodological, technical, or operational issues, are solely those of the authors and do not necessarily reflect the official positions or policies of the Census Bureau, or the views of other staff members. The authors accept responsibility for all errors and thank David Johnson, Charles Nelson, and Trudi Renwick for helpful comments on earlier drafts. This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress. This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone more limited review than official publications.

## Abstract

*In November of 2011 the Census Bureau released the first report (Short, 2011) detailing research on a new Supplemental Poverty Measure following suggestions from an interagency technical working group (ITWG, 2010). Notable was the increase in the percent of individuals with income in the lower middle of the SPM resource distribution. This large group represents what we will refer to as people of 'moderate income' whose net resources leave them between 1 and 2 times the SPM threshold. This group is the focus of this paper. Rather than fully analyze this group the main goal is to provide estimates to those who are interested in conducting additional analysis and inspection. Further investigation into the SPM will benefit our understanding of the implications of this new measure for those who are not poor but for whom the SPM concepts might apply, including the moderate income group we focus on here.*

## Introduction

In November of 2011 the Census Bureau released the first report (Short, 2011) detailing research on a new Supplemental Poverty Measure (SPM) following suggestions from an interagency technical working group (ITWG, 2010). That report presented differences between the new SPM and the current official poverty measure and showed estimates of poverty rates, distributions of poverty populations by a variety of characteristics, as well as distributions of income-to-poverty threshold ratios using the two measures (Short 2011, Table 4, Page 10, and Figure 4, page 11).<sup>1</sup>

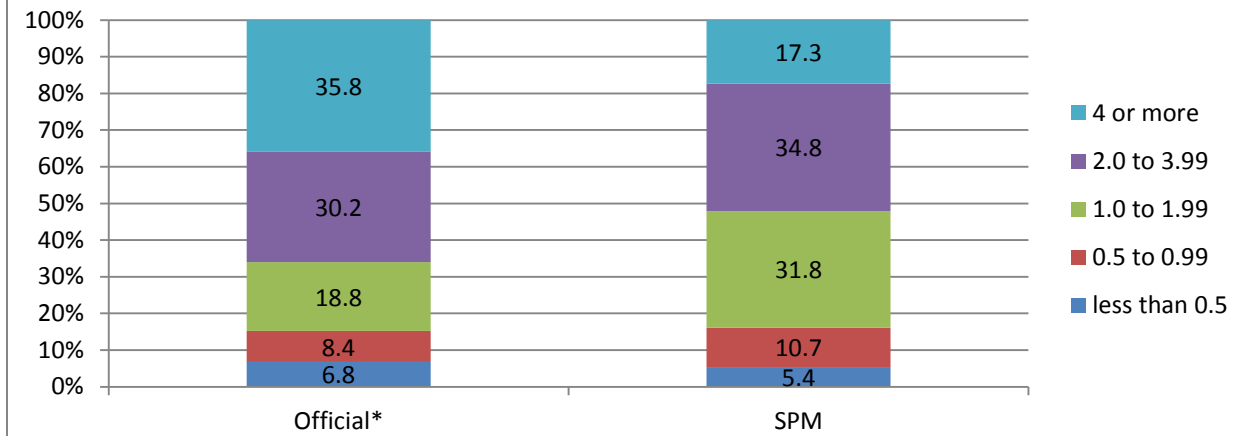
The SPM income and SPM thresholds concepts were designed explicitly for measuring poverty. But they may also be used to explore the income-to-SPM thresholds distribution, assuming the measures of income and SPM thresholds are appropriate to the question one is trying to answer. While others have posited after tax and benefit income distribution measures (e.g. U.N. , 2011, CBO, 2011, 2012) and while most studies of income inequality adjust for differences in unit size to measure adjusted income, the SPM concepts of SPM thresholds and resources can also be employed to measure some aspects of inequality.

The SPM report presented one chart and one table on the distribution of income-to-poverty threshold ratios for various groups. Dividing income by the poverty threshold controls income by unit size and composition. Figure 1, reproduced from that report, shows the percent of all people in each income-to-threshold ratio category. In general the comparison suggests that there is a smaller percentage of the population in the lowest category of the distribution using the SPM. For most groups, including targeted non-cash benefits and refundable tax credits reduces the percent of the population in the lowest category, those with income below half their poverty threshold ( Sherman CBPP; Edin and Shaefer, 2012) and in general provide benefits to those near or below the poverty line . On the other hand, the SPM shows a smaller percentage with income or resources in the highest category; four or more times the thresholds. The SPM resource measure compresses the distribution of income-to-SPM thresholds as it subtracts income and payroll taxes, medical out of pocket expenses (MOOP) and work related expenses, bringing down the percent of people with income in the highest category, while the official measure does not. Given the construction of the SPM, we would expect there to be an increase in the middle groups. Including tax and transfers to construct disposable income from a market income concept invariably results in lower inequality (OECD, 2008). Most notable is the increase in the percent of individuals with a ratio between 1.00 and 1.99 times the SPM threshold. This large group represents what we will refer to as people of *moderate income* (compared to SPM thresholds) whose net resources are between 1 and 2 times the poverty threshold. This group is the focus of this paper.

---

1 The data in this report are from the “Annual Social and Economic Supplement (ASEC)” to the 2010 and 2011 Current Population Survey (CPS). The estimates in this paper (which may be shown in text, figures, and tables) are based on responses from a sample of the population and may differ from actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant. All comparative statements have undergone statistical testing and are significant at the 90 percent confidence level unless otherwise noted. Standard errors were calculated using replicate weights. Further information about the source and accuracy of the estimates is available at <[www.census.gov/hhes/www/p60\\_238sa.pdf](http://www.census.gov/hhes/www/p60_238sa.pdf)> and <[www.census.gov/hhes/www/p60\\_239sa.pdf](http://www.census.gov/hhes/www/p60_239sa.pdf)>, accessed September 2011.

