

**ESTIMATING THE VALUE OF FEDERAL HOUSING
ASSISTANCE FOR THE SUPPLEMENTAL POVERTY
MEASURE**

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Introduction

In 2009 the Office of Management and Budget's Chief Statistician formed an Interagency Technical Working Group (ITWG) on Developing a Supplemental Poverty Measure. That group included representatives from the U.S. Census Bureau, Bureau of Labor Statistics, Economics and Statistics Administration, Council of Economic Advisers, U.S. Department of Health and Human Services, and Office of Management and Budget. In March 2010 the Interagency Working Group issued a series of suggestions to the Census Bureau and BLS on how to develop a new Supplemental Poverty Measure (Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure). Their suggestions drew on the recommendations of the 1995 report of National Academy of Sciences (NAS) Panel on Poverty and Family Assistance and the extensive research on poverty measurement conducted over the past 15 years, at the Census Bureau and elsewhere. The new thresholds are not intended to assess eligibility for government programs and will not replace the official poverty thresholds. If the President's budget initiative is approved, the Census Bureau will publish the first set of poverty estimates using the new approach in September 2011.

The 1995 National Academy of Science's Panel on Poverty and Family Assistance (NAS Panel) recommended that when measuring poverty, the definition of family resources for comparison with the appropriate poverty thresholds should be disposable money and near-money income. The NAS Panel specifically recommended that gross money income (the current income concept) be adjusted by adding the value of near-money nonmedical in-kind benefits and subtracting taxes, out-of-pocket medical care expenses, child care costs, work-related transportation and miscellaneous expenses and child support payments.

Since the early 1980s, the Census Bureau has used a model based on data from the 1985 American Housing Survey (AHS) to estimate the value of housing subsidies. These estimates are included in the enhanced Current Population Survey Annual Social and Economic Supplement (CPS ASEC) file and are used in the Estimates of the Effect of Benefits and Taxes on Income and Poverty series (sometimes referred to as the R&D series). The 1995 NAS report was critical of this method. Specifically, the panel expressed concern with (1) the difference between the total outlays for housing assistance and the total subsidy amount

estimated using the 1985 American Housing Survey method, (2) the fact that the Census Bureau model differentiated the value of housing subsidies only by four broad regions and (3) the age of the AHS data used in the analysis.

In 1999 and in 2001, the Census Bureau released reports that presented a set of experimental poverty measures based on recommendations of the 1995 NAS panel report (Short et al. 1999, Short, 2001). The reports also examined the effects of each part of the recommendations, plus reasonable alternatives. These reports considered several alternative approaches for estimating the value of housing subsidies including a method using the U.S. Department of Housing and Urban Development (HUD) Fair Market Rents (FMRs). The FMR approach has been used in the NAS-based poverty estimates available at <http://www.census.gov/hhes/www/povmeas/tables.html>.

This paper will describe the methodologies currently used by the Census Bureau to estimate the value of housing assistance, review the literature, alternatives and issues surrounding each approach, and recommend a methodology to be used in the resource calculation for a the supplemental poverty measure (SPM).¹

Housing Assistance: Federal Administrative Estimates vs. CPS ASEC

Households can receive housing assistance from a plethora of federal, state and local programs. Federal housing assistance consists of a number of programs administered primarily by HUD. These programs traditionally take the form of rental subsidies and mortgage-interest subsidies, targeted to very-low-income renters and are either project-based (public housing) or household-based subsidies. The programs generally reduce tenants' rent payments to a fixed percentage of their income after certain deductions, currently 30 percent.

For 2008, HUD's *Picture of Subsidized Housing* estimates the value of housing assistance benefits (exclusive of administrative and other costs) for the two major federal programs at \$24.3 billion and the number of participant households at 3.4 million. According to this report, 2.2 million received rental assistance in the form of vouchers while 1.2 million lived in public housing. (Approximately 1.4 million households received other federal housing assistance.)² These estimates are summarized in Table 1.

¹ The data in this report are from the Annual Social and Economic Supplement (ASEC) to the 2009 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_236sa.pdf>.

² http://www.huduser.org/portal/picture2008/form_7TOTB4.odt Previous work in this area has used data from the Ways and Means Green book which provides much larger estimates of total outlays and program participants. This data was from the U.S. House of Representatives, Ways and Means Committee, *2008 Greenbook*, "Federal Housing Assistance Housing Assistance Programs", Tables 15-2 and 15-3, found at <http://waysandmeans.house.gov/singlepages.aspx?NewsID=10490>. The Greenbook estimates "Total Outlays" which include administrative costs at \$33 billion and the number of recipients at 4.7 million.

The CPS ASEC asks the following questions about housing assistance:

Is this public housing, that is, is it owned by a local housing authority or other public agency? 1 Yes 2 No

Are you paying lower rent because the Federal, State, or local government is paying part of the cost? 1 Yes 2 No

Is this through Section 8 or through some other government program? 1 Section 8 2 Some other government program 3 Not sure

At first glance, housing assistance does not appear to be “underreported” on the CPS ASEC. Both the 2009 CPS ASEC and HUD administrative data estimate 5.1 million households with some kind of federal housing assistance.³ However, there is some evidence that respondents do not understand the distinction between living in public housing and having the Federal, State or local government pay part of the cost. While HUD administrative data estimates 1.2 million public housing units, 3.3 million households on the 2009 CPS ASEC reported living in public housing. While HUD administrative data estimates 2.2 million households receiving rental assistance in the form of tenant-based vouchers, the 2009 CPS ASEC estimates only 1.7 million households.

One reason for the apparent lack of underreporting of housing assistance in the CPS ASEC is that in addition to the federal HUD programs, for which we have estimates of the number of participants, there are many state and local housing assistance programs. Therefore there may still be significant underreporting of overall housing assistance benefits.

Assigning a Value to Housing Subsidies

In the CPS, respondents are asked only to report their current status as of the interview date concerning whether or not they live in public housing or receive help from the government with rent. There is no further information collected that helps to determine a dollar amount to add to family income. There have been a number of different methods proposed to assign a value to these housing subsidies for the purposes of poverty determination. Each method has advantages and disadvantages and poverty rates vary based on the method chosen. As would be expected, the poverty rates of households reporting housing assistance are much more sensitive to the choice of valuation methodology than the overall poverty rates.

