

**TO:** David Riemer, Conor Williams  
**FROM:** Steve Holt  
**DATE:** June 12, 2009  
**RE:** Poverty Measurement Options – Final Report

This report details how the United States determines who is officially designated as poor and how that could be improved. It begins with a description of how poverty is measured currently and summarizes how that measure is fundamentally flawed. It then examines alternative poverty estimates and the elements of improved measurement, focusing on proposals from the National Academy of Sciences. It looks in detail at specific initiatives implementing those proposals and at data issues associated with replicating them in Wisconsin. The report concludes with recommendations for how to proceed.

## **Poverty Measurement Currently**

There are several poverty *measures*. The *federal poverty level* (or *poverty line*) refers to a standard for each family size published annually as *poverty guidelines*. The *official poverty measure* is based on more specific *poverty thresholds*. These are the resources a household needs to not be in poverty. The resources determined to be available are *household income*. The *poverty rate* is the percentage of households (or persons) with incomes below the threshold. Rates, sometimes broken down by geography or demographics, and always based on sample data, may be referred to as *poverty estimates*. Aggregating the amounts by which each poor household's income falls short of the thresholds provides the *poverty gap*.

## Poverty Guidelines vs. Poverty Thresholds

The commonly-used reference point for poverty (the "federal poverty level") is actually the set of poverty guidelines issued annually by the U.S. Department of Health and Human Services. There is a single number for each family size with a constant differential for each additional family member. The poverty guidelines (or percentages of them) are used by numerous programs to determine eligibility.

The official poverty measure is based on poverty thresholds issued annually by the Census Bureau. These are used to calculate the percentage of people in poverty (the poverty rate). There are forty-eight threshold amounts in a matrix,

with family size in rows (for one- and two-person households, varying by whether or not elderly), and the number of related children under eighteen in columns.

The poverty guidelines are based on the weighted average poverty thresholds for each family size. There are separate guidelines for Alaska and for Hawaii. The 2009 poverty guidelines are based on the calendar year 2007 thresholds updated to reflect the price level of calendar year 2008.

### Calculating the Poverty Threshold

The thresholds used to measure poverty derive from a definition created for the War on Poverty by Mollie Orshansky at the Social Security Administration. The original threshold was set at three times the amount of the USDA Economy Food Plan (a subsistence food budget) for 1961 (itself based on data from the 1955 Household Food Consumption Survey) for a family of four. For other household combinations, the expenditure ratios between different family sizes (from the same survey) were used to create what is called an equivalence scale.

The thresholds for the base year (1963) have been updated annually, using overall price changes (now based on the Consumer Price Index for All Urban Consumers, or CPI-U) rather than changes in the cost of the Economy Food Plan. The same poverty thresholds are used for all states.

### Measuring Household Income

The official poverty measure looks at a household's total pre-tax cash income. This includes cash from any source, including earnings, pensions, investment income (but not capital gains), educational assistance, child support, and cash transfer payments (such as Social Security, SSI, and TANF). It does not include near-cash assistance (such as SNAP (formerly Food Stamps) and housing vouchers) or assistance provided through the tax system (such as the EITC).

### Defining the Household Unit

The composition of the family is significant both for matching each household to the appropriate poverty threshold and for determining each household's total resources. The Census Bureau assumes that all persons who live together and are related (by blood, adoption, or marriage) share resources, and the sum of the income of all those persons age fifteen and older constitutes the household's resources. Conversely, legally unrelated co-residents (such as unmarried partners) are treated as separate household units.

### Population Universe

In general, the Census Bureau does not determine the poverty status of persons living in group quarters (including college dormitories, military barracks, nursing homes, and correctional facilities) and of unrelated persons under age fifteen

living in housing units. There are, however, some differences among the data sources in the treatment of group quarters and residency status.

### Data Sources

The Census Bureau – using the same definitions – reports poverty estimates from several sources:

- Current Population Survey Annual Social and Economic Supplement (CPS ASEC)
- American Community Survey (ACS)
- Survey of Income and Program Participation (SIPP)
- Small Area Income and Poverty Estimates (SAIPE) program

Through 2000, the long form of the decennial Census was a source of poverty estimates, but the ACS has supplanted the long form. The data sources vary in methodology and in the statistical accuracy of the estimates provided.

### Most Recent Poverty Estimates

The official poverty rate is determined annually through the CPS ASEC. In 2007, the U.S. rate was 12.5% (+/- 0.1%). This means that 1 in 8 persons lived in a household unit with resources less than the household's poverty threshold. The rate for Wisconsin was 11.0% (+/- 1.0%). There are no sub-state estimates.

The 2007 U.S. poverty estimate using the ACS as the data source was 13.0% (+/- 0.1%). Wisconsin's rate was 10.8% (+/- 0.3%), the 15<sup>th</sup> lowest among the states. The ACS also provides estimates for sub-state areas. The City of Milwaukee's poverty rate was 24.4% (+/- 1.4%), 7<sup>th</sup> highest among places with 250,000 or more people. Waukesha County had the 5<sup>th</sup> lowest rate (4.0%, +/- 0.7%) among counties with populations of 250,000 or more.

County poverty estimates are available from the SAIPE program, but the specificity varies considerably depending on the size of the county. For 2007, the estimated rates ranged from 4.1% (+/- 0.6%) in Waukesha and 4.5% (+/- 0.9%) in Ozaukee to 18.2% (+/- 1.15%) in Milwaukee and 34.1% (+/- 6.55%) in Menominee County.