**Figure 1: Distribution of people by income-to-threshold ratios: 2010**



Under the official poverty measure 18.8 percent of the population is in this category. Some analysts who refer to this group as ‘low income’ and have shown that dollar amounts of basic budgets are similar up to approximately 200 percent of the official poverty thresholds (Fisher, forthcoming, Pearce, 2001, Fremsted, 2010). While it is unclear whether this same designation should be used for this category under the new measure, Figure 1 shows a very large increase in the number of people who are in our moderate income group between once and twice the SPM poverty line.

The official thresholds, based on a multiplier of basic food needs, represented about half the median before-tax income and a third of after-tax income in the 1960s when they were designed (Smeeding, 2006). On the other hand, the SPM thresholds, following recommendations from the National Academy of Sciences report (Citro and Michael, 1995), represent expenditures on food, clothing shelter and utilities plus a “little bit more” to cover non-work-related transportation, personal care items, and other needed expenses. The SPM thresholds were about 10 percent higher than the official thresholds in 2010 before adjustments.

The SPM resource measure is designed to fit with the SPM thresholds and includes both cash and noncash income while subtracting amounts spent on necessities such as work-related expenses, medical out-of-pocket expenditures, taxes, and child support payments to other households. The SPM measure also counts cohabiting partners as one poverty unit who are sharing resources and it has different standards depending on whether you own a home outright, own one with a mortgage or are a renter; and it adjusts for cost of living differences across the United States. The official measure does none of these. So it is clear that the two measures are very different in many dimensions, including the family unit, the thresholds and the measure of resources.

The purpose of this paper is to provide additional information about this larger moderate income group using the SPM. We present information about the characteristics of this group, where individuals are in

the distribution using the official measure, and which elements of the SPM may have shifted these individuals into this category. Because this group comprises 31.8 percent of the population, a much larger group than under the official measure (18.8 percent), there is interest in examining this group in more detail. It is less a goal of this paper to fully analyze these estimates as to provide them to those who are interested in conducting additional analysis and inspection. Further investigation into the SPM will benefit our understanding of the implications of this new measure, not only for those who are poor using the SPM concepts, but for others along the distribution of SPM resources, including the between 1 and 2 group we focus on here.

### **The distribution of the total population and the population between 1 and 2 times the official and SPM thresholds by selected characteristics: 2010**

Under the official poverty measure there were 57.5 million people with income between 1 and 2 times the official poverty thresholds in 2010. Using the SPM there were 97.5 million people in this category. Table 1 compares the composition of the total population with the population in this ‘between 1 and 2 group’ under both measures. Differences between the groups are shown in the table and shed light on the type of individuals classified here by the different measures. The only groups for which there is no statistically significant difference between the two measures are Blacks, who are about 16 percent of this group under both measures, and those inside principal cities.

The SPM moderate income group has a statistically significant higher percentage of the nonelderly, married couples, White non-Hispanic individuals, Asians, the native born or naturalized citizens, owners with mortgages, those residing in suburbs, in the Northeast or West, those with private health insurance, and working, particularly year-round full-time, than the official measure.

On the other hand, the SPM group has a lower percentage of seniors, individuals living in male householder families or in new SPM units (families that include cohabiting partners and foster children), fewer individuals of Hispanic origin, and the foreign born, fewer homeowners with no mortgages and renters, fewer residing inside principal cities or in non-metropolitan areas, in the Midwest or the South, with public insurance or the uninsured, and working less than full-time year-round, or not working than under the official measure.

