Supplemental Poverty Measure: A Comparison of Geographic Adjustments with Regional Price Parities vs. Median Rents from the American Community Survey

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This presentation is released to inform interested parties of ongoing research and to encourage discussion of work in progress. This presentation reports the results of research and analysis undertaken by Census Bureau and Bureau of Economic Analysis staff. It has undergone more limited review than official publications.
Supplemental Poverty Measure (SPM)

Observations from the Interagency Technical Working Group - March 2, 2010

- Will not replace the official poverty measure
- Will not be used for resource allocation or program eligibility
- Census Bureau and BLS responsible for improving and updating the measure
- Continued research and improvement
- Based on NAS panel 1995 recommendations

<table>
<thead>
<tr>
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<th>Official Poverty Measure</th>
<th>Supplemental Poverty Measure</th>
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<tbody>
<tr>
<td><strong>Thresholds</strong></td>
<td>48 thresholds by age of head, size of family and number of children. Derived from USDA food budgets.</td>
<td>Derived from latest five years of CE data on spending on food, clothing, shelter and utilities; adjusted for tenure and geography</td>
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<tr>
<td><strong>Resources</strong></td>
<td>Cash income before taxes</td>
<td>Cash income before taxes PLUS noncash benefits and tax credits MINUS taxes and necessary expenditures</td>
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<td><strong>Unit of Analysis</strong></td>
<td>Related by blood, marriage or adoption – universe excludes unrelated children &lt; 15</td>
<td>Resource unit includes cohabiting partners, their relatives and unrelated children under age 15</td>
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Comparing the Official and SPM Thresholds

**Official Measure**

- Cost of a minimum food basket times three
- Updated each year with the CPI
- Same for all areas in the US

**Supplemental Measure**

- 33rd percentile of sum of expenditures for food, clothing, and shelter, and utilities (FCSU) plus “a little bit more”
- Updated each year with most recent 5 years of data
- Adjusted for differences in home ownership status and geography
Median Rent Index

\[ Threshold_{ijt} = [(HousingShare_t \times MRI_{ij}) + (1 \times HousingShare_t)] \times Threshold_t \]

- \( i \) = state
- \( j \) = specific metro area, other metro or nonmetro area
- \( t \) = tenure: owner with mortgage, owner without a mortgage, renter
- MRI = Median Rent Index
- HousingShare = percent of threshold represented by housing and utility expenditures
- Threshold = national average dollar value for income below which households are considered in poverty
San Francisco vs. Rural Mississippi

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<th>Mississippi Nonmetro Areas</th>
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<td>Apply to Only Housing Portion of Thresholds</td>
<td>49.7%*1.661+50.3%*1.0</td>
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Regional Price Parities

• Spatial price indexes produced by the Bureau of Economic Analysis to measure price level differences across regions

• Stage One – price and expenditures inputs collected by the BLS CPI program and the CE – 38 urban areas (weights available for 38 urban areas plus 4 rural regions)

• Stage Two – combined with data from the ACS on housing costs to calculate index values for all metro areas
Two RPP Options

• Apply the overall RPP to the entire threshold

• Apply the item-specific RPP indices to each element of the threshold: food, clothing, shelter and utilities
  – No geographic variation assumed for “other” items in the threshold
  – Item-specific uses the weights of each element in the SPM thresholds
RPP Formulas

- Overall RPP
  \[ \text{Threshold}_{ijt} = RPP_{ij} \times \text{Threshold}_{t} \]

- Item-specific RPP
  \[ \text{Threshold}_{ijt} = \left( \text{HousingShare}_t \times \text{rent}_{rpp_{ij}} \right. \]
  \[ + \left. \text{FoodShare}_t \times \text{food}_{rpp_{ij}} \right. \]
  \[ + \left. \text{ApparelShare}_t \times \text{app}_{rpp_{ij}} + \text{OtherShare}_t \right) \times \text{Threshold}_{t} \]
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<td>Item-specific RPP Indices: Rent/Food/Apparel</td>
<td>1.877/1.161/1.272</td>
<td>.497/.920/.861</td>
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<td>$37,714</td>
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All three indices are highly correlated (91.9, 96.3, 96.3)
Comparing SPM Thresholds – Renters with two adults, two children, 2011