### **Shortcomings of Current Poverty Measure**

The current official poverty measure is fundamentally flawed. The principal problems are that:

- the thresholds are based on a very outdated expenditure model as the share of household spending on food has fallen dramatically since 1955 and housing is now typically the single biggest budget item;

- using a single national threshold fails to capture the significant geographic differences in living costs, particularly the price of housing;
- the static expenditure model reflects changes in prices but not in the general standard of living so does not capture relative deprivation;
- the measure of family income fails to include substantial resources available to meet household needs, such as the EITC, other refundable tax credits, and SNAP; and
- the resource exclusions mean that the effects of the largest anti-poverty programs are not captured in and cannot be evaluated by the official measure.

### Alternative Poverty Estimates

In 1993, the Census Bureau started publishing poverty estimates using alternative definitions of income. The Census Bureau also provided estimates using a variation of the official thresholds based on an alternative inflation index. In 1995, the National Academy of Sciences (NAS) released a report with recommendations from its Panel on Poverty and Family Assistance for improvements in all dimensions of the measurement of poverty. The NAS recommendations have provided the basis for an additional series of alternative poverty estimates by the Census Bureau.

#### Census Bureau Alternative Income Measures

In a 2005 report based on the CPS ASEC, the Census Bureau calculated annual poverty estimates for 1987 through 2003 using several alternative measures of household income (but with no change in the thresholds). The following table looks at the effect on the national poverty rate in 2003 of using a few of the modified income definitions (all estimates are +/- 0.2%):

MI (money income) – <i>the official measure</i>	12.5%
MI - Tx ( <i>Tx</i> equals payroll taxes and net federal & state income taxes (including credits) plus realized capital gains (losses))	12.0%
MI - Tx + NC ( <i>NC</i> equals value of employer-provided health benefits & non-cash transfers)	9.7%
MI - Tx + NC - MM ( <i>MM</i> equals Medicare & Medicaid)	10.2%
MI - Tx + NC + HE ( <i>HE</i> equals imputed return to home equity)	9.0%

Because there are a total of seventeen alternative income definitions in the series, it is possible to look at the effect of specific individual elements. If just the EITC is excluded from the measure “MI – Tx”, the poverty rate estimate increases from 12.0% to 13.5%. Isolating Social Security payroll taxes through another definition shows they increase the poverty measure by 1.1 percentage

points. Federal income taxes (not including the EITC) and state income taxes did not affect the 2003 estimate, but there were impacts from these modifications looking at earlier years.

Breakdowns by demographic characteristics using the alternative income definitions show the differential impact on population sub-groups. For instance, the shift from “MI” to “MI – Tx” lowered the 2003 poverty rate for children from 17.6% to 16.0% (+/- 0.5%) but did not affect the rate among the elderly. Alternatively, the slight decrease in the child poverty rate from adding in the value of home equity (HE) was within the margin of error, but the elderly poverty rate declined substantially using the measure (8.1% to 5.7%, +/- 0.3%).

### Census Alternative Price Inflator

As noted above, the Census Bureau uses the CPI-U to update the official poverty thresholds for inflation. The methodology used to derive the CPI-U may result in overstated estimates of inflation, excessively increasing the poverty thresholds and the resulting poverty rate. An alternative – the Consumer Price Index Research Series Using Current Methods, or CPI-U-RS – tends to result in lower annual adjustments.<sup>1</sup> Using this alternative inflator lowers the poverty thresholds. The 2003 national poverty estimate using the standard income measure but with thresholds adjusted using the CPI-U-RS was 10.5%, 2.0 percentage points lower than the official rate.

### NAS Recommendations

The NAS recommendations involve changes in all elements of the poverty estimation process. They advocate a poverty measure having the following properties: 1) consistency between thresholds and resources; 2) statistical defensibility; 3) understandability; 4) broad acceptance by the public; and 5) operational feasibility.

Specific elements of the NAS approach are:

- abandoning the Orshansky formulation of the poverty thresholds;
- basing the thresholds on spending not only for food but for a broader set of necessities;
- setting the thresholds using recent and regularly updated expenditure data;
- varying the thresholds to reflect cost-of-living differences among geographic areas;
- improving the adjustments in the thresholds based on family size (the equivalence scale);
- including unmarried partners in the household unit;

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<sup>1</sup> The CPI-U-RS makes different adjustments to account for changes in the quality of goods in the CPI market basket and better accounts for consumer substitutions in response to price increases.

- counting as resources (income) those available to meet the basic needs reflected in the thresholds; that is:
  - excluding tax liabilities and including tax credits,
  - including in-kind benefits used to purchase necessities, and
  - excluding child support payments, work expenses, and medical out-of-pocket (MOOP) expenses.

Key to the NAS alternative is a desire to escape the anachronistic static interpretation of the Orshansky formulation: assuming one-third of a household's budget is spent on food. The recommended alternative recognizes that food is not the only core necessity of concern and that an appropriate understanding of "poverty" requires regular reference to general spending norms.

For many items, the NAS panel proposed a range of options. Extensive research since 1995 within the NAS framework has refined the options and modified some of the recommendations.

### Variable Elements in NAS Recommendations

Within the NAS framework, there remain numerous choices. The Census Bureau has produced alternative poverty estimates examining different elements. One series of reports (using CPS ASEC data through 2007) provides estimates along three variables: geographic price adjustment, updating mechanism, and treatment of health care costs. The Census Bureau also provides estimates based on the use of an alternative equivalence scale. The specific issues involved with each demonstrate the challenges faced in designing alternative measures.

#### *Geographic Price Adjustment*

A primary difference in the cost of living among geographic areas is the cost of housing. The Census estimates adjust the thresholds based on an index tied to the U.S. Department of Housing and Urban Development Fair Market Rent (FMR) data. This method varies the threshold by state and by metropolitan and non-metropolitan region. The FMR includes some utility costs.