Each methodology explicitly or implicitly sets the value of the subsidy as the difference between the “market rent” for a given family/household and the actual rent that they are required to pay. The problem is that the CPS ASEC does not provide information on either the market rent or actual rent payments. The valuation approaches differ in the assumptions used to impute these two different amounts. The following table summarizes the major approaches to subsidy valuation.

³ See Appendix Table 1 for summary statistics from HUD’s Picture of Subsidized Housing. About 5.1 million households received some form of federal housing assistance from HUD but only 3.4 million received either public housing or tenant-based vouchers, the kind of assistance this analysis is attempting to evaluate.

SUMMARY OF MAJOR APPROACHES USED TO ESTIMATE VALUE OF FEDERAL HOUSING SUBSIDIES			
	Market Rent	Rent Paid	Notes
Census Bureau Noncash Benefits	1985 American Housing Survey – using regression to model market rents for subsidized renters	1985 American Housing Survey – using respondent reports of actual amount of rent paid	Used average subsidy value for 36 categories; Updated using CPI Residential Rent Index.
NAS Experimental Measures	HUD Fair Market Rents – average of metro and nonmetro for each state; Based on imputed bedroom requirements for each family.	30% of Household Income	Subsidy prorated to families living in the unit based on number of persons in each family. Capped at 44% of the geographically adjusted thresholds.
CEO - Center for Economic Opportunity	Housing Portion of NAS Threshold	Statistical match with New York City Housing and Vacancy Survey – does not use ACS report of rental costs.	Used ACS data which did not identify which households had subsidies; NYCHVS not available nationally; Subsidies allowed to be negative.
Stern (2000)	Statistical match with the American Housing Survey	30% of Household Income	Many negative subsidies
Stern (2001)	Predicted Mean Match from 1999 American Housing Survey	30% of Household Income	Capped at 44.3 of threshold; Updated to 2007 but many households still end up with negative subsidies.
Renwick (2010)	Housing Portion of NAS Threshold	30% of Adjusted Household Income	Subsidies not allowed to be negative.

Housing subsidies help families pay their rent and as such are added to income for the SPM measure. However, there is general agreement that, while the value of a housing subsidy can free up a family’s income to purchase food and other basic items, it will only do so to the

extent that it meets the need for shelter. Thus, the values for housing subsidies included as income are limited to the proportion of the threshold that is allocated to housing costs.⁴

Since the CPS ASEC reports only current housing assistance status, assumptions must be made regarding the duration of subsidy receipt. The Census Bureau has always assumed that a subsidy reported in the CPS ASEC was received for all 12 months of the previous calendar year.

Many of the methods use data from the American Housing Survey (AHS) to impute data for items not included in the CPS ASEC. The AHS is a nationally representative survey that asks detailed questions about housing characteristics and household financial outlays for housing. The AHS asks about whether or not a household receives housing assistance, household income, and the amount of rent actually paid for the unit. Unfortunately, the AHS does not include data regarding the market or unsubsidized rent for subsidized units. However, since the AHS includes data on housing characteristics, the market rent of subsidized units can be estimated by developing a statistical model using the data for unsubsidized renters. Once market rents are estimated for subsidized units, subsidy values can be estimated as the difference between the predicted market rent for the unit and either (1) the reported rent paid or (2) 30 percent of income. Once the subsidy values are estimated for cases in the AHS, various strategies have been employed to match the AHS subsidy values to CPS ASEC households.

1. CPS ASEC Enhanced File – The “Old Method”

The annual CPS ASEC enhanced file contains an estimate of the value of housing subsidies for each family reporting residence in public housing or receipt of housing assistance. The amount assigned to each family is based on a model developed by using the 1985 AHS updated each year using the Consumer Price Index Residential Rent Index. The model used to estimate the market rent for a two- bedroom subsidized unit used four factors in the regression.⁵ Separate estimates were made for each of the four regions (Northeast, Midwest, South and West) and then the estimated coefficients were applied to the characteristics of the

⁴The NAS panel report did not discuss the issue of caps for subsidy amounts. The Census Bureau began capping the value of housing subsidies at the shelter portion of the threshold in its earliest work with the NAS-based measures. In part this was a response to the acknowledgement that the FMR-based method for evaluating housing subsidies might overestimate the value of these subsidies since the FMR was a ceiling not an average of the market rent of subsidized housing. The concept of capping housing subsidies was noted in the August 2, 2000 “Open Letter on Revising the Official Measure of Poverty.” The letter, signed by numerous academic researchers, noted :

“In general the market value of benefits should be used to establish their contribution to family resources. For housing benefits, however, the value imputed for these in-kind benefits should not exceed the housing budget share in the new poverty thresholds. The “excess” of in-kind housing subsidies over the housing budget share, which in some cases may be very large, cannot be used to pay a family’s food and clothing requirements.”

⁵ The four factors included in the regression model were number of bathrooms, whether the unit had three specific kitchen appliances (refrigerator, dishwasher, and garbage disposal), whether the unit had any of three specific problems (holes in the walls, holes in the floor, peeling paint, or rats), and an index of satisfaction with community services.

subsidized units yielding an estimated market value of the two-bedroom subsidized units. The average predicted two-bedroom monthly cost less the average two-bedroom reported rent paid for each of the four regions is the average subsidy for two-bedroom units in each of the four regions. The region-specific subsidies are then adjusted for the number of bedrooms in the unit (more than two, two, or less than two) and family income (\$10,000 or more, \$6,000-\$9,999, or less than \$6,000).⁶ The result is a 36-cell matrix of income by number of bedrooms by region from which each CPS family is assigned a subsidy. Since the CPS does not collect information about the number of bedrooms in a housing unit, the number of bedrooms is imputed for each family.