| Table 1: Distribution of People in Total and Population between 1 and 2 times the official and SPM Thresholds: 2010 |                           |                        |            |                        |        |                        |                            |  |
|---|---------------------------|------------------------|------------|------------------------|--------|------------------------|----------------------------|--|
|   | Total Population          |                        | Official** |                        | SPM    |                        | Difference Official vs SPM |  |
|   | Est.                      | 90 percent C.I.† (+/-) | Est.       | 90 percent C.I.† (+/-) | Est.   | 90 percent C.I.† (+/-) |                            |  |
| <b>All People</b>   | 306,110                   | 69                     | 57,465     | 885                    | 97,475 | 1,034                  |                            |  |
|   | (percent of column total) |                        |            |                        |        |                        |                            |  |
| <b>Age</b>  |                           |                        |            |                        |        |                        |                            |  |
| <b>Under 18 years</b>   | 24.5                      | 0.0                    | 28.0       | 0.4                    | 29.6   | 0.3                    | 1.7 *                      |  |
| <b>18 to 64 years</b>   | 62.7                      | 0.1                    | 54.6       | 0.4                    | 57.1   | 0.3                    | 2.5 *                      |  |
| <b>65 years and older</b>   | 12.8                      | 0.0                    | 17.5       | 0.4                    | 13.3   | 0.3                    | -4.1 *                     |  |
| <b>Type of Unit</b>   |                           |                        |            |                        |        |                        |                            |  |
| <b>In married couple unit</b>   | 60.7                      | 0.4                    | 47.9       | 0.9                    | 54.1   | 0.7                    | 6.2 *                      |  |
| <b>In female householder unit</b>   | 20.2                      | 0.3                    | 29.3       | 0.7                    | 26.0   | 0.6                    | -3.3 *                     |  |
| <b>In male householder unit</b>   | 10.5                      | 0.2                    | 12.3       | 0.4                    | 10.5   | 0.3                    | -1.7 *                     |  |
| <b>In new SPM unit</b>  | 8.6                       | 0.2                    | 10.6       | 0.5                    | 9.4    | 0.4                    | -1.2 *                     |  |
| <b>Race and Hispanic Origin</b>   |                           |                        |            |                        |        |                        |                            |  |
| <b>White</b>  | 79.5                      | 0.0                    | 76.0       | 0.6                    | 75.3   | 0.5                    | -0.7 *                     |  |
| <b>White, not Hispanic</b>  | 64.5                      | 0.0                    | 53.4       | 0.8                    | 54.3   | 0.5                    | 0.9 *                      |  |
| <b>Black</b>  | 12.8                      | 0.0                    | 16.2       | 0.5                    | 16.4   | 0.4                    | 0.1                        |  |
| <b>Asian</b>  | 4.7                       | 0.0                    | 4.0        | 0.3                    | 4.7    | 0.3                    | 0.6 *                      |  |
| <b>Hispanic (any race)</b>  | 16.3                      | 0.0                    | 24.4       | 0.6                    | 22.7   | 0.4                    | -1.7 *                     |  |
| <b>Nativity</b>   |                           |                        |            |                        |        |                        |                            |  |
| <b>Native born</b>  | 87.5                      | 0.2                    | 84.3       | 0.5                    | 84.8   | 0.4                    | 0.5 *                      |  |
| <b>Foreign born</b>   | 12.5                      | 0.2                    | 15.7       | 0.5                    | 15.2   | 0.4                    | -0.5 *                     |  |
| <b>Naturalized citizen</b>  | 5.5                       | 0.1                    | 5.6        | 0.3                    | 6.2    | 0.2                    | 0.6 *                      |  |
| <b>Not a citizen</b>  | 7.0                       | 0.2                    | 10.1       | 0.4                    | 9.0    | 0.3                    | -1.1 *                     |  |
| <b>Tenure</b>   |                           |                        |            |                        |        |                        |                            |  |
| <b>Owner</b>  | 67.7                      | 0.4                    | 52.8       | 0.9                    | 56.0   | 0.8                    | 3.2 *                      |  |
| <b>Owner/Mortgage</b>   | 45.2                      | 0.4                    | 28.7       | 0.8                    | 36.9   | 0.7                    | 8.2 *                      |  |
| <b>Owner/No mortgage/rentfree</b>   | 23.6                      | 0.3                    | 25.6       | 0.8                    | 20.3   | 0.6                    | -5.3 *                     |  |
| <b>Renter</b>   | 31.2                      | 0.5                    | 45.6       | 0.9                    | 42.8   | 0.8                    | -2.9 *                     |  |
| <b>Residence</b>  |                           |                        |            |                        |        |                        |                            |  |
| <b>Inside MSAs</b>  | 84.4                      | 0.9                    | 81.2       | 1.2                    | 83.8   | 1.0                    | 2.6 *                      |  |
| <b>Inside principal cities</b>  | 32.3                      | 0.6                    | 35.3       | 1.0                    | 34.8   | 0.8                    | -0.5                       |  |
| <b>Outside principal cities</b>   | 52.1                      | 0.8                    | 45.9       | 1.3                    | 49.0   | 1.0                    | 3.1 *                      |  |
| <b>Outside MSAs</b>   | 15.6                      | 0.9                    | 18.8       | 1.2                    | 16.2   | 1.0                    | -2.6 *                     |  |
| <b>Region</b>   |                           |                        |            |                        |        |                        |                            |  |
| <b>Northeast</b>  | 17.9                      | 0.1                    | 15.4       | 0.6                    | 17.4   | 0.5                    | 2.0 *                      |  |
| <b>Midwest</b>  | 21.6                      | 0.1                    | 20.9       | 0.7                    | 20.1   | 0.5                    | -0.7 *                     |  |
| <b>South</b>  | 37.0                      | 0.1                    | 39.5       | 0.9                    | 37.4   | 0.6                    | -2.0 *                     |  |
| <b>West</b>   | 23.5                      | 0.1                    | 24.3       | 0.7                    | 25.0   | 0.5                    | 0.7 *                      |  |
| <b>Health Insurance coverage</b>  |                           |                        |            |                        |        |                        |                            |  |
| <b>With private insurance</b>   | 64.0                      | 0.4                    | 42.2       | 0.7                    | 50.7   | 0.6                    | 8.5 *                      |  |
| <b>With public, no private insurance</b>  | 19.7                      | 0.3                    | 32.3       | 0.7                    | 28.0   | 0.5                    | -4.3 *                     |  |
| <b>Not insured</b>  | 16.3                      | 0.2                    | 25.6       | 0.6                    | 21.3   | 0.4                    | -4.3 *                     |  |
| <b>Work Experience (Ages 16 to 65)</b>  |                           |                        |            |                        |        |                        |                            |  |
| <b>All workers</b>  | 47.4                      | 0.2                    | 36.4       | 0.5                    | 40.7   | 0.3                    | 4.3 *                      |  |
| <b>Full-time, year-round</b>  | 31.2                      | 0.2                    | 18.9       | 0.3                    | 23.6   | 0.3                    | 4.7 *                      |  |
| <b>Not full-time, year-round</b>  | 16.2                      | 0.2                    | 17.5       | 0.4                    | 17.1   | 0.3                    | -0.4 *                     |  |
| <b>Did not work</b>   | 18.2                      | 0.2                    | 21.3       | 0.4                    | 19.5   | 0.3                    | -1.7 *                     |  |

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

\* 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.

## Comparing categories across two measures: Official income-to-threshold ratios for those with moderate income using the SPM

Table 2 shows the composition of those in the moderate income group using the SPM by official income-to-SPM thresholds ratios. This comparison reveals the characteristics of those who changed categories between the two measures and those who did not and, as such, highlights differences between the two measures.

The first column shows the number of individuals in the moderate income group whose before-tax money income was between 1 and 2 times the official thresholds. The next column contains those who were poor under the official measure but are *moved up* to the moderate income category with the SPM. This group would consist of individuals who were recipients of noncash benefits or who received refundable tax credits in excess of other taxes paid, or whose SPM thresholds were lower than official thresholds. Lower SPM thresholds may occur due to lower housing costs assigned by the geographic cost-of-living adjustment or the housing tenure adjustments (such as owners who have paid off their mortgage). In either case the net effect is to increase the ratio of income to needs under the SPM definition

The last column consists of those who are *moved down* the income-to-poverty threshold ratio distribution under the SPM from a higher category under the official measure. This would occur due to the subtraction of payroll and income taxes in excess of credits, medical out-of-pocket expenses, or work-related expenses from income, from less in targeted noncash benefits or from higher SPM thresholds representing higher housing costs. About half of these individuals are workers (and so have work-related costs, payroll taxes, and employer subsidized health insurance for which they also have to pay some of the premiums) subtracted from income. The next section of the paper examines in more depth the factors behind these differences.

