IMPROVING THE MEASUREMENT OF FAMILY RESOURCES IN A MODERNIZED POVERTY MEASUREMENT

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January 2010

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Abstract

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.

For the past ten years, the Census Bureau has published estimates of poverty based on the NAS Panel recommendations. This paper will describe the methodologies currently used by the Census Bureau to estimate the value of near-money nonmedical in-kind benefits in order to add this value to the resource estimate used in experimental poverty measures and review the literature, alternatives and issues surrounding each approach. Where appropriate, the paper will recommend a methodology to be used in the resource calculation for a modernized poverty measure. The paper will also provide data to illustrate the impact of these methodological alternatives on the overall poverty rate and the poverty rate for significant subgroups.

IMPROVING THE MEASUREMENT OF FAMILY RESOURCES IN A MODERNIZED POVERTY MEASUREMENT

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.

The Census Bureau employs a variety of techniques to assign values to near-money or in-kind income. Estimates of the value of many in-kind benefits are included in the annual release of the enhanced micro data from the Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS). Estimates of the value of Supplemental Nutrition Assistance Program (SNAP) benefits and low-income energy assistance rely directly on the survey responses. The value of regular, reduced price and free school lunches is estimated combining the survey responses on the number of children receiving school lunch with administrative estimates of the average subsidy per lunch served. The value of public housing and rental subsidies is estimated using a model based on data from the 1985 American Housing Survey adjusted for changes in the Consumer Price Index Residential Rent Index.

The 1995 NAS report noted the importance of taking into account in-kind benefits and particularly mentioned the importance of capturing the effects on poverty of important government policy changes, particularly those designed explicitly to combat poverty. (Citro and Michael, p. 207). The report authors explicitly accepted the Census Bureau's use of market values for SNAP but expressed concern with the estimates for the value of public housing. Specifically, the report expressed concern with (1) the difference between the total outlays for housing assistance and the total subsidy amount estimated using the 1985 American Housing 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. The panel suggested that the Survey of Income and Program Participation (SIPP) would afford the opportunity to improve the valuation of all nonmedical in-kind benefits and particularly housing subsidies. The panel also suggested that SIPP be used to ascertain which additional in-kind benefit (beyond housing subsidies and SNAP benefits) should be included in the resource measure.

For the past ten years the Census Bureau has published estimates of poverty based on the NAS Panel recommendations. The Census Bureau uses the enhanced ASEC estimates of the value of SNAP, regular, free, and reduced price school lunch, and heating assistance in the production of the annual NAS-based measures, but uses a different estimation technique for the value of public and subsidized housing. The Census Bureau also estimates taxes, medical out-of-pocket expenditures, child care

expenses and other work-related expenses which are subtracted from income in order to calculate the resource measure used in these experimental poverty estimates.

This paper will review the Census Bureau methodologies used to estimate the value of near-money nonmedical in-kind benefits in order to add these values to cash income to estimate poverty rates.[1] The paper will discuss the issues surrounding the measurement of nutritional assistance (SNAP, school lunch and WIC), energy assistance and housing subsidies. Where appropriate, the paper will make recommendations for improvements to these approaches. This paper will not discuss the methods used to estimate the value of elements "subtracted" from income – taxes, medical out-of-pocket expenses, child care and other work-related expenses.

NAS-based Poverty Measures

The Census Bureau routinely publishes estimates for eight different National Academy of Sciences (NAS) based measures in its experimental poverty series. In order to examine the impact of changes in the resource measure, this analysis uses just one of these measures, MSI-CE-GA --- Medical Out-of-Pocket Expenditures Subtracted from Income, Thresholds updated using the Consumer Expenditure Survey, Geographically Adjusted. Similar analysis could be done using any of the other measures. Unless otherwise notes, all poverty estimates were calculated using the March 2008 CPS ASEC internal files.

1. Nutritional Assistance

a. Food Stamps/Supplemental Nutritional Assistance Program (SNAP)

SNAP is the most important Federal food assistance program, providing low-income households with electronic benefits they can use like cash at most grocery stores. The U.S. Department of Agriculture administers SNAP at the Federal level through its Food and Nutrition Service (FNS). State agencies administer the program at State and local levels, including determination of eligibility and allotments, and distribution of benefits.

The CPS ASEC asks each household about its receipt of food stamp/SNAP benefits. The questionnaire asks about total SNAP benefits for the household and the number of people in the household receiving benefits. When there is more than one family in the household, the ASEC CPS enhanced file prorates the SNAP benefits based on each "eligible" family's share of the total number of people receiving benefits.[2]

[1] These methods are described in detail in two reports. Kathleen Short, Thesia Garner, David Johnson and Patricia Doyle, "Experimental Poverty Measures: 1990-1997", P60-205, June 1999 and Kathleen Short, "Experimental Poverty Measures: 1999, P60-216", October 2001.