The bedroom imputation attempts to assign each family the number of bedrooms for which it would be eligible under the most common housing assistance program rules based on the composition of the primary family and related subfamilies. The head of the primary family is assigned one bedroom. One bedroom is assigned to every two children under the age of six. One bedroom is assigned to every two persons over the age of six of the same sex. If there is only one child under the age of six, the child shares a bedroom with any same sex person over six. If there is an odd number of children under the age of six (and more than one), the extra child is assigned his/her own bedroom. If there is an odd number of persons over the age of six, the extra person is assigned own bedroom. Unrelated subfamilies are assigned one bedroom, regardless of family size. A primary individual is assigned his/her own bedroom. Secondary individuals are assigned zero bedrooms.⁷

In the first Census Bureau report on the NAS-based experimental poverty measures (1999), the poverty estimates used the 1985 AHS housing subsidy estimates but the appendix included a discussion of two alternate methods. The AHS model was updated using data from the 1993 AHS and the authors found that using the CPI-U rent indices to update the 1985 average subsidies for 1993 underestimated the average subsidy by 35 percent compared to the model using newer data.⁸

2. Alternative Approaches Using the American Housing Survey

After the release of the NAS Panel on Poverty and Family Assistance report in 1995, the Census Bureau issued a series of working papers evaluating the estimation of housing subsidies and suggesting alternative approaches. Naifeh and Eller (1997) examined several new approaches to modeling market rent in the AHS, the method for matching AHS subsidies to the CPS and the method by which the number of bedrooms assigned to each family is imputed on the CPS. They also investigated a model in which the AHS subsidies were the dependent variable.

⁶ While the subsidy amounts are updated each year for changes in the cost of living, these income categories have never been adjusted.

⁷ Shea, Naifeh and Short (1997) identified three shortcomings of this approach to imputing the number of bedrooms. First, it probably overestimates the number of bedrooms because it is possible for one person in the family to use the living quarters as a bedroom. Second, it was based on family composition rather than household composition. Third, married couples in related subfamilies were not assigned their own room. They proposed an alternative method that assigned each married couple in a household its own room and assumed that an “extra” person would use the living quarters as a bedroom.

⁸ Short, Garner, Johnson and Doyle, 1999, p. C-10.

The second Census Bureau report on the NAS-based experimental measures (2001) introduced two new methods for measuring housing subsidies: the Fair Market Rent method and the statistical match approach. The report reported results of housing subsidy estimates using a statistical match between the CPS ASEC and the 1999 AHS. Monthly market rents for subsidized renters in the AHS sample were estimated using a hedonic regression model from data for unsubsidized units.

Stern (2000, 2001, 2004) continued this research, refining the hedonic model for estimating market rents in the AHS and experimenting with different geographic specifications. Stern also explored three different methods for matching the AHS subsidies to the CPS. First, she examined improvements to the subsidy value table approach used in the 1985 AHS method. Second, she did a statistical match of households in the CPS to households in the AHS using a distance function that included the number of persons in the household, the number of children in the household, the household's MSA, state, marital status of the householder, senior citizen status of householder, race of householder, and the sex of householder. Finally, she conducted a statistical match between the AHS and the CPS using a predicted mean match (Stern 2001).

In 2008, Short and O'Hara updated this statistical match using the 2005 American Housing Survey and the 2006 CPS ASEC. The hedonic regression used to predict market rents was updated. In a January 2010 paper, Renwick updated this analysis using a predicted mean match method to match market rent values for subsidized renters from the 2007 AHS to the 2008 CPS ASEC. This work has not been updated to match to the 2009 CPS ASEC and therefore results using this approach are not shown in this working paper.

This approach suffered from two major shortcomings. The predictive value of the housing hedonic model was fairly weak with an adjusted R-squared of only .4066. Market rents estimated using this method were lower than the estimates using other methods and resulted in negative subsidy estimates for approximately 15 percent of the sample.

3. FMR Approach

Since the release of the 2001 experimental poverty measures report (Short et.al. 2001), the FMR approach has been used almost exclusively in the Census Bureau research on NAS-based experimental poverty measures. Average FMRs for metropolitan and nonmetropolitan areas for each bedroom size are calculated from each year's FMR data. These FMRs are assigned to households on the CPS ASEC using the same bedroom imputation assumptions developed in the 1985 AHS model. Since the 1985 AHS imputation model imputes bedrooms at the family level, the FMR method aggregates the bedrooms for each family in the subsidized household. The value of the household subsidy is set at the FMR for its geography and bedroom size minus 30 percent of total household income. For household with multiple families, that household subsidy amount is then prorated among the families based on the number of persons in each family. The subsidy amount is capped at 44 percent of the threshold.

a. FMRs are not a nationally consistent standard

There are numerous concerns about the use of FMRs in the poverty calculation. (They are also currently used to geographically adjust the NAS thresholds.) One concern is that not all local housing authorities use the FMRs as a ceiling for rental assistance. Some housing authorities request and receive permission to use a higher payment standard. A second concern is that some FMRs are set at the 50th percentile of market rent rather than the 40th percentile of market rents. A third concern for some low cost areas is that a floor has been imposed on the FMRs with the FMR set equal to this minimum amount rather than a set percentile of the rent distribution. A fourth concern is that FMRs are the ceiling for housing assistance. Some subsidized renters will be living in units with rents below the FMR and therefore the FMR method may overstate the value of their housing subsidies.