The table shows the number of these individuals in each of these three groups across several characteristics. For example, of the individuals who were in this moderate income category with the SPM but classified as poor under the official measure, 5.3 million were children. Examination of other groups sheds light on what types of individuals comprise these categories.

Table 2: Official income-to-poverty needs ratios for those in 1 and 2 times the SPM threshold category

|  | In 1-2 category |                        | Official** poor |                        | Above 2 x official threshold |                        |
|--|-----------------|------------------------|-----------------|------------------------|------------------------------|------------------------|
|  | Both measures   |                        | Moved up        |                        | Moved down                   |                        |
|  | Number (000)    | 90 percent C.I.† (+/-) | Number (000)    | 90 percent C.I.† (+/-) | Number (000)                 | 90 percent C.I.† (+/-) |
| <b>All People</b>                      | 41,846          | 760                    | 11,154          | 421                    | 44,476                       | 804                    |
| <b>Age</b>                             |                 |                        |                 |                        |                              |                        |
| Under 18 years                         | 13,020          | 347                    | 5,295           | 254                    | 10,567                       | 281                    |
| 18 to 64 years                         | 21,906          | 428                    | 5,370           | 210                    | 28,346                       | 538                    |
| 65 years and older                     | 6,919           | 253                    | 489             | 53                     | 5,563                        | 222                    |
| <b>Type of Unit</b>                    |                 |                        |                 |                        |                              |                        |
| In married couple unit                 | 20,784          | 645                    | 3,315           | 305                    | 28,653                       | 660                    |
| In female householder unit             | 12,729          | 377                    | 3,831           | 240                    | 8,750                        | 224                    |
| In male householder unit               | 5,070           | 212                    | 656             | 80                     | 4,541                        | 326                    |
| In new SPM unit                        | 3,262           | 227                    | 3,351           | 210                    | 2,534                        | 196                    |
| <b>Race and Hispanic Origin</b>        |                 |                        |                 |                        |                              |                        |
| White                                  | 31,865          | 665                    | 7,415           | 340                    | 34,103                       | 693                    |
| White, not Hispanic                    | 22,512          | 586                    | 4,777           | 279                    | 25,678                       | 627                    |
| Black                                  | 6,912           | 299                    | 2,892           | 214                    | 6,167                        | 314                    |
| Asian                                  | 1,505           | 163                    | 248             | 64                     | 2,780                        | 206                    |
| Hispanic (any race)                    | 10,085          | 368                    | 2,916           | 227                    | 9,133                        | 373                    |
| <b>Nativity</b>                        |                 |                        |                 |                        |                              |                        |
| Native born                            | 35,951          | 706                    | 9,926           | 389                    | 36,770                       | 725                    |
| Foreign born                           | 5,895           | 250                    | 1,228           | 104                    | 7,706                        | 306                    |
| Naturalized citizen                    | 2,081           | 128                    | 310             | 48                     | 3,628                        | 189                    |
| Not a citizen                          | 3,814           | 212                    | 917             | 92                     | 4,078                        | 239                    |
| <b>Tenure</b>                          |                 |                        |                 |                        |                              |                        |
| Owner                                  | 22,019          | 655                    | 3,481           | 238                    | 29,069                       | 721                    |
| Owner/Mortgage                         | 11,611          | 433                    | 1,528           | 176                    | 22,854                       | 607                    |
| Owner/No mortgage/rentfree             | 11,135          | 449                    | 2,145           | 203                    | 6,498                        | 336                    |
| Renter                                 | 19,099          | 513                    | 7,481           | 358                    | 15,124                       | 510                    |
| <b>Residence</b>                       |                 |                        |                 |                        |                              |                        |
| Inside MSAs                            | 33,248          | 788                    | 8,275           | 432                    | 40,164                       | 857                    |
| Inside principal cities                | 14,399          | 480                    | 4,298           | 271                    | 15,211                       | 492                    |
| Outside principal cities               | 18,849          | 686                    | 3,976           | 314                    | 24,953                       | 717                    |
| Outside MSAs                           | 8,597           | 653                    | 2,879           | 247                    | 4,312                        | 332                    |
| <b>Region</b>                          |                 |                        |                 |                        |                              |                        |
| Northeast                              | 6,168           | 336                    | 1,675           | 174                    | 9,132                        | 368                    |
| Midwest                                | 9,313           | 411                    | 2,512           | 185                    | 7,809                        | 337                    |
| South                                  | 17,221          | 554                    | 5,019           | 289                    | 14,246                       | 554                    |
| West                                   | 9,143           | 368                    | 1,948           | 174                    | 13,290                       | 456                    |
| <b>Health Insurance coverage</b>       |                 |                        |                 |                        |                              |                        |
| With private insurance                 | 17,014          | 475                    | 1,595           | 130                    | 30,794                       | 604                    |
| With public, no private insurance      | 14,425          | 439                    | 6,759           | 330                    | 6,118                        | 278                    |
| Not insured                            | 10,407          | 317                    | 2,800           | 170                    | 7,564                        | 332                    |
| <b>Work Experience (Ages 16 to 65)</b> |                 |                        |                 |                        |                              |                        |
| All workers                            | 14,770          | 200                    | 2,667           | 74                     | 22,229                       | 261                    |
| Full-time, year-round                  | 7,836           | 118                    | 778             | 40                     | 14,428                       | 196                    |
| Not full-time, year-round              | 6,933           | 143                    | 1,889           | 66                     | 7,801                        | 140                    |
| Did not work                           | 8,536           | 163                    | 3,092           | 97                     | 7,422                        | 134                    |

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].

\*\* 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.



## Changes across two measures in a multivariate framework

As described above the SPM has many parts that affect the SPM poverty status as compared to the official measure. These same parts affect the placement of individuals in the income-to-SPM thresholds distribution. It is useful to examine these outcomes in a multivariate context. Tables 3 and 4 present estimates from two logistic regressions; one that models the probability of being official poor and between 1 and 2 SPM, considered as “moving up”, and a second that models the probability of being above twice the official threshold and between 1 and 2 SPM, considered as “moving down”. The two models contain the same explanatory variables that consist of various demographic characteristics, indicators of threshold adjustments for housing tenure and residence and region, indicators of receipt of in-kind benefits and indicators of payment of nondiscretionary expenses. A coefficient greater than one says that the odds that an explanatory variable, like a benefit or a tax, has a higher probability of moving up or down relative to the omitted category.

