This article examines poverty among persons aged 65 or older under experimental measures, which are based on a 1995 report released by the National Academy of Sciences. When compared with the official measure, the experimental measure produces higher poverty rates for all groups and narrower differences in poverty rates across groups.

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Application of Experimental Poverty Measures to the Aged

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Summary

The U.S. Census Bureau recently released new, experimental measures of poverty based on a National Academy of Sciences (NAS) panel's recommendations. This article examines the effects of the experimental measures on poverty rates among persons aged 65 or older in order to help inform policy debate. Policymakers and analysts use poverty rates to measure the successes and failures of existing programs and to create and defend new policy initiatives. The Census Bureau computes the official rates of poverty using poverty thresholds and definitions of countable income that have changed little since the official poverty measure was adopted in 1965.

Amid growing concerns about the adequacy of the official poverty measure, a NAS panel undertook a study of the concepts, methodology, and data needed to measure poverty. The panel concluded in its 1995 report that the current measure no longer provides an accurate picture of relative rates of poverty for different groups in the population or of changes in poverty over time. The panel recommended changes in establishing the poverty thresholds, defining family resources, and obtaining the required data.

The Census Bureau report shows how estimated levels of poverty would differ from the official level as specific recommendations of the NAS panel are implemented individually and how estimated trends would differ when many recommendations are implemented simultaneously. It computes nonstandardized and standardized poverty rates. (The latter constrains the overall poverty rate under the experimental measures to match the official rate.)

This article reports poverty rates that have not been standardized and provides considerably more detail than the Census report about the effects of the experimental measures on poverty among the aged. It examines the effects of changing the poverty thresholds and the items included or excluded from the definition of available resources. It also explores the effects of the experimental measures on persons aged 65 or older by age group, gender, race and ethnicity, and marital status. Results indicate that:

- *Poverty rates in 1997 for persons aged 65 or older under the experimental NAS poverty measure are 17.3 percent, compared with 10.5 percent under the official poverty measure.* This 65-percent increase is largely driven by the NAS-based measure's subtraction of medical out-of-pocket (MOOP) expenses from resources.
- *Under the NAS-based measures, poverty rates increase for all major groups of older persons, and increase the most*

for groups for whom the incidence of official poverty is the lowest.

- *The experimental NAS poverty measure shows narrower differences between genders, racial and ethnic groups, and among persons of different marital statuses than the official poverty measure.* For example, white Hispanic women aged 65 or older have poverty rates that are 450 percent higher than those for white non-Hispanic men under the official poverty measure and 181 percent higher under the NAS measure.
- *The NAS-based measure's subtraction of MOOP expenses from resources has a disproportionate effect on poverty rates among non-Hispanic whites and men as compared with other groups.* However, changes in relative poverty between groups appear to be most influenced by the NAS midpoint equivalence scale. Because this scale decreases poverty rates for persons who live alone or with unrelated individuals and increases them for persons who live with others, poverty rates differ meaningfully under the NAS and official measures among demographic groups.

This article highlights issues concerning the elements of the experimental NAS poverty measure that are particularly important to the measurement of poverty among the aged population. Results suggest that the research community's future efforts to refine, enhance, and build upon the NAS panel's recommendations will yield important insights about poverty among the older population.

I. Importance of Poverty Measurement to Social Security and Medicare Policy Initiatives

Policymakers and analysts use poverty rates to measure programmatic successes and failures and to create, defend, and dispute new policy initiatives. In this article, poverty rates are estimated using the official poverty measure in addition to the new experimental measures developed by the Census Bureau (Short et al. 1999), based on the 1995 recommendations of the National Academy of Sciences' (NAS's) panel on Poverty and Family Assistance (Citro and Michael 1995). Although these experimental measures allow alternative estimates of poverty to be computed for different age groups, this article focuses specifically on the experimental measures' effects on the U.S. population aged 65 or older.

Measuring the incidence of poverty among the aged is particularly important in the context of Social Security and Medicare policy initiatives.[1] First, accurate measures of poverty among the elderly as a group will allow policymakers to make more informed judgments as to the effects of Social Security and Medicare initiatives on poverty rates. Even if benefit reductions would not affect the current aged population, accurately measuring today's incidence of poverty is a starting point for projecting poverty rates among the next generation under different benefit provisions. Similarly, relative poverty rates among demographic groups within the aged population identify priority groups for antipoverty initiatives. For example, President Clinton has expressed his desire to find a way to reduce poverty among elderly women, and most members of the 1994–96 Social Security Advisory Council proposed an increase in widows' benefits (Advisory Council on Social Security 1996).

II. Overview of Poverty Measures

Development

Only a few changes have been made to the official poverty measure since it was first adopted in 1965.[2] The official poverty measure consists of a set of dollar thresholds for families of different sizes and compositions (that is, householder younger or older than age 65, number of children younger than age 18, and whether or not individuals are in "unrelated" family units). The thresholds were chosen to represent the cost of a minimum diet multiplied by three (to allow for expenditures on other goods and services), and they are updated annually to keep pace with inflation. Once the applicable official poverty threshold is identified for an individual or family based on family size and composition, this threshold amount is compared with the family's before-tax money income to determine the individual's or family's poverty status (Short et al. 1999, p. 2).

In 1998, the official poverty threshold for unrelated individuals aged 65 or older was $7,818, as compared with $8,480 for their nonaged counterparts—a difference of $662 annually, or 9 percent.[3] This difference is based on the fact that the Department of Agriculture's Economy Food Plan, on which the official poverty measure was developed, priced a "nutritionally adequate" diet for persons aged 65 or older as less costly than that for younger persons. Critics have argued that from a physiological perspective, older persons generally require more food than younger people to absorb the same amount of nutrients. In addition, they argue that the official poverty measure should include in-kind benefits, the cost of earning wage income, regional variations in the cost of living, and differences in health insurance coverage. Moreover, critics believe that the official thresholds should be updated to reflect the changing consumption patterns and/or levels of U.S. households (Burtless 1999).

As concerns about the validity of the official poverty measure increased,[4] Congress funded a study to "address concepts, measurement methods, and information needs for a poverty measure" (Citro and Michael 1995, p. xvi). The NAS undertook this study, and in 1995, it recommended developing a new official poverty measure for the United States. The panel concluded that the current measure "no longer provides an accurate picture of the differences in the extent of economic poverty among population groups or geographic areas of the country, nor an accurate picture of trends over time" (Citro and Michael 1995, p. 1). In response to the NAS study, the Census Bureau released a July 1999 report (Short et al. 1999) on

experimental poverty measures, using measures that are illustrative of the NAS panel's specific recommendations.

NAS Recommendations in Brief

Poverty measures generally compare family *resources* to a *threshold*. Persons living in families that have resources below the threshold are, by definition, in poverty. Because the definition of poverty depends on both threshold levels and resource definitions, one or both may be changed when modifying poverty measurement. The NAS panel stressed the importance of using threshold and resource definitions that are consistent with one another.

The NAS panel also recommended an alternative to the current poverty *threshold*, which is based on a minimum diet, times three. Specifically, the NAS-based poverty measures construct a threshold derived from consumer expenditure patterns, a scale to adjust for family size and composition, and geographic differences in housing costs. As an alternative to defining *resources* as before-tax money income, the NAS resource definition subtracts taxes, medical out-of-pocket (MOOP) expenses, capital losses, and work-related and child-care expenses. It adds any earned income tax credits (EITCs) and capital gains, as well as the value of food assistance programs, heating assistance, and housing subsidies (chart 1). In addition to recommending alternative threshold and resource definitions, the NAS panel emphasized that poverty should be estimated using the Survey of Income and Program Participation (SIPP) rather than the data set currently used—the Current Population Survey (CPS). This important recommendation is discussed in more detail in appendix A.

Chart 1.—NAS poverty measure

Components of alternative NAS poverty thresholds

- base poverty on median expenditures on common needs
- adjust thresholds for family size and composition
- adjust thresholds for geographic differences in housing costs

Components of alternative NAS resource definition using CPS data [1]

- add the value of food stamps and school lunch programs
- add the value of heating assistance and housing subsidies
- subtract the costs of child care and other work expenses
- add/subtract for state and federal income taxes, payroll taxes, earned income tax credits, and capital gains/losses
- subtract out-of-pocket medical care costs

[1] If SIPP data were available, Women, Infants, and Children (WIC) data would be added, and child support data would be subtracted from resources.

III. Methodology

Purpose of Analysis

Short and others (1999) examined the isolated and combined effects of alternative poverty measure components on a variety of groups. Results included poverty estimates for those aged 65 or older as a whole and by their living arrangements.[5] This article provides more detailed estimates of poverty among the aged, using a new (July 1999) public micro data file provided by the Census Bureau. Specifically, the U.S. population aged 65 or older[6] in 1997 is examined by age group, gender, race and ethnicity,[7] and marital status.

Data Set

Currently, a SIPP-based data set containing the NAS-based experimental poverty measures is unavailable. Just as the official U.S. poverty rate is estimated using the CPS, all variables except age used to produce this analysis are included in the Experimental Poverty Measures Research Data File,[8] which is based on the March 1998 CPS.[9] The age variable[10] was imported from the 1998 CPS March Supplement.[11] All data presented are for 1997. The monthly CPS collects primarily labor force data about the civilian noninstitutional population. Interviewers ask questions about each member aged 15 or older in every sample household. The resultant data set used for this analysis was subsampled to exclude all persons younger than age 65 in 1997, with a remaining sample representing 32 million individuals.