b. Model used to impute the number of bedrooms

Like the AHS-based methods, the FMR method requires the analyst to impute the number of bedrooms required for each family on the CPS ASEC. The estimates included in the Census NAS-based experimental measures use the original bedroom imputation model. Shea, Naifeh and Short's alternative bedroom imputation model assigns, on average, a smaller number of bedrooms to each household. This in turn reduces the average subsidy assigned to each household. In essence, the difference between the two models is the treatment of extra children and married couple subfamilies. When there is an "extra" child, the old model assumes that extra child needs an extra bedroom. The alternative model assumes this child shares with his/her siblings or sleeps in the living area. The old model assigned a single bedroom to an each subfamily regardless of composition. The alternative model gives married couples in subfamilies a bedroom separate from their children.⁹

c. Total vs. Adjusted Household Income

The NAS-style research measures published by the Census Bureau use 30 percent of total household money income to estimate the household contribution to housing costs. In practice, recipients of housing assistance are expected to contribute 30 percent of "adjusted" household income. HUD regulations define "adjusted household income" as cash income excluding income from certain sources minus numerous deductions. Some of the income exclusions can be identified from the CPS ASEC, such as income from employment of children, student financial assistance, earnings in excess of \$480 for each full-time student 18 years or older. HUD also allows for a number of deductions which can be modeled from the CPS ASEC: \$480 for each dependent, \$400 for any family with a head or spouse who is elderly or disabled, child care and medical expenses. The dependent deduction is for each family member who is either under 18 years of age, a person with disabilities or a full-time student. An elderly or disabled family is any family in which the head or spouse (or the sole member) is at least 62 years of age or a person with disabilities. Child care expenses for any children, age 12 and younger, necessary to enable a family to work, look for work, or further his/her education are subtracted from income. The medical expense deduction is permitted only for households in which the head or spouse is at least 62 or disabled. The allowable

⁹ See Renwick (2010) for estimates of the impact of the alternative bedroom assumptions on the value of FMR-based housing subsidies.

medical expense is that portion of total medical expenses that exceeds three percent of annual income.¹⁰

d. Setting the Cap

i. After adjusting for geographic costs differences, the housing portion of the threshold is not equal to 44 percent of the threshold

Generally the value of the housing subsidy based on the FMRs has been capped at 44 percent (44.3 percent in the work by Stern) of the threshold. In implementing this cap, the Census Bureau uses 44 percent of the adjusted threshold for each family. This is not exactly the same as the housing portion of the threshold. Technically the housing portion of the threshold is 44 percent of the reference family threshold adjusted for family size (using the equivalence scale) and geographic differences in housing costs.

		<i>Assume FSCU= \$24,755 and GEOADJ = 1.2</i>
Adjusted Threshold =	$.44 * FCSU * GEOADJ + .56 * FSCU * 1$	$.44 * 24,755 + .56 * 24,755 = \$26,933$
Current Cap =	$.44 * \text{Adjusted Threshold}$	$.44 * \$26,933 = \$11,851$
Housing Portion of Threshold =	$.44 * FCSU * GEOADJ$	$.44 * 24,755 * 1.2 = \$13,071$

The geographic adjustment for the overall thresholds applies the differences in housing costs to 44 percent of the threshold and assumes no geographic differences for the other portion of the threshold. For example: If an area has housing costs that are 20 percent higher than the national average, the overall threshold is increased by 8.8 percent ($1.2 * .44 + 1.0 * .56$) rather than by 20 percent. In disaggregating the housing portion of the threshold, the full 20 percent geographic adjustment should be applied to the housing portion of the reference family threshold.

Secondly, 44 (or 44.3) percent is used as the housing portion of the threshold based on estimates originally calculated for the NAS panel's 1995 report. Although housing has become a considerably larger portion of the threshold, the housing factor has never been increased. Ideally, this factor should be updated each year using the same CE data used to update the threshold.

ii. The family's contribution to housing costs should be considered in setting the cap

For the family with a housing subsidy equal to the cap, the following equations describe the poverty calculation.

POVERTY=1 IF:

$FOOD + CLOTHING + SHELTER + UTILITIES + MISC > INCOME + (SHELTER + UTILITIES)$

¹⁰ While the enhanced CPS ASEC file does not include estimates of child care and medical out-of-pocket expenses, these items are estimated in the process of estimating the NAS-based experimental measures.

Subtracting SHELTER + UTILITIES from each side of the equation;
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} > \text{INCOME}$

But if the family must contribute 30 percent of its income towards its shelter costs, then the poverty calculation (ignoring other additions/subtractions to income) should be:

POVERTY = 1 IF
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} + .3 * \text{INCOME} > \text{INCOME}$
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} > .70 * \text{INCOME}$
 $(\text{FOOD} + \text{CLOTHING} + \text{MISC}) / .70 > \text{INCOME}$
 $1.43 * (\text{FOOD} + \text{CLOTHING} + \text{MISC}) > \text{INCOME}$

The poverty threshold for this family should be 43 percent greater than the sum of FOOD, CLOTHING and MISCELLANEOUS. A better way to set the cap is to cap the housing subsidy at the housing portion of the threshold MINUS the family contribution to housing costs.¹¹

POVERTY=1 IF:

$\text{FOOD} + \text{CLOTHING} + \text{SHELTER} \& \text{UTILITIES} + \text{MISC} > \text{INCOME} + (\text{SHELTER} \& \text{UTILITIES} - .3 * \text{INCOME})$
Subtracting SHELTER&UTILITITES from both sides
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} > \text{INCOME} - +.3 * \text{INCOME}$
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} + .3 * \text{INCOME} > \text{INCOME}$
 $\text{FOOD} + \text{CLOTHING} + \text{MISC} + > .7 * \text{INCOME}$

COMPARISON OF TWO METHODS OF SETTING CAP ON THE VALUE OF HOUSING SUBSIDIES		
Threshold	\$30,000	
Family Income	\$20,000	
Annual FMR	\$24,000	
Family Contribution to Rent @30% of income	\$ 6,000	
Uncapped Value of housing subsidy	\$24,000 - \$6,000 = \$18,000	
Housing Portion of Threshold	.44*\$30,000 = \$13,200	
Food, Clothing + Misc Portion of Threshold	\$30,000 - \$13,200 = \$16,800	
Resources available after paying shelter	\$20,000- \$6,000 = \$14,000	
	CURRENT METHOD	PROPOSED METHOD
Cap on housing subsidy	\$30,000* .44=\$13,200	\$30,000*.44-\$6,000=\$7,200
Resources available	\$20,000+ \$13,200=\$33,200	\$20,000+ \$7,200=\$27,200
Poverty Status	NOT IN POVERTY	IN POVERTY

¹¹ Technically, energy assistance payments reported by the household plus the housing subsidy should be subject to the cap since 44 (or 44.3) percent represents the shelter including utilities portion of the threshold.

