

Final Report
of the
Interagency Technical Working Group on
Evaluating Alternative Measures of Poverty

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Executive Summary

Since the establishment of the U.S. official poverty measure (OPM) more than fifty years ago, there has been continuing research on poverty measurement. Alternative estimates of poverty have been published for more than three decades by the Census Bureau, and in 2011 the Census Bureau in cooperation with the Bureau of Labor Statistics (BLS) began publishing the Supplemental Poverty Measure (SPM). Existing and previous measures of poverty produced by the Federal government are income based and rely on surveys to capture the income data. Guidance issued by the Commission on Evidence-based Policymaking, National Academy of Sciences reports, and the Office of Management and Budget (OMB) has recommended combining administrative data with survey data to improve national statistics. In recent years, evidence has shown that there is survey misreporting of many income sources. Recognizing the changing landscape and that alternative statistics can provide useful information, the Chief Statistician of the United States (Chief Statistician) formed the Interagency Technical Working Group on Evaluating Alternative Measures of Poverty (Working Group) to evaluate possible alternative measures of poverty, how such measures might be constructed, and whether to publish those measures along with current measures.

To provide context for the Working Group's recommendations for alternative measures of poverty, this report begins by discussing the history of poverty measurement in the U.S., including the development and implementation of the OPM and SPM. In addition, the Working Group identified some of the uses of the OPM and SPM, as well as noted some of the known concerns with each of the measures.

The Working Group primarily focused on unidimensional poverty measurement. Unidimensional poverty measures have two key parts: the resource measure (such as income or consumption) and the thresholds (the cutoffs to which the resource measure is compared). The Working Group's consensus recommendations for unidimensional poverty measurement provide for detailed recommendations for the resource measures and recommendations for future expert input and research on thresholds.

The Working Group recommends adopting both extended income-based and consumption-based resource measures, and it identifies other areas worthy of future research by the Federal Statistical System. For an extended income resource measure, the Working Group recommends expanding beyond pre-tax cash income to include at least some in-kind transfers and accounting for taxes and tax credits, much like the SPM resource measure. In addition, the Working Group recommends producing resource measures with and without a value for health insurance with some direction provided on how to do so. The Working Group discussed how to value implicit flows from non-financial assets (e.g., vehicles, owner occupied housing, other properties), and how to value net flows from financial assets for inclusion in both income- and consumption-based resources. An extended income resource measure would also integrate administrative data with household survey income information when appropriate, taking advantage of recent research on the use and the increased availability of potentially more accurate administrative data. The Working Group considered other approaches for adjusting survey data for misreporting as well.

A consumption-based resource measure may more directly capture the resources available to a family if it records the consumption that was actually achieved. These measures begin by summing most categories of expenditures on goods and services. The Working Group recommends beginning in this way, but recommends excluding certain categories of expenditures that are often thought of as enhancing future consumption, such as pension contributions and education expenses. As with the extended income-based resource measure, the Working Group recommends that any consumption-based resource measure be produced with and without a value of health insurance. The Working Group

also recommends that a flow of consumption resources be attributed to owned vehicles and owner-occupied homes and that current expenditures on these items are excluded from consumption.

The final report of the Working Group also considers implementation issues with, as well as other advantages and limitations of, proposed measures. The Working Group discussed many implementation issues. These included the choice of survey data most appropriate for use in developing the measure. For example, for an income resource measure, choosing between the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) or the American Community Survey (ACS) would have an effect on the ability to produce estimates at different geographic levels. The Working Group suggests using the CPS ASEC as the survey base for an extended income-based resource measure and recommends the Consumer Expenditure (CE) Interview Survey for a consumption-based resource measure. In addition, the Working Group has identified some advantages and limitations of extended income- and consumption-based resource measures. For example, for an income-based resource measure, annual income will not capture the standard of living of individuals who draw upon savings or borrow to fund their consumption. However, an income-based resource measure captures the flow of new resources available for consumption, and household income data are available in more datasets than are household expenditures.

The Working Group also discussed thresholds and notes that poverty thresholds are a key component of a poverty measure. Individuals with resources that fall below the poverty threshold are counted as poor, and individuals with resources at or above the poverty threshold are not counted as poor. In the end, the Working Group recommends additional expert input and research on several key considerations for determining poverty thresholds, and provides a discussion of each of these considerations within the report.

Finally, while the Working Group is focused on the extended income-based and consumption-based measures, the Working Group provides recommendations for future research by the Federal Statistical System on other topics, including multidimensional poverty measurement and individual indicators of well-being, individuals excluded from poverty measures such as most of those experiencing homelessness, and timely poverty measurement.

Background

In early 2019, the Chief Statistician of the United States established the Interagency Technical Working Group on Evaluating Alternative Measures of Poverty (the Working Group) in order to evaluate possible alternative measures of poverty, how such measures might be constructed, and whether to publish those measures along with the measures currently being published.¹ This Working Group includes members from 11 Federal agencies. After much deliberation throughout 2019, the Working Group finalized a consensus interim report that was published on February 14, 2020, alongside a Federal Register Notice for public comment on the work of the Working Group (85 FR 8610).²

Since the publication of the Working Group's consensus interim report, the Working Group has continued to meet and advance its work. This final report of the Working Group builds upon the interim report and details the Working Group's considerations and consensus recommendations.

Creation of the Technical Working Group

Since the U.S. official poverty measure (OPM) was first established in 1969, there has been continuing debate about alternative approaches to the measurement of poverty. The Census Bureau has considered many alternative measures. Starting in 1982, the Census Bureau published poverty measures that accounted for in-kind benefits and in 1983 estimates that accounted for taxes. Between 1999 and 2010, the Census Bureau published poverty estimates that implemented many of the recommendations of a 1995 National Research Council report (hereafter referred to as *Measuring Poverty*).³ The Census Bureau also reported poverty measures using an alternative inflation adjustment.⁴

Recognizing that alternative statistics can provide useful information, the Chief Statistician of the United States (Chief Statistician) formed an Interagency Technical Working Group on Developing a Supplemental Poverty Measure (the SPM Development Working Group) in 2009 to develop initial starting points for producing a Supplemental Poverty Measure (SPM).⁵ The SPM Development Working Group issued their observations in 2010 drawing on the recommendations from *Measuring Poverty* and other sources.⁶ The SPM was designed to be an experimental measure that complements, but does not replace, the OPM. The SPM incorporates estimates of taxes and many in-kind benefits, which are not incorporated in the OPM. In addition, the SPM thresholds (poverty cutoffs) are based on recent expenditure patterns for a limited set of goods and services, not all spending. The SPM is described in detail in the section titled The Supplemental Poverty Measure. The initial release of the SPM was in the fall of 2011, and this experimental measure has been published annually thereafter. Research on the SPM continues and the Interagency Technical Working Group on the Supplemental Poverty Measure (the SPM Implementation Working Group) provides advice on improvement of the SPM.

¹ This means that the poverty measures recommended by the Working Group are not intended to replace the OPM or the SPM.

² The Federal Register Notice and the Working Group's Interim Report are available online at: <https://www.regulations.gov/docket?D=OMB-2019-0007>.

³ National Research Council (1995).

⁴ See U.S. Census Bureau 1989 or U.S. Census Bureau 2007.

⁵ For information on the creation of this Working Group, see Blank, R.M., Fall 2011. The Supplemental Poverty Measure: A New Tool for Understanding U.S. Poverty. *Pathways*.

⁶ https://www.bls.gov/pir/spm/spm_twg_observations.pdf

Twenty-five years have passed since *Measuring Poverty* and a decade since the SPM observations document. Since that time, evidence has accumulated on the extent of survey misreporting of many income sources, along with evidence indicating a decline over time in the accuracy of survey reports of these income sources.⁷ In the last few years, the Commission on Evidence-based Policymaking, and several National Academy of Sciences reports have recommended combining administrative data with survey data to improve national statistics. This activity builds on requirements of the Paperwork Reduction Act of 1995 and guidance in OMB M-14-06.⁸ Recent research suggests that administrative data can be combined with survey data to produce poverty statistics.⁹ Building on earlier work, including by the Census Bureau and BLS, recent research has also examined the possibility of using expenditure data to measure material well-being and poverty.¹⁰ Families may more accurately report expenditures than income,¹¹ and conceptually, consumption may better reflect their material circumstances because it could reflect the actual consumption a family achieved, rather than what income is available to them to purchase those goods and services.¹² In addition, there may be value in producing additional absolute and purely relative poverty measures, alongside the current OPM and SPM.

With this background in mind, the Chief Statistician established the Working Group to evaluate possible alternative measures of poverty, how such measures might be constructed, and whether to publish those measures along with the measures currently being published.¹³ The Working Group includes members from 11 Federal agencies.

Goals and Elements of a Poverty Measure

Goals of a Poverty Measure

In order to consider the goals of a poverty measure, it is necessary to first define what is meant by poverty in broad terms. A helpful working definition comes from *Measuring Poverty* (National Research Council 1995, p. 19) “We define poverty as economic deprivation. A way of expressing this concept is that it pertains to people's lack of economic resources (e.g., money or near-money income) for consumption of economic goods and services (e.g., food, housing, clothing, transportation). Thus, a poverty standard is based on a level of family resources (or, alternatively, of families' actual consumption) deemed necessary to obtain a minimally adequate standard of living, defined appropriately for the United States today.”

⁷ For example, see Coder and Scoon-Rogers (1996), Moore et al. (2000), Roemer (2000), Wheaton (2007), Iams and Purcell (2013a, 2013b), Gathright and Crabb (2014), Meyer, Mok and Sullivan (2015) and Rothbaum (2015).

⁸ This memorandum gives guidance on providing and using administrative data for statistical purposes. Available at: <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2014/m-14-06.pdf>.

⁹ See Bee and Mitchell (2017), Nicholas and Wiseman (2010), and Meyer, Wu, Mooers and Medalia (2019).

¹⁰ For joint Census Bureau-BLS work, see U.S. Census Bureau (2003); a goal of this report was to provide information to initiate discussions to examine issues involved in supplementing income-based measures of poverty with those based on consumption and material hardship. For early research using expenditures and or/or consumption to measure material well-being, see Cutler and Katz (1991), Garner (1993), Poterba (1991), Slesnick (1993, 2001); for more recent research, see Johnson et al. (2005), Meyer and Sullivan (2012), Fisher et al. (2015), and Meyer and Sullivan (2018).

¹¹ For example, see Meyer and Sullivan 2003, 2011.

¹² A family could achieve this consumption through using income, savings, accruing debt, or other means. See UNECE (2017).

¹³ This means that the poverty measures recommended by the Working Group are not intended to replace the OPM or the SPM.

The appropriateness of a poverty measure will differ depending on the goals it is designed to achieve. In this report, the Working Group focused on the following three goals: 1) identify who in the population is the most disadvantaged, 2) determine how the degree of economic deprivation has changed over time, and 3) assess the impact that public policies and broad social and economic trends have on economic deprivation.¹⁴ Some uses of poverty measures include targeting transfers to individuals or areas most in need and providing a benchmark for eligibility for means-tested programs.¹⁵ However, the Working Group's mandate is to address only the first three measurement goals and not consider programmatic uses.

Elements of a Poverty Measure

Unidimensional vs. Multidimensional Measures of Well-Being

Most poverty measures in the U.S. reflect a single dimension of deprivation such as income or consumption. An attraction of such measures is that researchers and policymakers in the U.S. have more experience with these than with multidimensional measures. While work on multidimensional poverty measures (which could include dimensions such as health, education, work, or housing) has been done internationally, given their complexity, the limited research with U.S. data, and the limited time of the Working Group, the Working Group decided to focus on unidimensional poverty measurement. Multidimensional poverty measures are discussed more fully in the section titled Consensus Recommendations Worthy of Further Research by the Federal Statistical System in this report.

Components of a Unidimensional Poverty Measure

The design of a unidimensional poverty measure typically entails the following:

- 1) *A resource measure*: How should the resources available to people for consumption be defined? Typically, resources are measured using income or consumption, but there is debate about how to define income and consumption. One must also decide the time period over which to measure resources—should poverty be measured over a year or over a shorter or longer time period? Finally, a measure needs to specify who should be included in the resource-sharing unit: only related family members, those pooling income and making joint purchases, or another unit.
- 2) *Thresholds*: To determine poverty, unidimensional measures compare resources to some specified threshold. In addition to setting the baseline threshold, one must also designate how this threshold will be adjusted over time (to account for inflation or changing living standards), across sharing units of different compositions (to account for different needs), and perhaps even across geographic areas (to account for geographic cost of living differences). Thresholds can be set at an absolute level, relative to some standard, based on subjective assessments, or a combination of these approaches.¹⁶

¹⁴ This focus accords very closely with the goals stated in *Measuring Poverty*: a “. . .measure that will more accurately identify the poor population today...” and “. . .will more accurately describe changes in the extent of poverty over time that result from new public policies and further social and economic change.” (National Research Council 1995, p. 1-2).

¹⁵ The Working Group recognizes that measures targeted to meet specific policy needs; such as the Department of Health and Human Service's Poverty Guidelines, the Census Bureau's Small Area Income and Poverty Estimates, and the National Center for Education Statistics' in-development National Assessment of Educational Progress socioeconomic status indices and experimental School Neighborhood Poverty Estimates; would still be needed.

¹⁶ The official poverty measure of Ireland is a combination measure: monetary and nonmonetary indicators of

In application, some poverty measures identify whether an individual's resources fall above or below a specified threshold, which is usually called a head count measure. Alternatively, a measure could capture how far the resources of units fall below the threshold, as is done by a poverty gap measure, which sums the differences between the resource measure and the threshold for all units with resources below the thresholds.

The Official Poverty Measure

History of the Official Poverty Measure

The development of the OPM had been underway, but came to the fore in January 1964 when President Lyndon B. Johnson called for a national war on poverty in his State of the Union address to Congress. Since no official poverty measure existed at the time of his call for a War on Poverty, for his terms of engagement President Johnson relied on a poverty measure developed by his Council of Economic Advisers (CEA). In the 1964 *Economic Report of the President*, CEA estimated that in 1962 approximately 20 percent of all Americans were poor (CEA 1964).¹⁷ The CEA poverty measure used pre-tax money income as its resource measure and extended its 1962 thresholds back historically based only on inflation (CEA 1964). In June 1965, the Census Bureau released a report estimating the number of "low-income families and unrelated individuals" as of 1963 using the CEA poverty measure (U.S. Census Bureau 1965).

The Office of Economic Opportunity was established in 1964 to coordinate efforts in implementing President Johnson's War on Poverty (HHS 2000). The Office of Economic Opportunity adopted different poverty thresholds based on the work of Mollie Orshansky, a staff economist in the Social Security Administration. Orshansky published in 1965, "Counting the Poor: Another Look at the Poverty Profile," intended to improve on the CEA poverty measure by adjusting poverty thresholds based on the number of people in a family and whether the family lives on a farm (Orshansky 1965). Orshansky based her poverty thresholds on the cost of either the lower "economy food plan" (now, the Thrifty Food Plan) or the higher "low-cost food plan" for a family of a given size, as determined by the U.S. Department of Agriculture (USDA). Orshansky multiplied the cost of each of these food plans by three to obtain two different sets of poverty thresholds because the average family spent about one-third in after-tax money income on food based on a USDA survey conducted in 1955 (Orshansky 1965).

The Office of Economic Opportunity decided to use the lower thresholds based on the economy food plan, and the Census Bureau released reports in 1966 and 1968 based on this poverty measure (U.S. Census Bureau 1966, 1968). Fisher (2008) argues that the Office of Economic Opportunity chose these lower thresholds because they produced a poverty rate similar to the poverty rate CEA had determined for 1962, which had been used as President Johnson's baseline for evaluating progress in his War on Poverty. While Orshansky herself may have preferred the

deprivation are combined in a measure of "consistent" poverty to determine the status of the population living in household that are both economically disadvantaged and below the monetary relative poverty line (see Atkinson 2019). Also see the recent World Bank (2018) report on poverty and shared prosperity in which absolute and relative concepts are combined into what is referred to as a societal poverty line.

¹⁷ In multiple speeches in 1964, President Johnson referred to this CEA standard as his baseline for assessing progress in his War on Poverty, referring to the "one-fifth of our people" living in poverty and the "20 percent that earns less than \$3,000 per year" (Johnson 1965, p. 287, p. 376). As Fisher (1992) notes, the development of the CEA poverty thresholds preceded the publication of Mollie Orshansky's poverty estimates in "Children of the Poor" published in July 1963, and thus, Fisher concludes that the CEA thresholds were ultimately not modeled after Orshansky's thresholds.

higher thresholds (see Fisher 2008), Orshansky recognized that the thresholds she developed were arbitrary, stating, “The measure of poverty thus developed is arbitrary. Few could call it too high. Many might find it too low” (Orshansky 1965, p. 10). As Fisher (1997) notes, Orshansky used the word arbitrary not to emphasize that the poverty thresholds were random, but rather, that they were a value judgement about societally appropriate standards.

On August 12, 1969, the Census Bureau released another report on poverty entitled, “Revision in Poverty Statistics, 1959 to 1968,” but this time, its poverty thresholds differed in a fundamental way from those in its previous poverty reports. Based on the guidance of the Poverty Level Review Committee, an interagency group created by the Bureau of the Budget (today the Office of Management and Budget) to review poverty thresholds, the Census Bureau adjusted thresholds each year based on inflation (using the Consumer Price Index or CPI), rather than changes in the cost of the food plan. This choice was consistent with the CEA approach (CEA 1964, 1966) as well as the initial Census Bureau report on low-income populations in 1965 (U.S. Census Bureau 1965).

On August 29, 1969, based on the recommendations of the Poverty Level Review Committee, the OPM was officially established. On that date, the Bureau of the Budget issued a notice (Definition of Poverty for Statistical Purposes n.d.) that all federal agencies should use the poverty statistics in the 1969 Census Bureau report (U.S. Census Bureau 1969) for years 1959 through 1968 (HHS 2000). In addition, future reports of the Census Bureau in the same series would be the official poverty statistics for future years. This notice both endorsed the methodology the Census Bureau used in its 1969 report, and it stated explicitly that the CPI should be used to adjust thresholds each year (Bureau of the Budget 1969). OMB later formalized this notice as “Statistical Policy Directive 14” in 1978 (U.S. Census Bureau 2017).¹⁸

Since its inception on August 29, 1969, only minor changes have been made to the OPM (CRS 2010). In 1979, the CPI for Urban Wage Earners and Clerical Workers (CPI-W) was replaced by the CPI for All Urban Consumers (CPI-U) for updating thresholds annually (CRS 2010). In 1981, farm families no longer were assigned a lower poverty threshold than non-farm families, female-headed families were no longer assigned a special threshold adjustment, and the maximum threshold based on family size was increased from seven to nine family members (CRS 2010).

Uses of the Official Poverty Measure

The OPM is an indicator of economic well-being relied upon by policy makers and advocates, analysts, and the general public. Each September the Census Bureau releases the estimates for official poverty rates from the CPS ASEC for the previous calendar year with a webinar, printed report, and thousands of detailed internet tables. The primary focus of that report and webinar are the changes in poverty rates from the previous year, for the nation as a whole as well as many specific demographic groups. Public use microdata are also released that permit analysts and policymakers to do their own poverty tabulations. Later in September, official poverty estimates from the ACS provide annual estimates for states, Congressional districts, and any geographic area with a population greater than 65,000 people. In December, 5-year poverty and income statistics are released for all geographies in the United States using the ACS.

¹⁸ <https://www.census.gov/topics/income-poverty/poverty/about/history-of-the-poverty-measure/omb-stat-policy-14.html>

The OPM from the CPS ASEC provides a time series of fairly consistent estimates back to 1959. Trends in poverty rates over time and differences in poverty rates across population groups are often cited as reasons a particular policy is, or is not, needed. The poverty measure also plays a role in evaluating government programs for low-income people and, more generally, the effects of government policies and economic growth on the distribution of income. There is a large literature on the characteristics of the poor, factors leading to poverty and other kinds of deprivation, and the effects of poverty on other behaviors and outcomes. Most of these studies use official poverty estimates.

It is worth noting that various fractions or multiples of the official poverty thresholds are also frequently used in both government and academic reports as well as policy discussions. The Census Bureau regularly reports the share of the population below half the poverty line. Higher cutoffs are also examined, such as near poverty (often 125 percent of the poverty line).¹⁹

Although the original statistical directive was clear, stating “these [poverty] levels were not developed for administrative use in any specific program and nothing in this Directive should be construed as requiring that they should be applied for such a purpose” (Bureau of the Budget 1969), the current official U.S. poverty measure is not only an important statistical indicator; it is also used in government programs that are designed to help low-income families. Although many programs have their own need standard for eligibility, a significant number link their standard to the poverty guidelines (or a multiple of them), which are based on OPM thresholds.²⁰ For example, the gross income standard used for eligibility for the Supplemental Nutrition Assistance Program (SNAP, formerly the food stamp program) is set at 130 percent of the poverty guidelines.²¹ Poverty estimates are also used for allocation of Federal funds to states and localities. Funding formulas use the official poverty rates from the CPS ASEC, but many formulas use poverty estimates from the ACS. The Department of Education uses poverty estimates from the Small Area Income and Poverty Estimates (SAIPE) program to distribute funding under Title I of the Elementary and Secondary Education Act.