Census Bureau estimates indicate that geographic adjustment does not appear to have a statistically-significant effect on the *national* poverty rate. It does, however, affect the geographic distribution of those found to be poor. Looking at broad regions, using geographic adjustment increases the poverty rate in the Northeast and West and decreases it in the Midwest and South.

#### *Updating Mechanism*

The NAS recommendations assume that there will be a reset of the expenditures from which the poverty threshold is derived. A separate but related question is how to update the reference expenditures base from year to year.

The Census Bureau estimates show the effect of alternative updating mechanisms. The official measure updates the thresholds based on overall changes in prices (using the CPI-U). An alternative updates the expenditure base each year by looking at changes in what all households spend on the set of necessities included in the threshold (determined from a three-year average of updated Consumer Expenditure (CE) survey data). This approach encompasses changes in social norms as well as changes in market prices.

The choice of updating mechanism has significant effects. In 2003, using changes in actual household expenditures rather than just changes in market prices increased the estimated U.S. poverty rate by 1.1 to 1.4 percentage points (depending on other modifications). The effect is magnified over time: using expenditures increased the poverty rate by 2.5 to 3.1 percentage points in 2007.

### *Health Care Costs*

MOOP is a measure of a household's health care expenditures, including insurance premiums, cost sharing payments (deductibles, co-payments, co-insurance, etc.), and over-the-counter medications. The Census Bureau looked at three ways of taking MOOP into account: 1) excluding health care costs from the necessities measured in the threshold and subtracting a household's MOOP from income; 2) including an estimated MOOP amount in the necessities used to calculate the threshold and making no adjustment to income; and 3) including estimated MOOP in the threshold and adjusting household income to reflect the difference between the actual and expected amounts (this third method is not included in subsequent estimates).

Including estimated health care costs in the threshold calculation results in poverty rates 0.3 to 0.9 percentage points higher than those found based on subtracting actual costs from household income.

### *Equivalence Scale*

An equivalence scale is used to adjust the poverty thresholds set for the "reference family" (two related adults with two children) for other family sizes and types. The NAS recommendation to improve the family size adjustment has evolved to a "three-parameter scale." The three parameters reflect that: 1) children on average consume less than adults; 2) expenses do not increase at a constant rate as family size increases; and 3) the first child in a one-adult family increases expenses more than the first child in a two-adult family.

Looking at 2006 and 2007 estimates using the CPS Table Creator II (see below), it does not appear that the three-parameter equivalence scale has a significant impact on the estimated overall national poverty rate. However, as would be expected, it does affect the rate by family size.

## Testing Alternative Measures

The Census Bureau maintains an online tool (the CPS Table Creator) for generating customized tables from the array of data in the CPS ASEC public use file. A specialized version of the interactive tool – CPS Table Creator II<sup>2</sup> – allows generation of tables using alternative poverty threshold and household income definitions. Poverty threshold options include the NAS experimental elements outlined above as well as measures of relative poverty. For household income, the tool has four pre-defined measures plus the ability to customize based on from thirty-six individual income components.

### *Threshold Alternatives*

The CPS Table Creator II permits exploration of adjustments to the current (Orshansky-based) thresholds, new NAS-based threshold definitions, and combinations. The following table presents results for the U.S. for 2007:

THRESHOLD ADJUSTMENTS	
<i>% point effect on % of persons in poverty (compared to current thresholds; no change in household income definitions)</i>	
Current thresholds but with geographic price adjustment	- 0.2%
Current thresholds but updated based on CPI-U-RS	- 1.8%
Current threshold basis but with three-parameter equivalence scale	- 0.1%
New thresholds based on consumer expenditures	+ 1.1%
New thresholds based on expenditures and geographic price adjustment	+ 0.9%

As noted before, the aggregate effects of geographic adjustments and a revised equivalence scale do not capture the effects on specific locations or family types. These can be explored further using the online tool.

### *Income Alternatives*

The number of income variables available in the CPS Table Creator II permits testing the effects of including individual elements in household income. The table on the following page presents the U.S. results for 2007 (reflecting household income in 2006):

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<sup>2</sup> [http://www.census.gov/hhes/www/cpstc/apm/cpstc\\_alt pov.html](http://www.census.gov/hhes/www/cpstc/apm/cpstc_alt pov.html)

INCOME ADJUSTMENTS	
<i>% point effect of individual element on % of persons in poverty (compared to current definitions; no change in thresholds)</i>	
Payroll taxes	+ 0.9%
Federal EITC	- 1.4%
Federal income taxes & refundable credits other than EITC	0.0%
State income taxes & refundable credits	+ 0.1%
Food Stamps	- 0.6%
School free and reduced-fee lunch program	- 0.2%
Low-Income Energy Assistance Program	0.0%
Public housing subsidies	- 0.4%
Realized capital gains / losses added	0.0%
Imputed return to home equity added	- 1.2%
MOOP deducted	+ 1.2%
Work-related expenses other than child care deducted	+ 0.8%
Work-related expenses including child care deducted	+ 1.0%

The online tool can also be used to test combinations of adjustments to household income, because the combined effects may not equal the aggregation of the individual effects:

EITC and federal income taxes & other refundable credits	- 1.2%
EITC and federal income taxes & other refundable credits and payroll taxes	- 0.5%
Food Stamps and school free and reduced-fee lunch program	- 0.8%
Food Stamps and school free and reduced-fee lunch program and Low-Income Energy Assistance Program and public housing subsidies	- 1.4%

### *Generating Wisconsin Estimates*

The CPS Table Creator II may be used to look at the effect of alternative poverty measures on the estimated poverty rate Wisconsin. However, the data limitations of the CPS ASEC – namely, small sample sizes – mandate caution. The 2007 Wisconsin data set represents only 5,476 persons living in 2,274 households. The potential for sampling error is great. The CPS Table Creator II does not itself calculate the standard errors for customized tables, and additional work would be required to determine the statistical significance of differences found in Wisconsin-specific outputs.