[2] "Eligible" is defined as either a family receiving public assistance or SSI or a family with income below its poverty threshold If the number of persons in the household is greater than the number of persons in families receiving public assistance or SSI plus the number of persons in families with income below the poverty threshold, then the remaining family is assumed to be eligible for SNAP. Since federal eligibility

Table 1 provides estimates of the number of recipients and aggregate value of SNAP benefits from the 2008 CPS ASEC. Table 1 also includes USDA estimates of total outlays for SNAP benefits and average number of SNAP participants for FFY2007. These figures are consistent with numerous other analyses finding that SNAP benefits tend to be underreported in the CPS ASEC.[3] Meyer et. al. (2009) found that on average, the CPS ASEC estimates of aggregate SNAP benefits between 1979 and 2007 averaged 66.5 percent of administrative estimates and that this reporting rate had fallen from 75.5 percent in 1979 to 53.9 percent in 2006. The change in the program name and particularly the use of different names for the program in different states may result in even further deterioration of this reporting rate. [4]

Including SNAP benefits in resources makes a difference in the poverty estimate. Table 1a shows the impact of the inclusion of SNAP benefits in the resource measure on the overall 2007 poverty rate (using the MSI-CE-GA NAS-based experimental measure) and the 2007 poverty rate of SNAP recipients.

b. School Lunch

The school lunch program offers children free meals if family income is below 130 percent of federal poverty guidelines, reduced price meals if family income is between 130 and 185 percent of the guidelines, and a subsidized meal for all other children. The School Lunch program provided $5.1 billion in fiscal year 2007 to children in 95,000 schools. Average daily participation was 30.5 million students. Of these, 49 percent received free lunches, and 10 percent received reduced-price lunches.[5]

The Census Bureau currently uses administrative data on the average outlays on regular, free and reduced price school lunch to estimate the value of benefits for participants in the program. The CPS question asks how many children "usually" ate school lunch and whether or not it was a free or reduced price school lunch. If the response to the usually ate school lunch question is positive, the child is assumed to eat

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for SNAP is based on gross income below 130% of the poverty guideline, the second criteria for "eligibility" should probably be income less than 130% of the threshold rather than 100% of the threshold.

[3] For example, in Short et. al. (1999) found that for 1991the CPS ASEC estimated total food stamp benefits of $12.4 billion compared to USDA unpublished program spending totals of $18.3 billion.

[4] In 2008, as a part of the Food, Conservation and Energy Act of 2008, the name of the program changed from food stamps to the supplemental nutrition assistance program. With the change in the name of the federal program and state-by-state differences in the program name, the quality of CPS ASEC responses may deteriorate if respondents are uncertain of the name of the program from which they receive benefits. Most states have changed the name of the state program to SNAP but a number of states have adopted their own program name. The CPS questionnaire can use the specific state name of the state of residence of the respondent. As of July 13, 2009, twenty-seven jurisdictions had adopted the SNAP name while 17 were planning to change to or keep an alternative name: Maine (Food Supplement Program); Vermont (3 SquaresVT); Arizona (Nutrition Assistance); Washington (Basic Food Program); Alabama, Michigan and Ohio (Food Assistance); Florida, Delaware, Maryland, Colorado, Iowa, and Kansas (Food Assistance Program); Minnesota (Food Support), Wisconsin (Food Share). Source: From Food Stamps to SNAP: State Name Changes Tracking Chart, July 13, 2009, www.fns.usda.gov/FSP/roll-out/**state-chart**.pdf

[5] U.S. House of Representatives, Ways and Means Committee Greenbook - Chapter 15 http://waysandmeans.house.gov/media/pdf/110/15school.pdf.

school lunch each school day in the calendar year. No value is given to school lunches for family members who did not "usually" eat school lunch.

There are several conceptual differences between the administrative estimates of program participation and the CPS ASEC estimates. Average daily participation reported by USDA is not the same concept as the CPS ASEC number of children who "usually" ate free lunch. In addition, the assumption that children who "usually" eat school lunch eat school lunch each and every day is not realistic and therefore we would expect that the aggregate value of school lunches would be overstated in by the CPS ASEC estimates. As can be seen in Table 1, while the 2008 CPS ASEC estimates the total number of participants at 38 million, USDA reports average daily participation at 31 million. Table 1 also shows that participation in the free and reduced lunch segment of the school lunch program, like SNAP, tends to be underreported in the CPS ASEC. Again, this is consistent with other research on in-kind benefit reporting.[6]

Short (2003) examined the differences between the estimates of school lunch in the CPS and SIPP. She concluded that the compared to the SIPP, CPS overestimates the value of free and reduced price school lunch but underestimates the number of persons receiving benefits from the program. Children who may not have 'usually' received a lunch in the previous year may be reported in the SIPP as 'usually' getting a school lunch in the previous four months. On the other hand, the average annual value of school lunches per child is lower in the SIPP than in the CPS because the SIPP does not assume full-year participation.

c. Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

The 1995 National Academy of Science report noted that WIC and School Breakfast Program seemed to be "prime candidates to include" in an improved resource measure. (Citro and Michael, p. 219). The Special Supplemental Nutrition Program for Women, Infants, and Children - better known as the WIC Program is designed to provide food assistance and nutritional screening to low-income pregnant and postpartum women and their infants, and to low-income children up to age five. Incomes must be at or below 185 percent of the poverty guidelines and applicants must be nutritionally at-risk (having abnormal nutritional conditions, nutrition-related medical conditions, or dietary deficiencies). Benefits include supplemental foods in the form of food items or vouchers for purchases of specific food items.

The CPS ASEC asks whether or not respondents received benefits from the WIC program. For 2007, approximately 3.3 million individuals reported receipt of WIC benefits in the CPS ASEC. According to UDSA, average WIC benefits for 2007 were $39.04 per month per participant.[7] Since the CPS ASEC question does not ask how many months the person received WIC benefits, the assumption is made that each person

[6] Meyer et.al. (2009) found that an average reporting rate (ratio of survey program participation estimates to administrative estimates) of 54.8 percent for the CPS ASEC from 1979 to 2006. Unlike the SNAP program, they did not find significant deterioration in the reporting ratio for free and reduced price school lunches overt this time period.