Method of Analysis

Short and others (1999) examined the components of the NAS threshold and resources definitions individually and then combined several of them to create experimental poverty measures. Similarly, this article examines the effect of each component of the NAS *threshold* individually against the official definition of resources (that is, before-tax money income) on poverty incidence for persons aged 65 or older based on age, marital status, geographic region, and race and ethnicity. Then, each component of the NAS panel's definition of a *resource* is compared separately against the official poverty threshold by these same demographic variables.

Combining old resource with new threshold measures, and vice versa, is done to demonstrate the direction and magnitude of the effect of changing one part of the official poverty measure. Understanding the effect of an isolated change on poverty rate estimates is helpful to understanding the effects of the NAS-based poverty measures that combine new threshold levels with new resource definitions. These combined effects are presented in sections VI and VII.

The two measures in the Census Bureau's report most similar to that recommended by the NAS panel are the so-called "NAS" and "NGA" measures. The NGA measure is identical to the NAS measure, except that NGA does not adjust the poverty threshold to reflect differences in housing costs across geographical areas (chart 1). This article compares the effects of the NAS and NGA poverty measures against the official poverty measure for persons aged 65 or older as a whole. Because the demonstrated difference between the NAS and NGA measures is so small, subsequent and more detailed estimates focus on the differences in poverty estimates between the NAS and official poverty measures. These comparisons are based on age, marital status, geographic region, and race and ethnicity. In addition, the sensitivity of the NAS measure to a particular resource has been tested by removing one resource element from the total resource definition.

Interpreting Results

Note that although the sample sizes used to produce each computation are adequate to produce statistically representative poverty estimates for every group and subgroup identified, caution is warranted in attributing importance to percent differences between estimates, because they may not be statistically significant. Where poverty estimates between groups within a given poverty measure are compared, a two-tailed t-test has been performed to ascertain statistical significance at the 95-percent level, and the result is noted in the text. Appendix B discusses how to use confidence intervals to assist in determining the statistical significance of differences between other results in which readers may be interested.

Another precautionary note is required even though the results contained in this article are the best currently available. Both the official poverty rate and the NAS-based estimates may overstate the true incidence of poverty among the aged, since estimates are based on the CPS, which has been shown to underreport certain income, such as government transfer payments. (See appendix A for discussion.) This may be particularly true for certain subgroups, such as men, married persons, and those living with others (Social Security Administration 1997).

IV. Poverty Thresholds

Consumer Expenditure Survey

Calculating thresholds involves several steps. First, the NAS panel proposed constructing a new threshold for a reference family based on two adults and two children. This threshold is based on a "designated percentage" of median family expenditures for food, clothing, shelter, and utilities, derived from Consumer Expenditure Survey data. The designated percentages NAS recommended ranged from 78 percent to 83 percent of these median family expenditures. Multiplying median family expenditures by 78 percent to 83 percent yields a dollar figure. The NAS panel proposed increasing this dollar figure by 15 percent to 25 percent to account for other needs like household supplies, personal care items, and so forth. This factor is the "designated multiplier." The Census Bureau used the midpoint of the combined designated percentage and multiplier values to construct the NAS and NGA poverty measures.

Family Size and Composition Equivalence Scale

Because the dollar amount and designated multiplier from the Consumer Expenditure Survey is based on a family of two adults and two children, it is necessary to assign a different threshold for families of other sizes and compositions. An "equivalence scale" adjusts the reference family threshold higher or lower so that it can be applied to different family types and/or sizes. The NAS panel rejected using the official poverty measure's implicit equivalence scale, questioning its scientific basis. As an alternative, the NAS panel developed its own equivalence scale. One component is based on the number of children in the family, with the assumption that children consume less than adults. The other is based on economies of scale that arise from persons living together.[12] The NAS panel recommended a possible range of values for its equivalence scale. The Census Bureau (Short et al. 1999) used the midpoint of those recommendations to construct the NAS and NGA poverty measures.

Geographic Differences

The official measure of poverty takes no account of differences in cost of living across the United States (for example, the cost of living in rural Mississippi versus New York City). The NAS panel recommended that, as a first step, an adjustment should be made to adjust poverty thresholds for geographic differences in housing costs. The approach NAS developed involves geographic indices and was based on an earlier approach advanced by the Department of Housing and Urban Development.[13] Geographic indices are based on both region (that is, Northeast, Midwest, South, West), subregion (for example, New England, Middle Atlantic), and metropolitan area size. Some large metropolitan areas have indices that show the cost of living there to be about 20 percent higher than the average cost of living elsewhere in the United States; in contrast, the least densely populated areas of the country have geographic indexes equal to 80 percent of the average cost of living elsewhere.

Effects of Alternative Thresholds

Threshold elements can affect not only overall poverty incidence but also the composition of the poor. When the poverty threshold is adjusted using the midpoint of the NAS panel's designated multiplier and percentage values, the

poverty rate among the aged falls from 10.5 percent under the official poverty measure to 10.1 percent. Cross-tabulations (not shown) suggest that this threshold element in and of itself has very little effect on changing the composition of the aged poor by gender, age group, race and ethnicity, or marital status.

In addition, when the official poverty threshold is adjusted to account for the number of children in the family and available economies of scale (NAS midpoint equivalence scale), the incidence of poverty among persons aged 65 or older declines from 10.5 percent to 10 percent—a 5-percent difference. Although the overall poverty rate changes just 5 percent, table 1 shows that the *composition* of the aged poor changes dramatically. The poverty rate for married couples rises 43 percent (from 4.4 percent to 6.3 percent). At the same time, the poverty rates for widow(er)s, divorced/separated, and never married persons aged 65 or older decline by 19, 25, and 15 percent, respectively. The NAS midpoint equivalence scale increases poverty rates for persons who do not live alone (for example, married persons) and lowers them for those living alone or in a household of unrelated individuals (for example, widows).

Finally, adjusting the poverty threshold based on a geographic housing index results in a slight decline in poverty rates for persons aged 65 or older from 10.5 percent under the official poverty measure to 10.3 percent. Unlike the equivalence scale element of the NAS thresholds, the geographic housing index appears to have very little effect on the composition of the poor by gender, age, race and ethnicity, or marital status.

V. Resource Definitions

Like threshold elements, resource elements can affect both levels of overall poverty and the composition of the poor. Changes in the measure of who is poor among the population aged 65 or older are noted where cross-tabulations have revealed substantial variation between official and NAS estimates across gender, age, race and ethnicity, and/or marital status.

In-Kind Benefits: Food Stamps, Heating Assistance, and Housing Subsidies

The NAS panel recommended taking the value of food assistance, heating assistance, and housing subsidies into account when computing resources. Accounting for the effect of these types of "in-kind" benefits on available resources has long been recognized as an important improvement to measuring poverty, which currently accounts for only cash transfers. Its importance heightened once government spending on in-kind benefits began outpacing spending on means-tested cash assistance. Unfortunately, attempts to take in-kind resources into account have revealed technical and substantive issues about their proper valuation. In an attempt to overcome such obstacles, the Census Bureau has made several estimates of the effect of in-kind benefits on resources (Committee on Ways and Means 1998, pp. 1308-1309).

The effects the NAS panel's recommendations have for taking food assistance, heating assistance, and housing subsidies into account in determining resources are shown in chart 2. In 1997, 4.8 percent of elderly families received food stamps, and 5.3 percent received heating and housing assistance.[14] As expected, comparing the official poverty threshold to a definition of resources that includes these in-kind benefits lowers poverty rates among the population aged 65 or older. All else equal, taking into account food assistance when computing resources reduces poverty among the aged from 10.5 percent under the official measure to 10.1 percent.

Heating assistance and housing subsidies have an even larger effect, reducing poverty incidence among the aged from 10.5 percent to 9.2 percent—a difference of 12 percent (chart 2). Tabulations of percent differences based on chart 3 suggest that the reduction in poverty estimates affects older women more than older men. Whereas the poverty rate for older men is reduced by 9 percent when heating assistance and housing subsidies are taken into account, the reduction for older women is 15 percent.[15] That is, the proportion of aged women relative to men in poverty falls slightly when heating assistance and housing subsidies are taken into account. The direction of the results may be attributable to that fact that women live longer,

Table 1.—Incidence of poverty among the aged, by official threshold adjustment, 1997

[In percents]

Adjustment	Total	Married, spouse present	Widowed	Divorced/ separated	Never married
Official poverty definition……	10.5	4.4	16.6	20.4	20.6
Expenditures and necessities midpoint range…….……	10.1	4.2	16.0	19.6	20.1
Alternative adjustments for family size and composition……..	10.0	6.3	13.5	15.3	17.5
Geographic indexes……..	10.3	4.2	15.8	21.0	22.1

Source: Tabulations based on the March 1998 Current Population Survey and the Experimental Poverty Measures Research Data File.

on average, than men and that the likelihood of requiring assistance presumably increases with age.

Expenses: Taxes, Work, and Childcare

Obviously, resources that are consumed in the process of earning labor income or paying taxes are not available for spending on basic needs. Recognizing this, the NAS panel advocated removing work-related expenses, child-care expenses, and taxes from computations of resources. Chart 2 shows that the subtraction of work-related and child-care expenses from the definition of resources results in a 0.2 percentage point increase in poverty incidence among the population aged 65 or older.