## Application of NAS Principles

An April 2008 paper by Bureau of Labor Statistics and Census Bureau staffers Thesia Garner and Kathleen Short used the NAS procedure to produce poverty thresholds for 1996-2005 based on consumer expenditure data. This involved deciding among the options presented by the original panel and incorporating subsequent recommendations:

- unlike in the NAS recommendations, not including in the reference family (used to estimate median expenditures) those couples who are cohabitating
- making estimates based on two sets of expenditures:
  - the original NAS recommendation of food, clothing, shelter, utilities, and other needs (FCSU)
  - an updated recommendation to add MOOP to the threshold calculation (FCSUM), rather than excluding it from household income
- unlike in the NAS recommendations, including mortgage principal payments in homeowner shelter expenditures
- using the midpoint of the NAS recommendations for setting what percentage of the reference family's median expenditures represents poverty-level spending (80.5%)
- incorporating "other needs" expenditures (such as household supplies, personal care, and non-work-related transportation) by multiplying the other FCSU components by the midpoint of the NAS multipliers (1.2)
- calculating the thresholds using the most recent three years of CE data
- generally applying the three-parameter equivalence scale, but for MOOP using a medical risk index based both on family size and the age and health insurance coverage of family members

This table compares, for the reference family of four, the official and NAS-type thresholds ("FCSU-CE") and FCSU-CE when repayment of mortgage principal by homeowners is counted in shelter expenditures:

Year	Official	FCSU-CE	+ mortgage principal
1999	\$16,895	\$17,036	\$18,196
2000	\$17,463	\$17,884	\$19,097
2001	\$17,960	\$18,709	\$19,935
2002	\$18,244	\$19,329	\$20,757
2003	\$18,660	\$19,778	\$21,218
2004	\$19,157	\$19,984	\$21,895
2005	\$19,806	\$20,708	\$22,769
2006	\$20,444	\$21,818	\$24,026
2007	\$21,027	\$23,465	\$25,680

Garner and Short note that the NAS procedures for calculation of a poverty rate require use of a measure of resources consistent with the decisions made in constructing the thresholds. Two specific examples are that the expenditure analysis does not include food purchased through subsidized school meals or the value of housing subsidies; these should then not be included in the resource measure.

Garner and Short also look at the effect of NAS-recommended *additions to* – the EITC, Food Stamps, and net capital gains – and *subtractions from* – payroll taxes, federal and state income taxes, and work-related expenses (including child care) – the official poverty measure definition of household income. In 1996, the subtractions were five times as large as the additions; by 2005, the ratio was seven to one.

The poverty rates found using these experimental measures were consistently higher both overall (from a differential of 2.9 percentage points for 1997 to 5.1 percentage points for 2005) and for specific demographic groups.

## **Pending Proposals**

This section looks at three current initiatives pursuing development of a new poverty measure through implementation of the NAS recommendations:

- a Hamilton Project discussion paper by Rebecca Blank (now serving as Under Secretary for Economic Affairs at the U.S. Department of Commerce) and Mark Greenberg (Georgetown University Center on Poverty, Inequality and Public Policy; Center for American Progress; Center for Law and Social Policy) (Blank/Greenberg);
- the proposed Measuring American Poverty Act (MAP Act); and
- the development of a specific poverty measure for New York City by its Center for Economic Opportunity (CEO).

### Blank/Greenberg

The Blank/Greenberg discussion paper is a succinct yet comprehensive overview of the issues involved in improving the measurement of poverty. It specifies several substantive and pragmatic reasons for following the NAS approach. Substantively, the NAS method is premised on a clear logical framework, and it addresses the principal criticisms of the current official measure. It also proposes a consistent and credible statistic that does not presuppose what the level of poverty ought to be. Pragmatically, the NAS recommendations represent the best available thinking on the subject and have been carefully reviewed and studied over time. Any other approach to poverty measurement would essentially require starting over.

Blank and Greenberg also focus on important process concerns, such as: 1) giving a statistical agency full authority to develop and update a new poverty measure; 2) insulating program eligibility, benefits, and funding allocation from any immediate application of the new measure; and 3) developing additional measures of economic well-being (a decent living standard threshold and a medical risk index).

The paper specifies a framework for determining which items belong in the calculation of thresholds and which should be part of calculating resources:

- the thresholds should include “necessities purchased by all households to which one can appropriately apply broadly defined equivalence scales and geographic price adjustments”;
- a family’s resources should include those things that “affect the ability of that family to access the necessary items included in the threshold, when their individual distribution across households is important, and when some households have those resources and some do not”.

Applying these principles, Blank and Greenberg say that medical and child care costs should not be included in the threshold but should be subtracted from income. They also argue against the imputation of the value of homeownership in family resources.

Blank and Greenberg believe that additional work needs to be done in three areas before a new poverty measure can be implemented:

- investigating whether using a single base reference family skews measurement, because four-person families are not representative of some groups among the poor (for example, they are more likely to be married and to own homes);
- determining whether there is a need to determine homeowner shelter expenditures differently from those of renters and whether homeowners with mortgages should be distinguished from those without; and
- reviewing how best to impute medical and child care expenses.