Considering Out-of-Pocket Housing Costs in Setting the Cap on the Value of Housing Assistance

Let's assume the following facts: family income of \$20,000; FMR equal to \$2,000 per month; poverty threshold equal to \$30,000 of which \$13,200 (44 percent) represents the housing portion of the threshold. The current model assumes that the family pays 30 percent of its income or \$6,000 for rent. The housing subsidy would then be set at \$24,000 minus \$6,000 or \$18,000 and would be capped at \$13,200. For determining the poverty status of this family, the \$13,200 would be added to the \$20,000 cash income for a total of \$33,200 and this family would not be considered poor. Yet our threshold establishes that this family needs \$16,800 (\$30,000 minus \$13,200) to cover non-housing necessities. After paying its share of rent, the family has only \$14,000 (\$20,000 minus \$6,000) available to cover these necessities and therefore should be considered in poverty.

4. CEO Approach

In August 2008, New York City's Center for Economic Opportunity released its working paper, "The CEO Poverty Measure" which was an effort to adopt the NAS recommendations to American Community Survey (ACS) data for New York City. Estimating housing subsidies was an important part of this effort because so many households in New York pay less than market rent, either because of housing assistance, rent control or owning a home free and clear (without a mortgage). CEO was able to take advantage of the rich data in the New York City Housing and Vacancy Survey (NYCHVS) to estimate household outlays for housing. While noting several approaches that could be used to take into account the value of housing assistance, including separate thresholds by housing status and use of the FMRs as a proxy for market rent, the report chose a different approach. The value of these subsidies was calculated by subtracting this estimate of household outlays (from the NYCHVS) from the shelter portion of the family's threshold for all households paying less than full market rent. In essence, CEO is using the "cap" from the FMR measure as the estimate of market rent for their subsidy calculations.

Renwick (2010) developed an approach that combined the FMR approach with the CEO approach. Like the CEO analysis, the housing portion of the NAS threshold was used as a proxy for market rent. Like the FMR approach, the household contribution to housing costs was estimated at 30 percent of household income.

One problem with this approach is the fact that the housing portion of the NAS threshold is conceptually different from market rent.¹² The housing portion of the NAS threshold is calculated as a percentage of the outlays (not including mortgage principal

¹² Garner and Betson (2010) have developed NAS-based thresholds that replace outlays for shelter with the rental equivalence of shelter for units in the Consumer Expenditure survey. The housing portion of these thresholds would be conceptually consistent with the market rent concept. In an earlier analysis (Garner and Short, 2001) replaced out-of-pocket housing outlays with an estimate of the total cost of subsidized housing in the CE. They found that this calculation added approximately \$15 to the thresholds for the reference family of two adults and two children. (p. 6-7)

payments) for housing services of reference families at the midpoint of the distribution of expenditures on food, clothing, shelter and utilities. Some families in this distribution will not be paying market rent for their shelter. They may be living mortgage-free or in subsidized housing and have outlays much lower than the “rental equivalence” of the housing services they consume. On the other hand, some reference families may have a mortgage with a high interest rate and have outlays that exceed market rent.

Another way of looking at the CEO approach is that it defines a different threshold for families reporting housing assistance. For these families, their effective threshold is set as the food, clothing and miscellaneous expenditures included in the threshold for all families plus their actual outlays for shelter. In this sense, the method is consistent with the concept of the threshold being based on outlays/expenditures rather than consumption.

This method evaluates poverty based on the following formula:

$$\text{POVERTY}=1 \text{ IF:} \\ \text{FOOD} + \text{CLOTHING} + \text{SHELTER} + \text{MISC} > \text{INCOME} + (\text{SHELTER} - \text{RENT PAID})$$

Subtracting SHELTER from each side of the equation;
$$\text{FOOD} + \text{CLOTHING} + \text{MISC} > \text{INCOME} - \text{RENT PAID}$$

Adding RENT PAID to each side of the equation
$$\text{FOOD} + \text{CLOTHING} + \text{MISC} + \text{RENT PAID} > \text{INCOME}$$

5. A New Approach: Using HUD Administrative Data to Estimate Market Rent

The “market rent” for the household is estimated using a statistical match with United States Housing and Urban Development (HUD) administrative data from the Public and Indian Housing Information Center (PIC) and the Tenant Rental Assistance Certification System (TRACS). Combined, these two data sources cover the bulk of households receiving federal rental assistance. For each household, an attempt was made to match on state, Core Based Statistical Area (CBSA), and household size.¹³ Since the HUD administrative data only include estimates of gross or contract rent for tenant-based housing assistance programs, the contract rents assigned to CPS ASEC households living in public housing are adjusted by a factor of 767/971.¹⁴

The total tenant payment is estimated using the total income reported by the household on the CPS ASEC and HUD program rules. Generally, participants in either public housing or tenant-based subsidy programs administered by HUD are expected to contribute towards housing costs the greater of one third of their “adjusted” income or 10 percent of their gross income. Adjusted income is calculated using HUD program rules. Income from employment of children, student financial assistance and earnings in excess of \$480 for each full-time student 18 years or older is excluded. Deductions from income are made for dependents,

¹³ <http://www.huduser.org/portal/picture2008/index.html>

¹⁴ This adjustment factor was derived from data published in the “Picture of Subsidized Households: 2008” which estimates the average tenant payment and the average subsidy by type of assistance. The average contract rent would be the sum of these two estimates, \$324+647=971 for tenant-based and \$255+512=767 for public housing.

families with an elderly or disabled head or spouse, child care and medical expenses in excess of three percent of annual income.

The value of subsidies is capped at the housing portion of the threshold for renters minus the household's out-of-pocket housing expenditures. The housing portion of the threshold is calculated by applying the full geographic adjustment and the equivalence scale to the 49.3 percent of the threshold. The cap is set at the housing portion of the threshold minus the household's out-of-pocket expenditures.