Making these resource adjustments based on taxes and the earned income tax credit yields a rate of poverty identical to the official poverty measure. Taking taxes and the EITC into account has little or no effect on poverty rates among older persons even though many retired persons pay income taxes that reduce their disposable incomes.[16] The explanation for the virtually nonexistent effect on poverty estimates of removing the cost of taxes from the definition of resources may be that such a change is insufficient to affect those near the poverty threshold, since persons near that threshold are unlikely to have tax liabilities to begin with.

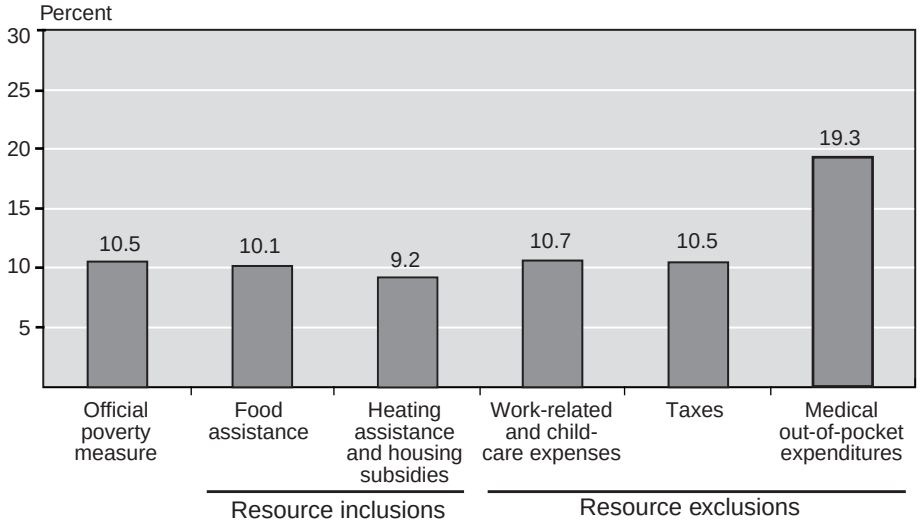
Expenses: Medical Out-of-Pocket Costs

The Census Bureau (Short et al. 1999) reports "the panel's recommendations on handling the need for medical care have inspired more debate than any other element in its report" (p. 11). In addition, Short and others indicate that subtracting medical out-of-pocket (MOOP) expenses from the definition of resources is an element of poverty measurement that requires a great deal of additional methodological research. After examining many possible ways to account for medical expenses, the NAS panel recommended using fairly complex statistical methods and National Medical Expenditure Survey (NMES) data, as detailed in appendix C. In effect, the NAS produces a measure of resources that is sensitive to changes in individual health-care costs and factors that affect those costs (such as Medicare policies).

As chart 2 demonstrates, comparing the official poverty *threshold* to a definition of *resources* that subtracts MOOP costs has, by far, the greatest impact on estimated rates of poverty among the aged, relative to other individual components of the NAS measure. All else equal, when MOOP expenses are subtracted from resources, the poverty rate among the aged climbs 8.8 percentage points—from 10.5 percent under the official poverty measure to 19.3 percent when MOOP costs are excluded from resources. That is, holding all else constant, the poverty rate increases by 84 percent when MOOP expenses are excluded from resources.

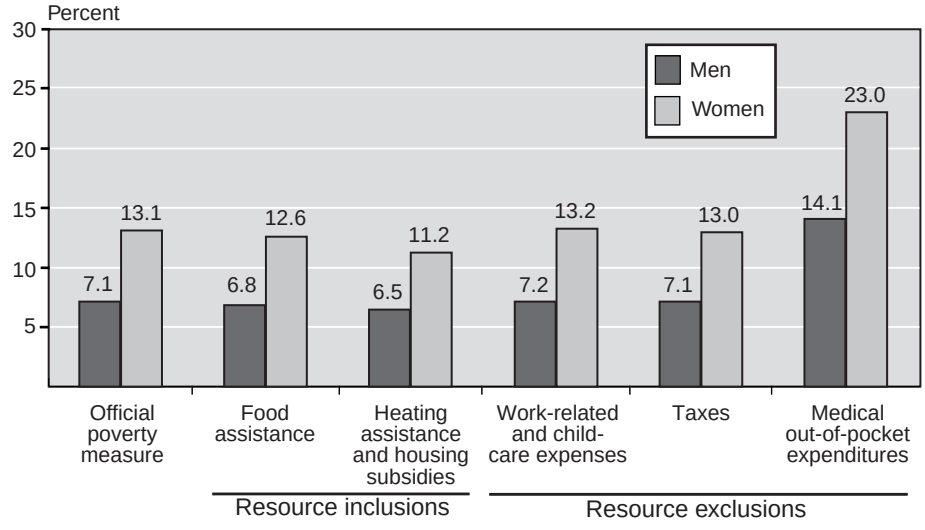
Chart 4 shows that, like the equivalence scale, the MOOP cost element of poverty measurement changes the composition of the poor, relative to the official measure of poverty. Compared with the official poverty rate (4.4 percent), older married couples have an estimated poverty rate that is 159 percent

Chart 2.—Incidence of poverty: Official poverty threshold with alternative definitions of resources for all persons aged 65 or older, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Chart 3.—Sensitivity of poverty rates to resource inclusion/exclusion for persons aged 65 or older, by gender, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

larger when MOOP costs are taken into account (11.4 percent), all else equal. Widow(er)s' poverty rates experience a 68-percent increase, and rates for divorced/separated and never married persons increase by 54 percent and 40 percent, respectively (chart 4).[17] Therefore, the MOOP cost element of the NAS measure increases poverty rates among aged persons without a spouse, but has a much greater effect on increasing poverty among aged persons who are married (spouse present). As indicated earlier, the composition of the poor among the elderly has important implications for poverty measurement across subgroups, since the definition of poverty depends on family income, and some demographic groups are more likely to be married than others.

Chart 3 shows the effect of subtracting MOOP expenses by gender. All else equal, subtracting MOOP costs increases poverty incidence among men from 7.1 percent to 14.1 percent. For aged women, poverty rates rise from 13.1 percent to 23 percent. Note that although the *percentage* point increase is higher for older women, the *percent* increase relative to rates under the official poverty measure is higher for older men. Older men experience a 7 percentage point increase when MOOP costs are taken into account, which is a 99-percent increase relative to their official poverty rate. Older women, on the other hand, experience a 9.4 percentage point increase, which translates into a 72-percent increase over their official poverty rate.[18] Chart 5 shows that poverty rates generally rise even more steeply with age when MOOP expenses are taken into account than under the official poverty measure, as might be expected because medical costs tend to increase with age.

Chart 6 shows that poverty estimates by race and ethnicity are affected differently by the exclusion of MOOP costs, relative to the official measure of poverty. Among aged white non-Hispanic individuals aged 65 or older, the poverty rate increases from 8.2 percent to 16.7 percent when MOOP expenses are taken into account—an increase of 104 percent. Among aged white Hispanic, black non-Hispanic, and "other" non-Hispanic individuals, poverty rate increases range between 41 percent and 59 percent.[19]

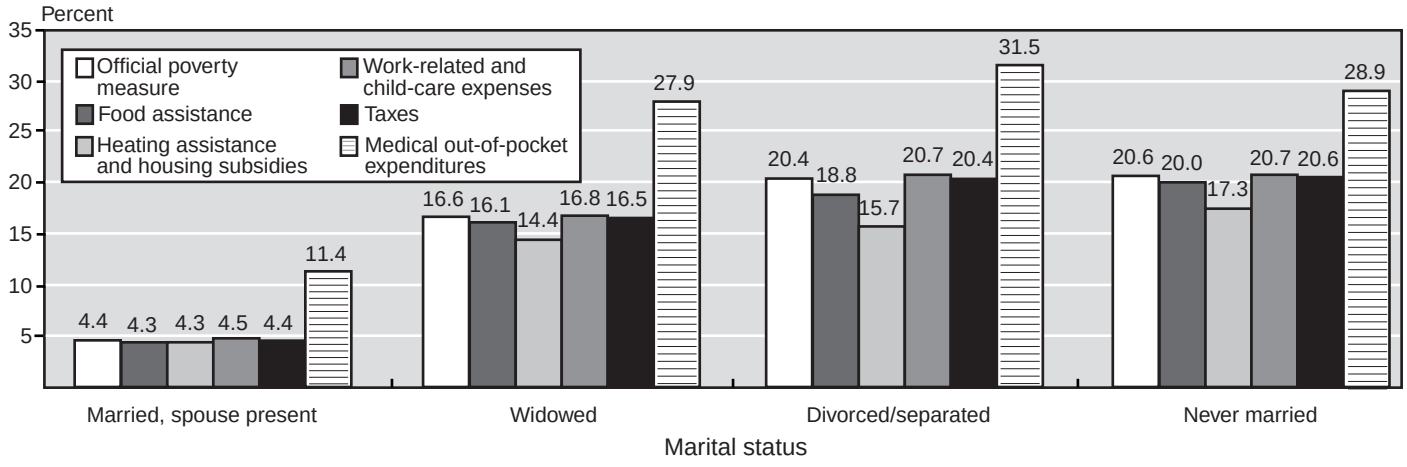
VI. Official Poverty Rate Versus NAS Estimate, by Group

This section produces three sets of poverty estimates that use definitions of resources and thresholds that are consistent with one another. As a result, they provide alternative estimates of actual poverty incidence among groups of persons aged 65 or older. The "NAS measure" uses the NAS threshold and resource definitions. The NAS threshold consists of all the threshold components previously discussed: reference thresholds based on median expenditures and common needs, and adjustments for family size and composition and geographic differences in housing costs. The NAS threshold is compared against the NAS definition of resources that combines all the resource components discussed earlier: food stamps and school lunch programs; heating assistance and housing subsidies; childcare and other work-related expenses; state and federal income taxes, payroll taxes, and earned income tax credits; capital gains/losses; and medical out-of-pocket costs (chart 1).