### Measuring American Poverty Act

#### *Purpose*

The ongoing collaborative work on implementation of the NAS recommendations seen in the Blank/Greenberg paper is also reflected in the proposed MAP Act. As introduced in the last Congress as H.R. 6941 (by Representative McDermott) and S. 3636 (by Senators Dodd and Bingaman), the legislative purpose of the MAP Act is to:

provide for an improved and updated method for measuring the extent to which families in the United States have sufficient income to allow a minimal, socially acceptable, level of consumption that meets their basic physical needs, including food, shelter (including utilities), clothing, and other necessary items, in order to better assess the effects of certain policies and programs in reducing the prevalence and depth of poverty, to accurately gauge the level of economic deprivation, and to ensure appropriate targeting of public resources.

The legislation refers to the NAS recommendations as the starting point for an improved poverty measure.

### *Framework*

The MAP Act directs the Census Bureau to develop, in consultation with other statistical agencies and outside experts, “modern” poverty thresholds and rates. The poverty rates would be separately calculated based on “adjusted market income” and “adjusted disposable income”. The existing official poverty determination would continue to be determined under the title “traditional” poverty measure. This would be the default reference for other programs, so there would be no automatic effect on eligibility, funding allocations, etc.

The MAP Act also calls for the NAS to develop methods for calculating the two additional measures advocated by Blank/Greenberg:

- a “decent living standard” threshold – “the amount of annual income that would allow an individual to live beyond deprivation at a safe and decent, but modest, standard of living”; and
- a “medical care risk” measure – “the extent to which individuals are at risk of being unable to afford needed medical treatment, services, goods, and care”.

### *Specific Guidelines*

The Act specifies several characteristics of the “modern” measures. These generally make choices within the NAS framework:

- household unit – includes unrelated cohabitants (subject to agency determination that resources are shared as a family);
- threshold – uses the approach of Garner and Short except it does not include MOOP, determines (if possible) separate thresholds for homeowners without mortgage payments, and considers adjustment of thresholds for energy assistance, nutrition programs, and housing subsidies if not feasible to calculate the value of those benefits as resources;
- market income – uses the existing cash income definition but excludes alimony, child support, work-related expenses (including child care and transportation), and MOOP; and
- disposable income – subtracts (from market income) net taxes and adds refundable tax credits and non-medical public benefits.

Congressional staff is working on adjustments to the legislation that will be incorporated into a revised bill for introduction in the 111<sup>th</sup> Congress by mid-summer.

### Center for Economic Opportunity, New York City

#### *Philosophy*

The CEO applied the following criteria in developing a poverty measure for the City of New York:

- 1) easy understandability by the “non-expert” public, building off but improving on the familiar official measure;
- 2) use of the substantial body of research on poverty measurement with support of experts in the field;
- 3) ability to capture impacts of public policy;
- 4) practicality; and
- 5) replicability.

#### *Key Features*

In many ways, as seen in the table on the following page, the NYC poverty measure follows a NAS-based approach similar to that of the other alternatives. A key difference, however, is that it relies on a different data source – the ACS<sup>3</sup> – for determining resources. The rationale is that the ACS, as a much larger survey than the CPS, provides a sample for New York City that is sufficiently large (over 25,000 households) to analyze poverty among different demographic groups and neighborhoods.

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<sup>3</sup> The ACS data used are from the Public Use Microdata Sample (PUMS).

<b>CHANGES TO POVERTY MEASURE IN NEW YORK CITY CEO APPROACH</b>	
<b>MODIFICATIONS</b>	<b>RATIONALE</b>
<b><i>Population Universe</i></b>	
Exclude all group quarters population	ACS lacks data on fraction of group quarters' population for which Census Bureau determines poverty status
Foster children	When counted by Census (age 15+), poverty status determined independently of household, and this is not reflective of actual economic need
<b><i>Household Unit</i></b>	
Unmarried partners of household head (& any children) included in household	Follows NAS recommendations
Create "people in unrelated subfamilies" category	Better describes persons not related to the household head but related to each other
<b><i>Threshold</i></b>	
Begin with FCSU-CE	Uses midpoints of NAS recommendations (80.5% of median for core expenses, multiplied by 12% for miscellaneous expenses)
Adjust 44% of FCSU-CE representing shelter costs by ratio of metropolitan area FMR for 2 bedrooms to national average (weighted by population)	Follows NAS methodology
Apply three-parameter equivalence scale	Follows NAS methodology
<b><i>Resources</i></b>	
Follow NAS "disposable income" concept as closely as possible	Some variance necessitated by availability of data
Account for significant variance in housing, child care, and medical costs by subtracting from resources (rather than adjusting thresholds)	Generally follows NAS recommendations but with addition of housing expenditure adjustment

Although the NYC CEO measure uses the ACS as the basis for the calculation of household resources, the ACS does not collect data on several resource components. This requires use of other data sources and statistical methods to determine some aspects of disposable income. The following table describes the treatment of different resource elements and the specific data sources used to determine each:

<b>RESOURCES ELEMENT</b>	<b>DATA METHODS &amp; SOURCES</b>
Pre-tax cash income	Compilation from ACS
Net taxes	Derived from tax model: calculation of FICA/Medicare taxes, then creation of tax filing units within each household, determination of filing status, & construction of simulated federal, state, and local income tax returns for each filer (incorporating all credits)
Nutritional assistance	ACS data on Food Stamps (distributed to poverty units within the household); calculation of school lunch value based on applying program rules to ACS schooling & income variables and using Census figures for dollar values per meal
Housing adjustment (for families in housing with cost not reflective of market prices)	Calculated as SU portion of threshold less household's actual SU expenditures; imputed from New York City Housing and Vacancy Study
Deduction for work-related transportation costs	ACS data on mode & number of trips; administrative data for cost per trip
Deduction for work-related child care costs	Imputation from regression-based model based on SIPP data for urban families
Deduction for MOOP costs	Imputation using "hot-deck" approach based on data from national Medical Expenditure Panel Survey; stratification of families based on family size, income, & other socioeconomic characteristics, then random assignment of 25 <sup>th</sup> , 50 <sup>th</sup> , or 75 <sup>th</sup> percentile of annual MOOP costs for family group

## Findings

The 2006 New York City threshold was set at \$26,138 for the reference family of four. The overall poverty rate – based on the new threshold and the new resource calculations – increased from 18.0% to 23.0%. There were significant shifts by demographic groups:

CHANGE IN POVERTY RATE (percentage point difference)	
Elderly	+ 13.9
Naturalized citizens	+ 8.3
Non-citizens	+ 7.9
Asians	+ 7.9
Non-Hispanic whites	+ 6.3
Children in single-parent families	- 2.8

Medical costs accounted for much of the higher rate for the elderly. The lower rates for children living in single-parent families were the result of counting as resources refundable tax credits, nutritional assistance, and housing assistance.

There were also changes in the spatial distribution of poverty, with those found to be poor less geographically concentrated. The housing adjustment resulted in lower poverty rates for neighborhoods with concentrations of public housing and housing subsidies (such as Harlem and the South Bronx). On the other hand, the poverty rate for the borough of Queens increased by 7.8 percentage points; the increase was especially large in neighborhoods with large concentrations of foreign-born residents.

## Replication

The NYC CEO will soon release a report that will apply the new poverty measure across three years (2005, 2006, and 2007). The researchers believe that the best test of the measure is how it captures change over time.

An outstanding issue is the calculation of standard errors to indicate the precision of findings using the NYC CEO method. The new report will utilize the Census Bureau's ACS methodology. However, there are known problems with that approach, and outside experts are being consulted to address those technical issues.

A number of jurisdictions have inquired about replicating the NYC CEO model. At present, there are two active partners: New York State, and Mark Stern at the University of Pennsylvania (developing measures for the City of Philadelphia and the outlying metropolitan area). The NYC CEO researchers are very open to providing technical assistance, including sharing the programming code (SPSS format) for the various extraction and modeling routines.

## **Recommendations for Wisconsin**

### A New Wisconsin Poverty Measure

#### *Merits*

Wisconsin should develop updated tools for measuring poverty based on the NAS recommendations as they are being applied elsewhere. The rationale advanced by the City of New York applies equally in Wisconsin. The poverty thresholds need to reflect an updated, realistic view of household expenditures. The definition of household income needs to capture what is actually available to spend on necessities. “[M]ost importantly, a new poverty measure can offer policymakers a gauge by which they can see where and how public programs are, or are not, addressing poverty” (CEO, p.2).

The NAS/CEO approach is likely consistent with how the average person thinks about measuring poverty. The poverty line (*i.e.*, the threshold) is the amount needed for the necessities of life: food, clothing, shelter, and a few other basic items. Income is essentially disposable income; namely, net pay and other money coming into the household (such as retiree benefits, tax refunds, and “welfare” cash or near-cash payments). Some of the details – such as treatment of work expenses, MOOP, and the value of homeownership – are complicated; nonetheless, there are several acceptable options, each of which is both justifiable and understandable.

#### *Data Challenges*

There are several practical concerns related to data availability and reliability to appreciate when considering revisions to poverty measurement in Wisconsin. Some data do not exist in the needed form and often require imputation procedures. All pertinent data are drawn from surveys of population samples, and some of the samples are small. Many of the observations in any survey may also be influenced by non-sampling errors. These can include non-responses and respondent inability to recall (or to recall correctly) survey information. The Census Bureau uses sophisticated methods to control non-sampling error, but the extent to which it affects results cannot be quantified.

These data issues present a challenge for poverty measurement statewide and are especially significant when looking at any sub-state breakdowns. The smaller the area in population, the smaller the sample of that area in the source survey data, and the larger the uncertainty of any findings. This issue must be considered with the ACS and any of the other data sources required for constructing an improved measure.

The ACS is conducted annually, but the Census Bureau has been releasing geographic area data on a more limited basis due to sample size issues. Annual

data are available for areas with populations of 65,000 and higher. Estimates drawn from a three-year period are available for geographic areas with populations as low as 20,000.<sup>4</sup> For the smallest areas including tracts and block groups, Census will use five-year aggregations (the first are scheduled to become available in August 2010). Using multiple years' data can provide a sufficient sample for credible estimating; however, the aggregation complicates year-to-year comparisons that may be desired for assessing community well-being (the poverty rate and gap) and policy effectiveness.