These estimations are useful because they allow us to assess not only the characteristics of those who change categories, but the effects of the threshold adjustments and changes in the unit of analysis. For example, the presence of a cohabiter in the SPM unit represents a high probability that an individual, classified as poor under the official measure, is in the moderate income category with the SPM.

Other results in Table 3 suggest that those in female householder units, children, and the foreign born have a higher probability of moving up with the SPM relative to omitted groups. Those residing outside MSAs relative to those residing inside principal cities and those owning their home outright are also more likely to be in the higher SPM category. These results reflect lower SPM thresholds for these groups. Receipt of each of the noncash benefits and the EITC increase the probability of moving up, holding demographic characteristics and threshold adjustments constant.

Table 4 shows results, using the same indicators, for moving down; that is above twice the official threshold, but moving to moderate income status between 1 and 2 times the SPM threshold. Those over 65 years of age have a higher probability of moving down compared to adults aged 18 to 64, as do those residing in MSAs but outside principal cities (suburbs), in the Northeast or the Midwest relative to the omitted South category. All payments of nondiscretionary expenses increase the probability of moving down except for paying work expenses (likely highly collinear with payment of payroll taxes). These payments increase the probability even while holding demographic characteristics and adjustments to the thresholds constant in the regression model.

These results represent a preliminary look into the many factors at play that change income-to-threshold ratios between the two measures. Other specifications could shed additional light. For example, interaction terms between the explanatory variables, such as age and housing tenure, or race and residence, could be useful to isolate the various aspects that cause differences across the two measures. These more thorough explorations await future work.

| <b>Table 3: Logistic Regression Results</b>            |                   |                          |        |
|--|-------------------|--------------------------|--------|
| <b>Modeled likelihood of official poor and SPM 1-2</b> |                   |                          |        |
| <b>"Moved UP"</b>                                      |                   |                          |        |
| <b>Population: CPS ASEC 2011 Persons</b>               |                   |                          |        |
| <b>Effect</b>  | <b>Odds Ratio</b> | <b>90% Wald</b>          |        |
|  |                   | <b>Confidence Limits</b> |        |
|  |                   |                          |        |
| <b>In female householder unit</b>                      | <b>1.301</b>      | 1.299                    | 1.304  |
| <b>Cohabitor</b>                                       | <b>20.156</b>     | 20.113                   | 20.198 |
| <b>Under 18 years</b>                                  | <b>1.082</b>      | 1.081                    | 1.084  |
| <b>65 years and older</b>                              | <b>0.214</b>      | 0.213                    | 0.215  |
| <b>Black</b>   | <b>1.088</b>      | 1.086                    | 1.090  |
| <b>Hispanic (any race)</b>                             | <b>1.139</b>      | 1.137                    | 1.141  |
| <b>Foreign born</b>                                    | <b>1.360</b>      | 1.357                    | 1.363  |
| <b>Full-time, year-round worker</b>                    | <b>0.305</b>      | 0.304                    | 0.306  |
| <b>Outside MSAs</b>                                    | <b>1.509</b>      | 1.506                    | 1.511  |
| <b>Outside principal cities</b>                        | <b>0.853</b>      | 0.851                    | 0.854  |
| <b>Northeast</b>                                       | <b>0.637</b>      | 0.636                    | 0.638  |
| <b>Midwest</b>   | <b>0.773</b>      | 0.772                    | 0.775  |
| <b>West</b>  | <b>0.580</b>      | 0.579                    | 0.581  |
| <b>Owner/No mortgage/rentfree</b>                      | <b>1.696</b>      | 1.693                    | 1.699  |
| <b>Received EITC</b>                                   | <b>2.002</b>      | 1.997                    | 2.006  |
| <b>Received foodstamps</b>                             | <b>4.218</b>      | 4.212                    | 4.224  |
| <b>Received housing subsidy</b>                        | <b>5.938</b>      | 5.926                    | 5.951  |
| <b>Received school lunch</b>                           | <b>1.480</b>      | 1.477                    | 1.482  |
| <b>Received energy asst</b>                            | <b>1.396</b>      | 1.393                    | 1.399  |
| <b>Received WIC</b>                                    | <b>1.566</b>      | 1.564                    | 1.569  |
| <b>Paid payroll tax</b>                                | <b>0.680</b>      | 0.671                    | 0.690  |
| <b>Paid income tax</b>                                 | <b>0.233</b>      | 0.233                    | 0.234  |
| <b>Paid MOOP</b>                                       | <b>0.478</b>      | 0.476                    | 0.479  |
| <b>Paid work expenses</b>                              | <b>0.707</b>      | 0.697                    | 0.717  |
| <b>Paid childcare</b>                                  | <b>0.691</b>      | 0.689                    | 0.692  |
| <b>Paid child support</b>                              | <b>0.564</b>      | 0.561                    | 0.567  |
| Wald Pr > $\chi^2$                                     | <.0001            |                          |        |
| <b>Notes:</b>  |                   |                          |        |
| 1Bold if Pr < .0001                                    |                   |                          |        |
| Source: 2011 CPS ASEC                                  |                   |                          |        |