Results/Analysis

Table 2 summarizes some of the major differences in housing subsidies for eight different approaches:

- Old subsidy table with no cap
- Old subsidy table with a cap on the value of subsidies
- FMR method with no cap
- FMR method using old capping method
- FMR method with the new cap (which considers housing out of pocket expenditures)
- CEO method
- Method using statistical match to HUD administrative data
- Method using statistical match to HUD administrative data – capped.

The final column in Table 2 provides summary measures from the HUD administrative data.

1. Mean Subsidy per SPM Family

Table 1 summarizes the weighted mean subsidy per SPM family reporting housing assistance for each approach. The mean subsidy for the method using the statistical match to HUD data is smaller than the mean subsidies using the FMR methods or the CEO approach but greater than the mean subsidies based on the 1985 AHS subsidy table.

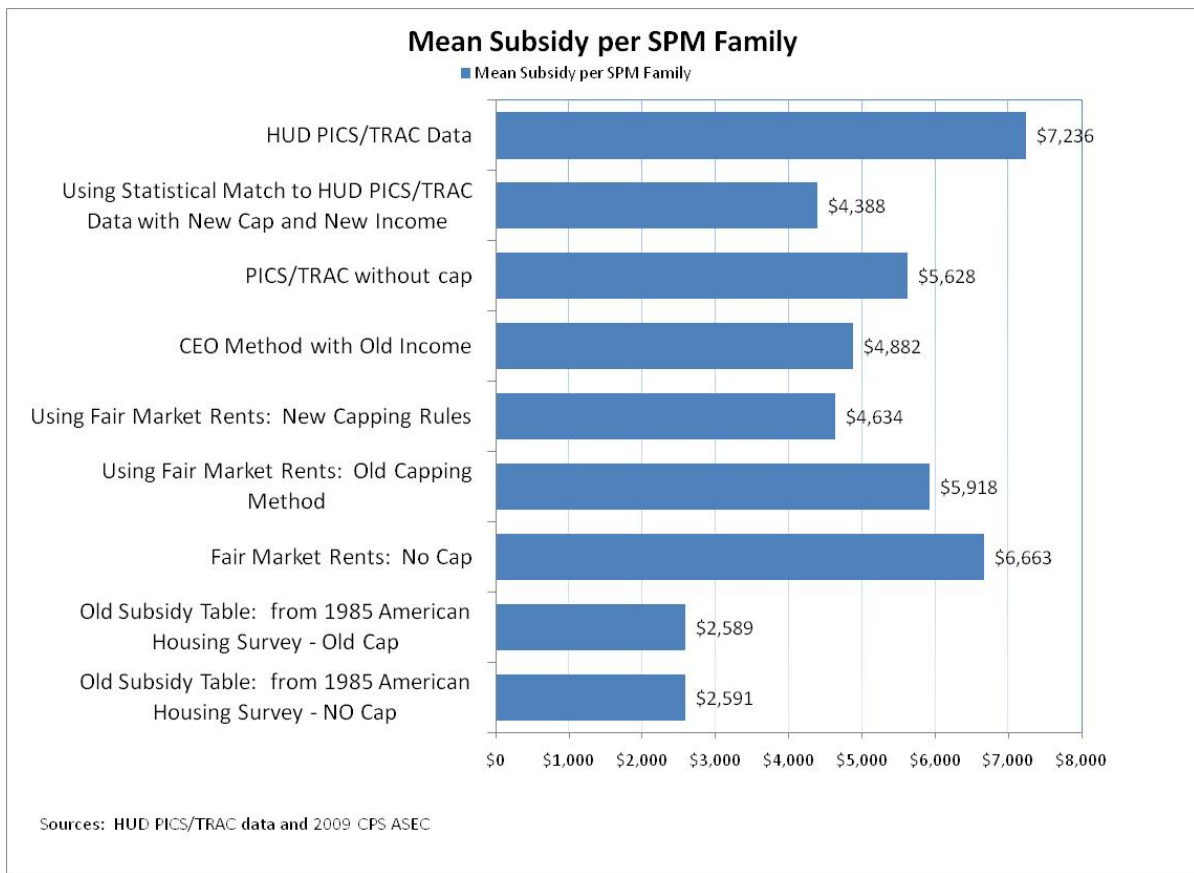


Figure 1

2. Number of Families Assigned \$0 Subsidy Value

One concern that has been expressed in previous working papers on this topic is the percentage of CPS ASEC households who report receiving housing assistance but are assigned a subsidy value of \$0 using a particular method. This occurs when the estimate of the household's contribution towards rental costs exceeds the estimate of the market value of their housing. This did not occur with the 1985 AHS subsidy table. Using that method every household was assigned a positive value. Using the FMR-method 18.3 percent of SPM families were assigned a subsidy value of \$0; using the CEO approach, 16.7 percent of SPM families were assigned a subsidy value of \$0; and using the statistical match to the HUD administrative data the share of SPM families with \$0 subsidy value decreased to 14.6 percent.¹⁵

Assigning subsidies of \$0 to these families reduces the number of households with assistance to an estimate closer to the HUD administrative records. According to HUD, their programs provided assistance to 3.4 million households through public housing and Section 8 Certificates and Vouchers (*See* Table 1). There are 5.2 million SPM families in 5.0 million households reporting assistance in the 2009 CPS ASEC. When the households with subsidies with zero or negative value using the HUD administrative data method are removed, the total number of households with assistance is reduced to 4.1 million.

¹⁵ The 18.3 percent with zero subsidies using the FMR-method is not statistically different than the 16.7 percent assigned a zero subsidy using the CEO approach.