Some implications of the sample sizes available for sub-state areas may be seen in the following table comparing the margins of error for the current official poverty status measures derived from the ACS for Milwaukee County and Eau Claire County<sup>5</sup>, using both one-year (2007) and three-year (2005-2007) data:

MARGINS OF ERROR FOR POVERTY RATE (% BELOW POVERTY LEVEL)				
	<i>Milwaukee County (1-year)</i>	<i>Milwaukee County (3-year)</i>	<i>Eau Claire County (1-year)</i>	<i>Eau Claire County (3-year)</i>
<b>Overall rate</b>	<b>+/- 1.0%</b>	<b>+/- 0.6%</b>	<b>+/- 2.0%</b>	<b>+/- 1.5%</b>
<i>Children</i>	+/- 2.5%	+/- 1.5%	+/- 3.2%	+/- 3.0%
<i>Elderly</i>	+/- 1.5%	+/- 0.7%	+/- 4.3%	+/- 2.1%
<i>African-Americans</i>	+/- 2.8%	+/- 1.9%	<i>not avail.</i>	<i>not avail.</i>
<i>Hispanics</i>	+/- 3.4%	+/- 3.1%	<i>not avail.</i>	<i>not avail.</i>
<i>Asians</i>	+/- 6.9%	+/- 4.1%	<i>not avail.</i>	+/- 13.9%
<i>Worked full-time, year-round</i>	+/- 0.6%	+/- 0.4%	+/- 1.4%	+/- 1.0%

The likely size of near-term real changes in poverty can be easily obscured by the imprecision of smaller-area estimates.

### *Process*

The goal should be to develop a NAS-based measure for Wisconsin and as many sub-state areas as the data can feasibly support. The CEO approach (using the ACS as the core data set) provides a good starting point. The estimation of taxes would need to be adapted to Wisconsin, but setting the state-specific parameters, credits, and so on is a relatively straightforward element of that modeling process. The housing data source for New York City is unavailable elsewhere, so imputations would need to be made from the

<sup>4</sup> The Institute for Research on Poverty at the University of Wisconsin-Madison recently used three-year ACS PUMS data to calculate individual poverty estimates for twenty-two areas in Wisconsin (ten individual counties, and twelve multi-county groupings).

<sup>5</sup> These estimates are derived from the ACS via the Census Bureau's American Fact Finder tool. Analysis following the CEO process would use the ACS PUMS. To protect respondent confidentiality, the PUMS data set is somewhat smaller than the ACS universe reflected here.

American Housing Survey (this is being pursued now for New York State and Philadelphia). The models for estimating work-related transportation and child care costs would require modifications to accommodate non-urban populations.

The Institute of Research on Poverty at the University of Wisconsin-Madison is pursuing improved poverty measurement for Wisconsin consistent with the NAS recommendations. Institute Director Timothy Smeeding notes several issues that must be addressed in replicating the CEO work. For example, housing costs are much lower in Wisconsin, so the resource adjustments made for that expenditure component in New York must be reassessed. Health care costs in Wisconsin, especially for low-income families, are greatly affected by the availability of BadgerCare, and that could affect decisions about the treatment of MOOP. In general, Smeeding stresses the need to understand and confront the tradeoffs that must be made between conceptual consistency and the availability of data of sufficient quality to be useful.

Technical expertise – such as that available from the Institute for Research on Poverty – is needed to process the source data and to assess the degree of data reliability. This is inevitably complicated and will require both time and money.

### A Way to Begin

The mission of the Community Advocates Public Policy Institute includes developing policy packages that can dramatically reduce poverty in Wisconsin, and quantifying current “poverty” is an essential first step. Counseling patience while an improved poverty measure is developed may be prudent, but being inactive in the interim is equally unrealistic and unwise. By whatever measure, there are poor households in Wisconsin. Their needs are immediate. Large sums are being spent on programs to ameliorate those needs. Policy proposals emerge continuously. The current poverty measure does not accurately assess what is and could be effective; although the right measure is not yet available, work to end poverty needs to be done today.

Fortunately, it is possible to do meaningful interim work through selective use of provisional poverty thresholds and household income simulations. The purpose of this exercise is not to describe overall poverty but to look at hypothetical households and make accurate assessments of poverty status based on different earnings assumptions and current and prospective policy configurations.

### *Provisional Thresholds*

The threshold side of measurement is more generalized and more easily modified. A set of provisional poverty thresholds for Wisconsin can be developed based on the CEO model.

The CEO started with the Census determination of the FCSU-CE. This figure represents 80.5% of the median amount spent by the reference family of four for food, clothing, shelter, and utilities, multiplied by 1.2 to account for miscellaneous expenses. In 2006, the amount was \$21,818 nationally. To adjust for geographic price differences, the CEO divided the New York City metropolitan FMR for a two-bedroom apartment in 2006 (\$1,133) by the national populated-weighted average FMR (\$783) for an adjustment factor of 1.45. The housing (shelter plus utility) portion of the national total (44%<sup>6</sup>, or \$9,600) was multiplied by this amount. The result was adjusted for family size by applying the three-parameter scale multipliers developed as part of the NAS process.

To replicate for Wisconsin, the latest available FCSU-CE figure to start from is for 2007 (\$23,465). The housing cost portion would be adjusted against a national FMR of \$812; however, unlike in New York, the geographic price factor results in downward adjustments. FMRs vary by metropolitan area, so the multiplier – and then the poverty threshold – would vary across the state; for example:

	MILWAUKEE	GREEN BAY	NON-METRO WI
FMR (2007)	\$726	\$608	\$543
Multiplier	.89	.75	.67
THRESHOLD <sup>7</sup> (reference family of four)	\$22,329	\$20,884	\$20,058

In future work on Wisconsin measures, it may be possible to use alternatives to the NAS-recommended housing-specific geographic price adjustment. Preliminary results from work by the Bureau of Economic Analysis using broader price data indicate different patterns of sub-state variation in Wisconsin.

Applying the family size adjusters would result in the following provisional poverty thresholds (using Milwaukee as an example):

MILWAUKEE METRO (2007)	
1 adult, no children	\$10,338
2 adults, no children	\$14,581
1 adult, 1 child	\$15,628
1 adult, 2 children	\$18,533
1 adult, 3 children	\$21,280
2 adults, 1 child	\$19,650
2 adults, 2 children	\$22,329
2 adults, 3 children	\$24,875

<sup>6</sup> The CEO report notes that the Census Bureau has not recalculated this percentage since the early 1990s, and it may need to be adjusted upward.