- San Francisco
  - Official: $22,811
  - MRI: $33,504
  - RPP - overall: $30,643
  - RPP - Item Specific: $37,714

- Rural Mississippi
  - Official: $22,811
  - MRI: $20,685
  - RPP - overall: $20,410
  - RPP - Item Specific: $18,176
Threshold Comparisons

• The 2011 MRI thresholds for SPM resource units who were renters with two adults and two children ranged from $20,163 for nonmetro North Dakota to $34,310 for San Jose-Sunnyvale-Santa Clara CA MSA.

• For the overall RPP-adjusted thresholds, the values ranged from $20,334 for nonmetro South Dakota to $31,053 for Honolulu, HI.

• For the item-specific RPPs, the values ranged from $17,987 in Arkansas nonmetro to $38,359 in San Jose-Sunnyvale-Santa Clara CA.

• The difference between the highest and lowest threshold for the MRI was $14,147 while the range for overall RPPS was $10,719. The item-specific RPP-adjusted thresholds had a range of $20,372.
Poverty Rate Comparisons

• Overall poverty rates:
  – MRI = 16.1 percent
  – Overall RPP = 15.6 percent
  – Item-specific RPP = 16.4 percent
  – Official = 15.1 percent

• Since the overall poverty rates differ so significantly, instructive to look at both poverty rates and distribution of the population in poverty for other characteristics
Place of Residence

Poverty Rates

Distribution of the Poor

- MRI
- Overall RPP
- Item Specific RPP

Inside MSA, Inside Principal City
Inside MSA, Outside Principal City
Outside MSA

Inside MSA, Inside Principal City
Outside Principal City
Outside MSA

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
Region

Poverty Rates

Distribution of the Poor

Midwest  Northeast  South  West

MRI
Overall RPP
Item Specific RPP
None of the differences are statistically significant.
Comparing to the official poverty rates, if the differences are statistically significant, they are in the same direction with all three choices of adjustment index.
Comparing official poverty rates to SPM poverty rates at the state level

The choice of index impacts the magnitude but not the direction of the change.

States with the largest absolute difference between SPM and Official poverty rates
Difference between SPM Poverty Rates:
Overall RPP vs ACS Geographic Cost Adjustment: 2009-2011

Legend
- Not statistically different
- RPP lower than MRI
- RPP higher than MRI

Difference between SPM Poverty Rates:
Item Specific RPP vs ACS Geographic Cost Adjustment: 2009-2011

Legend
- Not statistically significant
- Alternative RPP lower than MRI
- Alternative RPP higher than MRI

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Overall RPP vs ACS Geographic Cost Adjustment: 2009-2011

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Analysis

• Differences driven by the different implicit weights given to shelter costs in the two approaches.
  – In the SPM thresholds, shelter costs represent between 40 and 51 percent of the threshold.
  – In the RPPs, shelter costs represent 20.6 percent of the index
  – When SPM weights are used with the RPP index, the changes in poverty rates are generally greater

• Represent two different goals
  – MRI: Adjust the SPM thresholds
  – Overall RPP: Consistent with BEA national accounts
Next Steps/Future Research

• Investigate methods to evaluate the poverty rates that result from different indices
  – Correlation to measures of hardship?
  – Other criteria?

• BEA working on developing separate index for utilities – this analysis used the rent index

• How to account for geographic differences in amenities?
Contact Information

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Observations from the Interagency Technical Working Group - March 2, 2010

- Three basic thresholds by tenure/mortgage status:
  - Renters
  - Owners with a mortgage
  - Owners without a mortgage
- Poverty thresholds should be adjusted for price differences across geographic areas using the best available data and statistical methodology.
  - American Community Survey (ACS)
  - For Metropolitan Statistical Areas (MSAs) and by non-MSA areas in each State
  - Utilize a 5-year moving average of the data for each year
- Over time this adjustment mechanism may be modified and improved.