Concerns with the Official Poverty Measure

The methods for calculating the current OPM, largely unchanged since its inception in 1969, have been criticized by many researchers. In response, the Census Bureau has led an almost four-decade process of research and discussion of poverty measurement with an eye to revising the official measure and developing alternative measures. The process has involved hundreds of papers, dozens of official Census Bureau publications, and two National Academy of Sciences reports (National Research Council 1995 and National Research Council 2005). The concerns with the official measure focus primarily on eight topics: in-kind transfers and taxes, income misreporting, the sharing unit, updating of the thresholds, changes in living standards, geographic

¹⁹ For example, one of the main detailed tables published each year, “POV-01. Age and Sex of All People, Family Members and Unrelated Individuals Iterated by Income-to-Poverty Ratio and Race” provides estimates for 16 distinct income-to-poverty ratios ranging from “Below 50 percent of poverty” to “Below 600 percent of poverty”. <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pov/pov-01.html>

²⁰ The poverty guidelines are published by the U.S. Department of Health and Human Services and are based on the Census Bureau official poverty measure thresholds (<https://aspe.hhs.gov/poverty-guidelines>).

²¹ For additional programs that use the poverty guidelines see: <https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty>.

cost of living differences, adjustments for family size and composition, and its correlation with other measure of economic well-being.

Resource Measure Does Not Account For In-Kind Transfers And Taxes

The OPM defines resources as pre-tax money income,²² thus not reflecting the full resources at a family's disposal. Money income does not subtract tax liabilities (and even poor workers must pay payroll taxes for Social Security and Medicare), nor does it include the Earned Income Tax Credit and other tax credits or in-kind benefits such as SNAP, housing or school meal subsidies, public health insurance, or employer-provided health insurance contributions. Thus, many of the major anti-poverty initiatives of the last few decades are not reflected in poverty rate trends, because policies like a rise in the Earned Income Tax Credit, a more generous Child Tax Credit, and expansions of Medicaid and SNAP do not show up as pre-tax money income. Since these benefits are not counted as resources in the OPM, it cannot be used to determine the contribution of these benefits to lifting people out of poverty.

Income Misreporting

Income in the CPS ASEC and the ACS appears to be substantially under-reported, especially for categories of income important for those with few resources, and the extent of under-reporting has worsened over time. Roemer (2000); Wheaton (2007); Meyer, Mok, and Sullivan (2015); and Rothbaum (2015), among others, report comparisons of weighted micro-data from household surveys to administrative aggregates for government transfers and tax credits. Focusing on transfers important to those with low income, Meyer, Mok, and Sullivan (2015) find that the share of the administrative totals that appears in the CPS ASEC and ACS tends to be substantially below one and to have declined sharply over time. Over the available years between 2000 and 2012, they find that the CPS ASEC is missing 50 percent of TANF dollars, 42 percent of SNAP dollars, 32 percent of unemployment insurance dollars, and 54 percent of workers' compensation payments. While lower, the missing dollars in the ACS are still substantial. Furthermore, underreporting has sharply worsened over time in the CPS ASEC, even when including dollars that are imputed (Meyer, Mok, and Sullivan 2015). These patterns are supported in studies that link individual program records to surveys such as Gathright and Crabbe (2014) who examine Old Age and Survivor Disability Income (OASDI) and Supplemental Security Income (SSI) reporting in the Census Bureau's Survey of Income and Program Participation (SIPP) and Meyer, Mittag and Goerge (2020) who examine SNAP reporting in the ACS, CPS ASEC, and the SIPP. Meyer and Mittag (2019) link CPS ASEC micro-data to New York administrative micro-data for four government transfer programs for the same individuals and find that unreported transfers exceed the recorded cash income of those with pre-tax income below half the poverty line. Bee and Mitchell (2017) find that approximately half of pension payments are not reported in the CPS ASEC and that accounting for this and other underreporting reduces the elderly poverty rate by over two percentage points (about twenty-four percent). Meyer and Wu (2018) examine the poverty reduction of several transfer programs in the SIPP, which has the least underreporting of the major surveys, finding that the survey data miss more than half of the poverty reduction of several of the programs received by single parents.

In terms of its implications for poverty, the misreporting of earnings is even more important than program receipt. Meyer, Wu, Mooers, and Medalia (2021) find that earnings among those at the

²² For the Census Bureau definition of pre-tax cash money income, see www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html

very bottom of the distribution are sharply underreported in both the CPS ASEC and the SIPP. Some past work has found over-reporting of earnings when comparing survey reports to the Detailed Earnings Record (DER) file (Hokayem, Bollinger, and Ziliak 2015). Recent work has pointed out that the DER is only intended to capture the Social Security taxable part of self-employment income and omits unauthorized immigrants with Individual Taxpayer Identification Numbers. Collins et al. (2019) find that a meaningful percentage of tax units have labor earnings on Internal Revenue Service (IRS) Form 1040s that are not included in Form W2s (from which DER wage and salary income is derived), indicating that the earlier result of over-reporting may be misleading. However, there are also concerns with the accuracy and completeness of administrative records. A share of the survey reports that are not corroborated by administrative earnings reports are likely to be cases where earnings were not recorded in the administrative sources. Reporting is not required for some income and the IRS estimates that tax compliance is not perfect (Internal Revenue Service 2016).

The Resource Sharing Unit May Not Capture Actual Sharing Arrangements

The OPM treats the resource-sharing unit as those related by birth, marriage, or adoption. Cohabitators and their children are treated in the official measure as a separate family unit within the household even though they live together and may share resources. Unrelated children under age 15 are not included in the poverty universe for the OPM. Analytically, the sharing unit should be more aligned with those who share resources, regardless of familial connections. Information on resource sharing across cohabitators is not collected in the CPS ASEC, although resources or cost sharing provided to a family by cohabitators may be substantial. The treatment of cohabitators has become more important in recent years as the fraction of households with cohabitators present has risen (Lundberg, Pollak, and Stearns 2016). In the CE Survey, the main U.S. source of consumer expenditures, the reference unit includes all those related by blood, marriage, cohabitators, and those who report sharing two of the three following: housing, food, or other living expenses.²³ This definition arguably more directly aligns with the idea of the unit that shares resources.

The CPI-U Used to Adjust the Official Poverty Thresholds May Not Measure Inflation Accurately

As described above, the thresholds used in the OPM are adjusted each year for inflation using the CPI-U. This policy of using the CPI-U for the adjustment has not been reevaluated since the introduction of new measures of consumer inflation, such as the Chained CPI-U. As stated in Federal Register Notice Vol. 84, No. 88, “OMB is currently reevaluating the appropriateness of the use of the CPI-U for annual adjustment in the OPM.”²⁴ A separate Interagency Technical Working Group convened by OMB took up this work. In addition to this specific issue, that group is evaluating the strengths and weaknesses of the methodologies of different consumer inflation measures, including the CPI-U, and is expected to provide a report to the Chief Statistician. As that report has yet to be delivered to the Chief Statistician, the Evaluating Alternative Measures of Poverty Working Group was unable to use their work as an input to the discussion. Further information on the Evaluating Alternative Measures of Poverty Working Group’s considerations on price indices is available later in the report (see Updating Thresholds Over Time).

²³ <https://www.bls.gov/opub/hom/cex/pdf/cex.pdf>

²⁴ Available at: <https://www.govinfo.gov/content/pkg/FR-2019-05-07/pdf/2019-09106.pdf>

Thresholds Do Not Account for Changes in Living Standards

The experience with the OPM has shown that a threshold chosen at one point in time tends to remain unchanged decades later (indexing notwithstanding), whether living standards change dramatically or not. A commonly expressed concern with the OPM poverty thresholds is that they have not adequately accounted for the improvements in living standards that have occurred in the half century since they were set.

Thresholds Do Not Account For Geographic Price Differences

The OPM poverty thresholds are the same in all 50 states, though the poverty guidelines that determine benefit eligibility for many programs are higher for Alaska and Hawaii.²⁵ A largely uniform set of thresholds does not account for the differential level (or change) in cost of living across geography. For example, there is considerable geographic variation in housing costs, with areas such as New York City and the San Francisco Bay Area having housing costs several times those of many other areas. The OPM poverty thresholds do not adjust for geography. Whether poverty thresholds should adjust for these differences is the subject of debate, in part because these adjustments do not account for variation in local amenities.²⁶

The Adjustment for Family Size and Composition

The relationship between poverty thresholds for families with different numbers and ages of people, known as the equivalence scale, is widely criticized in the OPM. The scale implicit in the official poverty thresholds suggests children are costlier than adults in some cases and does not exhibit diminishing marginal increments for additional individuals over the whole range of family sizes. For example, the second child in a two-parent family adds much more to the OPM thresholds than the first or third child. Not only are the adjustments for increasing family size irregular in pattern, they actually increase as family size rises, implying that families of four or more, for example, are able to take advantage of fewer economies of scale than are families of two or three.²⁷

Association with Other Measures of Material Well-Being

Past work has often found that income poverty is only weakly associated with measures of material well-being. Mayer and Jencks (1989) found a weak relationship between the level of income relative to poverty thresholds and whether families could afford food, housing and medical care. A difficulty with interpreting this evidence is that it is unclear how strong a relationship should be expected between economic well-being measures and income poverty. To interpret the strength or weakness of the associations, Meyer and Sullivan (2003, 2007, 2011a, 2012a), Charles et al. (2006), Bavier (2008) and Fisher et al. (2009) compare the association between income and other measures of material well-being and the association between consumption and the same measures of material well-being. The papers using CE data find that the association between low consumption and low material well-being is stronger than the association between low income and low material well-being, while the evidence from other sources is mixed. A more complete discussion is provided in a later section. The most relevant comparisons come from Meyer and Sullivan (2012a) who use the CE Interview Survey with fairly complete measures of income and consumption. They find that households added to poverty

²⁵ The poverty guidelines can be found at <https://aspe.hhs.gov/poverty-guidelines>

²⁶ See National Research Council (1995), Kaplow (1995), Glaeser (1998, 2011) and Renwick (2019).

²⁷ For example, see Ruggles 1990, p. 72.

counts by the consumption-based measure are less likely to have health insurance, and have less education, smaller and less expensive cars, fewer household appliances and amenities, are less likely to own a home, have smaller homes and lower assets. However, it is worth noting that while the range of material well-being indicators available in the CE is broad, it is far from comprehensive. These results are also not informative about how low income or low consumption is related to later educational or health outcomes, crime or earnings, for example.

Comparisons of association with well-being measures are not the only way of validating a poverty measure. In certain situations that are particularly relevant for these analyses, decisions that improve a poverty measure may nonetheless lead to a weaker association with well-being measures. Means-tested transfer program application and recertification procedures are specifically designed to identify the disadvantaged either through their rules and screening process or through the self-selection process in individuals' decision to apply (Nichols and Zeckhauser 1982). Many in-kind benefits like SNAP and housing benefits are examples. In this case, recipients of these programs should be expected to be worse off than other people who may seem similar based on the imperfectly measured information on their income or consumption. There also may be confounding variables that need to be accounted for such as age. These factors should be carefully considered when determining whether or how to validate a component of a poverty measure based on comparisons of association with well-being measures.

The Supplemental Poverty Measure

History of the Supplemental Poverty Measure as Implemented

Between 1999 and 2010, the Census Bureau produced estimates based on the recommendations of *Measuring Poverty* that included estimates for eight variations of an alternative poverty measure with thresholds derived from CE Interview Survey data and resources that included many in-kind benefits and taxes (e.g., Short et al. 1999). In 2009, the SPM Development Working Group was formed and in 2010 issued a series of suggestions to the Census Bureau and the Bureau of Labor Statistics (BLS) on how to develop the SPM.²⁸ Their suggestions drew on the recommendations of *Measuring Poverty* and the extensive subsequent research on poverty measurement. The SPM had as a key goal consistency between thresholds and resources. These suggestions were published in the Federal Register and the Census Bureau and BLS reviewed comments from the public.

In 2011, the Census Bureau released the SPM. The SPM is an income-based poverty measure that incorporates certain in-kind benefits such as food stamps and housing assistance (but not the value of health insurance), reflects a post-tax measure of income, and subtracts certain expenses like medical out-of-pocket expenses (MOOP), work and childcare expenses. The SPM accounts for health insurance by subtracting spending for it from resources. The SPM thresholds are set at 1.2 times the average over five years of CE Interview Survey data for the 30th to 36th percentiles of the expenditure distribution for food, clothing, shelter, and utilities by consumer units with two children. The 1.2 multiplier is intended to account for other basic goods and services, like household supplies, personal care, and non-work-related transportation. Equivalence scales and geographic adjustments for housing costs are applied to the reference thresholds for use in the production of poverty statistics. The thresholds also differ depending on whether a family is a renter, a homeowner with a mortgage, or a homeowner without a mortgage and they change

²⁸ For more information, see https://www.bls.gov/pir/spm/spm_twg_observations.pdf.

over time as expenditures over the past five years change. The Census Bureau has released an annual report (separate from the annual report on income and official poverty rates) estimating a poverty rate under the SPM since 2011. Another interagency technical working group is tasked with making improvements to the measure. In September 2020, the National Academy of Sciences began a Consensus Panel on Evaluation and Improvements to the Supplemental Poverty Measure, sponsored by the Census Bureau. The consensus report is expected in July 2022.

Current Uses of the Supplemental Poverty Measure

The SPM is designed to provide information on aggregate levels of economic need at a national level or within large subpopulations or areas. It was not designed to replace the OPM but rather to provide an additional indicator of economic well-being to better understand economic conditions and trends. For a variety of reasons, the SPM is not intended to be the measure used to estimate eligibility for government programs or allocation of federal funds.

One of the most common uses of the SPM has been to measure the marginal impact of particular income sources, government benefits and/or certain expenses on poverty rates holding all else the same and assuming no behavioral changes. Each September the Census Bureau publishes a report with tables that estimate the change in the number of people in poverty after including Social Security, refundable tax credits, SNAP, SSI, housing subsidies, child support received, school lunch, TANF/general assistance, unemployment insurance, workers' compensation, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Low Income Home Energy Assistance Program (LIHEAP), child support paid, federal income tax, FICA (Federal Insurance Contributions Act tax), work expenses and medical expenses.

The SPM has been used extensively in more recent academic research on poverty in the United States. Although Census Bureau estimates of the SPM go back only as far as 2009, outside researchers have extended SPM estimates to 1967.²⁹

Concerns with the Supplemental Poverty Measure

Resources

The SPM resource definition includes not only money income, but also tax credits such as the Earned Income Tax Credit and the child credit, and the value of some in-kind benefits. In addition, the resources concept subtracts income tax liabilities, payments for child support, childcare and other work expenses, and out-of-pocket medical expenses.³⁰ Thus, conceptually these changes lead the measure of resources to more closely approximate resources available for consumption than pre-tax money income does. Also, by including tax credits and in-kind transfers, the SPM is intended to gauge more accurately the effectiveness of anti-poverty efforts.

While the conceptual advantages of these changes are clear, other changes have been challenged, particularly the subtraction of MOOP from income. Even the authors of *Measuring Poverty* reported, "The issue of how to best treat medical care needs and resources in the poverty measure has bedeviled analysts since the mid-1970s . . . Yet after almost two decades of experimentation, there is still no agreement on the best approach to use." (National Research

²⁹ Fox et al. (2015).

³⁰ In 2010, the CPS ASEC added questions so that it could estimate these expenses subtracted from income, but this information is not available historically.

Council 1995, p. 223-4). On the one hand, large out-of-pocket medical expenses resulting from poor health can drain family resources. On the other hand, these expenses can arise because families choose to allocate resources towards health, purchasing expensive health insurance or electing to have procedures that are not fully covered by insurance (see the dissent to *Measuring Poverty*, National Research Council 1995, p. 385-390). Empirically, MOOP is roughly a constant share of overall spending (Aguiar and Bils 2015)—on average it rises with income at the same rate as other spending so it is not clear that it should be treated differently. Thus, MOOP does not have the characteristic commonly used to define a necessity, a low-income elasticity. In addition, the SPM does not, nor was it designed to, capture the large and growing value of health insurance provided to the low-income population, aside from its effect on out-of-pocket spending (CEA 2014, Korenman et al. 2016, Burkhauser et al. 2019, CEA 2019, National Academies of Sciences 2019).

While the conceptual advantages of including in-kind benefits are clear, the SPM misses a substantial share of these in-kind benefits due to misreporting.³¹ Shantz and Fox (2018) compare administrative records for the SNAP and TANF to CPS ASEC survey responses. They find that 43 percent of SNAP recipients and 62 percent of TANF recipients in the administrative data do not report those benefits in the survey. They calculate how much misreporting biases estimates of the SPM, which includes cash welfare (such as TANF) and in-kind benefits (such as SNAP, which is not included in official poverty estimates). Despite the high false negative rate, they do not find a statistically significant effect on the SPM rate from TANF under-reporting. However, SNAP under-reporting biases the SPM estimate upward by 0.5 percentage points or about 4 percent.

*Association with Other Measures of Material Well-Being*³²

As noted in the section titled The Official Poverty Measure, past work has often found that income poverty is only weakly associated with measures of material well-being. However, various measures of poverty may highlight different dimensions of economic deprivation. In addition, results may suggest that deprived individuals may live in households that are neither income nor consumption poor. Subject to these caveats, Meyer and Sullivan (2012a), using the CE, found the SPM classifies the population into poor and not poor relative to the OPM (holding the size of the poor population the same by rescaling the thresholds) in a way that the group it calls poor is more advantaged on the basis of a wide range of measures.³³ They report that the SPM poor consume more goods and services, are more likely to be covered by health insurance, especially private health insurance, are more likely to be a homeowner, own a car, live in a large house or apartment, be in a family headed by a college graduate, have substantial assets, have many household appliances and other household amenities. Research using the SIPP suggests that this finding could be due to the inclusion of in-kind transfers that are a marker for substantial

³¹ Many papers have examined SNAP (or Food Stamp Program) underreporting including Moore et al. (2000), while Meyer, Mok and Sullivan (2015) also examine school meals and Meyer and Mittag (2019) examine public and subsidized housing.

³² Comparisons of association with well-being measures is not the only way of validating a poverty measure. See the [paragraph](#) in the section titled Association with Other Measures of Material Well-Being for more information.

³³ Since Meyer and Sullivan were using the CE they were not able to fully implement the SPM measure. The SPM-like measure used in their analysis lacks some in-kind benefits and did not include geographic adjustments. This result that the SPM poor are more advantaged than the OPM poor was also confirmed in analyses using recent data from the SIPP that also did not incorporate geographic adjustments (Curran et al. 2020). For the association of the SPM geographic adjustment and other geographic adjustments with economic well-being, see the geographic adjustment section below.

disadvantage, while not correcting for errors in other income sources (Meyer, Wu, Mooers, and Medalia, 2021).

Updating Mechanism for Thresholds

The SPM updates the thresholds based on recent spending on food, clothing, shelter and utilities (FCSU), as opposed to all spending, or to changes in income or consumer prices only. Thus, the SPM is not an absolute measure of poverty because the value of the thresholds changes in real terms over time. It is also not a purely relative measure of poverty, because the value of the poverty thresholds does not change proportionally with a change in a point in the distribution of income (like the median). In practice, this updating could result in changes in the poverty rates that result from changes in income or changes in the thresholds. To understand what role economic conditions or policy had on the poverty rate, one needs to understand how these factors affect the underlying distribution of FCSU expenditures, as well as how they affect income. There is also concern that like any relative measure, in a deep recession, SPM poverty thresholds might fall and result in declining poverty rates during a time of increasing economic hardship.³⁴ The SPM attempts to mitigate this problem by using a five-year average of changes in spending on FCSU rather than changes in overall consumption expenditures or income.³⁵

Alternative Measures of Poverty Recommended by the Working Group

This section of the final report of the Working Group details the Working Group's considerations and consensus recommendations for resource measures and thresholds. At a high level, the Working Group recommends:

Recommendations:

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- 1. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics begin development of the recommended measures as soon as possible and that the research measures be published as soon as possible thereafter.*
 - 2. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics engage with stakeholders and other experts throughout the development of the recommended measures, including soliciting additional public comment as needed. In particular, the Working Group recommends expert input through a National Academy of Sciences panel.*
 - 3. The Working Group recommends that an advisory structure, such as a new Interagency Technical Working Group, be established to engage with the Census Bureau and the*

³⁴The *Measuring Poverty* panel acknowledged that the updating method, using several years of FCSU spending data, could exacerbate the problem when there are downturns in the economy, but argued that this updating method better represents more recent standards of living than an absolute threshold set in the distance past and only updated by price changes (National Research Council 1995, p. 103, 329; also see Blank 2011 regarding this issue).

³⁵ Research is underway at the BLS to understand how changes in the economy, among other factors, impact the expenditures underlying the thresholds.

Bureau of Labor Statistics on issues related to implementation of the detailed recommendations throughout this report and other new issues that arise.

More detailed recommendations for resource measures and thresholds are within the following sections.