[7] WIC Annual Summary, http://www.fns.usda.gov/pd/wisummary.htm

received benefits for the full 12 months of the reference year. Using the average outlay of $39.04 per month per recipient, WIC benefits would add $448 dollars per participant to the income of each recipient family and increase aggregate family income by $1.5 billion. Table 1a shows the impact of inclusion of WIC benefits on poverty rates.

d) School Breakfast

The School Breakfast program serves fewer students than does the School Lunch program. Approximately 1.7 billion breakfasts in 80,000 schools were subsidized in fiscal year 2007. Average daily participation was 10.1 million children (23 percent of the 43 million children enrolled in participating schools and residential child care institutions). Of these 10.1 million, 70 percent received free meals and 10 percent purchased reduced-price meals. In the 2008-09 school year, inflation-indexed per-breakfast cash subsidies ranged from 25 cents for full-price meals to $1.40 and $1.10 for free and reduced-price breakfasts, respectively. Fiscal year 2007 Federal school breakfast funding totaled about $2.2 billion.[8]

Short (2003) examined the impact on poverty rates of taking into account school breakfast. Using SIPP data (the CPS ASEC does not include a question about school breakfast), Short found that calculating a value for the school breakfast subsidy in the same way as was done for the school lunch program added approximately $2 billion to income of families in the SIPP in 1996. While 24 percent of families reported school lunch participation, only 9.1 percent reported school breakfast participation. Of officially poor families, 37.3 percent participated in the school lunch program and 25.5 percent in the school breakfast program. The average value of the school breakfast subsidy for poor families (using the official definition) was $256 per year. The poverty rate (using the official thresholds) fell from 12.8 percent to 12.7 percent when the value of school breakfasts was added to income. [9]

Since the CPS ASEC does not ask about participation in the school breakfast program, it would be difficult, but not impossible, to include the value of school breakfasts in the resource measure. SIPP data could be used to model the likelihood of participation in the school breakfast program. This model could then be used to impute participation in the school breakfast program to a fraction of the families participating in the school lunch program. This paper has not made these imputations.

2. Low-Income Home Energy Assistance Program (LIHEAP)

The Low-Income Home Energy Assistance Program provides three major types of energy assistance. Under this program, states may help pay heating or cooling bills, provide allotments for low-cost weatherization, or provide assistance during energy-related emergencies. States determine eligibility and can provide assistance in various

[8] U.S. House of Representatives, Ways and Means Committee Greenbook - Chapter 15 http://waysandmeans.house.gov/media/pdf/110/15school.pdf

[9] Kathleen Short, "Alternative Poverty Measures in the Survey of Income and Program Participation: 1996", January 3, 2003.

ways, including cash payment, vendor payment, two-party checks, vouchers/coupons, and payments directly to landlords.

The 2009 CPS ASEC asked the following questions on energy assistance:

The government has an energy assistance program which helps pay heating costs. This assistance can be received directly by the household or it can be paid directly to the electric company, gas company, or fuel dealer. Since October 1, 2008, (have you/has this household) received assistance of this type from the federal, state, or local government? 1 Yes 2 No

Do you remember receiving an additional or unexpected check that was sent during the winter to help pay heating costs? 1 Yes 2 No

Was it used to pay heating costs? 1 Yes 2 No

Altogether, how much energy assistance has been received since October 1, 2008? Enter annual amount only

The Census Bureau NAS measures add the reported value of energy assistance for each household to cash income. When there are multiple families in a household, the reported benefits received are prorated across the families according to the number of household members in each family.

Table 1 compares the estimates of the number of participants and the aggregate value of these benefits from the 2008 CPS ASEC to administrative estimates. There are several concerns when comparing CPS ASEC participation estimates with those found in administrative records. The LIHEAP report to Congress notes that their 5.5 million estimate of the number of participants was not an unduplicated count of households. Many households receive both a "regular" benefit and one or more crisis or emergency benefits. Additionally, since LIHEAP payments are often made directly to a utility company or fuel oil vendor, many households may have difficulty reporting the precise amount of the LIHEAP payment made on their behalf.[10]

Another concern is that the CPS ASEC question asks only about energy assistance received during the winter months while the LIHEAP program provides heating and cooling assistance. While heating assistance continues to be the most important part of the LIHEAP program, cooling/crisis assistance has grown from $50 million in 1981 to $160 million in 2006. Over this same period heating/crisis assistance has grown from $1.51 billion to $2.13 billion with total program outlays growing from $1.56 billion in 1981 to $2.29 billion in 2006. [11] In addition, even LIHEAP heating benefits may be provided after the CPS ASEC survey period. If a household can be interviewed in February for the CPS ASEC and receive assistance for February/March heating bills in March or April.

[10] LIHEAP Report to Congress FY2006.
[11] LIHEAP Home Energy Notebook for FY 2006, HHES, August 2008. Page 31. Figure 3-22.

SIPP asks household whether or not they receive energy assistance and the form in which the assistance is received. If the household responds that the assistance is received in the form or a check to the household or a voucher, the household is asked about the amount of the assistance. If the household reports that the assistance is paid directly to the utility the amount question is not asked. In the 2006 SIPP, 4.75 million households reported receipt of energy assistance. Of those 4.75 million, 4.11 million or 87 percent reported that the assistance was paid directly to the utility.[12]

Ideally, the resource measure should include the value of both heating and cooling assistance. Without a change in the CPS ASEC questionnaire, it is difficult to obtain an estimate for households receiving cooling benefits. One possibility would be to examine SIPP data to develop a model to impute these amounts. SIPP asks survey participants about energy assistance in each "wave" of the survey so it would be possible to get estimates for assistance received outside the time frame of the CPS ASEC question.

3. Housing Subsidies

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 the Department of Housing and Urban Development (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.