| <b>Table 4: Logistic Regression Results</b><br><b>Modeled likelihood of over 2X official and SPM 1-2</b><br><b>"Moved DOWN"</b><br><b>Population: CPS ASEC 2011 Persons</b> |              |                   |       |
|---|--------------|-------------------|-------|
| Effect  | Odds Ratio   | 90% Wald          |       |
|   |              | Confidence Limits |       |
|   |              |                   |       |
| <b>In female householder unit</b>   | <b>0.587</b> | 0.564             | 0.611 |
| <b>Cohabitor</b>  | <b>0.239</b> | 0.226             | 0.252 |
| <b>Under 18 years</b>   | <b>1.113</b> | 1.086             | 1.140 |
| <b>65 years and older</b>   | <b>3.499</b> | 3.304             | 3.704 |
| <b>Black</b>  | 0.989        | 0.938             | 1.044 |
| <b>Hispanic (any race)</b>  | <b>0.716</b> | 0.683             | 0.752 |
| <b>Foreign born</b>   | 0.979        | 0.938             | 1.021 |
| <b>Full-time, year-round worker</b>   | <b>1.517</b> | 1.476             | 1.559 |
| <b>Outside MSAs</b>   | <b>0.546</b> | 0.518             | 0.575 |
| <b>Outside principal cities</b>   | <b>1.234</b> | 1.188             | 1.281 |
| <b>Northeast</b>  | <b>1.841</b> | 1.749             | 1.937 |
| <b>Midwest</b>  | 1.028        | 0.975             | 1.083 |
| <b>West</b>   | <b>1.853</b> | 1.759             | 1.952 |
| <b>Owner/No mortgage/rentfree</b>   | <b>0.499</b> | 0.477             | 0.523 |
| <b>Received EITC</b>  | <b>0.281</b> | 0.269             | 0.293 |
| <b>Received foodstamps</b>  | <b>0.328</b> | 0.307             | 0.350 |
| <b>Received housing subsidy</b>   | <b>0.129</b> | 0.112             | 0.148 |
| <b>Received school lunch</b>  | <b>0.905</b> | 0.868             | 0.944 |
| <b>Received energy asst</b>   | <b>0.385</b> | 0.350             | 0.424 |
| <b>Received WIC</b>   | <b>0.548</b> | 0.498             | 0.602 |
| <b>Paid payroll tax</b>   | <b>5.055</b> | 3.081             | 8.294 |
| <b>Paid income tax</b>  | <b>9.249</b> | 8.795             | 9.726 |
| <b>Paid MOOP</b>  | <b>3.114</b> | 2.856             | 3.394 |
| <b>Paid work expenses</b>   | <b>0.390</b> | 0.236             | 0.644 |
| <b>Paid childcare</b>   | <b>2.024</b> | 1.897             | 2.159 |
| <b>Paid child support</b>   | <b>2.136</b> | 1.887             | 2.418 |
| Wald Pr> $\chi^2$   | <.0001       |                   |       |
| Notes:  |              |                   |       |
| 1Bold if Pr < .0001   |              |                   |       |
| Source: 2011 CPS ASEC   |              |                   |       |

## Examining change across the SPM income-to-thresholds distribution with/without selected additions or subtractions

The purpose of Table 5 is to move away from comparing the SPM to the official measure and look only at changes *within* the SPM measure. This exercise allows us to gauge the effects of taxes and transfers and other necessary expenses using the SPM alone as the measure of economic wellbeing. It shows differences from changing the way we construct the SPM by adding to or subtracting from resources (accounting for one element at a time). By removing one addition or subtraction at a time, and holding everything else the same, we may see how the number of individuals in this category is marginally changed by those moving across the SPM poverty threshold, either up or down, and by those moving across 2 times the SPM threshold, either up or down, component by component. This exercise also illustrates the complexity of understanding what items move people into the category as it is highly probable that an element may be moving some families up into the category but other families up out of the category and vice versa for moving down.

As an example, the table shows that the EITC raises the number of individuals in this category by 4.9 million. This result corresponds to similar calculations in the November report that showed that the EITC lowered the poverty rate for all people from 18.0 percent to 16.0 percent, all else constant minus any individuals who would have moved to the higher category due to the EITC. The difference captures net movements into this category from a lower one and out of this category into a higher one.

Table 5 further illustrates that only 12.1 million individuals were added to this category with all the additions of all refundable tax credits and noncash benefits to income. This figure represents those who moved up with the additions minus those who moved above 2 times the threshold with the additions.

Table 5 also shows the effect of *subtracting* nondiscretionary expenses from income. For example, the subtraction of MOOP increases the number of individuals in this category by about 7 million, testifying to the effects of medical out-of-pocket expenses on discretionary income. The difference again captures net movements into this category from a higher one and out of this category into a lower one.

## Examining the SPM moderate income group in a multivariate framework

As noted above, there are a variety of factors that determine the placement of individuals in the income-to-SPM thresholds ratio distribution. Table 5 showed that additions and subtractions affect the membership in the group of interest, those with income between 1 and 2 times the SPM thresholds.

| <b>Table 5. Effect of Excluding Individual Additions on those between 1 and 2 times SPM threshold: 2010</b> |               |                        |
|---|---------------|------------------------|
|   | Number (000)  | 90 percent C.I.† (+/-) |
| <b>Between 1 and 2</b>  | <b>97,475</b> | <b>1,034</b>           |
| EITC  | 4,926         | 361                    |
| SNAP  | 4,157         | 301                    |
| Hsg subsidy   | 2,664         | 218                    |
| School lunch  | 633           | 168                    |
| WIC   | 109           | 65                     |
| LIHEAP  | 227           | 67                     |
| <b>All additions</b>  | <b>12,087</b> | <b>566</b>             |
| Child support   | 184           | 122                    |
| Federal income tax  | 7,477         | 458                    |
| FICA  | 8,277         | 590                    |
| Work expense  | 3,702         | 471                    |
| MOOP  | 6,943         | 623                    |
| <b>All subtractions</b>   | <b>24,477</b> | <b>958</b>             |

**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].

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

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

Estimates of the probability of being in this category across all individuals by demographic characteristics, threshold adjustments, and taxes and transfers are shown in Table 6. The model used is parallel in design to those described above and used to examine changes between measures. The dependent variable is set to one if an individual is in this category. Coefficients on the explanatory variables estimate the net effect on the probability of being in the category between 1 and 2 times the SPM thresholds.