Considerations and Consensus Recommendations for Income- and Consumption-based Resource Measures

This section details the Working Group's considerations for income- and consumption-based resource measures, as well as the consensus recommendations. At a high level, the Working Group recommends:

Recommendations:

- 4. The Working Group recommends that the Census Bureau develop and publish two new sets of research measures of income-based resources, one that includes a value of health insurance and one that does not.*
 - 5. The Working Group recommends that the Bureau of Labor Statistics develop and publish two new sets of research measures of consumption-based resources, one that includes a value of health insurance and one that does not.*
 - 6. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics use, where available and when appropriate, administrative data to supplement or replace the use of survey data for developing the recommended measures.*
 - 7. The Working Group recommends that the Census Bureau should attempt to produce the new income-based resource measures within 12 months of survey data collection. For example, estimates for calendar year 2020, for which data are collected in February-April 2021, should be made available by March 2022. The Working Group recognizes that in the first few years of implementation these time lags may be greater, but expects that over time the lags will decrease. The Bureau of Labor Statistics may be able to produce consumption resource measures with less of a lag.*
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Detailed recommendations are available throughout the rest of this section within the context of the considerations of the Working Group.

In considering how to define income and consumption for poverty measurement, research as well as national and international guidance and recommended standards have been considered. Specific research studies are highlighted later in this report. Regarding national and international guidance and standards, documents consulted include those produced by the International

Labour Organization (2003, 2004), Organization for Economic Cooperation and Development (2013), United Nations (UN) Canberra Group (2001), and UN Economic Commission for Europe (2017).

The Working Group recommends income measures that expand beyond pre-tax cash income to include some in-kind transfers and account for taxes and tax credits, much like the SPM resource measure. These measures should also integrate administrative data with household survey income information, taking advantage of recent research on the use and the increased availability of potentially more accurate administrative data. There are many potential versions of such resource measures depending on how the administrative data are used: whether they are used to replace survey reports, supply missing survey reports, combined with survey reports, or used in imputation. The strategies will likely differ across income sources. While the Working Group discussed other data sources for income, the Working Group focused on the CPS ASEC and the ACS. In addition to monetary income and in-kind transfer benefits, the Working Group recommends incorporating implicit income flows from owner-occupied housing and vehicles, as well as from assets and liabilities while recognizing the limited data available in the CPS ASEC and ACS to derive estimates of these flows.

The Working Group also recommends poverty measures that are based on consumption. Such measures may more directly capture the resources available to a family if they record the consumption that was actually achieved. These measures begin by summing expenditures on most categories of goods and services. A flow of consumption resources is also typically attributed to owner-occupied housing and vehicles. Since it is the only comprehensive and nationally representative source of U.S. consumption data, the Working Group has focused on the CE Interview Survey.

In evaluating alternative resource measures, the Working Group has been guided by how well existing and potential alternatives may achieve the goals of a poverty measure described earlier. In particular, how well do the measures capture economic deprivation at a point in time, changes in deprivation over time, and the effects of policy? In addition, the Working Group implicitly was guided by some of the criteria noted in *Measuring Poverty*, including using scientific evidence, best judgement, understandability to the public, that the concepts underlying thresholds and the definition of resources be consistent, and feasibility of implementation.³⁶

Income-based Resource Measures Using the CPS ASEC and ACS

An alternative income-poverty measure should include a more expansive definition of income than the pre-tax cash concept currently used for the OPM. The Working Group has considered whether and how a resource measure should account for the following: taxes paid; tax credits received; many of the in-kind benefits such as SNAP, WIC, housing assistance, and energy assistance provided to disadvantaged families and individuals; the incorporation of health insurance benefits; and implicit flows from non-financial assets (i.e. vehicles and owner occupied housing), as well as annuity-type flows of income from the stock of other assets and liabilities (as

³⁶ “Our recommended changes are based on the best scientific evidence available, our best judgement, and three additional criteria. First, a poverty measure should be acceptable and understandable to the public. Second, a poverty measure should be statistically defensible. In this regard, the concepts underlying the thresholds and the definition of resources should be consistent. Third, a poverty measure should be feasible to implement with data that are available or can fairly readily be obtained.” (National Research Council 1995, p. 3).

opposed to only the interest earned on savings, for example, which is already included in monetary income).

In addition to concerns about what to include in resources, there is growing concern about the quality of survey-based estimates of cash and in-kind benefits. The Working Group explored methods to correct for the potential misreporting of money income and in-kind benefits. One of the most promising of these methods is the incorporation of administrative data. Another issue is to determine whether current surveys provide sufficient data to produce implicit income flows from non-financial assets, as well as from financial assets and liabilities. When they do not, recommendations are needed for the collection of such data, for example, by adding questions to the surveys or from administrative records.

Adjustment to resources for child support obligations

The last half century has seen an increase in the number of noncustodial parents living in households away from their children and in the number of persons making child support payments. Resources are transferred from one household to another when child support payments are made. These transfers potentially create accounting inconsistencies if child support payments are included in the resource totals for the recipient households and are not deducted from the resource totals of the providers of those payments. This results in the double counting of resources because once the child support payments are transferred away from the nonresident parents those transfers are no longer available for consumption by the households making the child support payments. One way to avoid double counting these resources is to subtract child support payments from the resource totals of the noncustodial parents and to include the payments in the income totals of the recipient households. This subtraction is currently being made with the SPM but is not made with the OPM.³⁷

Recommendations:

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- 8. The Working Group recommends subtracting child support payments from resource totals for income-based measures. No adjustments are required for child support payments for consumption-based measures because the transfer of income from one family to another is indirectly captured through increased consumption of families receiving the transfers and decreased consumption among families with nonresident parents making child support payments.*
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Adjustment to resources for work and childcare expenditures

Another important methodological issue for poverty metrics is the treatment of expenditures needed for employment. Since its implementation in 1969 the OPM has not made any adjustments for childcare and other work-related expenditures in its calculations but these costs are sometimes steep enough to discourage work among low-income families. *Measuring Poverty* noted that almost all jobs require workers to use a part of their earnings to pay for expenditures such as union dues, licenses, permits, tools, uniforms, and transportation to and from places of employment. Many families with young children also need to purchase childcare to enter the

³⁷ The Working Group supports including child support payments received in the resource totals as is currently done in both the OPM and SPM calculations.

workforce. Out-of-pocket expenditures for childcare vary considerably across situations, but can be very high for many families.

As stated in *Measuring Poverty*, “Just as income used for taxes is not available for consumption, neither is the amount of earnings devoted to work expenses; hence, such expenses should not be counted as family resources” (National Research Council 1995, p. 70). The Census Bureau collects data on work-related expenditures on the SIPP and uses this information to impute these expenditures onto the CPS ASEC to be used as a part of its calculation of SPM poverty. To compute the SPM poverty rate, a flat deduction representing 85 percent of median weekly work-related expenses is subtracted from family resources for all individuals based on the number of weeks they reported working over the year in the CPS ASEC. Additional questions were added to the CPS ASEC to directly collect information on childcare payments. These expenditures are subtracted from the resources used to calculate the SPM poverty rate. The combined value of childcare and work expenditures is capped at the reported earnings of the lowest earning reference person or his or her spouse/partner.³⁸

Recommendations:

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9. *The Working Group recommends that expenditures needed to work including childcare expenditures be subtracted from family resources for any new recommended poverty measures and that total childcare expenditures be capped because it is difficult to distinguish between childcare necessary to work versus other childcare.*
 10. *The Working Group recommends continued work to improve measurement of childcare and other work-related expenditures and methods to cap them.*
-

Income should be defined more broadly than pre-tax cash income currently used for the OPM Post-tax income

While the OPM uses pre-tax cash income as the resource definition, there is a strong case that after-tax income should be used in an alternative resource measure because taxes paid are not available for consumption and tax credits received are available for consumption. In fact, many of the federal anti-poverty resources are delivered through the tax system, such as the Earned Income Tax Credit (EITC). For example, in tax year 2016 the U.S. spent \$61 billion on the refundable portion of the EITC and \$20 billion on the refundable portion of the Additional Child Tax Credit (ACTC), which are mainly targeted at families with children that have low to moderate earnings (Falk et al. 2018). The SPM subtracts Federal and State income taxes and payroll taxes from income, accounting for tax credits. It would be possible to consider subtracting estimates of property and sales taxes paid but it could only be done with substantial error.

³⁸ Fox (2019) notes that “Some analysts have suggested that this cap may be inappropriate in certain cases, such as if the parent is in school, looking for work, or receiving types of compensation other than earnings.”

Recommendations:

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- 11. The Working Group recommends that income be adjusted, as feasible, for federal, state and local income and payroll taxes and credits in a new income-based resource measure.*
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Incorporating in-kind transfers including SNAP, WIC, housing assistance, school meals, LIHEAP

Two of the measurement goals this Working Group considered were to capture the most economically disadvantaged people at a point-in-time and to indicate how the number of economically disadvantaged people changes over time. To address these goals, it is often agreed that all resources available to an individual should be included. Otherwise, individuals who benefit from omitted resources will be more likely counted as poor, holding constant total resources. This concern was clearly articulated by the United Nations Statistics Division's Canberra Group's international guidelines for income definitions, which stated that "despite the attraction and convenience of using cash income data only, this measure falls short of valuing the economic resources enjoyed by the household. Of particular concern is the fact that the relative mix of cash and non-cash income may differ significantly across population groups" (Canberra Group 2001, p. 25). Moreover, changes in the availability of the omitted resources to the population over time will not be reflected in poverty trends.³⁹

While cash welfare assistance to low-income families has shrunk in the past 25 years, in-kind benefits have grown and are now much more important for low-income families than cash assistance. In 2016, the U.S. spent \$70 billion on the SNAP and \$36 billion on housing assistance (Section 8 Housing Choice Vouchers, Section 8 Project-Based Rental Assistance and Public Housing) compared to \$8.7 billion for the TANF cash assistance program (Falk et al. 2018). For income and poverty measurement, the challenges are assigning an appropriate dollar value to these in-kind benefits and making decisions about precisely which benefits to include. The SPM includes in its resource measure benefits from SNAP, the National School Lunch Program, WIC, LIHEAP, and rental housing assistance.

Recommendations:

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- 12. The Working Group recommends that a new income-based resource measure include as resources in-kind benefits from SNAP, school meals, WIC, LIHEAP, and rental housing assistance.*
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Valuing health insurance and the treatment of MOOP

Note: This section on valuing health insurance provides for the considerations of inclusion for both an income- and consumption-based resource measure.

³⁹ Recognizing practical measurement issues of measuring in-kind transfers in some countries, the operational definition of income from the Canberra group excludes these transfers while encouraging countries to still value them at times since these transfers are important for welfare analysis (see Canberra Group Handbook, 2nd Edition, p. 16 and 46, https://www.unece.org/fileadmin/DAM/stats/groups/cgh/Canberra_Handbook_2011_WEB.pdf).

This section (i) reviews possible approaches for valuing health insurance, (ii) reviews possible approaches for the treatment of medical out of pocket expenditures (MOOP), and (iii) presents the Working Group’s recommendations on the valuation of health insurance.

Valuing health insurance

In 2017, health insurance covered \$2.6 trillion in health expenditures (CMS 2019). Despite the large and increasing amount of resources spent on health insurance, the value of employer and government provided health insurance is not captured in the OPM. It is also not captured in the SPM, except to the extent that health insurance changes out-of-pocket expenses on health care and health insurance premiums. Experimental measures produced by the Census Bureau in the 1980s (e.g., Smeeding 1982; U.S. Census Bureau 1988) and recent research has incorporated a value of health insurance in poverty measures (Short and Garner 2002; Meyer and Sullivan 2012b; Korenman and Remler 2016; Winship 2016; Burkhauser et al. 2019; CEA 2019; National Academies of Sciences 2019).⁴⁰ In addition, the Congressional Budget Office (CBO) and academic researchers have included a value of health insurance for the related (but not identical) exercise of analyzing income distribution trends (CBO 2018; Burkhauser et al. 2012, 2013; Armour et al. 2013; Larrimore et al. 2015; and Kaestner and Lubotsky 2016).

One challenge when incorporating health insurance into a poverty measure is determining its value. The Working Group explored different ways to reflect the ex-ante value of health insurance, or its value prior to knowledge about injury or sickness in a given year. This approach helps to avoid the problem of making the injured and sick or those with greater medical needs look less poor, which is a larger concern with an alternate approach of simply including as a resource all medical spending incurred on behalf of an individual through insurance in a given year. However, even the ex-ante value of health insurance can make individuals with disabilities or longer-term health conditions look less poor since they require more health care and thus typically consume more health insurance. Thus, the Working Group further explored ways to ensure health insurance values were not conditioned on disability status or other health conditions.

The Working Group considered various approaches for valuing health insurance. The key approaches considered included: (i) using the full market value of health insurance; (ii) using a lower value of health insurance reflecting research that estimates a willingness to pay below 100 percent of its full market value; (iii) using a fungible value of health insurance; and (iv) placing a zero value on health insurance. Each of these measures could be implemented with an exclusion from resources of all or some MOOP to reflect that such amounts are not available for non-health consumption. It is worth acknowledging that none of these approaches would perfectly capture the situation of all individuals—it is a question of choosing a strategy that approximates the value of health insurance well for most people. The Working Group also discussed recommending multiple poverty measures incorporating different values of health insurance.

⁴⁰ For Census Bureau reports in the 1980s that incorporated a value of health insurance, see for example the report of the Conference on the Measurement of Noncash Benefits held in Williamsburg, Virginia in December 1985. <https://www.census.gov/library/working-papers/1985/demo/measurement-conf.html>. There were a series of technical working papers (50, 51, 52, 55, 56, 57, and 58) published between 1982 and 1988 that discussed alternative approaches. After 1988 the Census Bureau began to publish the Research and Development (P-60-RD) series that introduced the concept of the fungible value approach for valuing Medicare and Medicaid benefits. See for example, <https://www2.census.gov/library/publications/1988/demographics/p60-164-rd-1.pdf>.

Market Value

One possible value is the full “market value” of health insurance. The market value is the total price of health insurance (or comparable health insurance) in the private market. An income resource measure would include only the value of the employer paid premium for employment-based coverage, and the full value of government-provided coverage for Medicaid, Medicare and subsidized direct purchase plans (net of premiums). A consumption resource measure would include both the employer paid premium and employee paid premium for employment-based coverage, and the full value of government provided coverage along with any individual paid premium for Medicaid, Medicare and direct purchase plans.

Some past research assigned market values using estimates based on insurance claims payments (net certain other payments and costs) (Smeeding 1984; Ward 1985). More recently, Meyer and Sullivan (2012b) and Burkhauser, Larrimore, and Simon (2013) estimate the market value of public health insurance (Medicaid and Medicare) as the average cost of providing the insurance for broad risk classes, and they separately estimate the market value of employer coverage based on external surveys covering health insurance costs. The specific approach taken by Burkhauser, Larrimore and Simon (2013) has been used since 2012 by CBO for analysis of income distribution trends, and has been used by Burkhauser et al. (2019) and CEA (2019) for the analysis of poverty trends.⁴¹ Other recent research has used the value of “benchmark” plans (Scholz, Moffit, and Cowan 2009; Korenman and Remler 2016). For example, Scholz et al. (2009) use the average cost for a fee-for-service plan (for Medicare) and the cost of a typical HMO policy (for Medicaid) as the base plan prices for measuring the market value of health insurance. Alternatively, Korenman and Remler (2016) define the value of Medicaid and private health insurance coverage using the second lowest-cost Basic Silver Plan on the Affordable Care Act exchange and define the value of Medicare as the average cost of Medicare Advantage-Prescription Drug (MA-PD) plans. Remler and Korenman's (2020) alternative full-income poverty measure limits health resources to covering health needs alone and shows that the absolute size of health need over time (and trends) is heavily dependent on the choice of price index.

Advantages/Disadvantages

The primary advantage of the market value approach is that it places a value on public health insurance that is equal to what people could obtain in the private market. This is consistent with the approach for valuing housing and food subsidies. In addition, the market value approach can accommodate “community rating” under the Affordable Care Act (ACA) of health insurance plans purchased on the health insurance exchanges, which allocates to recipients the same health insurance value regardless of their health conditions and thus, does not make people who need more care look less poor. This can be implemented by tying health insurance values to ACA exchange plans, or by assigning to recipients the average costs of public health insurance without conditioning on disability status or other health conditions.

⁴¹ Until the series was discontinued in 2015 due to data availability issues, the Census Bureau provided estimates of the market value of health insurance for those covered by Medicaid or Medicare (U.S. Census Bureau 2015) using six risk classes. Estimates of the market value of employer-provided health insurance were also removed from the CPS ASEC file effective 2019 as part of a larger overhaul of the CPS ASEC processing system. Based on research (Janicki, O'Hara, and Zawacki, 2013; Berchick and O'Hara, 2017), the analysts determined that the quality of this synthetic variable was not sufficient for a Census Bureau data product so the series was discontinued. For more information see <https://www.census.gov/programs-surveys/cps/data-detail/fungible-values.html>.

Valuing public health insurance at its market value, however, also has disadvantages. First, the market value likely does not reflect the true value individuals place on public health insurance.⁴² People may be willing to pay substantially more or substantially less than market value for health insurance and market value estimates may be unrealistically high relative to the coverage lower-income recipients can or would purchase (U.S. Census Bureau 1988). Others may choose to forgo purchasing insurance and health care altogether based on health status, tolerance for risk, or other factors and preferences (Kaestner and Lubotsky 2016).

There are also practical hurdles for calculating a market value of health insurance. In the case of public health insurance this approach relies on obtaining a value of comparable health insurance plans in the private market. For example, Korenman and Remler (2016) assume that Medicaid has comparable quality to the second lowest cost silver plan on the health insurance exchanges, and Scholz, Moffit and Cowan (2009) value Medicaid at the cost of a “typical” HMO policy and Medicare at the average cost of a fee-for-service plan. These assumed values do not necessarily equal the market value of Medicaid or Medicare coverage, because for example, the quality of Medicaid coverage may differ from the quality of the second lowest cost silver plan. Another approach is to use the average cost of providing public health insurance for different risk classes, such as in Meyer and Sullivan (2012b) and Burkhauser et al. (2013). This approach may not reflect the actual (unsubsidized) price recipients would face for comparable plans available for purchase on the private market, in part because such plans may not exist. Employer premiums are not currently available in the relevant household income and expenditure surveys and so they would need to be imputed. Some research imputes these premiums based on worker or firm characteristics (U.S. Census Bureau 1993, Burkhauser et al. 2013, CBO 2012, Janicki et al. 2013). In other research the total value of health insurance is based on some common baseline plan and employer premiums are calculated by netting out premiums paid by the employee, operationalized in the same way as public health insurance (Korenman and Remler 2016).

Willingness to pay

Valuing health insurance based on a willingness to pay approach starts from the idea that many individuals would not be willing to pay the full market price for insurance if they had to pay for it out of pocket. Willingness to pay estimates reflect the amount of money a consumer would be willing to pay to have health insurance coverage, which may be much lower or much higher than market value. For example, survey-based research shows that the uninsured value health insurance much lower than the insured (Friedberg et al. 2008), and the uninsured, younger adults, Hispanics, adult males, and those with lower incomes were more likely to agree with the statement “health insurance is not worth the money it costs” (Cohen 2013). To the extent that these groups already have or gain health insurance, using the full market value may overstate their willingness to pay for the health insurance coverage they receive. Alternatively, a large

⁴² There is more reason to believe that private health insurance is valued near the market value. If the average employee valued insurance at less than the market value, the employer could forego offering insurance and instead provide employees with higher wages that are above the employees’ average valuation but below the employer’s average costs, and both would be better off. The fact that in general employers do not forego offering health insurance that on average employees do value insurance at or above the market value. At the same time, tax advantages and employer incentives to promote employee wellness could allow for employee valuation of health insurance to fall below its market value and, if given the choice, some employees still may prefer higher wages over health insurance coverage suggesting that some may value the health insurance coverage below market value.

family may value employer-provided health insurance above the market cost if their family coverage costs do not rise with the number of children.

Empirical estimates of the willingness to pay for health insurance have been based on: randomized evaluations from the 2008 Oregon Health Insurance Experiment (Finkelstein, Hendren, and Luttmer 2019a); regression discontinuity analysis of data from the Massachusetts' Subsidized Insurance Exchange (Finkelstein, Hendren, and Shepard 2019b); structural models of labor supply in response to changes in Medicaid policies (Meyer and Rosenbaum 2000, Gallen 2015); and a survey experiment conducted to elicit willingness to pay for hypothetical plan offerings among the uninsured (Krueger and Kuziemko 2013).

Studies have consistently found that recipients value Medicaid below the amount it costs the government to provide the insurance (Smeeding 1982, Gallen 2015, Finkelstein et al. 2019a, and Finkelstein et al. 2019b) and research on the individual exchange market finds that across the lower end of the income distribution (individuals up to 300 percent of poverty) willingness to pay for private insurance is lower than both the expected cost of an individual beneficiary and the average cost over all beneficiaries (Finkelstein et al. 2019b). Overall, researchers have found that the value recipients place on Medicaid and plans on the exchanges falls below its market value at approximately \$0.30 to \$0.50 on the dollar (Smeeding 1982; Gallen 2015; Finkelstein et al. 2019a; and Finkelstein et al. 2019b).

Additional studies of employer-provided insurance analyze willingness to pay by weighing the fundamental tradeoff between the cost of health insurance benefits and foregone wages. Royalty (2008) finds that recipients (both those with individual plans and family plans) are not willing to trade off a dollar in wages to receive an *additional* dollar in health insurance. More relevant for valuing health insurance as a whole, Freiberg et al. (2008) finds that those employees who currently have coverage are willing to pay more than its cost, and those without coverage are willing to pay less than its cost (Friedberg et al. 2008).