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

In 2007, administrative data estimated the total value of HUD housing subsidies at $33 billion. In FY2007, 4.7 million households received assistance through the two major HUD programs --- 3.5 million received rental assistance and 1.2 million lived in public housing. (Approximately 100,000 households received other federal housing assistance.)[13]

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[12] Census Bureau analysis of SIPP 2004 Panel Waves 7-10.
[13] U.S. House of Representatives, Ways and Means Committee, 2008 Greenbook, "Federal Housing Assistance Housing Assistance Programs", Tables 15-2 and 15-3, http://waysandmeans.house.gov/Documents.asp?section=2168

At first glance, housing assistance does not appear to be "underreported" on the CPS ASEC. The 2008 CPS ASEC estimated 4.74 million households with some kind of housing assistance while HUD reports 4.69 million receiving assistance in FFY2007. 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 in FFY2007, 3.16 million households on the 2008 CPS ASEC reported living in public housing. While HUD administrative data estimates 3.5 million households receiving rental assistance, the 2008 CPS ASEC estimates only 1.57 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. Unfortunately, this study has not been able to locate a reliable source of estimates of recipients of and total outlays for state and local housing assistance.

Adding the "value" of housing subsidies in cash income is a more complex task than including the value of food stamps. 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. Since we know only current status we must make assumptions about the duration of receipt of subsidies. In this case we assume the subsidy was received for all 12 months of the previous calendar year.

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.

Many of the methods use data from the American Housing Survey (AHS) to impute data missing 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.

SUMMARY OF MAJOR APPROACHES TO ESTIMATE VALUE OF 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 actually 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.

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.[14] 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 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).[15] 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 own bedroom. Secondary individuals are assigned zero bedrooms.[16]

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

[14] 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.

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

[16] 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.

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.

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. This report also introduced an alternative method for estimating housing subsidies in the AHS. U.S. Housing and Urban Development (HUD) Fair Market Rents (FMRs) were used to estimate market rents and reported rent paid was replaced with an estimate of 30 percent of total household income excluding the income of minors, modeling HUD program rules.[17]

The second report on the NAS-based experimental measures (2001) introduced two new methods for measuring housing subsidies. Subsidies were calculated by subtracting 30 percent of household income from the average FMRs for each state by metropolitan status. In implementing this method, the report capped the values of the housing subsidies at the proportion of the threshold allocated to shelter costs. The report compared the results from this new FMR method to the results 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 ACS 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).

A predicted mean match does not involve a cohort variable or a distance function. In the first stage, a regression model is used to estimate coefficients in the relationship between the shared characteristics and the market rent on the AHS. Once market rents are modeled in the AHS, the model is used to predict the market value of subsidized rental units in both the AHS and CPS. In the second stage, the predicted values are statistically matched. The predicted rents for subsidized units from the AHS hedonic model are then transferred to the CPS record from its matching AHS record.

[17] Short, Garner, Johnson and Doyle, 1999, p. C-10.

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.

For this analysis, a predicted mean match method was used to match market rent values for subsidized renters from the 2007 AHS to the 2008 CPS ASEC. First a housing hedonic model (using the Short and O'Hara specification) was estimated for nonsubsidized renters on the 2007 AHS. (Results can be found in the appendix.) The parameter estimates from this hedonic model were applied to the housing characteristics for subsidized renters to estimate a predicted market rent for these records. Next, a regression analysis using variables that are available in both the CPS ASEC and the AHS was used to estimate a rent amount for subsidized households in both surveys. These rent amounts from the second stage model were then used to match records between the two surveys. The predicted rent from the first hedonic model was then transferred from the AHS case to the CPS ASEC case. The value of the subsidy is estimated as the predicted market rent minus 30 percent of the household income as estimated on the CPS ASEC.

This approach suffered from some of the same problems as those identified by Stern in earlier work. 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 15 percent of the sample.

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 metro and nonmetro 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.

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 50^{th} percentile of market rent rather than the 40^{th} percentile of market rents. A third 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.

To date, this method has used 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 elderly or disabled family, child care and medical expenses. The dependent deduction is for each family member who (1) under 18 years of age, (2) a person with disabilities or (3) 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 medical expense is that portion of total medical expenses that exceeds three percent of annual income.[18]

Like the AHS-based methods, this 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.

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 cap should be set at 44 percent of the reference family threshold and then adjusted for family size (using the equivalence scale) and adjusted for geographic differences in housing costs.

Current Method to set cap: CAP= .44* Adjusted Threshold where
Adjusted Threshold = .44*FCSU*GEOADJ + .56*FCSU*1
= (.44*GEOADJ+.56)*FCSU

Housing Portion of Threshold = .44*FCSU*GEOADJ

[18] 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.

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. However, housing is now a considerably larger portion of the threshold and consideration should be given to increasing the housing factor. Ideally, this factor should be updated each year using the same CE data used to update the threshold.

Another concern with the way in which this "cap" has been applied is its failure to consider the family's contribution to housing costs 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)

Subtracting SHELTER + UTILTIES *from each side of the equation*;
FOOD+ CLOTHING +MISC > 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) has become:

POVERTY =1 IF
FOOD + CLOTHING + MISC > INCOME - .30 * INCOME
FOOD + CLOTHING + MISC > .70*INCOME
(FOOD + CLOTHING + MISC)/.70 > INCOME
1.43*(FOOD + CLOTHING + MICS)>INCOME

The poverty threshold for this family has been overstated by 43 percent.

The easiest way to understand this issue is with an example. 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. 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.[19]

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.

Combining the FMR Approach with the CEO Approach

This paper develops an approach that combines the FMR approach with the CEO approach. Like the CEO analysis, the housing portion of the NAS threshold is used as a proxy for market rent. Like the FMR approach, the household contribution to housing costs is estimated at 30 percent of household income. However, adjusted household income is used rather than total household income in the calculation. Using this method the estimated housing subsidy cannot exceed the housing portion of the threshold and therefore there is no need to establish a cap for the subsidy because the subsidy calculation uses the "cap" currently used in the FMR approach as proxy for market rent.