<sup>7</sup> If homeowners' repayments of mortgage principal were included as a housing cost, the 2007 base amount would be \$25,680, and the geographically-adjusted amounts in this table would be \$24,212, \$22,470, and \$21,475, respectively.

These figures can be inflated forward to 2008 or 2009; however, as noted above, the choice of updating mechanism can greatly affect the results. The following table compares recent year-to-year percentage changes in FCSU-CE, the CPI-U, and the national and Milwaukee FMRs:

	<b>2006 to 2007</b>	<b>2007 to 2008</b>	<b>2008 to 2009</b>
FCSU-CE	+ 7.6%		
CPI-U	+ 2.8%	+ 3.8%	- 1.2% ( <i>prelim</i> )
National FMR	+ 3.9%	+ 6.0%	+ 3.2%
Milwaukee FMR	+ 2.8%	+ 9.5%	+ 5.5%

The overall inflation (CPI-U) and FMRs are not contemporaneous (the FMRs are released each fall prior to the beginning of the federal fiscal year). The FMR changes are closer to the larger year-to-year adjustments typically seen when using updated median household expenditure data rather than market price changes.

### *Income Simulations*

The income modeling must be consistent with the NAS framework reflected in the provisional thresholds. The model must calculate payroll taxes and federal and state income taxes (including refundable credits). It needs to consider participation in public assistance programs and make assumptions about costs that need to be deducted from income (work-related expenses, including transportation and child care, and MOOP).

The following tables detail two rough simulation examples using actual tax rates and program rules and the Milwaukee-based thresholds for 2007:

SINGLE ADULT, NO CHILDREN				
Earnings	\$10,000	\$12,500	\$15,000	\$17,500
Payroll Taxes	(\$765)	(\$937)	(\$1,148)	(\$1,339)
Federal Income Tax	(\$125)	(\$350)	(\$625)	(\$921)
Federal EITC	\$198	\$26	\$0	\$0
Federal CTC	\$0	\$0	\$0	\$0
State Income Tax	(\$0)	(\$17)	(\$157)	(\$286)
State EITC	\$0	\$0	\$0	\$0
Homestead Credit	\$589	\$431	\$238	\$62
SNAP (Food Stamps)	\$820	\$0	\$0	\$0
School lunches	\$0	\$0	\$0	\$0
Work-related transportation	(\$2,000)	(\$2,000)	(\$2,000)	(\$2,000)
Work-related child care	\$0	\$0	\$0	\$0
Medical out-of-pocket (MOOP)	(\$1,400)	(\$1,400)	(\$1,400)	(\$1,400)
<b>INCOME</b>	<b>\$7,317</b>	<b>\$8,002</b>	<b>\$9,908</b>	<b>\$11,616</b>
<b>% OF POVERTY</b>	<b>71%</b>	<b>78%</b>	<b>96%</b>	<b>112%</b>

SINGLE ADULT, TWO CHILDREN (1 pre-school, 1 school-age)				
Earnings	\$10,000	\$12,500	\$15,000	\$17,500
Payroll Taxes	(\$765)	(\$937)	(\$1,148)	(\$1,339)
Federal Income Tax	\$0	\$0	\$0	\$0
Federal EITC	\$4,000	\$4,716	\$4,716	\$4,272
Federal CTC	\$0	\$143	\$555	\$930
State Income Tax	\$0	\$0	\$0	\$81
State EITC	\$560	\$660	\$660	\$598
Homestead Credit	\$933	\$775	\$582	\$406
SNAP (Food Stamps)	\$4,555	\$3,936	\$3,081	\$2,338
School lunches	\$225	\$225	\$225	\$225
Work-related transportation	(\$2,000)	(\$2,000)	(\$2,000)	(\$2,000)
Work-related child care	(\$250)	(\$250)	(\$550)	(\$900)
Medical out-of-pocket (MOOP)	(\$1,400)	(\$1,400)	(\$1,400)	(\$1,400)
<b>INCOME</b>	<b>\$15,858</b>	<b>\$18,117</b>	<b>\$19,721</b>	<b>\$20,550</b>
<b>% OF POVERTY</b>	<b>86%</b>	<b>98%</b>	<b>106%</b>	<b>111%</b>

Income simulations require numerous assumptions, and some (for example, MOOP) can greatly affect the poverty determination. Among the assumptions embedded in the two tables above are:

- no cash income other than earnings
- no receipt of any housing assistance
- no receipt of energy assistance or WIC benefits
- housing expenses set according to the FMR (housing costs are involved in calculating the state income tax, Homestead Credit, and SNAP)
- work-related transportation costs equal to 100 miles a week for 50 weeks at \$0.40 per mile
- child care for pre-school child at co-payment rate for Wisconsin Shares subsidy program; no child care expenses for school-age child
- MOOP constant regardless of family size, reflecting greater subsidization for family with children but also greater over-the-counter outlays

Even basic simulations are complex, but they provide a means of assessing current and proposed policy against an updated, recognized standard.

### *Limitations*

It is important to remember the limitations of using provisional thresholds and income simulations. They can be useful in evaluating program design based on certain goals, such as ensuring that those who work full-time and take advantage of available programs will not be poor. They cannot, however, measure the effectiveness of program proposals in lowering the actual incidence of poverty. Such an estimation of the impact on poverty rates would require more sophisticated modeling that applies the simulation assumptions to a representative sample or reconstruction of the population.

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