Overall, among the lower-income population, willingness to pay below market value is likely based on multiple factors including: overall income constraints among the lower-income population; an undervaluing based on uninsured individuals paying less than full price for consumed health care (Herring 2005; Kaestner and Lubotsky 2016); and because some uninsured individuals can access informal care such as the use of emergency rooms for acute care at no cost to themselves (Garthwaite et al. 2018). In fact, Finkelstein et al. (2019b) find that for the lower-income population (those below 300 percent of poverty), estimates of uncompensated care for the uninsured are roughly close in magnitude to the gap between the full value of health insurance coverage and estimates of the willingness to pay for health insurance coverage. However, Herring (2005) and LoSasso and Meyer (2006) find considerable variation in availability of highly subsidized and uncompensated care across markets in the U.S., and so incorporating into a resource measure the value of implicit insurance due to the availability of uncompensated care would be difficult.

Existing studies have rarely incorporated a health insurance value based on a willingness to pay concept into poverty measures. However, Meyer and Sullivan (2012b) capture a fundamental property of the willingness to pay concept that health insurance values should be lower for those with fewer resources. In fact, lower-income individuals and families tend to spend less on almost all purchased goods, including health care, compared with those at higher income levels (Besanko

and Braeutigam 2011, Aguiar and Bils 2015). Thus, when individuals at the lower end of the income distribution receive a large subsidy for any good (such as health insurance), the Working Group would expect them to value it less than individuals with higher income, as long as the subsidy is larger than the amount they would have paid for the good on their own. The Meyer and Sullivan (2012b) approach was to cap the market value of health insurance at a set fraction of total resources. Specifically, they limited health insurance to be one-third of total resources, defined by these researchers as consumption. This approach meant that the cap on the share of total resources attributed (usually imputed) to health insurance coverage rose with consumption, but never could be the bulk of resources. There is nothing intrinsically meaningful about the one-third cap—another share could be chosen—and another resource measure could be chosen, like income, to determine the share.⁴³

Advantages/Disadvantages

A key advantage of the willingness to pay approach is that it reflects the actual value individuals place on having health insurance coverage, as opposed to the full market value of insurance which may overestimate its value for lower-income individuals. Because willingness to pay estimates tend to be lower for lower income individuals, this is particularly relevant for poverty estimates and analyses. Another advantage is that due to the availability of “natural experiments” this approach includes empirically rigorous studies for some populations and programs.

In practice, however, willingness to pay can be difficult to estimate with accuracy because it requires establishing a counterfactual that is not always directly available: namely, the amounts individuals would be willing to pay for health insurance coverage when in fact they do not purchase it. Further, while empirical results are available for the specific insurance coverage programs/options, subpopulations, and geographic locations described above, these estimates may not generalize to the broader U.S. population as a whole, or to future years when the nature of medical care and public policies may change. In addition, willingness to pay may underestimate the value of public health insurance to recipients if they believe they can access uncompensated care when uninsured, which as noted above, may be difficult to incorporate.

The specific approach taken by Meyer and Sullivan (2012b) has its own advantages and disadvantages. The advantage of this approach is that it is straightforward and captures the idea that the value of health insurance should grow with resources, but that individuals when given the choice, consume many other goods and services in addition to health care. The disadvantage of this approach is that a body of evidence does not currently exist to support any specific functional relationship between the value of health insurance and the level of income or non-health consumption.

Fungible value

Another approach for valuing health insurance is to use its “fungible value,” or the amount of resources assumed to be freed up for other, non-medical consumption due to health insurance

⁴³ The one-third fraction was chosen by Meyer and Sullivan because health spending was about one-sixth of total consumption at the time, so they took twice that to be a reasonable cap. The Current BEA PCE data indicates that this now have gone well beyond a one-sixth share; health spending (public and private) was 21.1 percent of total personal consumption expenditures in 2019. See <https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>.

coverage. The fungible value approach attempts to capture the extent to which individuals who are covered would have purchased coverage on their own, and thus, the extent to which the provision of insurance frees up these resources for other non-medical consumption. This approach caps the value of health insurance in a manner that depends on income. It typically assumes that low-income individuals receive no value from health insurance if they lack additional resources to fully cover their non-health basic needs, such as food and shelter.

The fungible value approach has generally been implemented by comparing a family's total income (excluding health insurance) to some overall budget level for food and housing deemed minimally adequate according to some specified standard. If the family's income exceeds the total specified budget for food and housing, then the valuation process assumes that government-provided insurance would free up the difference for other non-health purposes, under the assumption that the family would have otherwise purchased health insurance on their own with every dollar of income that exceeds the budget for food and housing. That amount of money (up to the market value of the health insurance) is called the fungible value. For example, in the former Census Bureau implementation, the fungible value of health insurance was zero for a family of four until the family's income reached \$25,430, the combined food and shelter budget deemed minimally adequate for a family of four.⁴⁴ Then as income rose, the fungible value approach increased the value of health insurance dollar for dollar until it reached its full market value. The CBO previously used the Census Bureau's fungible value estimates for income distribution statistics. However, concerns that the fungible value approach undervalues health insurance for the lower-income population contributed to the CBO decision to shift to a market value approach for its income distribution trends starting in 2012 (CBO 2012).

Advantages/Disadvantages

The main advantage to using the fungible value approach is that it acknowledges the value health insurance has in freeing up resources for other consumption, while also reflecting that health insurance does not free up resources on a dollar for dollar basis for those with fewer overall resources. A disadvantage of this approach, however, is the implication of zero or little value of health insurance for households with resources near or below the amount deemed minimally adequate for food and housing. Kaestner and Lubotsky (2016) argue that even for those households with very low incomes, the true value of health insurance should be higher than its fungible value since health insurance makes these households better off by increasing their consumption of health insurance.

Zero value

The Working Group also considered poverty measures that exclude the value of health insurance, consistent with the approach currently used in the OPM and SPM. The SPM was designed this way with the intention of separating the measurement of economic poverty from the measurement of medical care needs and the adequacy of resources to meet those needs.⁴⁵

⁴⁴ The Census Bureau's previously used fungible value approach assumed the value of health insurance is zero for individuals whose sharing unit income is less than the annualized sum of the national average Fair Market Rent and the USDA published cost of the "Thrifty Food Plan." In 2018, the national average annualized Fair Market Rent for a three-bedroom unit was \$17,726, and the annualized cost of the Thrifty Food Plan was \$7,705, for a total of \$25,430.

⁴⁵ This is the approach adopted by the authors of *Measuring Poverty* but they coupled their decision with a recommendation that appropriate agencies should work to develop one or more "medical care risk" indexes that measure the economic risk to families and individuals of having no or inadequate health insurance coverage (National Research Council 1995, p. 225).

Advantages of the zero-value approach are that it avoids the major unresolved challenges of estimating appropriate health insurance values for different individuals and it is simple to explain. The major disadvantage of the zero-value approach is that it understates the value of health insurance for most people. A family with health insurance will not be categorized as better off than the family with the same level of resources but no health insurance.

Treatment of Medical Out of Pocket Expenses

In addition to valuing health insurance, another important issue is the treatment of medical out of pocket expenses (MOOP). MOOP includes all payments by an individual for medical goods and services and thus excludes health insurance premiums paid by the government or their employers. MOOP includes employee paid premiums for health insurance, as well as co-pays and deductibles required to utilize health insurance, prescription drugs, medical equipment and other medical goods and services. The Working Group divides MOOP into two components: premium MOOP and non-premium MOOP. Premium MOOP includes only employee or other individually paid premiums for health insurance. Non-premium MOOP includes all other medical expenses (e.g., co-pays, deductibles, prescription drugs, and OTC items).

The treatment of MOOP depends on the definition of resources. Consumption poverty measures that include a value for health insurance should conceptually treat premium MOOP as consumption, since premium MOOP represents consumption of health insurance. In the case of an income-based poverty measure, premium MOOP would be subtracted from income after adding the total value of health insurance (or equivalently, only the employer/government paid premium, and not premium MOOP, would be added to income in the first place). However, treatment of non-premium MOOP is less clear. On the one hand, non-premium MOOP may reflect unavoidable costs incurred to avoid or recover from illness or other adverse health conditions. Someone who becomes sick and must pay for treatment in order to return to health has fewer resources available for non-health consumption on items such as food and shelter. On the other hand, some non-premium MOOP may be discretionary such as some plastic surgery or cosmetic dentistry.

In an income poverty measure that does not include a value of health insurance, both premium and non-premium MOOP could potentially be subtracted from income to reflect what is spent on MOOP is not available for non-health related consumption. And in a parallel fashion, for a consumption poverty measure, both premium MOOP and non-premium MOOP could be excluded from resources. However, as MOOP often increases when people gain health insurance (since they may pay a premium and incur other out-of-pocket costs), the receipt of health insurance can lead to an increased likelihood someone is counted as poor. Meyer and Sullivan (2012a) find that subtracting MOOP from income without accounting for the value of health insurance causes a poverty measure to perform less well in identifying the most disadvantaged based on markers of hardship.

When considering how to treat MOOP in a poverty measure, the Working Group considered concerns about discretionary spending on MOOP, inconsistent treatment of people who suffer the same adverse health shock but choose to consume different amounts of care, and inconsistent treatment of people with different insurance plans (e.g. low-premium/high-copay vs high-premium/low-copay plans). While concerns may exist about discretionary MOOP expenditures, it may be difficult or infeasible to separate out unavoidable costs from avoidable ones in existing datasets. Additional research is needed on these issues.

Recommendations

The Working Group reviewed and discussed the available literature and research on health insurance valuation and MOOP as presented above. The Working Group had consensus agreement on multiple broad aspects of measuring the value of health insurance coverage as a resource in the context of one or more potential new poverty measures. Treatment of MOOP requires further consideration.

Recommendations:

13. Two sets of income resource measures and two sets of consumption resource measures should be produced. For each type of resource measure, one set should not include a value of health insurance, and the other set should include some value of health insurance.

The recommendation to produce alternative resource measures – one with a value of health insurance and one without – reflects both the importance of health insurance as a resource for lower-income people and the lack of academic consensus about how to value it if at all. The Working Group agreed that for poverty measures that include a value of health insurance, thresholds should be either explicitly adjusted (e.g. Korenman and Remler 2016, Remler and Korenman 2020) or implicitly adjusted (e.g., Meyer and Sullivan 2012b, Burkhauser et al. 2019) to account for the additional resources.

Recommendations:

14. The value of health insurance should not depend on the disability or health status of individuals.

This would ensure that those with potentially greater health needs would not be deemed “richer” by having insurance coverage values that were substantially higher than those who may have fewer health needs. Importantly, the Working Group agreed that if community-rating is not available at some point in the future, health insurance values assigned to individuals should still not depend on their health or disability status.⁴⁶ For simplicity, throughout the rest of the recommendations, the Working Group will refer to the full market value of health insurance without adjustments for health or disability status as simply “market value”.

⁴⁶ Currently under the Affordable Care Act, community-rating is a rule that prevents insurers from charging different premiums based on disability status or other preexisting conditions. Premiums do vary based on age, geography, family vs. individual coverage, and tobacco usage.

Recommendations:

15. The value of health insurance should ideally depend on a person's resources but the precise method to implement this should be the subject of further research. In the interim, the market value of health insurance (with values that do not depend on the health status of the recipient) should be capped at some share of total resources.

While the Working Group agreed that health insurance values should ideally depend on a person's resources, the Working Group did not come to consensus agreement on whether there currently exists a suitable approach for doing so. Some Working Group members concluded that a zero value of health insurance should be used for one version of a poverty measure, and the full market value of health insurance should be used for another, in recognition that trends in absolute poverty using a resource-adjusted value of health insurance would fall somewhere in between. Other Working Group members preferred using a zero value of health insurance for one version, and for the other measure adjusting downward the market value of health insurance based on resources using a method developed by an appropriate agency. The latter approach also recognizes the "true" value of health insurance would likely be somewhere in between a full market value and zero value of health insurance, acknowledging that using the full market value of health insurance as a resource may be much too high for many at the low-end of the resource distribution but that people with very few resources still place some value greater than zero on their health insurance.

The Working Group unanimously agreed that the appropriate agencies should research the feasibility of developing a method to downwardly adjust the market value, and if/when it is ready, it should be used for the poverty measure that includes a value of health insurance. There was disagreement about the appropriate interim steps. A majority of the Working Group voted that the best interim approach was to cap the market value of health insurance at some share of total resources. This approach follows the methodology developed by Meyer and Sullivan (2012b) discussed earlier in this section, but it would not necessarily use the same one-third share. The exact share would be determined by the statistical agencies producing the poverty measure or a future advisory Working Group. A minority voted that the best interim approach was to use the market value. A smaller minority voted that the best interim approach was to not produce a poverty measure with a nonzero value of health insurance.

Recommendations:

16. The value of health insurance should ideally not constitute a majority of resources for people near the poverty threshold.

The group agreed that health insurance alone should not be able to lift a family out of poverty. Notably, capping the value of health insurance as a share of total resources (which is the interim approach described in Recommendation 3) automatically guarantees this condition. As long as

the cap is no higher than 50%, the capping approach ensures that health insurance does not constitute a majority of resources for people at any fraction or multiple of the poverty threshold.

Treatment of Education

Note: This section on the treatment of education provides for the considerations for both an income- and consumption-based resource measure.

In the United States during the 2016-2017 school year, \$739 billion was spent on public elementary and secondary schools alone, excluding expenditures on private and post-secondary education (Hussar et al. 2020). Given the large amount of spending on education and its impact on students, an important question is whether it should be considered a resource in an extended income- or consumption-based resource measure.

The question of whether to consider education as current consumption or investment in human capital (or a combination of the two) determines the treatment of education as a resource in an income or consumption measure.⁴⁷ If education is viewed as an investment in human capital, education would not be included in an extended income-based resource measure nor a consumption-based resource measure. However, if education is viewed as current consumption, it might be included in an extended income-based resource measure or a consumption-based resource measure.

Traditionally, education has been viewed by economists as an investment in human capital (Becker 1964; Mincer 1974; and Schultz 1961). Education is regarded as an investment in human capital because benefits accrue to an educated individual over a lifetime of activities (Jorgenson and Fraumeni 1989). A recurring theme in the literature is that the benefits of investment in education, such as greater earning power, are recorded in transactions within the labor market.⁴⁸ On the other hand, some researchers have asserted that education may also be considered, at least in part, as a consumption good based on the satisfaction of those obtaining an education, particularly at the University level.⁴⁹ If education were partially or totally considered as a consumption good, there is a significant challenge in valuing it in a poverty measure.⁵⁰

In theory, an income resource measure would deduct out-of-pocket education expenditures on tuition and other educational items. However, appropriate data to do so are currently unavailable or not of sufficient quality for this purpose. Similarly, the total value of education undertaken – either from education provided by others or through one’s own spending on education such as for private school or tuition for public colleges – is typically excluded from consumption resource measures.⁵¹

⁴⁷ Ruggles (1991) and National Research Council (1995) do not consider the inclusion of the value of education as a resource. Neither the OPM nor the SPM include a value of education in their resource measures.

⁴⁸ These labor market transactions include increased salaries and benefits as a direct result of education.

⁴⁹ See Pseiridis, Lianos, and Agiomirgianakis (2016), Alstadsaeter (2009), Akerlof and Kranton (2002), Dolton et al. (1989), and Weisbrod (1962).

⁵⁰ Determining the value of expenditures directly paid for education is more straightforward for a consumption-based resource measure based on data from the CE Survey. Data are more limited for determining the value of education for an extended income measure.

⁵¹ For example, in their consumption-poverty measure, Meyer and Sullivan (2012a) exclude educational expenditures from their resource measure because these expenditures are assumed to reflect investment.

Recommendations:

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17. *The Working Group recommends that expenditures on education be excluded from the recommended extended income-based and consumption-based resource measures because education is generally considered an investment in human capital.*
 18. *The Working Group recommends that, at this juncture, personal educational expenses not be subtracted from the extended income-based resource measure. However, the Working Group recommends a future advisory structure revisit the issue of deducting out-of-pocket education expenditures on tuition and other educational items if the data quality makes it feasible.*
 19. *The Working Group recommends continued research and additional stakeholder and expert engagement on whether and how to treat education within resource measures.*
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Valuing Key Service Flows and Other Asset Flows

Current income, as measured in either the survey data or administrative data, does not capture the income or net service flows that households derive from home ownership or vehicles, nor from nonmarket domestic services (i.e. home production for the consumption of one's sharing unit members). Nor does it include service flows from other assets and debt. Including the service flows for all of these elements was considered by the Working Group.

The conceptual framework, underlying the idea that the income or service flows from owner-occupied housing (including second homes) and vehicles be included, is that if two households have identical incomes but one owns a home or vehicle and the other does not, the household with the home or vehicle is often better off than the household without. A household would be considered better off as long as the implicit income flows from these are greater than the sum of the financing costs, maintenance and repair expenses, and the opportunity costs of investing in the house or vehicle versus other assets. The 1995 Measuring Poverty report concluded that "the next regular review of the poverty measure should give serious consideration to revising the income definition to include imputed net implicit rental values in homeowners' income (National Research Council 1995, p. 246)." Including the net value of owner-occupied housing services in income is consistent with international standards of household income (see ILO 2003; Canberra 2001, 2011). Also, including a value for the net service flows from household durables and including the value of unpaid domestic services (i.e. home production for the consumption of one's sharing unit) are included in the conceptual definition of income.⁵² At the present time, due to data quality considerations, the Working Group decided not to consider including the value of unpaid domestic services.

⁵² Yet, the Canberra Group recommendation was that the flow of services from durables would be excluded from income due to practical considerations. However, with detailed data on vehicles (e.g., make, model, and year, plus year of purchase) collected in household surveys and the growing market of leased vehicles, this concern seems less of an issue than in 2011. In contrast, the Canberra Group determined that for most countries, even in 2011, there was sufficient data available to produce values of unpaid domestic services and thus this element should be included in measures of income.

The service flows from the ownership of other assets and liabilities can also be counted in an extended measure of income. Currently the Census Bureau official measure of income, and that recommended by the Canberra Group (2011), includes returns from the ownership of assets as property income (e.g., dividends, interest, and rent). However, an alternative is not to include this property income but instead to convert the stock of assets into income for consumption, taking into account debt. For this, an option is to follow the example of Wolff and Zacharias (2003, 2009)⁵³ who produce the Levy Institute Measure of Economic Well-Being (LIMEW). This measure includes income flows from both housing and financial assets and debt. In addition to money income (but subtracting out property income), Wolff and Zacharias include imputed rent on owner-occupied housing less the annuitized value of mortgage debt, and the annuitized value of non-home wealth less the annuitized value of other debt. To obtain the annuity values, they assume that a household's net worth is spent over the period of the household's remaining life using life expectancy data. For the LIMEW, durables (like vehicles) were not considered to be assets because durables cannot be readily converted to cash without compromising current consumption (Wolff and Zacharias 2009). Also excluded from the LIMEW is the value of future retirement income such as from Social Security benefits or defined-benefits private pension plans; these were excluded since the household does not have direct control over these and they cannot be marketed.

Possible Accounting for Owner-Occupied Housing and Vehicle Ownership in Income

Implicit income can be derived from the ownership of housing and vehicles,⁵⁴ and thus can be included in an extended measure of income. This implicit income can come from these being considered as assets alone (like other non-financial assets like undeveloped property and valuable works of art, jewelry, gold, etc.) and providing a return on capital investments, or from these being considered assets that additionally provide flows of shelter and vehicle services. Regardless of the assumption one makes, owner-occupied housing and owned vehicles provide implicit income to households; and thus, these owner households could be better off than others who are not owners of these.⁵⁵

Treatment of Owned Housing and Vehicles as Assets Alone

If owned housing and vehicles were to be considered assets only, a simple approach would be to value the implicit income in terms of returns to capital held in the assets (the equity).⁵⁶ The

⁵³ Also see Zacharias et al. (2018).

⁵⁴ The flow of services from other major durables could also be considered, but those from vehicles are usually the only ones counted since there is an active rental and lease market for vehicles as opposed to other durables like furniture. The flow of services from major appliances, those that would normally be included in rental units, would already be accounted for in the flow of services from owner-occupied housing.

⁵⁵ An alternative method for incorporating housing costs and benefits to homeownership is to subtract housing costs from post-tax income. This approach, sometimes referred to as "shelter poverty," categorizes a household as "in poverty" if after paying for their housing, they can't meet their non-shelter needs. This type of a post-housing poverty measure is published in the UK and has been explored in research for the United States. See <https://www.gov.uk/government/statistics/households-below-average-income-199495-to-201617> and Stone (2004) and Pelletiere (2008).

⁵⁶ Another approach would be to annuitize the value of owner-occupied shelter and owned vehicles over the life cycle of the individual who owns the asset, or in the case of vehicles, over the product life-cycle. This is comparable to the possible inclusion of the annuitized values of other financial and non-financial assets and liabilities that are available to the household to meet its consumption needs; such an approach was presented earlier in this report. Either of these two approaches, return to equity or annuitizing the assets, would be preferred when there is limited information (e.g.,

return to capital approach focuses on implicit income as a function of equity in the asset and the rate of return that one might receive from investing in an alternative asset as opposed to putting one's money in the ownership of a home or a vehicle. This approach is recommended when rental markets are limited (Canberra 2011) and when little information is available (e.g., only the market value of equity). Smeeding et al. (2013) used this approach to impute implicit income from the return to home equity for households. In the past the Census Bureau followed the return to capital approach to derive implicit income from home equity based on the rate of return equal to the current year's return to municipal bonds (U.S. Census Bureau 1993), but no longer produces this measure.⁵⁷ Others using this approach for owner occupied shelter have used mortgage interest rates, the rate on short-term bonds, or mortgage rates plus a risk premium. The Canberra Group suggests that an interest rate would be chosen to represent a safe private market rate of return (Canberra Handbook on Household Income Statistics 2011, p. 39).