One problem with this approach is the fact that the housing portion of the NAS threshold is conceptually different from market rent.[20] The housing portion of the NAS threshold is calculated as a percentage of the outlays (not including mortgage principal 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

[19] 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.

[20] 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 outlays on housing 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)

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.

The proposed method would evaluate poverty based on the following formula:

POVERTY=1 IF:
FOOD +CLOTHING +SHELTER+MISC > INCOME +(SHELTER- RENT PAID)

Subtracting SHELTER *from each side of the equation*;
FOOD+ CLOTHING +MISC > INCOME – RENT PAID

Adding RENT PAID *to each side of the equation*
FOOD + CLOTHING + MISC + RENT PAID > INCOME

Assessment of Approaches to Evaluating Housing Subsidies

In order to evaluate each of these approaches, it is useful to compare the distribution of the component parts of the subsidy calculation from each source/approach. Tables 2, 3 and 4 describe the unweighted distributions of market rent, rent paid and the value of rental subsidies in different data sets using the different methodologies described in this paper. The last column of each table (the last two columns of Table 2) includes estimates derived from a match of 2007 HUD administrative data (from the PIC and TRACS data bases) with the 2008 CPS ASEC. Table 4 also includes the percentage of cases with a negative subsidy amount (e.g. the estimated rent paid exceeds the estimated market rent for their unit). Table 5 compares the estimate of aggregate subsidy amounts from each method.

Table 6 compares the poverty rates for the total population and the poverty rates for households with housing assistance using the various methods. The highest poverty rates are generated by the old Census Bureau methodology (using the 1985 AHS) and the statistical match to newer AHS data. The poverty rates using the FMR-based approach show that changing the bedroom assumptions and the income calculation has very little impact on the overall poverty rate. The poverty rates generated using the housing portion of the threshold and 30 percent of adjusted income fall in the mid-range of the other estimates.

Discussion

Should the value of any in-kind benefits be added to resources?

The most overarching issue with regards to the valuation of in-kind benefits in a poverty measure is the concern for making the resource measure "consistent" with the poverty threshold concept. Garner and Short (2008) argue that only in-kind benefits that are included in the expenditure data used to construct the thresholds should be included in the resource measure. They conclude that it is appropriate to include SNAP benefits because the CE data include all expenditures for food, including purchases made with food stamps, but that "the values of other benefits are not included in resources since these are not reflected as spending needs in the thresholds."(p. 14). They do not include the value of food paid for by subsidies for children's school meals or the value of housing subsidies.[21] Garner and Short argue that since households receiving these in-kind benefits are included in the distribution from which the thresholds are set, to the extent that their participation in these programs reduces their outlays for basic goods and services, these reduced outlays are already reflected in the threshold.

Another way to look at the question is to assess whether or not the reduced total expenditures/outlays on basic necessities of the recipients of these in-kind benefits are likely to impact the threshold calculation. The NAS panel recommended that median expenditures of the reference families (two adult, two children) be used as the starting point for the threshold calculation.[22] If the recipients of these benefits are unlikely to be reference families or unlikely to have expenditure totals near the median for all reference families, their reduced outlays for these goods and services will have no impact on the threshold. Garner and Rozaklis (2001) looked at the distribution of reference families by housing tenure for 1993-97 and found that only 1 percent of the distribution were subsidized renters. Further research would be required to affirm that these subsidized renters are below the median.

Using this perspective, the school lunch program provides an example of how to decide which benefits should be included in resources. Since even reference families at the median of the expenditure distribution are likely to benefit from the regular school lunch program, the value of these in-kind benefits are not included in the expenditure reports and therefore should not be included in the resource measure. On the other hand, since participants in the free and reduced price school lunch program are unlikely to be reference families, or if they are reference families, unlikely to have overall expenditures near the median, the value of these subsidies should be added to resources.

The fundamental question should be whether or not the receipt of these benefits in some way frees up other resources that can be used to purchase the basic goods and services that are included in the threshold --- e.g. that are purchased by reference

[21] While their analysis did not discuss the WIC program, since benefits are distributed in a fashion similar to the SNAP program and expenditures by participants likely to be included in their expenditure report, it would meet their test for inclusion in the resource measure.

[22] There have been proposals to change the reference family and/or set the thresholds at 120 percent of the 33rd percentile of the distribution rather than as a percentage of the median. These changes may impact the assessment of whether or not a particular in-kind benefit is reflected in the threshold calculation.

families at the middle of the distribution. Paying less for school lunches because you qualify for free or reduced price meals meets this test. Paying less than the full value for school lunches because all school lunches are subsidized by the federal government does not meet this test because the outlays of reference families at the middle of the distribution are also reduced by the program. Living in public housing or receiving rent vouchers also meets this test. Receiving free public education does not meet this test because expenditures for educational services are not included in the threshold.

There are important reasons to take into account public in-kind benefits in the poverty measure. Government programs spend billions each year to help families and individuals meet their basic needs. The cash income necessary to meet those needs varies depending on the in-kind benefits received. In addition, including the impact of in-kind benefits in the poverty measure provides an important tool to assess the poverty reducing impact of alternative policies and proposals. This is one of the major criticisms of the current measure and one of the major motivations to move towards an improved measure.

Which in-kind benefits should be considered?

Making decisions about which in-kind benefits to include in the resource measure is also difficult. One concern is the availability of data on participation in specific programs. We currently have data in the CPS ASEC regarding SNAP benefits, participation in the school lunch program, energy assistance received in the previous winter, housing assistance and participation in the WIC program. As a starting point, it our resource measure should include an estimate of the value of each of the benefits from each of these programs.