The "NGA measure" is also examined. Recall that it is identical to the NAS measure except that NGA does not include a geographic adjustment to the poverty thresholds. Although geographic adjustment is revealing in its effects on poverty measurement among the elderly, the variable "requires more research and better data sources" (Short et al. 1999, p.16). In response, composite measures based on the NAS report are provided both with and without geographic adjustment in the Census Bureau's 1999 report (Short et al. 1999).

After comparison of overall poverty rates under the NAS, NGA, and official poverty measures, the NAS poverty measure is compared against the official poverty measure for persons aged 65 or older based on age, gender, marital status, geographic region, and race and ethnicity. In addition, the sensitivity of the NAS poverty measures to a particular resource is tested by removing one resource variable at a time from the resource definition. Finally, this article concludes with

Chart 4.—Sensitivity of poverty rates to resource inclusion/exclusion for persons aged 65 or older, by marital status, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

summary observations and a discussion, as well as with areas for future research.

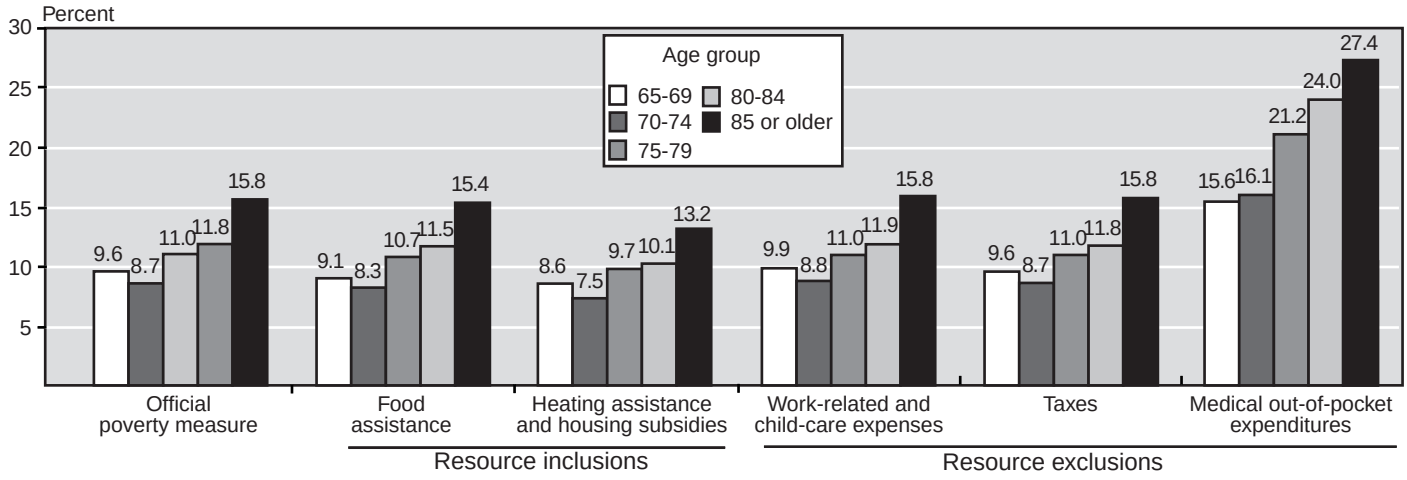
Overall Poverty Incidence

Official poverty rates are lower than the NAS and NGA measures. Chart 7 shows that the official poverty rate among persons aged 65 or older is 10.5 percent. The NAS measure's estimate of poverty is higher at 17.3 percent—65 percent higher than the official poverty rate. When no geographic adjustment is made (that is, under the NGA measure), the poverty rate among these aged persons is 17.9 percent—71 percent higher than the official poverty rate. Because the NGA and NAS measures produce similar results overall and within the subgroups identified in this article, the NAS measure is used as the basis of comparison against the official poverty measure in the remainder of this analysis.[20]

Sensitivity to Resource Inclusion/Exclusion

In charts 3 and 4, *resources* were added or excluded from the official poverty measure to test the sensitivity of each resource to the official poverty rate. To determine the sensitivity of the same resources to the NAS measure *as a whole*, poverty rates were estimated by removing individually each resource addition or subtraction from the NAS poverty measure. Subtraction of MOOP expenses was found to have, by far, the largest effect. Compared with the NAS measure as a whole, removing food assistance from resources increases the NAS poverty estimate from 17.3 percent to 18.4 percent; removing heating assistance increases it to 17.6 percent; and including work-related expenses and taxes decreases it 17 percent. In contrast, removing the MOOP element from the definition of resources decreases the NAS poverty estimate from 17.3 percent to 7.7 percent. In fact, under the NAS threshold and the NAS resource definition *without subtracting MOOP from resources*, poverty would

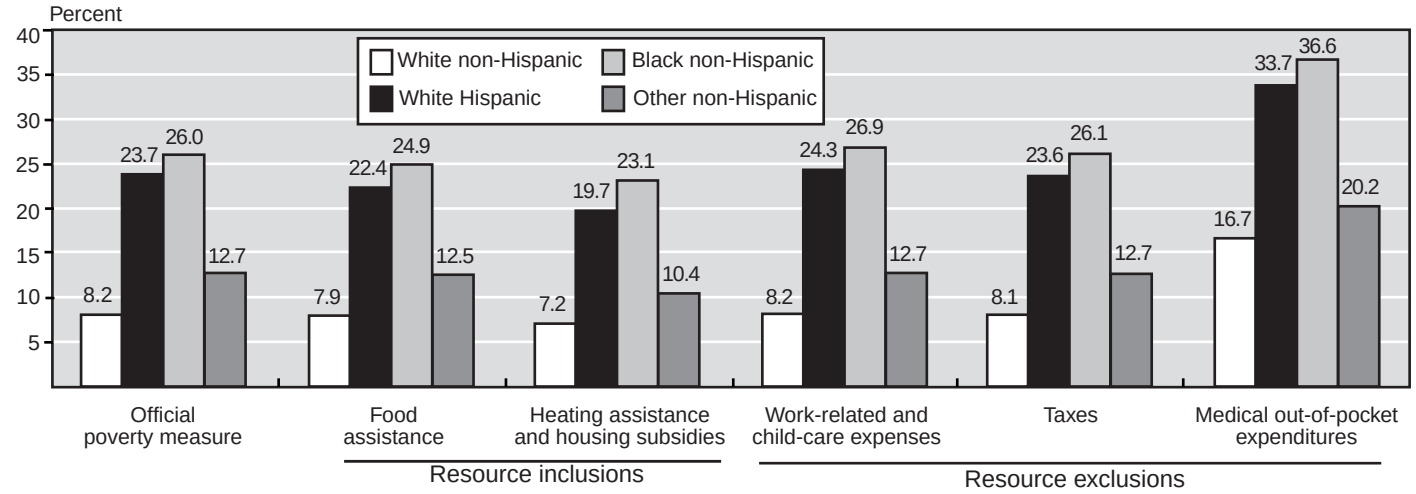
Chart 5.—Sensitivity of poverty rates to resource inclusion/exclusion for persons aged 65 or older, by age group, 1997



Note: The small dip at age group 70-74 is not statistically significant.

Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Chart 6.—Sensitivity of poverty rates to resource inclusion/exclusion for persons aged 65 or older, by race and ethnicity, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

actually be 2.8 percentage points lower (7.7 versus 10.5) under the NAS measure than under the official poverty measure.

Gender

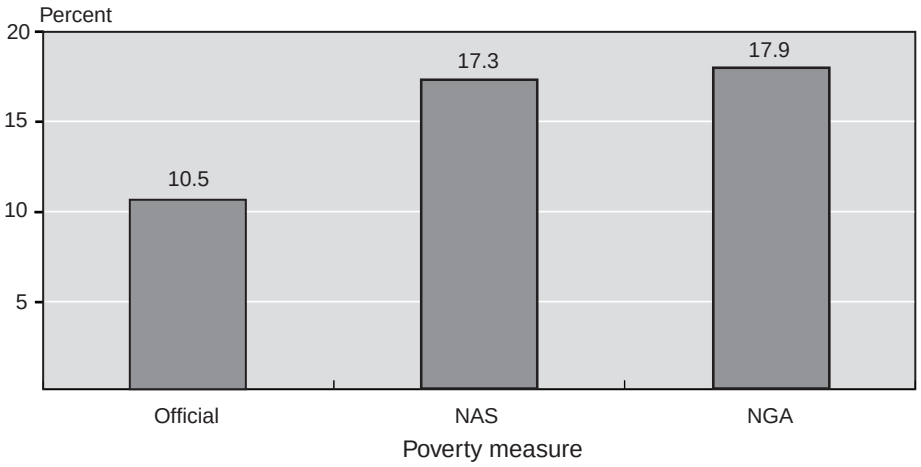
According to the official poverty rate, 7.1 percent of men aged 65 or older are in poverty, as compared with 14.2 percent under the NAS measure (chart 8). Older women's poverty incidence rises from 13.1 percent under the official poverty measure to 19.6 percent under the NAS measure. Therefore, according to the NAS measure of poverty incidence among persons aged 65 or older, men's poverty rates are double their official poverty rate, and aged women's poverty incidence rises by 50 percent.