Treatment of Owned Housing and Vehicles as Assets Providing Service Flows

Based on international standards for economic statistical measures (see Canberra Report 2011, ILO 2003), both owner shelter and vehicles are durables from which owning households receive benefits that those who are not owners do not receive (Canberra 2011, ILO 2003). The assumption is that, in the language of the System of National Accounts (SNA 2008), owners of homes, and extrapolating to vehicle owners, are unincorporated enterprises that lease their houses and vehicles back to themselves, like landlords for rental units and lessors of vehicles. The value of the flow of services from the house or the flow of services from the vehicle is set at the market rent for a similar house or at the rental or lease value for a similar vehicle. However, *to derive the net imputed income* from owning a house or vehicle, one needs to subtract from these flow values the expenses that go into the production of the housing and vehicle services. The subtracted expenses are those that are incurred by the household in its role as the landlord of the owned home or as the lessor of the owned vehicle. Thus, the net implicit income from owing a house or vehicle is the economic benefit that the household derives from these after paying for the costs of producing shelter or vehicle services.

Including the net implicit income derived from the flow of services from owner-occupied shelter and owned vehicles is based on two facts: (1) these capital or non-financial assets produce both flows of shelter and vehicle services; and (2) the economic benefits received exceed their costs of production. For household income statistics, the net implicit income from these would be included in a comprehensive income measure. To produce net implicit income, one needs both the value of service flows produced, and value of shelter landlord and vehicle lessor expenses.

at least current market value and balance owned on mortgage or vehicle loan if financed) about the asset or rental markets are limited.

⁵⁷ The new processing system, used at the Census Bureau, is no longer matching to the American Housing Survey (AHS) to pick up the variables needed to create HOUSRET or PROP_TAX on the CPS ASEC file. Under the earlier processing system, imputation for presence of a mortgage and property value-related questions was done with a match to the AHS using a cell hot deck approach. This was done to impute data from the AHS for questions not asked in the CPS ASEC. However, this resulted in a data lag where data from an earlier year's AHS was used (AHS conducted biennially in odd-numbered years). In the new processing system, the AHS variables needed to create presence of mortgage (HPRES_MORT needed for SPM) are no longer needed as questions on this topic were added to the CPS ASEC but not questions on property taxes or return on equity. Because of a redesign of the AHS in 2015, Census Bureau staff have been matching to the 2013 AHS. This resulted in the variables needed from AHS to create HOUSRET and PROP_TAX being increasingly out-of-date. In order to remove the processing dependency on another survey and eliminate the lag that would be present in the imputed data, the new system creates HPRES_MORT from respondents in the CPS ASEC but does not create HOUSRET or PROP_TAX.

The value of service flows from owner-occupied housing and durable goods like vehicles is referred to as the “consumption” value; this will be visited again in the Consumption section of this report.

Imputing the Value of Service Flows from Owner-occupied Shelter and Owned Vehicles

Before net implicit income from owner-occupied housing and vehicles can be produced, values for the flow of shelter and vehicle services derived from these need to be imputed. The literature focuses on imputing values for owner-occupied housing, with an implication that the same or similar methods can be used for durables like vehicles (see ILO 2003, paragraph 292). To estimate the values for the flow of services (also referred to as the market or consumption value), two main valuation approaches are used internationally: user costs and rental equivalence. Both user costs and rental equivalence approaches are designed to measure the change over time in the value for the flow of services consumed by owner-occupants or vehicle owners. In theory, both approaches should produce equivalent values.⁵⁸ However, there is a distinction in the two approaches: one focuses on the costs of producing the service while the other focuses on the selling price of the service. Specifically, “the user cost approach attempts to measure the *changes in the cost* to owner-occupiers of using the dwelling; user costs account for both recurring costs and the opportunity cost of having money tied up in the dwelling rather than being used for some other purpose” (ILO 2004, p. 179). In contrast, “the rental equivalence approach attempts to measure the *change in the price* of the housing service consumed by owner-occupants by estimating the market value of those services” (ILO 2004, p. 180); in). In other words, rental equivalence is how much owner-occupants would have to pay to rent their dwellings if they did not own them. In trying to understand the relationship between the two approaches, think about how a landlord decides what rent to charge for a housing unit. She would consider all the costs that she incurs in order to keep the shelter unit in the rental market; these include recurring costs like mortgage interest payments, property insurance, and routine maintenance and repairs (including those for major appliances included in the shelter unit and covered by the rental contract), but also the opportunity costs of investing in this shelter property as opposed to another asset plus perhaps expected appreciation. Using this information, she will set the market rent of the shelter unit based on her production costs or in other words, user costs. In theory, the market rent she sets will be comparable to the market rents, or rental equivalence, set by other landlords for comparable properties. The market rent that she sets will be comparable to what owner occupants would pay to rent their own homes when the units have the same characteristics and are in the same rental markets. Implicit in market rents, and by extension in imputed rents for owners, are the service flows from major appliances that are included in comparable rental units; in the U.S., usually refrigerators and stoves are included in rental units unlike in many European countries, for example.

There is a large literature that presents different approaches to impute the value of owner-occupied shelter service flows (e.g., Aten 2018; Balcazar et al. 2014; Canberra 2011; Diewert 2008a, 2008b; Garner and Short 2009; Garner and Verbrugge 2009a, 2009b; Gillingham 1983; ILO 2003, 2004; Katz 2004, 2017; Verbrugge 2008). As noted by the Canberra Group (2011), when there are established rental markets, the rental equivalence approach, as opposed to the user

⁵⁸ As noted by Garner and Verbrugge (2009), “In standard frictionless Jorgesonian capital theory with competitive markets, a durable good’s rental costs will equal its *ex ant* user cost, suggesting that these alternative measurements of the value of the flow services should be roughly equivalent.” However, empirically, values based on the two approaches diverge.

costs approach, is the recommended valuation approach to use since it is easier to implement compared to the user cost approach.

User Costs

The user cost approach has been applied to approximate the imputed flow of services (or imputed rent) from owned housing. Based on the ILO report (2003), similar methods to those from the housing literature can be used to derive implicit values of the service flows from vehicles. As noted earlier, the user cost of capital approach seeks to capture the opportunity cost of funds invested, the depreciation of the capital from use, the change in the market price of the asset, and expected appreciation or capital gains (ILO 2004). Depreciation is normal wear and tear, but it can include obsolescence. For a study that considers all of these costs in the estimation of user costs, see Garner and Verbrugge (2009). Another option to produce owner shelter user costs by applying rent-to-value ratios (also referred to as capitalization rates) based on the rents of rented properties to the market value of comparable rented properties. This is the method currently in use by the BEA for the National Income and Product Accounts (NIPA) (see Katz 2017).⁵⁹ The BEA is investigating alternatives to the current rent-to-value ratio approach that are more rental equivalence- as opposed to user costs-based (see Aten 2018).

All user cost approaches to value the service flow values from owner-occupied housing depend on the market value of the owned dwelling at a minimum. Market values can be obtained from tax records, multiple listings from real estate agents, recent sales, data sources like Zillow or CoreLogic, or self-reports of home values from surveys. As reported in Carter (2012), comparisons of appraisal data or sale prices with self-reports of home market values suggest that home owners may overvalue the current market values of their homes; overestimates have ranged from about 4 percent to 8.4 percent (see Kish Lansing 1954; Kiel and Zabel 1999). In contrast, research by Benítez-Silva et al. (2008) suggests that respondents who purchase their homes during soft housing markets (when sellers outnumber buyers) are more likely to report home market values that are more accurate. However, even with the market values of owned shelter and vehicles, additional data are needed to identify the inputs to derive user costs (as noted earlier, for example, interest and depreciation rates), and may involve significant assumptions regarding rates of return and expected appreciation. As a result, according to the ILO (2004), no statistical office was using the full user costs approach to derive the value of the flow of services from owner-occupied shelter as of the publication date of that report.⁶⁰

User costs approaches have also been used to produce values of service flows from vehicles. Fisher and Johnson (2013) used an interest rate to represent the opportunity costs of investing in vehicles versus other assets, and a depreciation rate to represent what essentially is the wear and tear on the vehicle over time. In contrast, Meyer and Sullivan (2012b) produce imputed flows of services from owned vehicles based on derived depreciation rates using the market value of cars over time. In both cases, these researchers produced these flow values for inclusion in consumption measures as opposed to income measures.

⁵⁹ For a discussion and application of the user costs approach compared to rental equivalence, see Garner and Verbrugge (2009); in their user cost calculations, they make an adjustment for the tax advantage of owning one's home. See Yates (1994) and Crone, Nakamura, and Voith (2004) for a discussion of capitalization rate methods.

⁶⁰ A noted in the ILO report, statistical offices are reluctant to use the measure "partly due to conceptual and methodological complexity of the measure, which may also make it difficult to obtain widespread public support" (ILO 2004, p. 180).

Rental Equivalence

The other approach to derive implicit values of the flow of services from owner-occupied housing, or the implicit rents, is based on what is referred to as rental equivalence. However, as noted earlier, rental equivalence is also an *estimate of imputed rents*, just like imputed rents that result from application of the user cost approach. The intuition underlying rental equivalence methods, like that of the user cost approaches, is to assign some value to living in one's own home that is consistent with what a landlord would charge as rent. Or in the case of an owned vehicle, the goal is to assign some value to using one's own vehicle that is consistent with what a lessor of the vehicle (comparable to a landlord for shelter) would charge the owner to lease her own vehicle. Or one could think of this as answering the following question: For how much would you pay in rent to use your vehicle if you did not own it?

Rental equivalence can be derived from regression hedonic models, matches of renter and owner units by characteristics, or direct reports. Researchers primarily have used the hedonic and direct report approaches as alternatives to user costs (see, for example, Arévalo and Ruiz-Castillo 2004; Frick et al. 2010; Garner and Short 2009; Norris and Pendakur 2013).⁶¹ However, more recently, Aten (2018) produced imputed rents through the matching of renters and owners by housing unit characteristics, with an adjustment to owners' imputed rents that constitutes an owners' premium based on the market value of the owned homes. For regression-based models, the preferred approach is to apply a Heckman selection model of owners versus renters before estimating the rent equation. Using Canadian data, Norris and Pendakur (2013) reported an increase in the imputed rents of owners based on a Heckman selection model of about 30 percent over rents based on the standard OLS model that did not account for selection. The second most frequently used rental equivalence approach is to use owners' direct estimates of rental equivalence for their own shelter. This method relies on the expectation that owners can estimate rental equivalence even when there are not comparable rental dwellings in their geographic area if they know the rents in other areas. As noted by Lanjouw (2009), this is less of a problem in areas with well-developed rental markets. Garner and Short (2009) reported average imputed rents for the U.S. based on a selection/hedonic model were about 83 percent of respondent rental equivalence for the U.S. in 2005. In contrast, Arévalo and Ruiz-Castillo (2004) reported that self-reported rents are very similar to imputed rents estimated using a hedonic model of the same dwellings for Spain.⁶²

In theory, rental equivalence estimates for vehicle services could be derived from the information on vehicle leases. However, as far as the Working Group knows, there are no estimates of the flow of services from vehicles that are based on rental equivalence approaches; this is likely due to the limited amount of data on long-term vehicle agreements, the fact that leases cover more than the value of the service provided, and that the stock of leased vehicles tend to be newer than the stock of owned vehicles by consumers.

Household Survey Data Available to Value the Flow of Services from Owner-Occupied Housing and Vehicles

Information collected in the ACS, CE, and CPS ASEC can be used to derive the service flow values for owner-occupied housing based on the market value of the housing unit, the rent of renters,

⁶¹ For a review of the capitalization rate approach, a hedonic model with sample selection correction, and reported rental equivalence with applications to the U.S., see Garner and Short (2009).

⁶² Also see the work on Frick et al. (2010) from a European perspective.

and shelter unit characteristics of both renters and owners. The ACS asks homeowners “how much do you think this house and lot, apartment or mobile home and lot, would sell for if it were for sale?” Respondents are given categories and asked to “specify” the amount if the amount is \$250,000 or more. The CPS ASEC asks a similar question, “About how much do you think this (house and lot/apartment/mobile home) would sell for if it were for sale?” This information could be combined with the housing unit characteristics of owner units to match rent and owner units (similar to the current BEA approach). Another alternative is that hedonic methods with Heckman selection to imputed owner rents. The Aten model could also be used. The CE Interview Survey asks a similar question for the market value of the owned home along with shelter unit characteristics of owners and rents, and various other owner shelter expenses that could be used in a user cost approach. However, in addition, the CE Interview Survey asks the owner to assess how much the unit would rent for, unfurnished and without utilities, in the current market. Thus, using the CE data, imputed rents could be estimated using both user costs and various rental equivalence approaches; this is what Garner and Short 2009 and Garner and Verbrugge (2009) have done previously.

Assigning dollar values to the service flows from vehicles requires data that are not currently available in the CPS and ACS, but are available in the SIPP and CE. For flows of services from vehicles, the CE Interview Survey and SIPP ask sufficient information about vehicle ownership to assign a value. The CPS ASEC does not ask about vehicle ownership. The ACS asks only how many vehicles are “kept at the home for use by members of the household”. Estimates of service flows from vehicles have been produced by Fisher and Johnson (2012) and Meyer and Sullivan (2012b) using data from the CE Interview Survey using user cost approaches. As noted earlier, Fisher and Johnson apply a set depreciation rate for all vehicles and interest rates to reflect the opportunity costs of investing in vehicles. In contrast, Meyer and Sullivan derive depreciation rates using vehicle characteristics but do not account for the interest rate. Neither accounts for the additional income that could be derived from the sale of the vehicle during the reference period.

[Operating Expenses to Subtract from the Value of Service Flows from Owner-Occupied Housing and Vehicles](#)

The final step to derive net implicit income from owning one’s home and vehicles is to subtract expenses from the imputed value of the service flow from owner-occupied shelter and owned vehicles. For owner-occupied housing, the net implicit income from owning is the difference in the value of the flow of shelter services (based on either a user cost approach or a rental equivalence approach) and the expenses that the owner as landlord would incur as operating expenses. These expenses are those which the landlord would not have incurred had she not placed the property in the rental market. These operating expenses could include, for example, mortgage interest payments, property taxes, routine repair and maintenance expenses (again, including those of major appliances), insurance costs, and depreciation. Some of these same costs would have entered the estimation of the shelter service flows when a user costs approach is used, but user costs (as opposed to operating expenses) also includes the opportunity costs of capital and expected appreciation. For example, suppose a landlord rents the housing unit out for \$1000 per month and her operating expenses are \$700 per month; her net implicit income is \$300 per month. The net implicit income from a similar owner -occupied housing unit would also be \$300 per month.

To derive net implicit income from owning vehicles, if one were to use the costs of renting vehicles, the operating expenses to be subtracted would include those that are similar to those of

landlords. However, if one were to use the costs of leasing vehicles to value the flow of services from vehicles, operating expenses deducted would be limited to lessor-type expenses. These expenses would include depreciation and interest payments (reflecting the finance charge on the amount of money the leasing company has tied up in the vehicle), assuming the vehicles are financed. Unlike for owner-occupants and landlords, vehicle lessors usually are not responsible for vehicle insurance and routine maintenance and repairs. These expenses are paid by the person who leases the vehicle, and thus would not be deducted to derive the net implicit from owning one's vehicle. The expected net income from owning a vehicle could be adjusted upward in any year in which the vehicle is both consumed for part of the year but sold by the end of the year (similar to the value of the vehicle at the end of the lease period).

Household Survey Data Available on Owner Expenses to Derive Net Implicit Income from Owner-occupied Housing and Owned Vehicles

As noted earlier, to derive the implicit net income from owned housing and from vehicles, landlord- or lessor-like expenses need to be deducted from the imputed rents in the case of shelter and the imputed lease values in the case of vehicles. For owned housing, the ACS asks about the amount of regular mortgage payments as well as real estate taxes and insurance payments. The CPS ASEC does not ask about owner expenditures for shelter. Neither survey asks about the amount of "equity" held in the home but both ask whether or not the homeowner has a mortgage and/or a home equity loan.⁶³ The CE Interview Survey asks detailed questions about mortgage payments including interest, homeowner's insurance, property taxes, and maintenance and repairs; equity in the owned house can also be ascertained from data available in the CE. Neither the ACS nor CPS ASEC includes information about vehicle ownership. In contrast, the CE Interview collects information about the stock of vehicles owned, vehicle make, model and year, and financing information. This information can be used to estimate lessor-types of expenses that would be deducted to derive the implicit net lease value from owning one's vehicle.

Recommendations:

20. The Working Group recommends that further research be undertaken to evaluate alternative methods to estimate the net value of service flows from owner-occupied shelter and the net value of the service flows from owned vehicles to be included in the income resource measures, including the possibility of imputing such values using statistical methods and data from the CE Survey. Such research should consider the availability of data from the CPS ASEC and ACS.

Correcting Survey Data for Misreporting and Improving Tax Estimates

There is growing evidence that survey-based estimates of cash income, in-kind benefits, and taxes suffer from misreporting that can bias poverty estimates and bias the estimated poverty reduction of government programs and taxes. There are three major approaches currently used to correct survey data for misreporting (that most often takes the form of underreporting): (1) rules-based approaches; (2) statistical- or regression-based modeling; and (3) direct substitution

⁶³ HUD's American Housing Survey asks about outstanding balance and value, which could be used to calculate equity with the caveats related to the estimation of value.

of survey reports with administrative records. These three approaches could be used independently or in combination.

Rules-based approaches

One approach to correcting for misreporting and missing data, particularly for program participation, is to use program rules to impute participation. For example, in some states any person receiving public assistance is categorically eligible for Medicaid and SNAP. Knowledge of these rules could therefore be used to assign Medicaid participation to all those who are automatically eligible.⁶⁴

Microsimulation models, such as the TRIM3 model, use a database of program eligibility rules and benefit levels to correct survey reports.⁶⁵ TRIM3 uses administrative data on program aggregates and the characteristics of program recipients to impute additional program recipients to align with the total number of recipients recorded in program data. Microsimulation models have not generally been used in surveys to correct for misreporting of earnings, the largest component of total income for most people. The TRIM3 model focuses on correcting survey reports of certain transfers and in-kind benefits.

Statistical- or regression-based modeling

Statistical- or regression-based modeling has been used by CBO as well as by Census Bureau researchers to improve the imputation of specific income elements and to correct for misreporting of means-tested benefits.⁶⁶ The CBO's analyses of the distribution of household income rely on the Census Bureau's CPS ASEC for information about receipt of government transfers, particularly means-tested transfers. CBO uses a probit regression to estimate a probability that people receive transfer income. CBO then imputes additional recipients on the basis of those probabilities so that the total number of people receiving a transfer in the model matches the actual number of recipients recorded in administrative program data.⁶⁷ Like TRIM3, the CBO models have focused on in-kind benefits and transfers rather than earnings from wages and salaries or self-employment.

Other research has considered statistical modeling to improve Census Bureau imputation of missing income data. The SIPP uses a sequential regression multivariable imputation (SRMI) method to impute missing data. A recent paper (Hokayem et al. 2015) evaluates the use of SRMI to impute missing income data in the CPS ASEC. The SRMI method allows for greater flexibility than the hot deck procedure⁶⁸ currently used to impute missing data in the CPS ASEC and the ACS and allows for the inclusion of additional covariate variables. Hokayem et al. compare model-based imputation with and without the use of administrative data from the Social Security

⁶⁴ However, it is also important to consider and understand uptake. For example, see <https://aspe.hhs.gov/basic-report/understanding-participation-rates-medicaid-implications-affordable-care-act>.

⁶⁵ The Transfer Income Model, version 3 (TRIM3) is a comprehensive microsimulation model that simulates the major governmental tax, transfer, and health programs that affect the U.S. population, and can produce results at the individual, family, state, and national levels. TRIM3 is developed and maintained at the Urban Institute under primary funding from Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (HHS/ASPE). For more information, see <http://trim3.urban.org/T3Welcome.php>.

⁶⁶ Several academic papers have also corrected for benefit underreporting, for example Scholz et al. (2009) and Ben-Shalom et al. (2012).

⁶⁷ <https://www.cbo.gov/system/files?file=2018-07/54234-workingpaper.pdf>

⁶⁸ See here for more information about the hot deck method used in the CPS: <https://www.census.gov/programs-surveys/cps/technical-documentation/methodology/imputation-of-unreported-data-items.html>

Administration's Detailed Earnings Record (DER) file. They find that for nearly all reciprocity and value models, the inclusion of DER data in the model improves the prediction of survey values. Other research at the Census Bureau has looked at using this type of model-based approach to reduce respondent burden by reducing (or eliminating) income questions in the survey (O'Hara, Bee, and Mitchell 2016).