However, even when we have survey data regarding participation, there are questions about the length of participation, the value to be assigned these benefits and problems with underreporting and misreporting. If we want to use the new American Community Survey to estimate experimental NAS-based poverty measures we will have even less data. The ACS asks about SNAP participation but not benefit amounts, no longer has a question regarding housing assistance and does not ask about energy assistance, school lunch or WIC. Decisions will have to be made whether or not to use data from the CPS ASEC to impute benefits to ACS respondents in order to include the value of these benefits in a poverty resource measure.

Should estimates of the value of in-kind benefits be benchmarked to administrative measures?

Another question is whether or not survey responses and/or imputation should be benchmarked to match administrative estimates of the number of participants and outlays on program benefits. The Census Bureau has never made this type of adjustment to either income or in-kind benefit estimates. The administrative data necessary to make this kind of an adjustment is often not available in a timely fashion. Second, it would be difficult to provide a rationale for adjusting one element of the income measure but not others. On the other hand, policymakers and service providers

would like to see the full impact of their programs on the poverty count. This full impact cannot be assessed without adjustments to the data.

Should the value of in-kind benefits be capped?

Capping the value of in-kind benefits is an application of the "poverty budget share" approach. Initial Census Bureau work on valuing in-kind benefits set forth three methods: the market value approach, recipient value approach, and the poverty budget share approach. The poverty budget share approach limited the value of in-kind benefits to no more than the amount spent on the item by unsubsidized families and individuals with incomes near the poverty level. The assumption is that recipients cannot use "extra" amounts of an in-kind benefit to meet their basic needs for other items. The poverty budget share approach evolved into the concept of "fungible" value when applied to evaluation of Medicaid and Medicare benefits. The fungible value approach asserted that the value of Medicaid and/or Medicare should only to added to family resources to the extent that the family had sufficient resources to cover food and shelter requirements without consideration of Medicaid/Medicare benefits. Again, the concept was that family could not use Medicare or Medicaid to purchase food or pay for rent and that therefore receipt of medical assistance services could not in and of itself change the poverty status of an individual or family.

The 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.[23] 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."

Table 7 compares the 2007 poverty rates using the official method, three different methods to set the cap on housing subsidies and the CEO-FMR method that does not require a cap.

Conclusion

Including the value of in-kind nonmedical benefits is an important element in the development of an improved poverty measure. This paper has reviewed the methods

[23] *See* Short (1999,2001).

currently used by the Census Bureau to estimate the cash equivalent value of in-kind benefits. With regards to nutritional assistance, the Census Bureau should monitor the impact of the program name change on the quality of responses to the SNAP/food stamp question on the CPS ASEC. Data available on receipt of WIC benefits should be used to add the value of these benefits to resources. The subsidy implicit in regular school lunches should no longer be added to resources. Further work should be undertaken to assess whether school breakfast participation can be modeled from SIPP data and imputed to the CPS ASEC records. For energy assistance, consideration should be given to revising the questionnaire to capture both heating and cooling assistance.

Establishing a method to estimate the value of housing assistance continues to offer the most challenges. This paper recommends the use of a method that combines the NYC CEO estimate of market rent (essentially the housing portion of the threshold) with an estimate of adjusted household income that takes advantage of the detailed income data available in the CPS ASEC. For subsidized households, the value of the subsidy would be set at the housing portion of the threshold minus 30 percent of this adjusted household income. If 30 percent of adjusted household income is greater than the housing portion of the threshold, the subsidy value would be set at zero. One advantage of this method is that it estimates the housing subsidy without relying on HUD's FMRs (and therefore without needing to impute the number of bedrooms). A second advantage is that since it uses the housing portion of the threshold as the estimate of market rent it does not have to be capped.

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Table 1: Comparison of CPS ASEC Estimates of In-Kind Benefits with Administrative Estimates

Nutritional Assistance

	2008 CPS ASEC				ADMINISTRATIVE	
	Number of Persons		Amount		Number of Persons	Amount
	(millions)	se	(billions)	se	(millions)	(billions)
SNAP[1]	21.68	0.44	$16.94	$0.414	26.47	$30.37
School Lunch - Total[2]	37.99	0.36	$7.79	$0.104	30.50	$8.73
School Lunch - Free or Reduced[2]	14.05	0.24	-	-	17.90	-
WIC[3]	3.32	0.08	$1.54	$0.038	8.29	$3.88
School Breakfast[4]	-	-	-	-	10.10	$2.16

Housing and Energy Assistance

	2008 CPS ASEC				ADMINISTRATIVE	
	Number of Households		Amount		Number of Households	Amount
	(millions)	se	(billions)	se	(millions)	(billions)
LIHEAP[5]	2.80	0.08	$0.99	$0.037	5.04	$1.60
Housing Subsidies - Old Method[6]	4.74	0.15	$12.56	$0.429	4.69	32.97
	3.16	0.13	-	-	1.20	-
Public Housing	1.57	0.07	-	-	3.50	-
Rental Assistance						
Housing Subsidies - NAS Method[6]	4.74	0.15	$22.84	$0.858	4.69	32.97

Notes

[1] SNAP Annual Summary, http://www.fns.usda.gov/pd/SNAPsummary.htm

[2] Greenbook - Chapter 15 http://waysandmeans.house.gov/media/pdf/110/15school.pd f

[3] WIC Annual Summary, http://www.fns.usda.gov/pd/wisummary.htm

[4] Greenbook - Chapter 15 http://waysandmeans.house.gov/media/pdf/110/15school.pdf