Several reasons may underlie the difference between the impact of the experimental measures on men and women. First, the addition of heating and housing assistance in the experimental resource measure may somewhat mitigate the role that other elements play in the NAS measure to reduce older women's resources (for example, MOOP expense subtractions). As indicated in chart 3, older women tend to be more likely to receive heating and housing assistance than older men. Second, as previously shown, MOOP cost subtraction has a disproportionate effect on reducing the resources of older men versus older women. Finally, relative to the official poverty measure's implicit equivalence scale, the NAS midpoint equivalence scale increases poverty for aged persons who do not live alone and lowers it for persons living alone or in a household in which they have no relatives. Because older men are more likely to be married than older women, they are less likely to live alone and therefore more likely to be in poverty when the NAS equivalence scale is used than when the implicit equivalence scale of the official poverty measure is used.[21]

Race and Ethnicity[22]

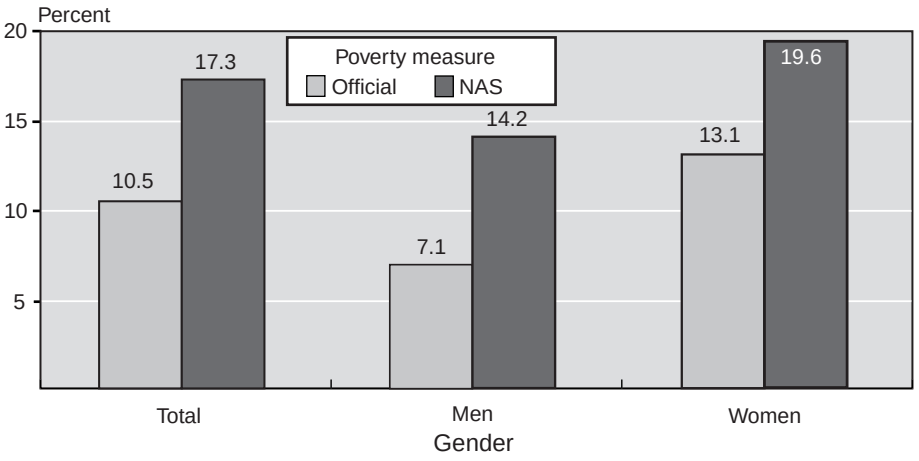
The gap in poverty rates between white Hispanic, black non-Hispanic, white non-Hispanic, and "other" non-Hispanic groups as a whole narrows under the NAS measure (chart 9). Under these experimental poverty measures, white

Chart 7.—Incidence of poverty: Official versus NAS measure for all persons aged 65 or older, 1997



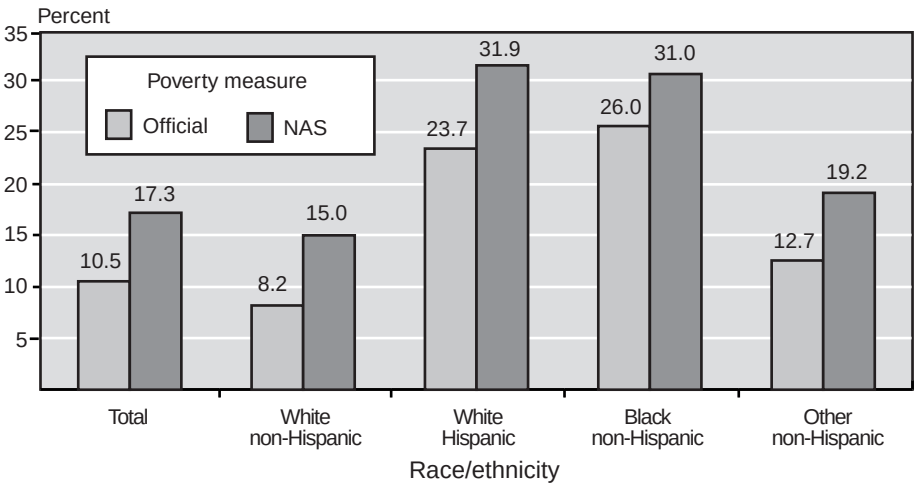
Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Chart 8.—Incidence of poverty: Official versus NAS measure for persons aged 65 or older, by gender, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Chart 9.—Incidence of poverty: Official versus NAS measure, by race and ethnicity, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Hispanic and black non-Hispanic groups of older persons have poverty rates more than double those of their White non-Hispanic counterparts, as opposed to about triple under the official poverty measure. This narrowing of the gap in poverty incidence among racial and ethnic groups is a result of the more profound effects of the NAS measure on increasing poverty estimates among white non-Hispanic and other racial and ethnic group categories. Whereas the total poverty rate estimate rises 65 percent for all older persons under the NAS measure relative to the official poverty rate, it rises 84 percent for whites. Relative to the official poverty rate, poverty rates increase by 51 percent for the "other" racial and ethnic group, but are less for the white Hispanic (35 percent) and black non-Hispanic (19 percent) groups (chart 9).

One reason for the difference between the impact of the experimental measures on white non-Hispanics versus other groups is largely because the experimental measures subtract MOOP expenses from resources, which has a larger impact on whites than nonwhites (chart 6). Tabulations based on chart 6 show that the subtraction of MOOP from resources increased poverty for white non-Hispanics from 8.2 percent to 16.7 percent—an increase of 104 percent. In comparison, the increases for white Hispanics, black non-Hispanics, and "other" non-Hispanics were not as large, ranging from 41 percent to 59 percent. Another reason is because the equivalence scale used in the NAS measure disproportionately increases poverty among whites because they are more likely than other groups (except "other" non-Hispanics) to be married with a spouse present.[23]

Age

Poverty tends to increase with age under each poverty measure (not shown), and the relative difference in poverty rates between the youngest and oldest age groups remains largely unchanged between the official versus NAS-based measures. The official poverty rate for persons aged 65-69 is 9.6 percent, as compared with 15.8 percent for persons aged 85 or older—a difference of 65 percent. Under the NAS poverty measure, the poverty rate for persons aged 65-69 is 14.5 percent, and the poverty rate for persons aged 85 or older is 22.6 percent—a difference of 56 percent (not shown).

The differences between the official poverty estimate and the NAS-based estimates are proportionately larger for persons aged 70-84. The NAS estimates are 51 percent and 43 percent larger than the official poverty rate for persons aged 65-69 and aged 85 or older, respectively, as compared with between 73 percent and 75 percent for those in age groups between ages 70 and 84. What may be happening is the NAS equivalence scale that shows a higher rate of poverty among the younger aged persons, who are more likely to be married (that is, not widowed), is offset by these persons' relatively smaller MOOP costs. In comparison, older aged persons may have both increased poverty because of greater MOOP costs and because of their increased likelihood to live alone.[24] Unfortunately, this explanation does not account for why the NAS estimate is only 43 percent greater than the official poverty measure for those aged 85 or older, as compared with 73 percent to 75 percent greater for those aged 70-84. Persons aged 85 or older are most likely to have MOOP costs and most likely to be living alone or with unrelated individuals (see note 26).

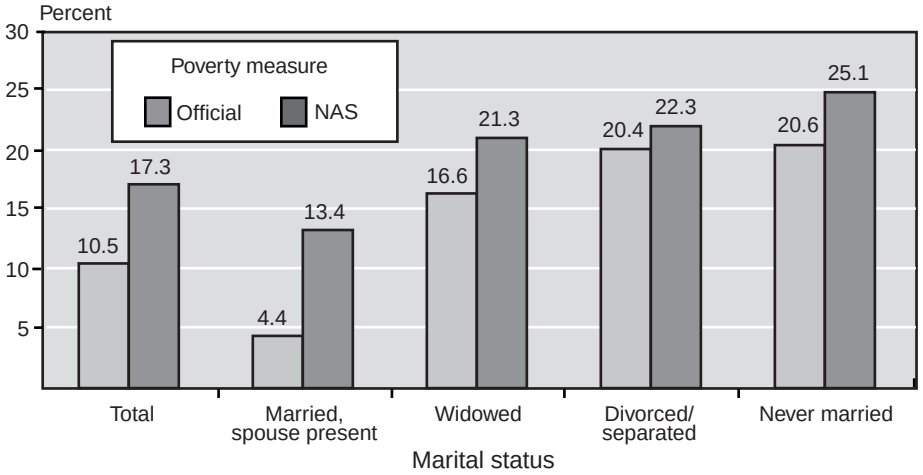
Marital Status

According to the official poverty measure, poverty rates are lowest by marital status for married persons whose spouse is present in the household (chart 10). These married individuals have official poverty rates of just 4.4 percent, as compared with 16.6 percent for widow(er)s, 20.4 percent for divorced/separated persons, and 20.6 percent for those never married. Obviously, the resultant percent differences in poverty rates among older persons by marital status are large. For example, the difference between married individuals (spouse present) and widow(er)s is 73 percent.

Under the NAS experimental measure of poverty, the poverty incidence is 13.4 percent for married couples—205 percent larger than under the official poverty measure. The poverty rate for widow(er)s, for example, is also larger at 21.3 percent, as compared with 16.6 percent under the official measure. However, the difference between older married individuals (spouse present) and persons with other marital statuses is narrower under the NAS measure. For example, under the NAS definition, poverty among married older persons (spouse present) is 37 percent lower than for widow(er)s, as compared with 73 percent under the official poverty measure (chart 10).