Direct substitution of survey reports with administrative records

In addition to statistical modeling, administrative records have been linked directly to survey reports at the individual level to evaluate survey responses and measure the impact of survey misreporting on poverty and other income estimates, and to replace modeled estimates of tax payments and credits with administrative reports. The Census Bureau is permitted under Title 13 §6 of the United States Code to acquire and use records, reports, and other material instead of conducting direct inquiries.⁶⁹ The Census Bureau is building an inventory of administrative records from federal agencies (IRS, SSA, HHS, HUD and others), the state agencies that deliver SNAP, WIC, TANF and other benefits, as well as some local agencies and commercial data providers.⁷⁰ In January 2019, the Foundations for Evidence-based Policymaking Act of 2018 was enacted.⁷¹ It includes a statutory provision called the Presumption of Accessibility which provides authority, similar to the authority of the Census Bureau, for statistical agencies and units to request data assets of any agency.

At the Census Bureau, both survey and administrative record data are linked at the individual level using unique anonymized identifiers called Protected Identification Keys (PIKs). These PIKs are assigned either probabilistically or deterministically, depending on the amount of information available.^{72, 73} Once PIKs are assigned and any Personally Identifiable Information (PII) is removed, the data are provisioned to Census Bureau employees and Special Sworn Status employees in a restricted research environment for use on approved projects.

There have been a number of studies that have employed this direct linkage methodology. Gathright and Crabbe (2015) examine OASDI and SSI reporting in the SIPP. Meyer, Mittag and Goerge (2020) examine SNAP reporting in the ACS, CPS and the SIPP. Meyer and Mittag (2019) link CPS micro-data to New York administrative micro-data for four government transfer programs. Bee and Mitchell study income and poverty estimates for the population age 65 and older linking a wide variety of administrative records on retirement income. Meyer and Wu (2018) examine the poverty reduction of several transfer programs in the SIPP. Meyer, Wu, Mooers, and Medalia (2021) link a wide variety of administrative records to the SIPP and CPS to look at extreme poverty. Shantz and Fox (2018) estimate SPM rates replacing survey reports with administrative data on TANF and SNAP for a subset of states.

⁶⁹ See <https://www.law.cornell.edu/uscode/text/13/6>

⁷⁰ For up-to-date information on the current inventory, see www.census.gov/datalinkage.

⁷¹ Pub. Law 115-435. Available at <https://www.congress.gov/115/plaws/publ435/PLAW-115publ435.pdf>.

⁷² See Wagner and Layne (2014) for a detailed description of the process used to assign PIKs.

⁷³ Since not all survey respondents or individuals within the administrative records can be assigned a PIK, researchers often use inverse probability weighting to reweight the estimates and make the linked sample representative of the target population. The inverse probability weights are created by dividing the survey sample weight by the predicted probability of the individual having a PIK.

These three approaches to correcting for misreporting and missing data each have advantages and disadvantages. The rules-based approach has the advantages of (i) being easier to implement than other approaches by requiring a significantly shorter time horizon for research and development, (ii) being easily adapted to analyzing impacts of various current or potential policy changes, and (iii) requiring no new inter-agency agreements or regulation changes prior to implementation. On the other hand, this approach cannot adjust for missing or misreported income/program receipt when rules are not available, such as for most earned income and other non-rules-based income sources. Even when rules are available, people who are eligible for a particular program may not enroll.⁷⁴ In addition, the rules-based approach is dependent on timely reported aggregated totals, which may be needed for calibration. Assuming totals are timely, while this approach may be correct at the aggregate level, the assigned income/program receipt may be incorrect at the micro or subgroup level, since it could be applied to the wrong record and the wrong part of the resource distribution. If not applied carefully, this could result in further erosion of the quality of survey data by replacing missing data with erroneous data.

The regression-based/modeling approach affords some of the same advantages as the rules-based approach and can overcome many of the disadvantages. This approach requires no new agreements or regulation changes (when based on publicly available data), is flexible to the timing of implementation and thus does not largely and adversely affect the timing of data release because modeling can use the latest data available, even if it does not correspond to the survey reference year. Since this approach is applied to each record and is not reliant on detailed program rules for its application, it can be implemented for any resource component that has missing or misreported information. Further, it affords the ability to take advantage of both individual-level and aggregate administrative data when such information is available. The statistical modeling approach can be combined with the rules-based approach, since known program enrollment rules can be built into the statistical models. This approach requires investments in research to develop appropriate models. It is sensitive to the specifications of the model chosen, assumes missing or misreported data are similar to data that are accurately reported, and is often hard to explain to the public.

Using administrative data to replace missing data and/or misreported data has several unique advantages that overcome limitations of other approaches. The public may more easily understand this approach. This approach overcomes the concerns of mismatched income/program assignment to an observation as it only assigns values when such information is directly observed. It affords the ability to capitalize on the quality of administrative data, when such quality is deemed high. Further, like any approach that uses administrative data, it is consistent with the recommendations from the Foundations for Evidence-Based Policymaking Act of 2018.⁷⁵

There are several key disadvantages to using administrative data that must be considered. Administrative data are not all of uniform quality, so research is needed to evaluate each source of administrative data and their fitness for use in a poverty measure. Administrative data are not collected, reported, or disseminated on the same timeline as many survey questions and release dates, so these timing issues must be addressed before implementation could occur. Similarly, the reference period for which administrative data are collected may not align with the reference

⁷⁴ See for example <https://www.census.gov/library/visualizations/interactive/snap-profiles.html>.

⁷⁵ Pub. Law 115-435. Available at <https://www.congress.gov/115/plaws/publ435/PLAW-115publ435.pdf>.

period for a survey, further requiring reconciliation before implementation. Program agencies may change the administrative data forms or other attributes about the collection, potentially causing breaks-in-series to statistical estimates of poverty using these data. There are issues surrounding how to handle data that are not linkable or are erroneously linked. In cases where data are linked, there are issues with how to reconcile differences between survey and administrative data. Administrative data are only available for some income sources, program receipts, geographic regions, and years; therefore, this approach would need to be used in combination with other approaches to address missing data and misreporting. And finally, there could be a significant cost associated with the need to modify agreements and/or regulations to permit the use of administrative data for use in the production of official statistics. Many of these key concerns are discussed below.

Implementation issues

Choice of survey

The Census Bureau reports income and poverty estimates from three major national household surveys: the CPS ASEC, the ACS, and the SIPP. These surveys differ in the length and detail of questionnaires, the number of households included (sample size), and the methodology used to collect and process data. Choice of which survey to use depends on the level of geographic disaggregation for the estimates, the timeframe for release of the estimates and preferences for level of detail for income and program participation reporting. The target population for income and poverty estimates from each of these household surveys is the resident civilian noninstitutionalized population. Therefore, people in institutions, such as prisons, long-term care hospitals, and nursing homes are not included in current poverty estimates, and people who are homeless are generally not included in the samples. All three surveys have been shown to suffer from misreporting of income with aggregate income reported well below estimates from the national accounts.⁷⁶ For more details on these potential data sources, see Appendix A. Based on the strengths and disadvantages of each survey, both the OPM and SPM are based on the CPS ASEC.

Recommendations:

21. The Working Group recommends that the Census Bureau use CPS ASEC for an alternative income-based resource measure.

Administrative Data Use Considerations

Availability and Permission to Use Administrative Records in Production

Using administrative records comes with a unique set of challenges that would need to be addressed before linking to survey data and producing official poverty estimates. Importantly, the Census Bureau is restricted to using administrative records for approved projects, per agreements with the data providers. At this time, most administrative records are currently not permitted for use in the production of official income and poverty estimates. Before using the

⁷⁶ See Table 7-6 of 2018 National Academies of Sciences assessment of the SIPP Redesign that compares income aggregates from the SIPP and the CPS ASEC to NIPA. Rothbaum (2015) has done a similar analysis including ACS estimates. See <https://www.census.gov/content/dam/Census/library/working-papers/2015/demo/SEHSD-WP2015-01.pdf>. See also Meyer, Mok and Sullivan (2015).

linked administrative records and survey data to produce official income and poverty estimates, the new uses of data would have to be approved by the data source agency, potentially including renegotiating agreements.

The availability and accessibility of administrative data sources differs for each of the elements included in cash income (23 in the CPS, 8 in the ACS and 81 in the SIPP) and for in-kind benefits. These administrative records also differ in quality.

For earnings, which is the single largest component of income for most people (about 80 percent of CPS ASEC income, but only about half of income of those below the official poverty line), the Census Bureau has extracts from IRS Form W-2, Form 1040, and the Detailed Earnings Record (DER) from the Social Security Administration.⁷⁷ These extracts do not contain all the information necessary to measure gross earnings, and do not include unreported earnings.

For other income sources, the administrative data sources vary. From SSA it is possible to obtain information on Social Security retirement income, disability compensation and survivor income and SSI payments.⁷⁸ IRS data on self-employment income are limited, do not include losses, and can be subject to underreporting (Erard and Ho 2003; Slemrod 2017). IRS administrative records are also available on interest and dividends (excluding tax-preferred accounts) and rent and royalty income. The rent and royalty data currently accessible include only gross rent.

Absent timely and complete administrative data, after-tax income requires the use of tax modeling to estimate tax obligations and tax credits. For the CPS ASEC, the Census Bureau maintains its own tax model.⁷⁹ External tax models are also available, including the NBER TAXSIM model⁸⁰ and the Bakija model.^{81, 82} These tax models require assumptions and rules regarding the formation of tax units and model-based estimates of itemized deductions. However, recent research finds that the tax imputations introduce substantial error in overall taxes, as well as tax credits. Errors in both measures can be sharply reduced even with a limited set of administrative tax data (Meyer, Wu, Finley, Langetieg, Medalia, Payne, and Plumley 2020). Research from the Census Bureau comparing CPS ASEC-simulated EITC payments to actual EITC payments suggests that these tax simulators overestimate the antipoverty effects of the EITC (Jones and Ziliak 2019).⁸³ Other research finds that the CPS tax model inaccurately distributes the EITC across the income distribution (Meyer and Wu 2018).

⁷⁷ The W-2s can be linked to all household surveys, and the DER can currently be linked to the CPS ASEC and the SIPP.

⁷⁸ Social Security and SSI data are available for the CPS ASEC and SIPP but not currently for the ACS, while the other income sources are available for the CPS ASEC, ACS and SIPP.

⁷⁹ U.S. Census Bureau, "CPS ASEC 2005 Tax Model Documentation", SEHSD Working Paper, 2004.

<https://www.census.gov/content/dam/Census/library/working-papers/2005/demo/cpsasec2005taxmodeldoc.pdf>.

O'Hara, Amy, "New Methods for Simulating CPS Taxes" Amy O'Hara, SEHSD working paper, 2004

<https://www.census.gov/library/working-papers/2004/demo/oharataxmodel.html>.

⁸⁰ The TAXSIM model was developed by the National Bureau of Economic Research (NBER). More information about the model can be found at <http://users.nber.org/~taxsim/feenberg-coutts.pdf>.

⁸¹ The Bakija model was developed by John Bakija with support from various organizations, including the Congressional Budget Office. For more information see the model documentation at

<https://web.williams.edu/Economics/wp/BakijaIncTaxCalcDoc.pdf>.

⁸² For a summary of the advantages and disadvantages of each tax model, see Wheaton and Stevens (2016), The Effect of Different Tax Calculators on the Supplemental Poverty Measure. <https://www.census.gov/library/working-papers/2016/demo/wheaton-stevens-2016.html>

⁸³ <https://ideas.repec.org/p/cen/wpaper/19-14.html>

Currently, in-kind benefits, SNAP, WIC, and Public Assistance⁸⁴ are available for some states in some years. Data on housing assistance are available for those receiving assistance from the U.S. Department of Housing and Urban Development. Households receiving housing assistance from USDA or state/local programs are not included in the HUD data set. Data on LIHEAP are available for only one state. Data on Medicare and Medicaid receipt are available from the Department of Health and Human Services and subject to HIPAA constraints on their use. Data on means-tested benefits received from the Department of Veteran's Affairs are available at the Census Bureau for approved research projects.

The Census Bureau is continuing to develop its administrative records acquisition program, and future acquisitions could improve the ability to accurately measure income and poverty. For example, the Census Bureau is considering requesting more detailed data from the IRS, which would provide more complete reports of gross earnings, federal tax obligations and credits, and limited information on state, local and property tax obligations, information that excludes depreciation from rental income, and information on unemployment compensation, educational assistance, capital gains, alimony, moving expenses, and gambling winnings. Future data acquisitions could improve the coverage of in-kind benefits administered at the state-level. Other data gaps may or may not be addressed, such as data on worker's compensation payments, and employer contributions to retirement plans and health insurance.

Administrative record quality and other issues

While administrative records can dramatically improve income estimates from survey data, the value of administrative records depends on the income component measured and the quality of the administrative data. For some administrative records, considerable work is required to "clean" the data, remove duplicates, and decipher the metadata.

For example, administrative data on Social Security benefits, SSI, and retirement income could be directly substituted for survey reports. On the other hand, use of administrative data on wage and salary earnings⁸⁵ and income from self-employment is less straightforward and decisions must be made when survey responses do not match estimates from administrative data, and when data from one administrative source do not align with another.

Administrative records may not be available for the same reference period as the survey data, presenting another challenge to researchers. For example, the ACS reference period is the "previous 12 months," whereas the reference period of IRS records is the tax year. A related issue is that the unit of analysis may vary across sources. For example, a family or household unit may not align with a tax unit.

As previously described, many sources of administrative records derive from state-administered programs where data availability varies. Decisions would have to be made as to how to treat respondents from states and programs with missing data. The Census Bureau is currently undertaking some research to evaluate an approach that would model responses for missing states using the states for which data are available.

⁸⁴ Not all cash assistance is covered by these data.

⁸⁵ Some sources of earnings (e.g. tips, under the table payments) may be reported in the survey but not in the administrative records.

Trade-offs between timeliness and accuracy of estimates

Administrative records are usually delivered to the Census Bureau at a lag compared to the survey data collected directly by the Census Bureau. This lag would likely mean that some (or many) administrative records may not be usable via direct substitution within the timeframe of the official publication of income and poverty estimates in September each year. Decisions would need to be made with respect to how to use these linked data, such as whether to delay publication of an alternative poverty measure until most administrative records are available, or to use the older administrative data to model current income sources. In addition, contingency plans would need to be developed to produce poverty estimates if an administrative data source was delayed in delivery/processing, became unavailable, or changed as a result of a policy change.⁸⁶

Recommendations:

22. The Working Group recommends, taking into consideration the advantages and disadvantages for each of the above approaches for correcting for missing or misreported data, the application of all three approaches, where appropriate, in the following order:

Methods that combine administrative data with survey data are the preferred approach for adjusting survey data to correct for misreporting and missing data. These methods may involve direct replacement of survey responses with administrative reports when research supports the quality of the administrative records relative to survey reports. The administrative data need to be available for use in production and the administrative data must also be available in a timely fashion.

When survey reports conflict with administrative records for particular individuals, research should examine criteria to determine which source to use for the poverty estimates.

Consistent with Foundations for the Evidence-based Policymaking Act of 2018, efforts to encourage and facilitate data sharing across government agencies should be strengthened.

Research to assess ways in which survey data might be made more comparable to administrative data (e.g. changing the reference period for income from the previous 12 months to the previous calendar year) should be encouraged.

Regression-based modeling (with or without individual-level or aggregate administrative data) can also improve the quality of estimates of income, expenditures, and program participation. These regression-based techniques can be used, for example, when sharing

⁸⁶ For example, data available from the IRS on employer contributions to health plans are the result of provisions of the Affordable Care Act (ACA). If there are changes to the ACA requirements the data available from the IRS could change.

agreements do not allow for direct substitution, there are significant lags in the availability of administrative data, or administrative data are not available for all geographies or years. Regression-based modeling such as Sequential Regression Multiple Imputation (SRMI) should replace hot deck imputations where feasible and continued research should be conducted to improve these methods as new tools and techniques become available.

Some rules-based adjustment may be necessary for some programs and income sources. For example, if program rules assign automatic eligibility for Medicaid to all TANF and SSI recipients, it could be logical to assign program receipt to all survey respondents who are known to participate in either of these two programs. In a similar vein, if there are school districts in which all students are deemed eligible for free school lunch, they should be assigned participation in free school lunch if they report that their children regularly eat school meals.

23. The Working Group recommends that the advisory structure recommended previously should vet decisions about data sources, adjustment strategies, and other assumptions. This advisory structure should consider and discuss continued research into availability and applicability of administrative data sources.

24. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics continue to research, and possibly implement, ways to reduce survey burden and improve the quality of resulting data through increased access and use of administrative data in surveys, including the CPS ASEC, ACS, and CE.

Consumption-based Resource Measures Using the CE Interview Survey

There is a long history of constructing consumption poverty or inequality measures from CE Interview Survey expenditure data (Cutler and Katz 1991; Garner 1993; Slesnick 1993; Meyer and Sullivan 2012a,b, 2017, 2018; Fisher et al. 2015). The Working Group has considered the approaches that researchers have typically followed. Researchers begin by summing most categories of expenditures, such as food eaten at home, food eaten away from home, rent, utilities, transportation, clothing and other goods and services. Expenditures that are made through SNAP food assistance program would also be included. Some other social transfers in-kind such as WIC would also be included in consumption measures as they would be in comprehensive income measures. Certain categories of expenditures have been thought of as enhancing future consumption and thus, have been typically excluded, such as pension contributions and education expenses. (See, for example, Cutler and Katz 1991; Slesnick 1993; Meyer and Sullivan 2012b; Fisher et al. 2015.) Health expenditures are less uniformly excluded, since they have both substantial investment and immediate consumption features. The Working Group proposes a variant on this approach where a value of any public or private health insurance coverage that an individual has is included. Current expenditures on owned vehicles and homes are also typically excluded. Instead, the value of service flows is calculated for these, using methods like those previously described in an earlier section, and included as part of consumption.

The main source of consumption data in the U.S. is the CE Interview Survey. See Appendix B for an overview of the CE Interview and Diary surveys.

Recommendations:

25. *The Working Group recommends funding support of the work to develop the new recommended measures, including funding to support BLS to research the nature and construction of a potential consumption-based poverty measure and improve the CE program in support of improved poverty measurement. A proposal requesting \$7.1 million was included in the fiscal year 2021 President's Budget.*
26. *The Working Group recommends that the Bureau of Labor Statistics use the CE Interview Survey data to research and develop a consumption-based resource measure.*
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Value of Rental Housing

For most renters, the value of rental shelter is just the rent they pay and thus is assumed to be the consumption value of shelter.⁸⁷ For others, methods to derive the consumption value of rents must be used. The rent paid by those living in public, subsidized, or rent-controlled housing, or living in a unit without paying any rent usually does not approximate the consumption value of that shelter. One can impute a market rent or rental equivalent for consumers in the CE Interview Survey in non-market valued shelter using information available in the CE Interview Survey on housing unit characteristics and geography. Hedonic models can be used to impute these rents.

Value of Flow of Services from Owner-occupied Housing

The value of the flow of services from owner-occupied shelter (including second homes) can be derived using user costs or rental equivalence approaches. These were presented and discussed in the income section of this report that focuses on including a net implicit income from owner-occupied housing as well as owned vehicles (both taking into account the flow value of services as well as the landlord and vehicle lessor-type expenses). Most researchers using the CE Interview Survey have used self-reported rental equivalence for owner-occupied housing as collected in the questionnaire. However, other approaches to estimate imputed rents have been used by the BEA for the NIPA as discussed earlier. For a consumption measure of resources based on reported rental equivalence, out-of-pocket spending on owner-occupied housing (e.g., mortgage interest payments, property tax payments, spending on insurance, and maintenance and repairs) would not be included in consumption. However, such expenses could be used to

⁸⁷ To the extent consumption amounts measure the quantity and quality of goods or services measured, they are valid individual measures of well-being. To the extent that consumption amounts are determined by factors other than quantity and quality, their validity as individual measures of well-being may be less clear. For example, if two households live in identical housing units in the same geographic area and the landlord for one household raises the rent for one unit, but the landlord for the other does not, does it follow that the one for whom rent is raised is better off? The interpretation of rent increases for consumption poverty depends on the reasons for the increases as well as the tradeoffs that households must make when those increases occur. Is the reason for the rent increase related to inflation, increased amenities (attributes) in an area, or is the rent increase being used as a strategy for making tenants leave the housing unit or because the tenant is new to the unit? The rents paid by tenants living in a unit for a longer period of time tend to represent under-estimates of their consumption while those who recently moved into their rental units, the rent reported will be an over-estimate (see Gallin and Verbrugge 2019). When rent is raised are households able to move easily to another more affordable housing unit or must they reduce expenditures in other consumption domains?

support the derivation of imputed rents using a user costs approach (see, Garner and Verbrugge 2009). It needs to be pointed out that, regardless of the approach used to derive a measure of the consumption value of the flow of services from owner-occupied housing, expenditures for the purchase and repairs of major appliances that are typically included in rented housing units would also not be counted among the other expenditures used to derive a consumption measure.