3. Aggregate Value of Housing Subsidies

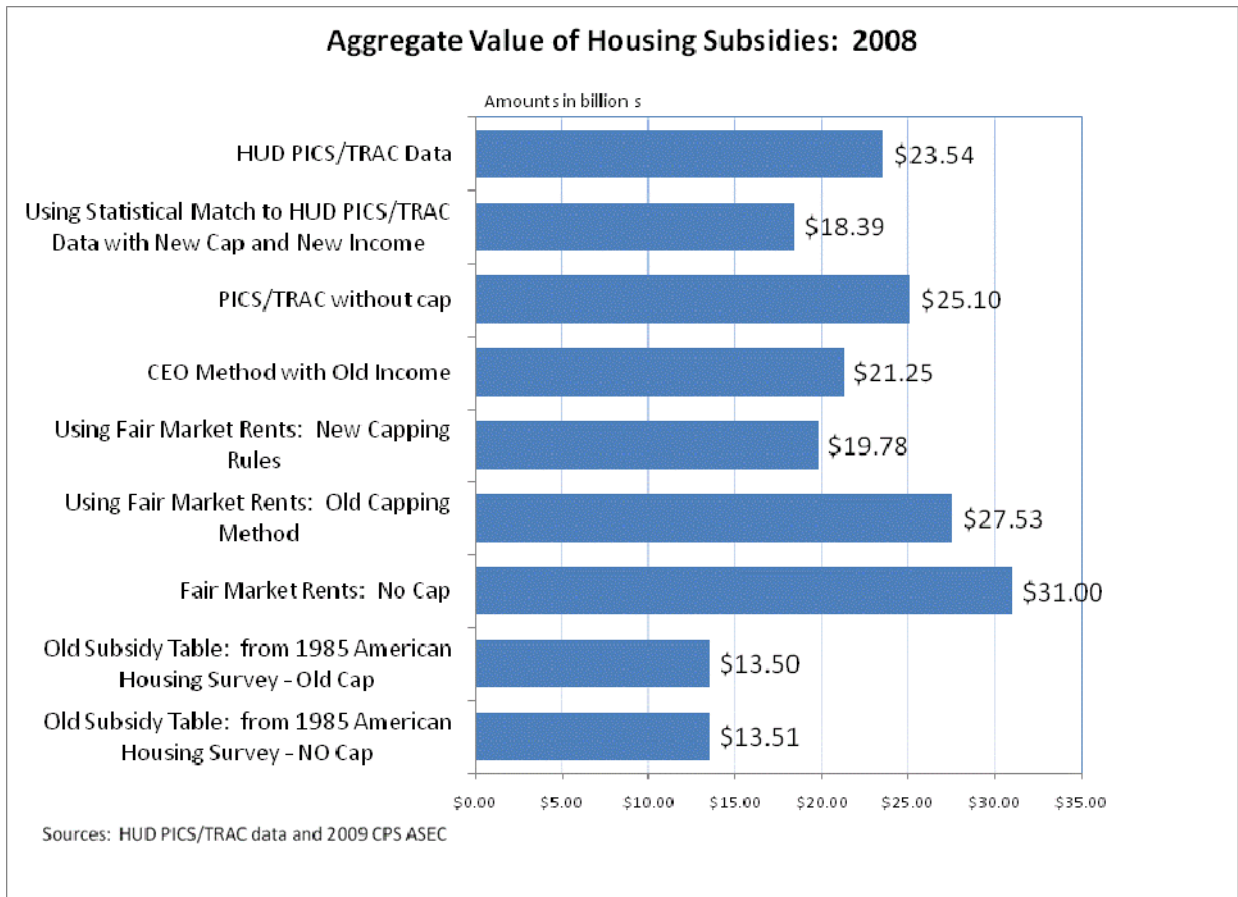


Figure 2

The aggregate value of housing subsidies using the new method is lower than the aggregate value using the FMR method. The FMR method with the old cap estimated aggregate subsidies at \$27.5 billion. The FMR method with the new cap (that excludes the household's contribution to rental costs) estimates aggregate subsidies at about \$19.8 billion. The new method estimates aggregate subsidies of \$18.4 billion.¹⁶

¹⁶ The apparent difference between 19.8 billion and 18.4 billion is not statistically significant.