The estimates suggest that those with a higher probability of being in the moderate income category, holding additions and subtractions constant, include those in female householder units relative to other unit types, children and those over the age of 65 (relative to adults 18 to 64), Blacks, Hispanics, and the foreign born. Threshold adjustments have small effects. Those residing outside MSAs and in the Northeast and West have a slightly greater probability relative to omitted groups, while those in the suburbs and owners with no mortgages are less likely to be in this category and lie somewhere else in the income-to-SPM threshold ratio distribution. Paying income taxes is also correlated with a lower probability of being in this category, representing that income tax liabilities fall on those higher up the income distribution. As mentioned above, payment of payroll taxes and assignments of work expenses are highly correlated with each other, possibly affecting estimated levels of significance. Full-time year-round workers are less likely to be in this category than those with lower work effort.

**Table 6: Logistic Regression Results**  
**Modeled likelihood of in between 1 and 2 SPM threshold**

**Population: CPS ASEC 2011 Persons**

| Effect                              | Odds         | 90% Wald          |       |
|-------------------------------------|--------------|-------------------|-------|
|                                     |              | Confidence Limits |       |
|                                     |              |                   |       |
| <b>In female householder unit</b>   | <b>1.217</b> | 1.191             | 1.244 |
| <b>Cohabitor</b>                    | 0.952        | 0.920             | 0.985 |
| <b>Under 18 years</b>               | 1.000        | 0.988             | 1.012 |
| <b>65 years and older</b>           | <b>1.457</b> | 1.430             | 1.484 |
| <b>Black</b>                        | <b>1.300</b> | 1.263             | 1.337 |
| <b>Hispanic (any race)</b>          | <b>1.359</b> | 1.326             | 1.393 |
| <b>Foreign born</b>                 | <b>1.182</b> | 1.157             | 1.207 |
| <b>Outside MSAs</b>                 | <b>1.108</b> | 1.079             | 1.138 |
| <b>Outside principal cities</b>     | 0.997        | 0.977             | 1.017 |
| <b>Full-time, year-round worker</b> | <b>0.805</b> | 0.794             | 0.815 |
| <b>Northeast</b>                    | <b>1.059</b> | 1.030             | 1.089 |
| <b>Midwest</b>                      | 0.977        | 0.953             | 1.002 |
| <b>West</b>                         | <b>1.077</b> | 1.050             | 1.105 |
| <b>Owner/No mortgage/rentfree</b>   | <b>0.787</b> | 0.769             | 0.804 |
| <b>Received EITC</b>                | <b>2.819</b> | 2.742             | 2.899 |
| <b>Received foodstamps</b>          | <b>1.161</b> | 1.124             | 1.200 |
| <b>Received housing subsidy</b>     | <b>1.513</b> | 1.435             | 1.595 |
| <b>Received school lunch</b>        | <b>1.178</b> | 1.155             | 1.201 |
| <b>Received energy asst</b>         | <b>1.386</b> | 1.320             | 1.455 |
| <b>Received WIC</b>                 | 0.993        | 0.948             | 1.040 |
| <b>Paid payroll tax</b>             | 1.100        | 0.895             | 1.352 |
| <b>Paid income tax</b>              | <b>0.727</b> | 0.709             | 0.746 |
| <b>Paid MOOP</b>                    | <b>1.160</b> | 1.113             | 1.210 |
| <b>Paid work expenses</b>           | 0.962        | 0.779             | 1.188 |
| <b>Paid childcare</b>               | 0.990        | 0.961             | 1.019 |
| <b>Paid child support</b>           | <b>1.201</b> | 1.131             | 1.275 |
| Wald Pr > $\chi^2$                  | <.0001       |                   |       |
| Notes:                              |              |                   |       |
| 1Bold if Pr < .0001                 |              |                   |       |
| Source: 2011 CPS ASEC               |              |                   |       |

## The effect of selected additions and subtractions on the SPM moderate income group: 2010

While the above section provides information about the characteristics of the group of interest, it also serves to illustrate the difficulty of examining a group in the middle of the income-to-SPM thresholds distribution like those with moderate incomes, a group for which items causing individuals to be in this category may also cause individuals to move out of the category. Tables 7 and 8 try to shed additional light on the effect of additions and subtractions by isolating changes into the between 1 to 2 group in only one direction. So, for example, we show the number of people who were moved into this category by the EITC from below, while ignoring those who may have been moved out of it into a higher category. The table again shows the effect by one item at a time, with all additions and then with all subtractions summarized at the bottom of each table. Since many items may have moved any individual over the threshold, the bottom line of table 4 shows the number of individuals moved up into the category by all the additions taken together. Clearly multiple sources of change are taking place in most households.

For instance, the effect of the largest single component in moving all people up to a new category, the EITC, moved about 6.1 million up to the moderate income range, but all additions together moved more than twice as many, 14.2 million, up the ladder. The table shows the calculations for the total population as well as three age groups, children, adults aged 18 to 64, and 65 years of age and older. For example, of the 28.8 million children in the category, 3.1 million moved out of poverty by adding the EITC and 2.2 million by SNAP (food stamps). Considering the addition of all noncash benefits and the EITC, 6.6 million children moved into this category from below the SPM threshold.

Similar calculations for those who moved into the between 1 and 2 group from a higher category by subtracting non-discretionary expenses from income, ignoring those who moved out of this category and into poverty by the same subtractions are shown in table 8. For example, the subtraction of payroll taxes from income moved 3.9 million children from a higher category into the focal one. All subtractions taken together pulled 10.8 million children down from categories with income above twice the SPM threshold, again a number less than the sum of its individual parts. Similar calculations are shown for the total population and for three age groups.