Value of Flow of Services from Owned Vehicles

Regarding vehicles, because vehicle expenditures occur very unevenly over time, to account for the consumption value of the flow of services from the stock of vehicles owned, one would not include the spending on new or used vehicle purchases, or expenditures associated with owning a vehicle (e.g., routine maintenance and repairs, insurance, interest paid if financed) in a consumption measure. Instead, an estimate of the value of the flow of services consumed from owned vehicles would be included. As noted in the income section, this flow of services from owned vehicles could be estimated as a function of an interest rate that reflects foregone interest by investing in the vehicle, estimated depreciation rates that reflect differences by age of the vehicle, and the current market value of the vehicle. The current market value of the vehicle is determined from the reported purchase price of the vehicle or an imputed current market value. To estimate the current market value of each car owned (if not purchased within the reference period), researchers can use detailed information on vehicles including make, model, and year available in the CE Interview Survey data. Other sources of data for current market values of new and used vehicles include those from aggregators like the National Automobile Dealers Association (NADA); using these data, interest and depreciation rates would still need to be selected. Another approach to derive the value of the flow of services from the stock of vehicles owned is to use data based on leased vehicles or short-term vehicle rentals.

Recommendations:

27. The Working Group recommends that the value of service flows from owner-occupied shelter and the value of the service flows from owned vehicles be included in the consumption resource measures.

Implementation Issues for Consumption-based Resource Measures Using the CE Interview Survey

As discussed in greater detail in Appendix B, the CE consists of estimates derived from two separate surveys, the Interview Survey and the Diary Survey. The Interview Survey is designed to collect data on large and recurring expenditures that consumers can be expected to recall for a period of 3 months or longer, such as rent and utilities, and the Diary Survey is designed to collect data on small, frequently purchased items, including most food and clothing. Together, the data from the two surveys cover the complete range of consumers' expenditures. Although the CE includes a Diary Survey component with a separate sample, the CE Interview Survey component is more suitable for analyses of poverty (and inequality more generally) because its longer reference period (a calendar quarter) as compared to the Diary Survey (two weeks) yields a more complete picture of spending. Additionally, the Interview Survey's coverage of the universe of expenditures approximates that of the open-ended diary, with about 65 percent of all spending represented by detailed questions and another 25 percent by global questions.

Accounting for Expenditure Misreporting

There is concern that some expenditures in the CE Interview Survey are misreported at the micro-level and that this misreporting is thus carried over into aggregate statistics. To assess the degree of differences at the aggregate level, CE Interview Survey data have been compared to data from many sources, but the most extensive and heavily cited comparisons are to the Personal Consumption Expenditure (PCE) data from the NIPA, with CE estimates being lower for most commodity groups (see, for example, Passero et al. 2015, as well as continuing comparisons completed by the CE program). However, there are reasons for differences in estimates from the CE Survey and the PCE including different population coverage, goods and services included, and concepts. Unfortunately, unlike for income, very few components of expenditures can be compared to administrative data at the household level; one exception is rent in public and subsidized housing, as noted in Christensen et al. (2019).

Focusing on the comparisons that separate Interview Survey and Diary Survey data, Bee, Meyer, and Sullivan (2015) report ratios of CE Interview Survey data to PCE aggregate data for 1986 and 2010. They divide the largest categories of expenditures for which comparable CE Interview Survey and PCE data are available into what they consider “well-measured” and “poorly measured” categories. Among the eight largest comparable categories of expenditures, six are reported at a high rate in the CE Interview Survey and that rate has been roughly constant over time. These well-measured categories are the imputed rent on owner-occupied housing, rent and utilities, food at home, gasoline and other energy goods, communication and new motor vehicles. In 2010, the ratio of CE Interview Survey to PCE is 0.95 or higher for imputed rent, rent and utilities, and new motor vehicles. It is 0.86 for food at home, 0.80 for communication, and 0.78 for gasoline and other energy goods.

When interview aggregated expenditures are compared to PCE aggregates, the categories that represent the largest shares of expenditures in what they consider “poorly measured” are food away from home with a ratio of 0.51, furniture and furnishings at 0.44, clothing at 0.32, and alcohol at 0.22, and for all of these measured categories, the ratio has fallen noticeably since 1980.⁸⁸

While under-reporting is generally a concern for recall-based household surveys, recent research results have also provided evidence of over-reporting for certain expenditure categories. In a records verification study, Tseng et al. (2012) noted that “With regards to the distribution of report values, participants’ underestimated costs for 37 percent of items reported and overestimated costs for the remaining 33 percent of the items.” The authors found overestimates of expenses in categories such as subscription/membership fees, home furnishings, and rent. Other studies with findings of CE over-reporting include Christensen et al. (2019), who reported that in a matched sample of CE-HUD administrative records, subsidized renters over-report rent payments by \$100 on average, when compared to administrative data. Additionally, in the most recent comparisons of CE-PCE for rental equivalence, the 2017 CE-PCE ratio for imputed rental of owner-occupied nonfarm housing was 1.10.

⁸⁸ To address concerns about potential measurement error in consumption based on CE data, Meyer and Sullivan (2012b, 2017) build upon the evidence noted above and construct a measure of economic well-being that is based on what they identify as “well-measured consumption.” This they define as food at home, rent plus utilities, gasoline and motor oil, the rental value of owner-occupied housing, and the rental value of owned vehicles.

Time Period

An important issue in constructing a consumption resource measure is deciding on the time period. The natural choices are either 3 months, relying on a single CE interview (as is done in Meyer and Sullivan 2012b, 2017) or 12 months, relying on four consecutive interviews (as is done in Fisher et al. 2015, and Aguiar and Bils 2015). There are advantages to each choice. Using 3 months has the advantage of relying on the largest sample and reduces the potential bias due to attrition over the course of the survey. Using 12 months provides a longer-term measure of consumption. A shorter time period will lead to a more dispersed measure of the consumption distribution and a higher poverty level if thresholds are just scaled by the length of the time period.

According to Coibion et al., a potential concern about a short time period is the potential for shopping frequency to change over time which could affect the ability to make valid comparisons over time, but the evidence suggests that the difference between 3 and 12 months is small, unlike the difference between 2 weeks and 3 months which appears to yield very different indicators of inequality (Coibion et al. 2017).

There is also nothing particularly compelling about looking at a longer-term measure of consumption. Over either 3 or 12 months, consumption should in principle provide a longer-term measure of well-being than would income over the same period assuming some consumers can borrow or draw from savings to partially fund their consumption.

Sample Design

The CE sample design is a two-step process in which a first-stage representative sample of geographic areas is selected from the U.S., and then a second-stage representative sample of household addresses is selected from those areas. This method is designed to produce unbiased weighted expenditure estimates at the national, U.S. Census Region, and U.S. Census Division level, but not at the state level (King and Wilson 2018). Of note, data users cannot generate statistically valid estimates at the state level since CE weights are calibrated to household and person population totals at the U.S. Census Region (prior to 2017) or the U.S. Census Division (2017 and later) level. Additionally, not all states are included in CE's sample design.

The use of state-level CE estimates for a consumption poverty measure would require changes in CE's first-stage sampling areas (both urban and rural) and sample sizes. First, the sample design must be updated to expand to an additional 4 states, which would ensure coverage in all 50 states and the District of Columbia. Second, in order to support reliable state-level estimates, CE Interview Survey sample sizes need to be substantially increased from the current annual level of approximately 13,000 unique household addresses. These addresses yield on average 22,000 interviews in a calendar year, which includes respondents who participated in multiple quarterly interviews. For comparison purposes, in the construction of state-level estimates, the Supplemental Poverty Measure relies on three years of CPS ASEC data, with about 90,000 household addresses per year (Fox 2019, Semega et al. 2020). Conversely, under the current sample design, CE estimates are calculated from a relatively small sample of predominantly urban areas. Within these areas, the CE program surveys only a small percentage of household

addresses. For example, in New York State the CE program successfully interviewed roughly 1,400 consumer units for the Interview Survey in 2019.

Additional Considerations

There are additional considerations related to CE's sample design and availability of administrative data for use in a consumption-based resource measure.

CE sampling, weighting, and coverage

First, if 12 months of respondent data are required, the sample size must be increased even further, since only approximately 60 percent of respondents complete all quarterly interviews. Second, a longitudinal weight must be produced. Third, the Interview Survey is not exhaustive in the sense that not all expenditure or consumption categories are covered; the Interview Survey covers approximately 90 percent of spending, excluding items like non-prescription drugs and postage stamps (BLS 2018).

Recommendations:

28. The Working Group recommends that the CE Interview serve as the primary data source for the production of the consumption resource measures, with estimates produced at the state level.

29. The Working Group recommends that the current CE Interview Survey serve as the interim data source for the production of the consumption resource measures, with estimates produced at the Census Division level.

Availability of administrative data

As discussed in the earlier section Administrative Data Use Considerations within the discussion of an income-based resource measure, it is important to consider whether data are available for use for these purposes. The Working Group recognizes that the strategies to correct for misreporting and impute missing data described earlier in the section titled Correcting Survey Data for Misreporting and Improving Tax Estimates are more applicable to income surveys than to the CE survey given the current paucity of reliable administrative data on expenditures. However, the Working Group also recognizes that current research at BLS using administrative data from HUD on public and subsidized housing is promising (see Christensen et al 2019). Another promising strategy for estimating consumption poverty with existing expenditure data is to use only those components of expenditures that research finds to be well-measured.

Valuing Health Insurance

The same choices that one faces for valuing health insurance with an income resource measure also apply to a consumption resource measure. See the section titled Valuing health insurance and the treatment of MOOP for more information. The Working Group's consensus recommendations on valuing health insurance for both an income- and consumption-based resource measures are available within that section.

Treatment of Education

The treatment of education for a consumption resource measure, similar to for an income resource measure, relies on whether education is considered current consumption or an investment. See the previous section titled Treatment of Education for more information. The Working Group's consensus recommendations on valuing education for both income- and consumption-based resource measures are available within that section.

Advantages/Disadvantages of Income- and Consumption-based Resource Measures

Conceptual Issues

Conceptual limitations of income resource measures have influenced a large literature that looks at consumption-based measures of well-being and discusses their advantages (Cutler and Katz 1991; Fisher and Johnson 2012; Fisher, Johnson, and Smeeding 2015; ILO 2003; National Research Council 1995; Meyer and Sullivan 2003, 2011b, 2012a,b; Poterba 1991; Slesnick 1993; UNECE 2017; U.S. Census Bureau 2003; World Bank 2018). Consumption is often thought to better estimate a families' long-term or "permanent" income. Annual income will not capture the standard of living of individuals who smooth consumption by drawing upon savings or borrow to fund this consumption. Also, income-based measures of well-being will not capture differences over time or across households in wealth accumulation, ownership of durable goods such as houses and vehicles, or access to credit. In addition, many anti-poverty programs such as Medicaid provide an insurance value to households, freeing up resources otherwise set aside for an emergency, that would be reflected in consumption but not income.

Some researchers have argued that income may have some conceptual advantages over consumption. One reason is that individuals can choose to have low consumption, while income reflects access to resources that can be used for consumption, and as such is not driven by consumption decisions (Atkinson 1991). However, individual choices affect the level of income as well through education, employment, occupation, and hours worked choices. Another potential advantage to income is that current consumption fails to capture the benefits to donors of leaving bequests.

In their Poverty Guidebook, the United Nations Economic Commission on Europe (2017, see p. 38) lists several conceptual advantages of an income measure: income measures a household's command over resources, there is a direct link between transfer program policies and income, and income measures allow for disaggregation by income source components. From a conceptual perspective, income allows people to satisfy their needs and pursue many other goals that they deem important to their lives. In particular, disposable income is an effective proxy for the resources that are available to an individual or household for either consumption (if they so wish) or saving. In addition, income-based poverty measures are often appealing to policy makers due to direct policy levers that exist through, for example, the targeting of welfare payments or tax credits to families below the poverty line. And, in general, it is possible to break down income by source (wages, pensions, social protection receipts, intra-household transfers, etc.) when analyzing poverty. This provides advantages in terms of understanding poverty within a certain group, and as a quality check for the data, via possible comparisons with other data sources.

A conceptual difference between consumption and income is the treatment of savings and debt. A consumption measure of resources might indicate a high level of consumption for a family that

has gotten itself heavily into debt. In such a case, a consumption measure would record the high level of spending while borrowing, but in the future, it would also record a low level of consumption if the family must sharply cut back to repay loans. Income in such a situation might miss both the period of high spending when the family is enjoying more goods and services and also miss the period of a tighter budget. In general, consumption should capture the extent to which people are able to maintain their living standard when they experience loss of employment or plan to work less out of choice. How this differs across population groups (possibly depending on the ability to obtain credit) or over time would be missed by an income measure.

Measurement Issues

Both income and consumption resource measures are subject to misreporting. However, on the income side there are many more sources available to use to understand the extent of the misreporting than on the consumption side.

Income misreporting

Income in the CPS ASEC appears to be misreported, especially for categories of income important for those with few resources, and the extent of under-reporting has worsened over time as discussed in detail above.

Comparisons of income and expenditures at the bottom of the distribution provide additional evidence that income is under-reported. Reported expenditures exceeds reported income at the bottom of the distribution, even for those with little or no assets or debts (Meyer and Sullivan 2003, 2011a).⁸⁹ For recent years, the fifth percentile of the expenditures distribution in the CE Interview Survey is more than 40 percent higher than the fifth percentile of the income distribution in the CPS ASEC. For families in the CE Interview Survey in the bottom five percent of the income distribution, expenditures exceed income by more than a factor of seven (Meyer and Sullivan 2011b). While expenditures could be overreported at the bottom of the distribution rather than income underreported, expenditures on average are underreported.⁹⁰ Furthermore, one of the main lessons of Meyer, Wu, Mooers, and Medalia (2021) is that the income distribution at the very bottom after incorporating administrative data becomes much closer to the consumption distribution, suggesting that much of the difference is due to income data that was in error originally.

Expenditure Misreporting

There is also evidence that at least some types of expenditures are misreported in the CE Interview Survey and that this misreporting has increased over time. However, as discussed above, among the eight largest comparable categories of expenditures, Meyer and Sullivan (2011b) consider six to be well reported: rent and utilities, food at home, gasoline and other energy goods, communication, and new motor vehicles.

However, Sabelhaus et al. (2015) find that the income reported in the CE Interview Survey, either because high-income people are missing or because income is under-reported at the top, does not match well to other sources such as the Survey of Consumer Finances and tax records.

⁸⁹ These comparisons have been questioned by Bavier (2008) based on the quality of income data in the CE from which these comparisons are derived.

⁹⁰ Comparisons of aggregated survey data expenditures to NIPA consumption indicate under-reporting of expenditures on average as noted above.

Furthermore, reported spending relative to income is very low at the top. The finding that much of the under-reporting of expenditures occurs at the very top of the income distribution means that the aggregate under-reporting of consumption statistics may overstate the weakness of the CE Interview Survey for a typical low-income person.

Of note, respondents at the low end of the income distribution may misreport income that is significantly lower than expenditures for a variety of measurement related reasons, including inaccurately reported means tested transfer program participation, and other recall-related under-reporting. However, certain population subgroups, such as students and retirees, may be accurately reporting low income and relying on assets and debt to support relatively higher than expected expenditures. As reported in Crain and Wilson (2017), "... 13 percent of the reference persons in the lowest 20 percent income quintile identified themselves as college students, and an additional 33 percent of the reference persons reported that they were retirees. Accordingly, 46 percent of the households ranked in the lowest income quintile are at stages in the life-cycle where one would assume lower incomes might prevail... Given the proportion of college students and retirees, who are assigned to the lowest 20 percent, one can assume that not all households within the lowest quintile represent the usual image of a "poor" household."

Income vs. Consumption

International statistical agencies have expressed mixed recommendations on this issue. On the one hand, the World Bank and the ILO have stated preferences for consumption-based measures. The ILO states that final consumption is the most appropriate concept for welfare analysis as it takes into account all consumer goods and services available to the household for the satisfaction of needs and wants of its consumers (ILO 2003, paragraph 26). The World Bank in its 2016 report of the Commission on Global Poverty stated, "consumption per capita is the preferred welfare indicator for the World Bank's analysis of global poverty."

On the other hand, the Canberra Group (2011 p. 3) favors income-based measures. In the 2011 update of its report, it states, "For most people, household income is the most important determinant of economic well-being." However, the group does acknowledge that there are cases for which consumption expenditure may represent a better estimate of the household's sustainable standard of living. They conclude, "In fact, the choice between the income or the consumption expenditure approach to measuring economic wellbeing is often made for the analyst by the fact that, at least in developed countries, income data may be more frequently available than data on consumption expenditure."

The UNECE Handbook on Poverty (2017, p46) lists the advantages and disadvantages of each concluding "where both income and consumption expenditures data are available for a given population, there is value in utilizing poverty measures based on both approaches. For international comparisons of poverty across the UNECE region, it is recommended that income be the main welfare measure, given its widespread usage among EU and OECD countries as well as increasing availability in other areas of the region". The UNECE handbook (p. 48) also includes another recommendation that "where data availability allows it, compilers of poverty statistics consider examining poverty measures based on income and expenditures as well as their intersection."

In their evaluation of poverty measurement for the United States, *Measuring Poverty* notes that "On balance, many members of the panel find more compelling the arguments in favor of a

consumption definition that attempts to assess actual levels of material well-being". The panel's final recommendation, however, called for an income-based measure because of concerns about adequate consumption data noting, "in the United States today, adequate data with which to implement a consumption-based resource definition for use in the official poverty measure are not available." (National Research Council 1995, p. 213) One important concern was that small samples in current consumption datasets make it difficult to construct poverty statistics at the subnational level, rather than national statistics as well as concerns with response rates and recall bias. Other concerns regarding data quality are discussed below.

A case for the accuracy of income would note that, for most people, income is easier to report given that much of it is recorded in tax records and that it typically comes from a small number of sources (predominantly earnings). However, for analyses of families with few resources this argument is less valid, as these families tend to have many, often sporadic, income sources (Edin and Lein 1997). Additionally, while income may be easier to report for some, it is likely to be a more sensitive topic for survey respondents than spending for consumption.

There is empirical evidence that consumption and income measures are very different. For those with few resources, spending on consumption exceeds income. Using the PSID, this is evident even for those with little or no assets or debts, so the discrepancy may not be due to borrowing or drawing down assets. This pattern is particularly evident the closer to the very bottom of the distribution examined (Rogers and Gray 1994; Jencks 1997; Sabelhaus and Groen 2000; Meyer and Sullivan 2003, 2011; Hall and Rector 2018). For families near the very bottom of the income distribution, these authors find that expenditures are a multiple of income. Evidence from other countries is consistent with that for the U.S. that shows that those at the very bottom in income data are often close to average in their spending. In their paper, "Why are Households That Report The Lowest Incomes so Well-Off?", Brewer, Etheridge, and O'Dea (2017) show that on average in the UK spending is much greater among families with extremely low income than those with just very low income. The authors conclude that this is mostly due to under-reporting of income (also see Brzozowski and Crossley 2011).

While both income and consumption surveys suffer from misreporting, there is some evidence that, as discussed above, components of consumption that are particularly important for the poor are fairly well-captured in surveys while many components of income important to the poor, especially transfer payments, may not be captured well (Roemer 2000; Wheaton 2007; Gathright and Crabb 2014; Meyer and Sullivan 2015; Rothbaum 2015; Meyer, Mittag and Goerge 2018; Meyer and Mittag 2019).

Some argue that consumption is more highly correlated with many measures of material well-being than income, in that material hardship and other adverse family outcomes are more severe for those with low consumption than for those with low income. This issue is discussed in the next section.

On the other hand, many would argue that there are important advantages to an income poverty measure over a consumption measure. First, there exist administrative records for many income sources, but for few spending categories. As described in this report, administrative records are useful for benchmarking survey estimates at the aggregate level, and improving survey responses at the individual level. Second, income questions are more likely to appear on other surveys, including other federal surveys, than consumption questions. This is important because

researchers may use these surveys to examine the relationship between poverty and housing, health, and other topics. Being able to benchmark a survey's income poverty estimates to other income poverty estimates could be valuable. Third, the survey data required to measure income poverty are available at the sub-national level, including at the state-level and even at the Census block level (when using the ACS). This is important because analysts can examine trends in poverty that may vary across sub-national geographies and examine the effect of state-specific policies.

Capturing economic disadvantage

The first two goals of a poverty measure outlined in the Background section of this report were assessing economic disadvantage at a point in time and over time. The Working Group discussed the possibility of placing the choice of a poverty measure on a firm footing by examining empirical evidence on how well different poverty measures capture economic well-being. This approach to assessing measures is not perfect as available indicators of economic well-being will not be comprehensive, and one measure may be associated more highly with some indicators, while another measure may be more highly associated with others.

The Working Group begins by assessing how well consumption and income measures capture disadvantage at a point in time. The comparisons from the CE Interview Survey have found that consumption poverty is more highly associated with available indicators of material well-being than income poverty at a point in time (Meyer and Sullivan 2003, 2007, 2011, 2012; Fisher et al. 2009). These studies look at a wide range of indicators including car ownership, housing characteristics, appliance ownership, education and assets. The evidence from other surveys such as the SIPP, and the University of Michigan's Panel Study of Income Dynamics and Health and Retirement Study is mixed, but slightly favors consumption (Meyer and Sullivan 2003, 2007, 2011; Charles et al. 2006; Bavier 2008). The SIPP studies examine hardship measures, the PSID studies examine housing and car characteristics, health and food insecurity measures, while the HRS study examines physical health, wealth, housing characteristics, mental health and food hardship.