The narrowing of the difference in poverty rates between older married individuals (spouse present) and those with other

Chart 10.—Incidence of poverty: Official versus NAS measure, by marital status, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

marital statuses is attributable to the disproportionate effect that the experimental NAS measure has on married (spouse present) individuals. While the NAS poverty estimates for those who are never married, divorced/separated, or widowed range from 9 percent to 28 percent higher than under the official measure, the difference is 205 percent for married individuals (spouse present), as mentioned earlier (chart 10). Again, at least a partial explanation for the disproportionate effect of the NAS-based measures on married individuals is the midpoint equivalence scale used in the NAS measure. Second, married couples are disproportionately affected by the subtraction of MOOP expenses from resources. The poverty estimate under the NAS measure is 159 percent higher than under the NAS measure without the exclusion of MOOP expenses from resources for married couples, but just 77 percent higher for never married persons (not shown).

VII. Official Poverty Rate Versus NAS Estimate, by Detailed Subgroup

This analysis has shown that poverty rates are higher for some groups than others, such as persons who are not married or who are widowed, female, and older. An even richer set of poverty figures is available by cross-tabulating these demographic characteristics in order to ascertain how being both widowed and female, or both very old and black (non-Hispanic) affects poverty incidence. The figures shown may help policymakers identify those who are at highest risk of impoverishment in old age. However, note that some of the poverty rates estimated for small demographic subgroups (for example, men aged 85 or older) have higher standard deviations than other estimates in this article (that is, broader confidence intervals—see appendix B). As a result, statistical analysis should be used before attributing statistical significance to relatively small differences in poverty estimates that are not specifically mentioned in the text but are shown in chart 11 and tables 1 and 2.

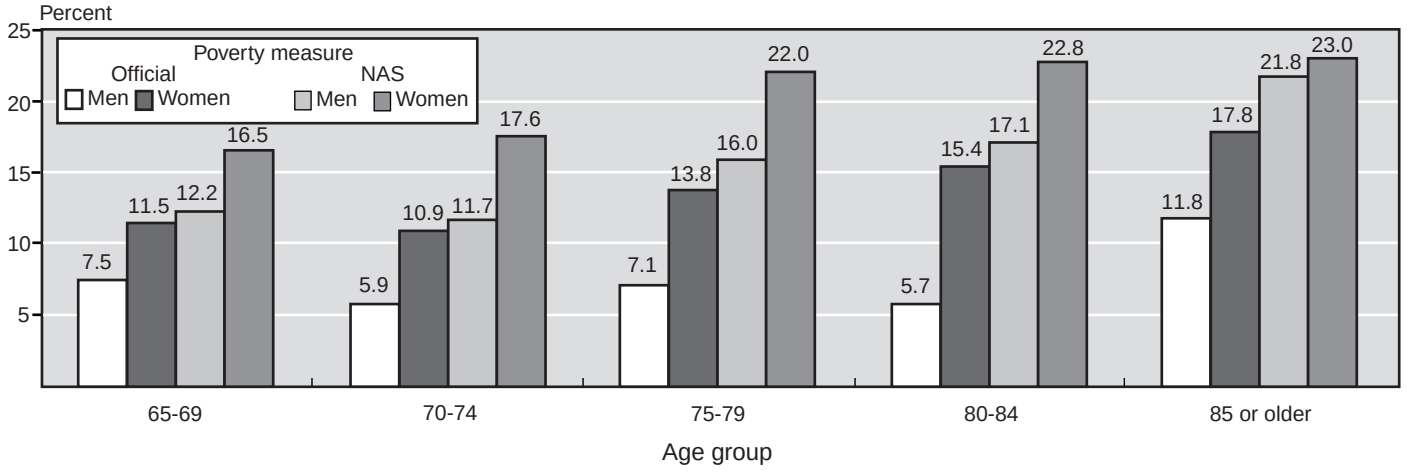
Poverty Rates Increase for Vulnerable Subgroups

Chart 11 and tables 2 and 3 show that the official poverty rate provides a lower poverty estimate than the NAS measure in every group. Poverty rates among higher risk groups, such as oldest-old women (that is, aged 85 or older), minority aged women, and aged widows are even higher when counted using the NAS measure. The official poverty rate for oldest-old women is 17.8 percent, but this rises to 23 percent when using the NAS measure (chart 11). Aged widows have a poverty incidence of 17.9 percent under the official poverty measure and of 23.1 percent under the NAS measure (table 2). Older black (non-Hispanic) women have an official poverty rate of 28.8 percent, and of 33 percent under the NAS measure (table 3). Similarly, aged white Hispanic women have a poverty rate of 26.4 percent under the current measure and an estimated poverty incidence of 33 percent under the NAS measure.

Poverty Rates Narrow Between Vulnerable and More Affluent Subgroups

Tables 1 and 2 and chart 11 may be equally notable for their indication of narrower differences between certain groups that have long been thought to have very disparate poverty rates under the NAS measure, relative to the official poverty measure. As can be seen in chart 11 and tables 2 and 3, poverty estimates for older women aged 65 or older are higher than their male counterparts in almost every group under the NAS measure.[25] In terms of marital status, a two-tailed t-test shows that the difference between older men's and older women's poverty rates is statistically significant at the 95-percent level for widows under the NAS measure, but it is not significant for aged married, divorced/separated, and never married groups. In comparison, older women's poverty rates are significantly higher than men's for both widows and divorced/separated groups under the official poverty measure.

Chart 11.—Incidence of poverty: Official versus NAS measure, by age and gender, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

In terms of race and ethnicity, the difference in older women's versus men's poverty rates is statistically significant under the NAS measure among aged non-Hispanic whites but not among older black non-Hispanics, white Hispanics, and "other" non-Hispanics. In comparison, women's poverty levels are significantly higher than men's among both older white and black non-Hispanics under the official poverty measure. The fact that the official poverty measure shows statistically significant differences in poverty rates between older men and women for more groups than the NAS measure is reflective of the narrowing of poverty levels between older men and women under the NAS measure. As chart 12 shows, the difference between older men's and women's poverty rates is smaller for the NAS measure than under the official poverty definition.[26]

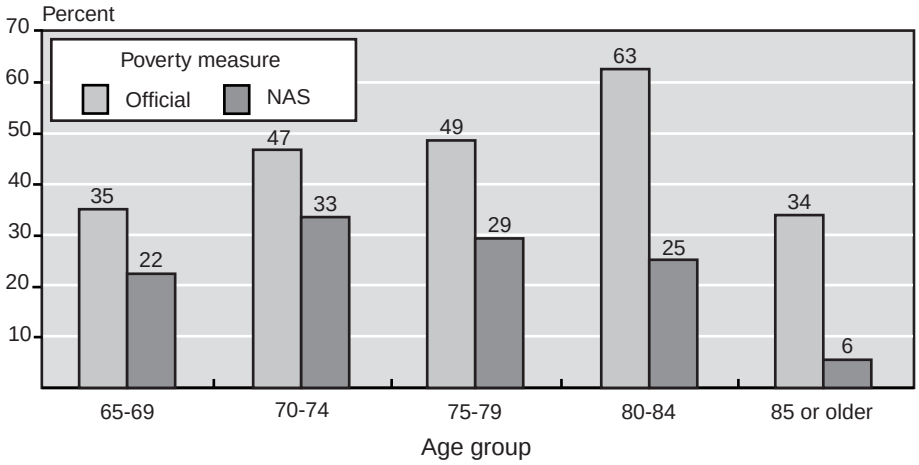
The NAS measure also produces narrower rates of poverty among certain age groups than does the official poverty measure. The difference between poverty incidence under the official poverty measure grows from ages 65 to 84 and then declines until men's poverty rates lag behind women's by 34 percent for those aged 85 or older. In comparison, the NAS measure indicates that the differences in poverty rates among older men and women steadily declines after age 70 to the point where men's poverty rates are just 6 percent under women's of the same age. Chart 13 shows that the difference between poverty among the youngest-old and oldest-old persons is also more narrow under the NAS definition than under the official poverty measure.[27] Similarly, table 4 shows that the difference between poverty rates for older white non-Hispanic men and other aged persons is not as large under the NAS measure as under the official poverty measure.

VIII. Summary and Discussion

The official poverty measure produces lower absolute estimates of the incidence of poverty among aged Americans than the NAS-based measures of poverty. This finding extends across all groups identified in this analysis, although certain groups such as older married couples and men seem to be more affected by the use of the NAS-based poverty measures than others. That is, under the NAS-based measures, high-risk groups of older persons are slightly poorer, and more affluent groups are much poorer, than under the official poverty measure.