[5] LIHEAP Report to Congress FY2006. Note LIHEAP estimates are for FFY2006 and use the 2006 CPS ASEC

[6] Greenbook - Chapter 15 http://waysandmeans.house.gov/media/pdf/110/hap.pdf

Table 1a: Comparison of Poverty Rates With and Without In-Kind Benefits

	2008 CPS ASEC					
	Overall Poverty Rate			Poverty Rate of Recipients		
	With Benefit	Without Benefit	Difference	With Benefit	Without Benefit	Difference
SNAP	15.27	16.01	-0.74 *	50.6	60.88	-10.28 *
School Lunch - Regular	15.27	15.28	-0.01 *	6.37	6.42	-0.05 *
School Lunch - Free or Reduced	15.27	15.58	-0.31 *	39.7	42.63	-2.93 *
WIC	15.22	15.27	-0.05 *	47.88	49.15	-1.27 *
LIHEAP	15.27	15.31	-0.04 *	46.1	48.2	-2.10 *
Housing Subsidies - Old Method	16.26	15.87	0.39 *	53.06	64.57	-11.51 *
Housing Subsidies - NAS Method	16.26	15.27	0.99 *	35.19	64.57	-29.38 *

* Significant at the 90 percent confidence level. Due to the high degree of covariance between estimates, even very small differences in the poverty rates are statistically signficant.

Table 2. Unweighted Estimates of Market Rents for Households with Rental Assistance or Public Housing: 2007 AHS, March 2008 CPS ASEC and March 2008 CPS ASEC/HUD Match

	2007 AHS (Using hedonic to estimate market rents for subsidized renters)	CPS - Using Predicted Mean Match to 2007 AHS	FMR- using old bedroom algorithm	FMR - using new bedroom algorithm	Housing Portion of NAS Threshold	2007 HUD/CPS Match Gross Rent (Contract Rent Plus Utility Allowance)	2007 HUD/CPS Match Contract Rent
Mean	$677	$630	$841	$832	$680	$793	$719
Maximum	$2,294	$1,277	$2,196	$2,196	$2,860	$3,065	$3,065
75th Percentile	$818	$755	$1,007	$972	$842	$937	$850
Median	$634	$578	$818	$795	$597	$721	$656
25th Percentile	$506	$500	$597	$597	$430	$566	$506
Minimum	$263	$321	$389	$389	$261	$322	$200
N	2,183	3,383	3,383	3,383	3,383	1,066	1,066

Table 3. Unweighted Estimates of Rent Paid for Households with Rental Assistance or Public Housing: 2007 AHS, March 2008 CPS ASEC, March 2008 CPS ASEC/HUD Match

	2007 American Housing Survey - Reported Rent Paid	2007 American Housing Survey - .3*Household Income	CPS - Using Predicted Mean Match to 2007 AHS	Current Census Method: HTOTVAL*.3	Proposed New Method: HUDINC*.3	2007 HUD/CPS Match: Total Tenant Payment
Mean	$387	$480	$210	$416	$336	$261
Maximum	$8,000	$12,957	$1,130	$10,450	$27,465	$1,084
75th Percentile	$541	$615	$285	$510	$438	$320
Median	$261	$300	$166	$308	$232	$230
25th Percentile	$144	$181	$44	$199	$138	$171
Minimum	$0	$0	$308	$0	$0	$0
N	1,941	2,183	3,134	3,383	3,383	1,066

Table 4. Unweighted Estimates of Value of Housing Subsidies for Households with Rental Assistance or Public Housing

	Census Bureau Noncash Benefits: Based on 1985 AHS Model	Census Bureau Experimental NAS Estimates: FMR minus .3*HTOTVAL	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HTOTVAL	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HUDINC	Predicted Means Match: Estimated Market Rent minus HUDINC*.3	Housing Portion of Threshold minus HUDINC*.3	2007 HUD/CPS Match: Monthly Subsidy
N	3,571	3,571	3,571	3,571	3,571	3,571	1,066
Mean	$210	$403	$394	$471	$279	$342	$532
Maximum	$526	$2,166	$2,020	$2,104	$1,299	$2,619	$2,868
75th Percentile	$292	$678	$669	$734	$495	$536	$687
Median	$171	$412	$409	$480	$327	$337	$475
25th Percentile	$122	$179	$175	$247	$125	$148	$327
Minimum	$89	($9,963)	($9,963)	($9,951)	($10,041)	($10,039)	$14
Percent=Zero or Negative	0	12.29	12.43	8.6	15.01	11.45	0

Table 5. Estimates of the Aggregate Value of Housing Subsidies for Households with Rental Assistance or Public Housing

	Census Bureau Noncash Benefits: Based on 1985 AHS Model	Census Bureau Experimental NAS Estimates: FMR minus .3*HTOTVAL	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HTOTVAL	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HUDINC	Predicted Means Match: Estimated Market Rent minus HUDINC*.3	Housing Portion of Threshold minus HUDINC*.3
Total (in billions)	**$12.565**	**$23.826**	**$23.402**	**$27.825**	**$16.986**	**$19.924**
Standard Error	*$0.429*	*$1.045*	*$1.031*	*$1.122*	*$0.764*	*$0.888*
Total - Setting Negative Subsidies to $0 (in billions)	**$12.565**	**$26.509**	**$26.114**	**$29.778**	**$20.086**	**$22.379**
Standard Error	*$0.429*	*$1.010*	*$0.995*	*$1.099*	*$0.711*	*$0.862*

Note: These estimates are without capping the value of the subsidies.