|                      | ALL People       |                        | Age < 18         |                        | Age 18 - 64      |                        | Age 65+          |                        |
|----------------------|------------------|------------------------|------------------|------------------------|------------------|------------------------|------------------|------------------------|
|                      | moved from below |                        | moved from below |                        | moved from below |                        | moved from below |                        |
|                      | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) |
| Total                | 306,110          | 114                    | 74,915           | 141                    | 192,015          | 207                    | 39,179           | 135                    |
| 1 - 2 times          | 97,475           | 1,034                  | 28,882           | 446                    | 55,621           | 656                    | 12,971           | 285                    |
| EITC                 | 6,073            | 332                    | 3,137            | 183                    | 2,877            | 166                    | 58               | 18                     |
| SNAP                 | 4,934            | 286                    | 2,233            | 169                    | 2,372            | 153                    | 327              | 46                     |
| Hsg subsidy          | 2,695            | 217                    | 962              | 115                    | 1,276            | 107                    | 457              | 67                     |
| School lunch         | 1,027            | 140                    | 589              | 81                     | 423              | 64                     | -                | -                      |
| WIC                  | 167              | 51                     | 85               | 26                     | 82               | 26                     | -                | -                      |
| LIHEAP               | 267              | 64                     | 77               | 31                     | 151              | 38                     | 40               | 15                     |
| <b>All additions</b> | <b>14,180</b>    | <b>518</b>             | <b>6,609</b>     | <b>275</b>             | <b>6,749</b>     | <b>270</b>             | <b>823</b>       | <b>84</b>              |

|                         | ALL People       |                        | Age < 18         |                        | Age 18 - 64      |                        | Age 65+          |                        |
|-------------------------|------------------|------------------------|------------------|------------------------|------------------|------------------------|------------------|------------------------|
|                         | moved from above |                        | moved from above |                        | moved from above |                        | moved from above |                        |
|                         | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) | Number (000)     | 90 percent C.I.† (+/-) |
| Total                   | 306,110          | 114                    | 74,915           | 141                    | 192,015          | 207                    | 39,179           | 135                    |
| 1 - 2 times             | 97,475           | 1,034                  | 28,882           | 446                    | 55,621           | 656                    | 12,971           | 285                    |
| Child support           | 619              | 99                     | 163              | 46                     | 431              | 64                     | 25               | 13                     |
| Federal income tax      | 8,899            | 429                    | 1,897            | 148                    | 6,465            | 313                    | 535              | 66                     |
| FICA                    | 12,736           | 490                    | 3,872            | 202                    | 8,443            | 339                    | 419              | 53                     |
| Work expense            | 8,262            | 367                    | 2,509            | 151                    | 5,443            | 250                    | 309              | 51                     |
| MOOP                    | 16,739           | 521                    | 3,822            | 197                    | 9,045            | 326                    | 3,871            | 173                    |
| <b>All subtractions</b> | <b>40,563</b>    | <b>757</b>             | <b>10,797</b>    | <b>299</b>             | <b>25,071</b>    | <b>503</b>             | <b>4,695</b>     | <b>189</b>             |

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,

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

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



## Summary

This paper has presented additional information about the group identified by the first report on the SPM as having resources just above the SPM thresholds, specifically in the category which we term “moderate “ income where resources are between 1 and 2 times the SPM thresholds. This is a category that is much larger using the SPM compared to the current official poverty measure. While there is some tradition in referring to individuals in this category under the official measure as low income, it is less clear what it means to have SPM resources at this level. Altogether about half of all people live below 2 times the poverty line using the SPM specifications and almost 98 million are not poor but of moderate income status.

Since the effect of taxes and transfers is often to move family income from the extremes of the distribution to the center of the distribution; that is from the very bottom with targeted transfers or from the very top via taxes, the increase in the size of this category is to be expected. The SPM measure accounts for additional near cash benefits and taxes while also adjusting for costs that are hard to avoid in maintaining earnings and a budget for other living standards. These adjustments capture what it means to be in this category compared to the similar category under the official measure. No account is taken of other types of benefits (like health insurance or education subsidies) or the role of other taxes, wealth or borrowing. The purpose of this paper is to present additional information on the characteristics of the moderate income group and the transfers and non-discretionary expenses that move them here.

The goal of this paper, rather than to fully analyze these estimates, is to provide information to those who are interested in conducting additional analysis and inspection. This is an important group and further investigation into differences between the official poverty measure and the SPM will benefit our understanding of the implications of this new measure.

## References

- Many Poverty Measurement Working Papers are available at [www.census.gov/hhes/povmeas/publications/working.html](http://www.census.gov/hhes/povmeas/publications/working.html) or <http://stats.bls.gov/pir/spmhome.htm> and at the IRP website under <http://www.irp.wisc.edu/research/povmeas.htm>
- Bureau of Labor Statistics (BLS, "Two-Adult-Two-Child SPM Poverty Thresholds: 2005 through 2010," Washington, DC, May 24, 2012, available at: <http://stats.bls.gov/pir/spmhome.htm#threshold> .
- Congressional Budget Office. 2011. Trends in the Distribution of Household Income Between 1979 and 2007 October . at <http://www.cbo.gov/publication/42729>
- CBO, The Distribution of Household Income and Federal Taxes, 2008 and 2009. July .at <http://www.cbo.gov/publication/43373>
- Citro, Constance F., and Robert T. Michael (eds.), *Measuring Poverty: A New Approach*, Washington, D.C.: National Academy Press, 1995.
- Edin, Kathy and Luke Shaefer, 2012. Extreme Poverty in the United States, 1996 to 2011 . National Poverty Center policy brief #28. February at [http://npc.umich.edu/publications/policy\\_briefs/brief28/policybrief28.pdf](http://npc.umich.edu/publications/policy_briefs/brief28/policybrief28.pdf)
- Fremstead, Shawn. 2010. A Modern Framework for Measuring Poverty and Basic Economic Security, at <http://www.cepr.net/documents/publications/poverty-2010-04.pdf>
- 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)
- OECD, *Growing Unequal: Income Distribution and Poverty in OECD Countries*, Organization for Economic Co-operation and Development, OECD Publications, 2008.
- [Pearce, Diana . 2001.](#) "The Self-Sufficiency Standard: A New Tool for Evaluating Anti-Poverty Policy," *Poverty & Race*, Vol. 10, No. 2
- Sherman, Arloc, 2011, "Poverty and Financial Distress Would Have Been Substantially Worse In 2010 Without Government Action, New Census Data Show. Center for Budget and Policy Priorities. November 11, 2011.
- Short, Kathleen, *The Research Supplemental Poverty Measure: 2010*, Current Population Reports P60-241, Census Bureau, 2011.
- United Nations, *Canberra Group Handbook on Household Income Statistics*, Second Edition. 2011.