Median Subsidy

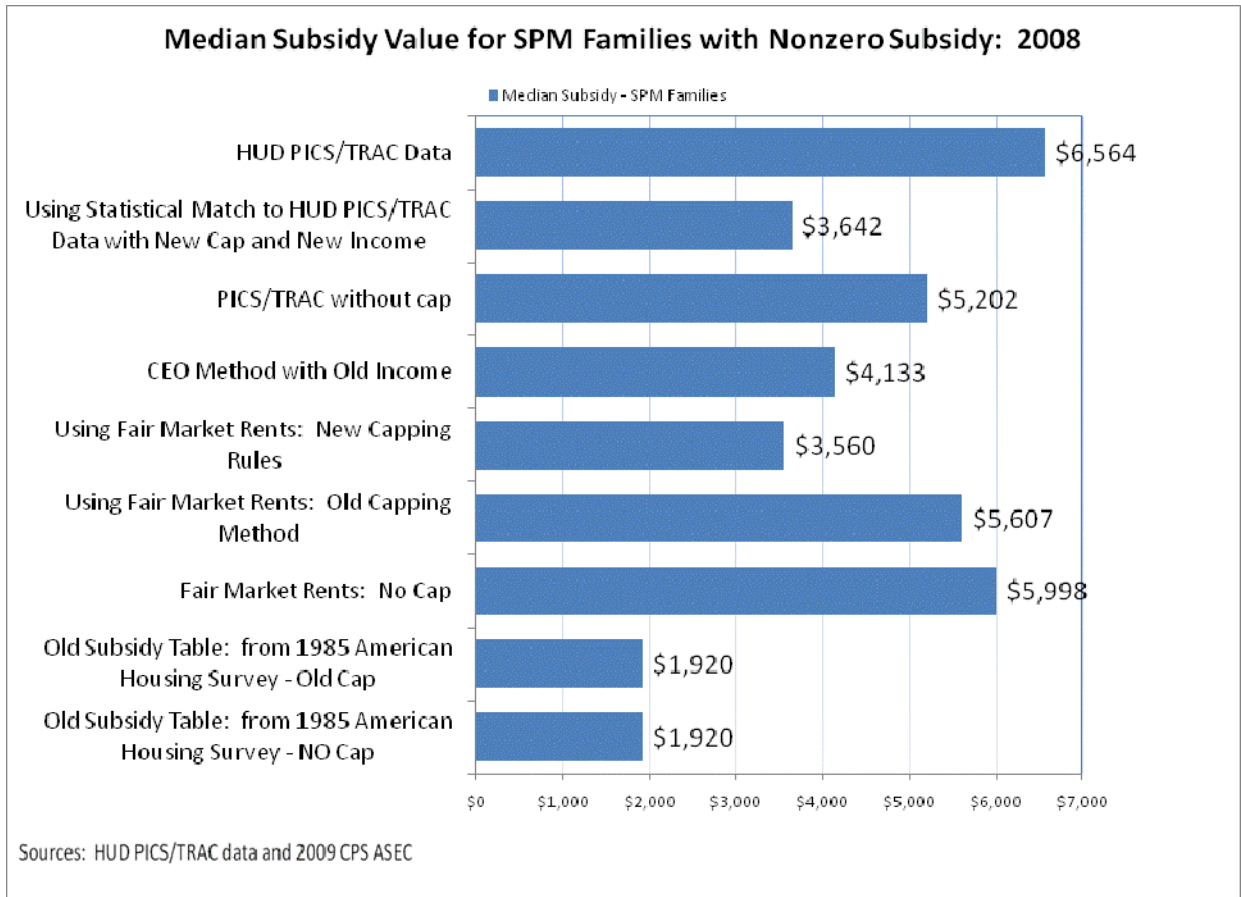


Figure 3

CONCLUSION

In conclusion, the Supplemental Poverty Measure should use a method to estimate the value of housing subsidies that (1) uses the statistical match to HUD administrative data to estimate the market rent of subsidized units, (2) uses adjusted rather than total household income to estimate the household's contribution towards housing costs, and (3) caps the value of these subsidies at the housing portion of the thresholds minus this estimated household contribution. The new method has the advantage that it eliminates the need to use Fair Market Rents in the estimate of the "market rent" of units occupied by subsidized renters. Since HUD actually pays the market rents to landlords it is the best source of data on these levels. The size of the administrative data base from HUD is large enough to ensure a very robust statistical match to the CPS ASEC. Using adjusted rather than total household income in the calculation brings this estimate closer to the way that these amounts are set in the administration of the program. Finally, correcting the cap ensures that the amount "added" to resources to account for housing subsidies does not categorize a family as not in poverty if that family does not have sufficient resources to purchase the non-shelter portion of the threshold.

Table 1

Summary Statistics from HUD's Picture of Subsidized Housing

Name	Total Units	Rent Per Month	Spending Per Month per Unit	Spending Per Year
Total Programs	5,063,071	287	589	35,785,785,828
Public Housing and Voucher Programs				
PUBLIC HOUSING	1,155,557	255	512	7,099,742,208
CERTIFICATES + TENANT-BASED VOUCHERS	2,209,675	324	647	17,155,916,700
SUBTOTAL*	3,365,232			24,255,658,908
Other Programs				
MODERATE REHABILITATION	27,067	215	549	178,317,396
MULTIFAMILY S8 NC/SR	1,116,250	250	610	8,170,950,000
MULTIFAMILY S. 236	225,167	254	494	1,334,789,976
MULTIFAMILY MF/OTHER	329,355	294	442	1,746,898,920
LOW INCOME HOUSING TAX CREDIT	1,672,239			
SUBTOTAL*	3,370,078			11,430,956,292

*Subtotals do not add to the grand total because households may participate in multiple programs.

Source: HUD Picture of Subsidized Housing

Table 2

Comparison of Housing Subsidy Methodologies: 2008 (Using 2009 CPS ASEC)									
	Old Subsidy Table: from 1985 American Housing Survey - NO Cap	Old Subsidy Table: from 1985 American Housing Survey - Old Cap	Fair Market Rents: No Cap	Using Fair Market Rents: Old Capping Method	Using Fair Market Rents: New Capping Rules	CEO Method with Old Income	PICS/TRAC without cap	Using Statistical Match to HUD PICS/TRAC Data with New Cap and New Income	HUD PICS/TRAC Data
Mean Subsidy per SPM Family	\$2,591	\$2,589	\$6,663	\$5,918	\$4,634	\$4,882	\$5,628	\$4,388	\$7,236
(SE)	\$32	\$32	\$118	\$92	\$95	\$106	\$101	\$87	na
Median Subsidy - SPM Families	\$1,920	\$1,920	\$5,998	\$5,607	\$3,560	\$4,133	\$5,202	\$3,642	\$6,564
	\$65	\$65	\$200	\$100	\$101	\$158	\$119	\$106	
Aggregate (in billions)	\$13.51	\$13.50	\$31.00	\$27.53	\$19.78	\$21.25	\$25.10	\$18.39	\$23.54
Se	\$0.47	\$0.47	\$1.17	\$1.01	\$0.77	\$0.84	\$0.96	\$0.70	na
Number of SPM Families with Assistance	5,212,788	5,212,788	4,267,881	4,267,881	4,267,881	4,351,962	4,190,774	4,190,774	4,282,130
SE	172,315	172,315	147,217	147,217	147,217	150,604	143,323	143,323	na
Public Housing	3,435,310	3,435,310	2,801,632	2,801,632	2,801,632	2,861,278	2,708,783	2,708,783	958,786
SE	149,755	149,755	125,131	125,131	125,131	128,194	120,737	120,737	na
Tenant Based	1,777,478	1,777,478	1,466,249	1,466,249	1,466,249	1,490,683	1,481,991	1,481,991	3,323,344
SE	80,986	80,986	70,662	70,662	70,662	72,114	71,723	71,723	na
Percent Zero	0.00	0.00	18.28	18.28	18.28	16.67	14.59	14.59	
SE	0.00	0.00	0.96	0.96	0.96	0.88	0.85	0.85	
Percent Capped	0.00	0.13		29.92	72.66			53.57	
SE		0.07		1.29	1.05			1.25	

Note: The estimates in all but the last column of this table are from the Annual Social and Economic Supplement (ASEC) to the 2009 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_236sa.pdf>.

Estimates in the last column are from HUD's Public and Indian Housing Information Center (PIC) and Tenant Rental Assistance Certification System (TRACS).

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