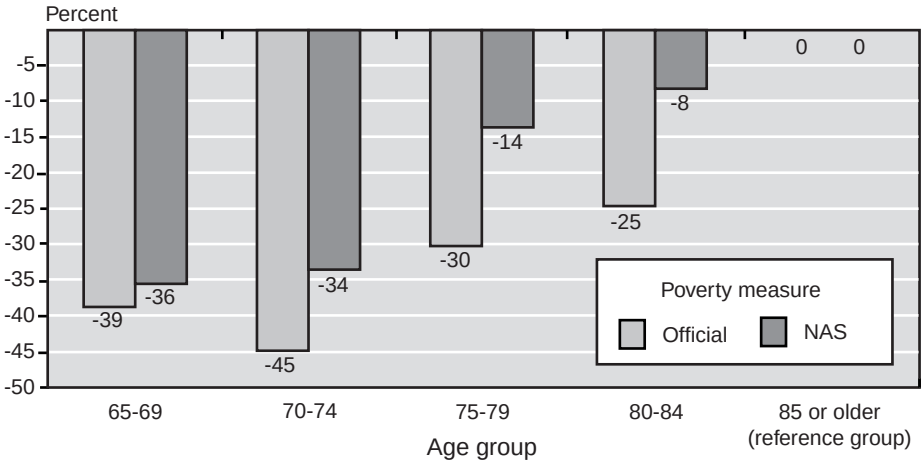
The main reasons for the difference between the impact of the NAS-based measures on older non-Hispanic whites versus other groups and older men versus women appear to be twofold. First, the NAS-based measures subtract medical out-of-pocket (MOOP) expenses in order to compute resources, which has a disproportionate effect on non-Hispanic whites and men as compared with other groups. Some have suggested that some persons in those more affluent groups spend themselves into poverty under the NAS measure by purchasing discretionary MOOP expenses that other groups cannot afford (for example, elective surgery). Such discretionary expenses may serve to reduce their discretionary incomes below the poverty threshold. Another and related explanation may be due to the fact that Short and others (1999) specifically exclude persons who are on Medicaid from assignment of MOOP expenses. As a result, if two people with the same cash

Chart 12.—Difference in estimated poverty incidence between men and women: Percent by which women's poverty rates are higher than men's, by age group and poverty measure, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

Chart 13.—Differences between poverty rates among age groups: Percent by which poverty rates for persons under age 85 are lower than for persons aged 85 or older, by poverty measure, 1997



Source: Tabulations based on the March 1998 CPS and the Experimental Poverty Measures Research Data File.

incomes receive identical medical treatments, but one pays out of pocket and the other has the treatment paid for by Medicaid, the former is poorer under the NAS measure. Since more affluent groups are less likely to receive Medicaid or other forms of public or family support for medical expenditures, it is not surprising that MOOP expenses disproportionately reduce their resources. Surely, other hypotheses to explain the disparate effect of MOOP by group exist, as Short and others (1999) note that the subtraction of MOOP costs from resources is the most contentious element of the NAS measure. More research is needed to quantify, refine, and explain the role MOOP costs—as currently modeled—play in contributing to the disproportionate effect of the NAS measure on older non-Hispanic whites and older men. In addition, further refinement of the model used to assign MOOP expenses should continue.

The second main reason for the difference between the impact of the NAS-based measures on older whites versus other groups of aged persons and men versus women is likely to be the NAS midpoint equivalence scale. Compared with the implicit equivalence scale of the official poverty measure, the NAS midpoint equivalence scale lowers poverty rates for persons who live alone or with unrelated individuals and increases them for persons who live with others. As a result, older married persons are disproportionately affected by the inclusion of the midpoint equivalence scale in the threshold. Because aged whites and men tend to be more likely to be married, they are less likely to live alone and therefore more likely to be in poverty when the NAS midpoint equivalence scale is used. Because, like the MOOP element, the NAS midpoint equivalence scale plays a major role in the results contained in this analysis, it deserves further study. One area of future research is the validity of the NAS midpoint equivalence scale for aged individuals. For example, Vaughan (1984) and Betson (1996) suggest that accurately constructed equivalence scales for the elderly may have unique features that reflect the special circumstances of the aged population.

IX. Additional Research Areas

This article has raised issues about refining, explaining, and quantifying the effects of elements of the experimental NAS

Table 2.—Incidence of poverty among the aged, by marital status and gender, 1997

[In percents]

	Total		Married, spouse present		Widowed		Divorced/separated		Never married	
Poverty measure	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Official	7.1	13.1	4. 6	4.2	11.1	17.9	15.7	23.5	21.6	20.0
NAS	14.2	19.6	13.2	13.7	13.8	23.1	19.1	24.4	24.7	25.4

Source: Tabulations based on the March 1998 Current Population Survey and the Experimental Poverty Measures Research Data File.

Table 3.—Incidence of poverty among the aged, by gender and race/ethnicity, 1997

[In percents]

	Total		White non-Hispanic		White Hispanic		Black non-Hispanic		Other non-Hispanic	
Poverty measure	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Official	7.1	13.1	4.8	10.6	20.0	26.4	21.8	28.8	9.7	15.2
NAS	14.2	19.6	11.8	17.4	30.3	33.0	27.9	33.0	19.3	19.1

Source: Tabulations based on the March 1998 Current Population Survey and the Experimental Poverty Measures Research Data File.

Table 4.—Percent by which poverty rates are higher than for white non-Hispanic men, 1997

[In percents]

	White non-Hispanic		White Hispanic		Black non-Hispanic		Other non-Hispanic	
Poverty measure	Men	Women	Men	Women	Men	Women	Men	Women
Official	(1)	121	316	450	354	500	103	218
NAS	(1)	48	157	181	138	180	64	62

[1] Not applicable; reference group.

Source: Percentage differences based on table 2.

poverty measure that are particularly important to the measurement of poverty among the aged population. Other interesting questions about the experimental NAS poverty measure include:

- *How do the official and NAS-based poverty measures affect the incidence of near-poverty among aged persons—that is, persons within 125 percent or 150 percent of the poverty threshold?* Near-poverty estimates are informative because they help assess the overall standard of living of America's aged and not only the percent who fall above and below a given poverty threshold.
- *How low are the incomes of aged persons who fall below the poverty level?* Although the income levels of the poor among the aged population tend to cluster around the poverty threshold under the official poverty measure, this is unlikely to be the case under the NAS measure. The subtraction of MOOP costs actually produces negative incomes for some aged persons under the model developed by Short and others (1999)—for example, a person with a cash income of $12,000 who incurs $15,000 of medical out-of-pocket costs for a given year. Other poor aged persons are assigned MOOP expenses that depress their incomes far below the poverty threshold. For example, a sizeable portion of the aged poor may have incomes at less than 25 percent or 50 percent of the poverty threshold under the NAS poverty measure due to the subtraction of MOOP expenses from their resources.
- *What elements should be added to the NAS measure in order to measure poverty better?* For example, whether and how to add the value of owner-occupied housing into the poverty measure for persons aged 65 or older are important decisions that could significantly affect policymakers' view of who is poor. Research has indicated that converting the value of owner-occupied housing into a stream of income significantly reduces poverty among the aged. However, a debate exists over how to measure this theoretical income stream and whether it should be counted as income if it is not actually received by the owner of the home.

Notes

[1] The Social Security Administration's interest in poverty measures can be traced back to Mollie Orshansky's work at the Social Security Administration in the early 1960s that led to the poverty measure ultimately adopted for official use (Citro and Michael (1995), p. 162).

[2] For more detail, see Citro and Michael (1995), pp. 24-25.

[3] Thresholds for one person living alone or in a household with one or more unrelated individuals.

[4] For an overview of the development of the official poverty measure and studies surrounding its validity, see Schultz (1995), pp. 31-46.

[5] Unrelated individuals and family members (householder or spouse versus other relative).

[6] The March Current Population Survey (CPS), which is the basis of the data sets used in this article, sets the maximum age that a respondent can list as age 90.

[7] Racial and ethnic groups identified in this analysis are non-Hispanic whites, white Hispanics, black non-Hispanics, and "other" non-Hispanics. Note that about 3.6 percent of the aged Hispanics represented in the sample do not consider themselves to be white. However, aged black Hispanics and older other Hispanics had sample sizes that produced large standard deviations and therefore are not analyzed in this analysis.

[8] Available on-line at: <*http://www.census.gov/hhes/www/povmeas.html*>.

[9] The Annual Demographic Survey, or March Current Population Survey (CPS) supplements the CPS—the primary source of detailed information on income and work experience in the United States. The CPS itself is a monthly survey of about 50,000 households conducted by the Census Bureau for the Bureau of Labor Statistics. It is the primary source of information on the labor force characteristics of the U.S. population.

[10] The data for age in the original Census alternative poverty measure file was in intervals that did not allow the age categories used for this article. The continuous age variable from the March 1998 CPS Supplement was merged into the alternative measures file to obtain additional detail on age.

[11] Available on-line at: <*http://www.bls.census.gov/cps/ads/adsmain.htm*>.

[12] See Citro and Michael (1995), pp. 159–182.

[13] See Citro and Michael (1995), pp. 182-201, and table 5-3, p. 252.

[14] Analysis based on March 1998 Current Population Survey (unpublished data, Office of Retirement Policy, Social Security Administration).

[15] The difference in the drop for men under the official poverty measure versus the measure that includes heating assistance and housing subsidies is significantly different from that of women (two-tailed t-test at the 95-percent confidence level).

[16] In tax year 1997, 44 percent of persons aged 65 or older paid income taxes (personal communication, Statistics of Income, Internal Revenue Service).

[17] The difference in the increase for married persons (spouse present) under the official poverty measure versus the measure that includes MOOP expenses is significantly different from that of widowed and divorced/separated persons (two-tailed t-test at the 95-percent confidence level). It is not significantly different from the percentage point difference for never married persons.

[18] The difference in the increase for men under the official poverty measure versus the measure that includes MOOP expenses is significantly different from that of women (two-tailed t-test at the 95-percent confidence level).

[19] The difference in the increase for non-Hispanic Whites under the official poverty measure versus the measure that includes MOOP expenses is not significantly different from that of other racial and ethnic groups (two-tailed t-test at the 95-percent confidence level).

[20] NGA estimates by subgroups are available upon request from the author at: <*kelly.olsen@ssa.gov*>.

[21] March 1998 CPS tabulations reveal that the majority of men aged 65 or older (73 percent) are married with a spouse present, whereas the majority of their female counterparts (58 percent) are widowed, divorced/separated, or never married.

[22] See note 7.