Table 6. Estimates of Poverty Rates Using Different Methods to Estimate the Value of Subsidies for Households with Rental Assistance or Public Housing

	Official Poverty	Census Bureau Noncash Benefits: Based on 1985 AHS Model	Census Bureau Experimental NAS Estimates: FMR minus .3*HTOTVAL (not capped)	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HTOTVAL	Census Bureau Experimental NAS Estimates: FMR with New Bedrooms minus .3*HUDINC	Predicted Means Match: Estimated Market Rent minus HUDINC*.3	Housing Portion of Threshold minus HUDINC*.3
Overall Poverty Rate	**12.48**	**15.87**	**15.11**	**15.13**	**15.03**	**15.63**	**15.24**
Standard Error	*0.17*	*0.18*	*0.17*	*0.17*	*0.17*	*0.18*	*0.17*
Poverty Rate for those in Subsidized Housing	**59.28**	**53.06**	**30.62**	**31.32**	**28.33**	**45.99**	**34.44**
Standard Error	*1.28*	*1.29*	*1.25*	*1.25*	*1.16*	*1.28*	*1.23*

Table 7. Estimates of Poverty Rates Using Different Methods to Cap the Estimated Value of Subsidies for Households with Rental Assistance or Public Housing

	Current FMR Method Without Cap	Current Method - 44% of the NAS Threshold	44% of the NAS Threshold Minus Family Outlays for Housing	Housing Portion of the NAS Threshold Minus Family Outlays for Housing	CEO Method - Housing Portion of the Threshold Minus 30% of Adjusted Income
Overall Poverty Rate	**15.11**	**15.27**	**15.53**	**15.35**	**15.24**
Standard Error	*0.17*	*0.17*	*0.17*	*0.17*	*0.17*
Poverty Rate for those in Subsidized Housing	**30.62**	**35.19**	**43.07**	**37.72**	**34.44**
Standard Error	*1.25*	*1.32*	*1.25*	*1.29*	*1.23*

Note: The apparent differences between the poverty rate estimates for the Current Method (2nd Column) and the poverty rate estimates for the CEO Method (5th Column) are not statistically significant at the 90% confidence level.

Appendix Table 1:

Housing Hedonic Used to Estimate Market Rents for AHS Subsidized Renters

Dependent Variable: lnrent Number of Observations Used 9261

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F	R-Square	Adj R-Sq
Model	36	1241.83957	34.49554	177.27	<.0001	0.4089	0.4066
Error	9224	1794.91671	0.19459				
Corrected Total	9260	3036.75628					
Root MSE	0.44113						
Dependent Mean	6.49942						
Coeff Var	6.78716						

Variable	Label	DF	Estimate	Error	t Value	Pr > |t|
Intercept	Intercept	1	5.5286	0.05985	92.37	<.0001
rooms	Number of rooms in unit	1	0.01221	0.029	0.42	0.6737
roomsq	Rooms squared	1	0.00215	0.00486	0.44	0.659
BEDRMS	count of bedrooms in unit	1	0.12629	0.03602	3.51	0.0005
bedrmsq	Number of bedrooms squared	1	-0.01173	0.00339	-3.46	0.0005
BATHS	Number of baths	1	0.27189	0.04359	6.24	<.0001
bathrmsq	Number of baths squared	1	-0.039	0.01307	-2.98	0.0028
HALFB	Number of half baths	1	0.1022	0.01608	6.35	<.0001
halfbsq	Number of half baths squared	1	-0.00994	0.00669	-1.49	0.1373
dwellage	Age of dwelling: current yr - yr built	1	-0.0046	0.000775	-5.93	<.0001
dwlagesq		1	2.95E-05	7.4E-06	3.98	<.0001
rtfuel	utilities included in rent	1	0.0458	0.01121	4.09	<.0001
rtwt	water and/or trash included in rent	1	0.0072	0.01061	0.68	0.4971
offst	Offstreet parking	1	-0.02419	0.01512	-1.6	0.1097
ac	Air conditioning	1	0.06671	0.01117	5.97	<.0001
notdet	Not detached	1	0.00551	0.01285	0.43	0.6679
mobhm	Mobile home	1	-0.26489	0.02403	-11.02	<.0001
msa		1	0.01847	0.01482	1.25	0.2127
mw		1	-0.04818	0.01631	-2.95	0.0031
south		1	-0.10341	0.0159	-6.5	<.0001
west		1	0.03854	0.01536	2.51	0.0121
transok	Transportation OK	1	0.55976	0.03853	14.53	<.0001
polok		1	0.01728	0.01409	1.23	0.22
sklok	Schools OK	1	0.0252	0.01179	2.14	0.0326
holesrat	dummy: any one of 4 bad conditions	1	-0.0258	0.01554	-1.66	0.0969
allappl	dummy: 1=has each of 3 major appliances	1	0.10848	0.01152	9.42	<.0001
crime1		1	-0.000999	0.01126	-0.09	0.9293
traffic		1	-0.00951	0.00987	-0.96	0.3352
fmrdum2	FMR Decile	1	0.17718	0.02326	7.62	<.0001
fmrdum3	FMR Decile	1	0.29089	0.02379	12.23	<.0001
fmrdum4	FMR Decile	1	0.33786	0.02465	13.71	<.0001
fmrdum5	FMR Decile	1	0.43264	0.02396	18.06	<.0001
fmrdum6	FMR Decile	1	0.43578	0.02558	17.04	<.0001
fmrdum7	FMR Decile	1	0.51359	0.02453	20.94	<.0001
fmrdum8	FMR Decile	1	0.61424	0.02535	24.23	<.0001
fmrdum9	FMR Decile	1	0.78573	0.02611	30.09	<.0001
fmrdum10	FMR Decile	1	0.86837	0.02604	33.35	<.0001