[23] March 1998 CPS tabulations show that 56 percent of non-Hispanic whites and "other" non-Hispanics aged 65 or older are married (spouse present), as compared with 50.1 percent of white Hispanics, and 36 percent of black non-Hispanics.

[24] Just 23 percent of those aged 85 or older are married with a spouse present, as compared with 66 percent of persons aged 65-69, 60 percent of those aged 70-74, 53 percent of persons aged 75-79, and 40 percent of persons aged 80-84 (March 1998 CPS tabulations).

[25] The difference between men's and women's poverty rates among "other" non-Hispanics is not statistically significant in table 3.

[26] Percentage difference between men and women based on chart 11 data.

[27] Percentage difference between women aged 85 or older and women in other age groups, based on chart 11 data.

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Appendix A: Using the SIPP Versus the CPS to Measure Poverty

In addition to altering the threshold and resource definitions, a primary recommendation of the National Academy of Science (NAS) panel was to estimate poverty using the Survey of Income and Program Participation (SIPP) rather than the Current Population Survey (CPS). The official U.S. poverty rate is estimated using the CPS. While the SIPP is designed to do a more complete job of collecting income data than the CPS, the SIPP is a longitudinal survey, and so persons drop out of the survey over time. Because the types of people who drop out of the survey tend to differ from those who continue participation (for instance, they tend to be poorer),[1] the SIPP suffers from an "attrition bias" that varies from year to year. Since the CPS is a cross-sectional survey, its sample of respondents is new each year, precluding concerns about certain types of respondents dropping out of the sample.[2]

Although SIPP estimates can be weighted, the weighting does not completely remove the attrition bias. One reason is that, until very recently, the weighting adjustment did not take into account income level or poverty ratio (income/poverty threshold) data on a cross-sectional basis. A second reason is that there are no independent controls of low-income persons by which to adjust the weighted counts. In other words, since the universe of low-income and poor individuals is uncertain under any available measure, it is difficult to ascertain how SIPP data should be adjusted to take these persons better into account. Research is currently underway to improve SIPP's weighting (Sae-Ung and Winters 1998).

On the other hand, although the CPS does not have attrition bias, it has been shown to underreport income relative to the SIPP. One study found that up to 55 percent of the difference in the observed poverty rate for the elderly under the SIPP versus the CPS is attributable to the underreporting of Social Security income in the CPS (Social Security Administration 1997). The remaining share of the differential is likely attributable to differences in the treatment of attrition and family composition,[3] the interaction between income sources, and the role of other aspects of income reporting, such as part-year income and small amounts of income (Martini and Dowhan 1997). For example, the CPS records the respondent's current family status and prior year's annual income, whereas the SIPP records both current income and family status. This disconnect between current need and recorded income is of particular importance when measuring the poverty status of widow(er)s (Holden et al. 1986). Past research indicates the difference between the official poverty estimates derived from SIPP data are 30 percent below those derived from the CPS (Social Security Administration 1997).

When the official poverty measure is computed using the SIPP *for all ages*, the overall poverty rate in 1991 is 12.1 percent, as compared with 13.6 percent under the NAS measure—a difference of 1.5 percentage points, or 12 percent. When the official poverty measure is computed using the CPS, the overall poverty rate for all ages is 14.2 percent, as compared

with 16.9 percent under the NAS measure—a difference of 2.7 percentage points, or 19 percent. Hence, the difference in the all-ages poverty rate between the official and NAS poverty measures is significantly smaller when using SIPP data than when using CPS data. If the same is true for those aged 65 or older, the estimates contained in this article may not only overestimate poverty incidence among the aged, but differences between the official and NAS poverty measures as well. Nonetheless, these are the best estimates available using both the official and NAS measures, given current data limitations. Moreover, the direction of the differences is highly likely to be the same regardless of the data set used to produce estimates.

Toward the goal of obtaining better data, the Census Bureau has proposed a survey redesign for the SIPP so that changes in poverty estimates from one year to the next are not affected by attrition bias. Short and others (1999) note, "adopting the SIPP as the official data source for poverty measurement, as recommended by the NAS panel, would place special demands on the SIPP and the imputation methods used to estimate values for the additions and subtractions to obtain a SIPP-based resource measure. For example, we will continue to work on medical out-of-pocket valuations . . . [which] have a great impact on poverty rates . . . In the future, we plan to statistically match new data collected in the SIPP with data collected in the 1996 (and later) Medical Expenditure Panel Survey" (Short et al., p. 25).

Appendix A: Notes

[1] See Short and others (1999), pp. 23-25.

[2] However, like the SIPP, the CPS suffers to a degree from nonrespondent error.

[3] For example, the CPS records the respondent's current family status and prior year's annual income, whereas the SIPP records both current income and family status.

Appendix A: Bibliography

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Appendix B: Confidence Intervals

Table B1 shows 90-percent confidence intervals for alternative poverty estimates by total, gender, age group, race and ethnicity, and marital status. That is, there is a 90-percent chance that the poverty estimates presented in this article fall within plus-or-minus the values shown in the table. For example, the poverty rate under the official poverty measure is 10.5 percent for persons aged 65 or older. Using table B1, we can therefore assume with 90-percent confidence that the true incidence of poverty among persons aged 65 or older falls between 9.9 percent and 11.1 percent—that is, 10.5 plus or minus 0.6. Notice that the confidence intervals are larger for older age groups. The larger the confidence interval, the more caution should be used in attributing statistical significance to differences estimated in this article.

Table B1 also shows 90-percent confidence intervals for other subgroups of the aged population. Note the relatively large confidence intervals for small groups like never married men and "other" non-Hispanic men. Hence, greater caution should be used for inferring statistical significance of differences involving those groups than those involving only groups with generally smaller confidence intervals, such as those also shown in the table. Confidence intervals for other poverty estimates included in this article are available upon request from the author.

Appendix C: Medical Out-Of-Pocket Expenditures

To compensate for the lack of information on medical expenditures in the CPS, the U.S. Census Bureau uses the same basic approach as the National Academy of Science (NAS) panel in computing medical out-of-pocket (MOOP) expenditures. Expenditure data (covering all components of MOOP expenses except individuals' premium payments for part B Medicare) were obtained from the 1987 National Medical Expenditure Survey (NMES), aged to 1991. The imputation procedure assigned a predicted expenditure to each family based on the characteristics of that family and adjusted the imputed amount to ensure that, in the aggregate, total imputed out-of-pocket expenditures agree with aggregate expenditures estimated from an independent source.

The Census Bureau determined whether or not a family incurred any MOOP expenses in the course of the year. A set of probabilities for different families was determined using NMES data that take account of insurance status, family size and income, race, and age of elderly householder. The Census Bureau then assigned actual values of MOOP expenses to those who incur such. The value of the expense is determined from the distribution of expenditures in the NMES using a stochastic approach.

The most straightforward component is the assignment of Medicare part B premiums to families with elderly members in the CPS. This is necessary because the expenditure data from

the NMES that formed the bases of the imputation model did not capture these out-of-pocket costs. For each elderly person in the family who was not covered under Medicaid, the Census Bureau assigned a fixed amount of money to the family equal to the legislated part B premium amount for each year. Persons with Medicaid coverage are assumed not to incur the costs of the part B premiums because that program (by and large) covers that obligation.

The final value of MOOP expenses is computed as the sum of the Medicare part B premiums and the imputed value M, adjusted for price changes and calibrated to the independent control totals. The aggregate totals used were developed from a variety of sources. Overall they pertain to the aggregate total for 1992 used by the panel, adjusted to other years according to changes in the Consumer Price Index for Urban Workers. Generally, the model tends to underestimate the out-of-pocket spending of the nonelderly and overestimate the spending of the elderly compared with the aggregates the Census Bureau used. For example, to match the aggregate values for 1997, the Census Bureau multiplied nonelderly expenditures by a factor of 1.179 and elderly expenditures by a factor of 0.8257. The MOOP estimates were adjusted as such for use in the Experimental Poverty Measures Research Data file.

Table B1.—90-percent confidence intervals for poverty estimates under the official and NAS poverty measures

Variable	Official measure	NAS measure
Total poor	±0.6	0.7
Gender:		
Men	±.7	1.0
Women	±.8	.9
Age:		
65-69	±1.0	1.2
70-74	±1.0	1.3
75-79	±1.2	1.6
80-84	±1.6	2.0
85 or older	±2.2	2.5
Race/ethnicity and gender:		
Total men	±.7	1.0
Total women	±.8	.9
White non-Hispanic		
Men	±.7	1.0
Women	±.8	1.0
White Hispanic		
Men	±5.1	5.8
Women	±4.8	5.1
Black non-Hispanic		
Men	±4.1	4.5
Women	±3.7	3.8
Other non-Hispanic		
Men	±4.9	6.6
Women	±5.6	6.1
Marital status and gender:		
Total men	±.7	1.0
Total women	±.8	.9
Married, spouse present		
Men	±.8	1.3
Women	±.9	1.5
Widowed		
Men	±2.6	2.9
Women	±1.6	1.7
Divorced/separated		
Men	±4.4	4.7
Women	±4.1	4.2
Never married		
Men	±6.8	7.1
Women	±5.1	5.5
Race/ethnicity and marital status:		
White non-Hispanic	±.5	.7
White Hispanic	±3.5	3.8
Black non-Hispanic	±2.8	2.9
Other non-Hispanic	±3.8	4.5
Married, spouse present	±.6	1.0
Widowed	±1.4	1.5
Divorce/separated	±3.1	3.2
Never married	±4.1	4.4