A difficulty in interpreting these comparisons is that the definitions, comprehensiveness and accuracy of income and consumption differ across dataset. In addition, different researchers have defined income and consumption differently in different studies as well. Most of the CE Interview Survey studies used data from before 2004 that did not include imputed income values and that has led some authors to question the early comparisons (Fisher 2006; Bavier 2008). However, the strongest evidence comes from the most recent study, Meyer and Sullivan (2012), discussed above, that uses the income data without the drawback of the earlier data.⁹¹ However, even the pre-2004 CE Interview Survey data are more comprehensive and come from a larger battery of questions than the consumption data used in the other surveys. In each of the other surveys that have been used for comparisons of income and consumption, income collection is a primary focus of the survey, while consumption data is at best a brief section or one-time short supplement, so that uneven data quality has given the income data an advantage in the comparisons.

⁹¹ Another potential concern with some of the earlier studies is that they examined cutoffs well above or below typical poverty cutoffs. This was not the case with the Meyer and Sullivan (2012) study that used the SPM level of poverty.

Second, the Working Group examined the short literature comparing how different poverty measures capture changes in economic well-being over time. Meyer and Sullivan (2011) conducted a thorough examination of the short-term relationship between income and consumption poverty and economic conditions, such as the unemployment rate and GDP, over five decades. They examined the relationship between income and consumption poverty and economic conditions at both the national and regional level, specifying economic conditions several different ways. They found that both income and consumption poverty were sensitive to macroeconomic conditions. One might expect that income would be more strongly related to the business cycle than consumption given that consumption reflects more long-term prospects and is known to be less subject to shocks than income. However, the evidence on whether income is more responsive to the business cycle than consumption is mixed. Income poverty does appear to be more responsive using national level variation, but consumption poverty is often more responsive to unemployment when using regional variation.

There is even more limited work looking at other indicators. Shaefer and Rivera (2018) examine several outcomes using a very small number of annual observations (usually 6, but sometimes as many as 18). The authors conclude that the time patterns of consumption poverty do not match up well with other indicators of well-being, while income poverty does quite well. However, Meyer and Sullivan (2018) find that after allowing for a time trend, all of the Shaefer and Rivera coefficients in the consumption poverty equations change sign.⁹²

It should be recognized that some proposed measures have not been evaluated through comparisons to economic well-being. For example, income measures improved by the incorporation of administrative data have not been evaluated because the required administrative data have become available only recently. It may be that an income measure that partially or fully incorporates administrative data may do a better job of capturing disadvantage than a consumption resource measure, but that is not known at this time.

Considerations and Consensus Recommendations for Thresholds

Poverty thresholds are a key component of a poverty measure. In this report, poverty is defined as economic deprivation and measured in terms of income or consumption.⁹³ Individuals with income or consumption that falls below the poverty threshold are counted as poor, and individuals with income or consumption at or above the poverty threshold are not counted as poor.⁹⁴ An implicit consideration of the Working Group for recommending new measures (see section titled Considerations and Consensus Recommendations for Income- and Consumption-based Resource Measures) is that thresholds and resources be consistently determined, either explicitly or implicitly. In the case of thresholds defined in terms of basic needs, an explicit adjustment to resources would be needed. For example, if childcare is included in basic needs, subsidies for childcare would be added to resources. If health insurance is included in thresholds,

⁹² Granger and Newbold (1974) argue that to analyze the short-term association between trending variables one should include a time trend to prevent spurious correlation.

⁹³ Poverty thresholds could also be produced that are based on other indicators of deprivation, for example, food insecurity or a lack of health insurance, or a multitude of indicators (see the Future Research section).

⁹⁴ In this section the Working Group highlights choices regarding setting poverty thresholds in a base year and updating them over time. However, poverty thresholds employed by national and international statistical offices and in policy discussions are often referred to as “absolute”, “relative”, and “subjective” (for example, see: National Research Council 1995; Ravallion 2016; World Bank 2018; UNECE 2017).

health insurance would be counted in resources. How these adjustments to resources are made is dependent upon whether an income- or consumption-based measure is assumed.⁹⁵ In contrast, when thresholds are derived from the resource measure (the two non-basic needs thresholds described in the next section), thresholds and resources are by definition consistently defined and thus no additional adjustment is needed.

There are several key decisions to be addressed when developing a poverty threshold: (i) where to set the threshold in a baseline year, (ii) how to adjust the threshold over time, and (iii) how the threshold varies across geographic locations.

The Working Group has discussed a number of considerations to understand and evaluate these key decisions for thresholds. Those considerations are articulated in the following sections. The Working Group recommends the following:

Recommendations:

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- 30. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics seek additional stakeholder and expert engagement on the key decisions required in setting poverty thresholds.*
 - 31. The Working Group recommends that this engagement should occur in parallel with the Census Bureau and the Bureau of Labor Statistics developing research income- and consumption-based resource measures.*
 - 32. The Working Group recommends that by the time the proposed resource measures are ready to be published, BLS and the Census Bureau should work to identify an interim solution for each set of the measures for applying thresholds to produce a full poverty measure. BLS and the Census Bureau should consider input from experts (per the previous recommendation) as available to inform the applied methodology. The interim methodology applied need not be the final methodology chosen for application to the resource measures. The intention of this recommendation is to ensure the ability to publish poverty measures using the proposed resource measure recommendations.*
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Setting Thresholds in a Baseline Year

While the poverty threshold can be set at any dollar value in a baseline year, there are three general approaches for determining this dollar value:

1. The threshold can be set at a chosen fraction of median resources.⁹⁶
2. The threshold can be set at a chosen percentile of the resource distribution.
3. The threshold can be set to reflect a view of the amount of resources needed to meet basic needs in terms of a specified bundle of goods and services.

⁹⁵ For a discussion of issues and approaches that could be used to account for health insurance in a resource measure, see the Health Insurance section.

⁹⁶ Some countries use other measure of central tendency like a mean, but this is less common than the median (see Ravallion, 2016).

Setting Thresholds at a Chosen Fraction Of Median Resources

Thresholds can be set at a chosen fraction of median resources. Countries in the European Union (EU) and the OECD employ this approach. Most EU countries set what are referred to as “at-risk-of-poverty” thresholds at 60 percent of national median equivalized income (Eurostat 2020). In contrast, the OECD sets poverty thresholds equal to 50 percent of median equivalized income for each country (OECD 2019). Setting thresholds in this way ties the poverty threshold to resources at a focal point of the resource distribution (i.e., the median). When baseline thresholds are set at a chosen fraction of median resources, poverty measures based on different resource measures will have different poverty rates in the baseline year.

Notably, any change in the resource definition would automatically adjust the thresholds, because median resources would change.

Setting Thresholds at a Chosen Percentile Of The Resource Distribution

Thresholds can alternatively be set at a chosen percentile of the resource distribution. For example, if the 20th percentile is chosen, then the poverty rate will be 20 percent. Based on the historical account of Fisher (2008), the OPM baseline thresholds for 1963 were implicitly set in this fashion. Fisher argues that during the development of the OPM during the 1960s, the Office of Economic Opportunity chose the lower of two threshold options produced by Mollie Orshansky because the lower threshold produced a poverty rate approximately equal to the 20 percent poverty rate estimated by CEA (1964) and used by President Johnson as his baseline for the War on Poverty. Meyer and Sullivan (2012), CEA (2019) and Burkhauser et al. (2019) followed this approach as well, anchoring the threshold at the percentile in the income distribution that was equal to the official poverty rate in a particular year. In other words, they set thresholds such that the poverty rate under their own poverty measure was equal to the poverty rate under the OPM in a reference year. Setting thresholds at a chosen percentile of the resource distribution facilitates the comparison of poverty trends across different resource measures because they can all begin at the same poverty rate in the baseline year.

Notably, any change in the resource definition would automatically adjust the thresholds, because the value of the chosen percentile of the resource distribution would change.

Setting Thresholds Defined in Terms Of Basic Needs

Basic needs thresholds are set to reflect the costs of buying a bundle of goods and services needed to satisfy basic needs to attain a specific standard of living. These thresholds vary according to household composition, and the cost of the threshold bundle within the geographic area where a household lives. Basic needs standards usually are defined based on some target level relative to some reference group such as a subsistence level or a level that allows achievement of such statuses as social inclusion, self-sufficiency, or social acceptance. The quality and nature of items included in the bundle are influenced by current norms and these are determined by judgments influenced by time and place and can be empirically informed.

Budgets can be descriptive, prescriptive (normative), or a combination of the two. Descriptive budgets represent observed expenditures for particular family or household types, for example, based on median spending for a specific family type; two examples are the set of Prevailing Family Budgets published by the BLS in the 1960s through 1980s (see Johnson et al. 2001) and the SPM thresholds (Interagency Technical Working Group 2010). Prescriptive budgets can be

based on multipliers (e.g., if food expenditures reflect 1/3 of income, food spending times three equals the threshold; an example is the set of Orshansky thresholds), in terms of self-declared basic needs and associated income,⁹⁷ or bundle or budget building. Examples of the latter thresholds are those developed by the BLS in the early 1900s (see Johnson et al. 2001) and Renwick and Bergmann (1993). Examples of more recently developed bundle or budget-built basic needs thresholds include the following: Asset Limited, Income Constrained, Employed (ALICE) thresholds produced for the United Way;⁹⁸ Economic Policy Institute Family Budgets;⁹⁹ Self-Sufficiency Standards;¹⁰⁰ the Living Wage Calculator;¹⁰¹ and basic needs thresholds calculated for Canada and Italy.¹⁰²

Updating Thresholds Over Time

There are three common approaches for updating thresholds over time.

1. Updating proportionally with the annual growth in median resources,
2. Updating with inflation each year, holding the value of the thresholds constant in real terms, and
3. Re-estimating each year the value of goods and services needed to meet basic needs and their associated costs in the geographic area for which the thresholds are produced.¹⁰³

Updating Proportionally

Updating proportionally ties the poverty threshold to changes in median resources. For example, when median resources grow by five percent in a given year the poverty threshold is increased by five percent as well. This means that thresholds automatically vary with changes in living standards over time, and it avoids the need to select a price index. It also means that thresholds over time cannot be used to ascertain how many people are lifted over a fixed living standard. For example, if median resources fell but the resources of those previously in poverty remained unchanged, the poverty rate would fall, despite the population with few resources being no better off.

⁹⁷ Subjective thresholds can be determined, for example, using reports to questions regarding minimum needs and actual income or spending. Examples using U.S. data include the following: Garner and Short (2003, 2004); De Vos and Garner (1991); and Garner and De Vos (1995). Recent international examples include, for example, Bishop et al. (2014); Buttler (2013); Carbonnier (2019). Much of this work depends of that of Goedhart et al. (1977). Kapteyn et al. (1988), Van Praag et al. (1980).

⁹⁸ See Hoopes et al. (2020) and available at <https://www.unitedforalice.org>

⁹⁹ <https://www.epi.org/resources/budget>

¹⁰⁰ For example, see *The Self-Sufficiency Standard for Washington State 2020* produced by Diana M. Pearce, August, 2020. http://www.selfsufficiencystandard.org/sites/default/files/selfsuff/docs/WA2020_SSS.pdf

¹⁰¹ See Nadeau (2019) and available at <https://livingwage.mit.edu/>

¹⁰² For the Canadian official measure of poverty, basic needs thresholds are produced; see Heisz (2019) and STATCAN (2016). For the Italian example, see Cutillo et al. (2019).

¹⁰³ Basic needs budgets can be updated to also reflect differing quantities and qualities of the basic bundle of goods and services in the budgets, thus prices alone are not the only factor that influence the updating. For example, if the quality of childcare within an area has increased this will be reflected implicitly in the cost for childcare included in the budget. In addition, basic needs budgets are expected to be rebased periodically to reflect differing combinations of goods and services considered to be essential. For example, a basic needs budget created for 1990 would likely not have included internet while one based on 2020 would.

Updating By Inflation

Holding constant a fixed standard of living by updating thresholds with inflation each year allows a poverty measure to be used to evaluate progress in lifting people above a fixed living standard over time without “moving the goalpost.” When updating for inflation, an index must be chosen that represents the price change over the comparison periods of interest. Identifying an index that allows one to hold the living standards constant over substantial periods of time and that accurately measures inflation is difficult.

The choice of the inflation adjustment should be based on the concept underlying the living standards threshold. If the threshold to which resources are compared is assumed to represent some fixed standard of living, then an inflation adjustment based on cost of living and consumer utility theory would be ideal.¹⁰⁴ How that living standard is defined is relevant for the selection of an inflation adjustment. For example, if the living standard is defined such that the flow of services derived from owned vehicles and owned shelter and in-kind benefits like Medicaid and free and reduced priced school meals are included, the inflation adjustment should reflect the changes in prices associated with these items in addition to price changes for consumer purchased goods and services. If the living standard selected does not account for education or medical goods and services, these would not be included in the inflation adjustment.

The threshold in the Official Poverty Measure (OPM) is based on a fixed standard of living. Accordingly, the All-Items Consumer Price Index – Urban series (CPI-U), published by the BLS, is used to adjust the value of the baseline thresholds to account for changes in prices from year to year.¹⁰⁵ However, research suggests the CPI-U does not fully account for changes in quality and substitution of goods and services to attain a constant living standard (see Moulton 2018).¹⁰⁶ Thus, the CPI-U is an upper bound to a cost of living adjustment for the general population. As a result, adjusting the OPM thresholds by the CPI-U could result in “moving the goalpost” over time. The CPI-U has undergone improvements in recent years (see BLS 2020) that partly address these issues. Alternative price indices including the Chained CPI-U (C-CPI-U), also produced by the BLS, and the Personal Consumption Expenditures (PCE) price index, produced by the Bureau of Economic Analysis, more extensively address these issues, though still not fully.

It is important to note that the CPI-U, C-CPI-U, and PCE indexes reflect price increases for the total population (in the case of the PCE) or total urban population (in the case of the CPIs). When adjusting poverty thresholds, there could be a compelling justification to develop and use a price index restricted to a lower income subpopulation for an income-based measure and a price index restricted to a lower consumption subpopulation for a consumption-based measure if these subpopulations face different rates of inflation than the general population at large. While some research has found that lower income subpopulations have experienced similar or lower rates of price inflation than the broader population (e.g., Garner et al. 1996; McGranahan and Paulson 2006; Broda, Leibtag and Weinstein 2009), other research comes to the opposite

¹⁰⁴ Under consumer utility theory, a cost-of-living (COLI) based index reflects a fixed “standard of living” because consumers can shift between variates of goods – and even different bundles of goods – to achieve the same “standard.” (see ILO CPI Manual 2004).

¹⁰⁵ The CPI is assumed to be a very close approximation to a cost of living index. For more information on the CPI and additional BLS produced consumer price indexes, see <https://stats.bls.gov/cpi>

¹⁰⁶ A separate Interagency Technical Working Group has been focusing on this issue with respect to the OPM and other income measures produced by the Census Bureau; see OMB (2019) for the Federal Register Notice requesting public input.

conclusion that lower income subpopulations face higher rates of inflation (e.g., Kaplan and Schulhofer-Wohl 2017; Jaravel 2019). This research raises questions regarding whether the spending pattern among the poor is sufficiently different from the population at large to warrant specifically designed price indexes for the poor.

An alternative approach to using an all-items basket in the above inflation measures is to restrict the set of goods and services to those corresponding to a baseline thresholds that represents the budget needed to afford specific, basic needs. Statistics Canada and the Italian Statistical Office update their official poverty thresholds in this way, updating each component of the fixed basket of goods and services for inflation each year. The price index adjustment factors differ for each geographic area based on the assumption that price trends may differ.¹⁰⁷

Recommendations:

33. The Working Group recommends that the BLS conduct a study of price indexes appropriate for use in updating thresholds that would be used in combination with consumption and income as defined in this report.

Updating through Re-Estimation

Updating thresholds through re-estimation is the approach most often used when adopting basic needs thresholds. For example, the SPM thresholds are updated each year through re-estimation. In the case of most budget-built thresholds, geographically specific monthly or annual costs of components, for example center-based childcare, are used to set and update the budgets. However, when cost or price data are not available for the threshold year, area-specific (e.g., for the Washington metropolitan area) and commodity specific prices indexes (for example, those for food, housing, health) are used. Once the value of each budget component is updated to threshold year dollars, the sum of the components represents the new threshold year budget.¹⁰⁸

Sharing and Adjusting for Different Sharing Unit Sizes

The OPM uses the family as the resource sharing unit, while the SPM includes cohabitators and non-relative or foster children as well in the resource sharing unit. The CE Survey defines the sharing unit as the consumer unit,¹⁰⁹ which in most cases is the OPM family and SPM unit, but it

¹⁰⁷ Intra-area price indexes, not inter-area indexes, are used. For Canada, see STATCAN (2016), and for Italy, see Cuttillo et al. (2019).

¹⁰⁸ This approach is used for geographically defined basic needs thresholds. For example, the costs of the components that comprise the Economic Policy Institute (EPI) Family Budgets Calculator (Gould et al., 2018), Living Wage Calculator (see Nadeau 2019), and United Way ALICE budgets (see Hoopes et al. 2020) are updated each year based on data for that year and geographic area when available, and when not available by item or commodity group specific consumer price indexes for components applied to earlier year values. The Self-Sufficiency Standard, or thresholds are generally re-based every three years, with cost components that apply to all states updated on an annual basis for all states (see Pearce 2020).

¹⁰⁹ A consumer unit comprises either: (1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their income to make joint expenditure decisions. Financial independence is determined by the three major expense categories: Housing, food, and other living expenses.

is not identical. The approach for defining a resource sharing unit assumes equal sharing across the unit; however, whether that is true or not, is difficult to determine. The assumption of equal sharing is the subject of research on the intra-household allocation of resources, often with reference to poverty measurement.¹¹⁰

In order to ascertain the poverty status of individuals in a society, data from the resource sharing unit need to be converted to the individual level in order to obtain comparable measures of resources across units of differing compositions (e.g., numbers of adults and children, age of children, disability status). This conversion is most often accomplished through the application of an equivalence scale. In its classic form, the equivalence scale question is "How much does it cost for a sharing unit with composition X to get to the same welfare level as a sharing unit with composition Y?"¹¹¹ Desirable properties of equivalence scales, in general, are that needs increase with sharing unit size, marginal needs decrease with increases in size, differing needs of adults and children are considered, and economies of scale for larger sharing units are incorporated.

Larger sharing units require more resources to maintain a constant standard of living because they contain more people who consume those resources. However, larger sharing units may require fewer resources on average per person due to differences in need, buying in bulk, economies of scale in the production of certain commodities like home produced meals, within the household nature of "public" commodities like shelter and utilities, and whether home production is accounted for consumption.¹¹² Whether and how to account for these factors should be considered in the development and selection of an equivalence scale for poverty measurement.

Equivalence scales should reflect time and place.¹¹³ Food now accounts for a smaller share of consumption relative to housing than in the past. This means that equivalence scales have become flatter (scale elasticity closer to zero) and the marginal cost of adding one more person to the household is less than what it would have been in the 1960's when food accounted for a

To be considered financially independent, at least two of the three major expense categories have to be provided entirely, or in part, by the respondent. See: <https://stats.bls.gov/cex/csxgloss.htm>.

¹¹⁰ Researchers have noted that the assumption of equal sharing of living conditions is a very restrictive one open to criticism (see Jenkins, 1991, and Guio and Van den Bosch, 2020) For much of the poverty literature, a key assumption is that all members within a consuming unit are equally well-off. However, it does not consider alternative explanations of human behavior which result in some members being better off while others are worse off; for example, one adult consumes most of the resources for a family with little left over for any other adult or children. If there is not equal sharing of living conditions, an assumption of equal sharing could result in a downward bias in estimations of the extent of poverty especially among some subgroups, such as women and children. In addition, by masking potential differences in poverty among consuming unit members, the effectiveness of poverty programs targeted to individual consuming unit members may be biased. For additional empirical research, see Bargain et al. (2014); Basu (2006); Botha and Ribar (2020); Calvi et al. (2020); Cherchye et al. (2015, 2016, 2017); De Vreyer et al. (2020); Dunbar et al. (2013); Lechene et al. (2020); Lewbel and Pendakur (2020); Penglase (2020); World Bank (2018).

¹¹¹ At one extreme is that each additional person costs the same as the first, a per capita equivalence scale adjustment with a scale elasticity of one. At the other extreme is no adjustment for sharing unit composition, with a scale elasticity of zero. The per capita scale does not account for economies of scale and the no adjustment option assumes perfect economies of scale. Neither accounts for the differing needs of adults and children or for other compositions. Alternatives that account for the differing needs of adults and children are those of the OECD (2013), and for adults and children plus an economies of scale factor are those recommended in the *Measuring Poverty* report (National Research Council 1995) and the ITWG SPM (2010).

¹¹² See Nelson (1993) Folbre et al. (2018).

¹¹³ For a discussion of this point see Mysiková et al. (2020).

larger share of consumption.¹¹⁴ Various approaches to derive equivalence scales exist in the literature. For example, there are utility or behavior-based approaches from analysis of expenditure survey data, expert judgment of what is considered reasonable, and approaches derived from individual responses to questions about minimum income and spending.¹¹⁵ Varying equivalence scales have been produced for different countries (e.g., Daley et al. 2020, Mysíková et al. 2020) and based on differing commodities or commodity bundles (e.g., Phipps and Garner 1994, Renwick and Garner 2020).

There is no consensus on the best equivalence scale for poverty measurement, nor is there consensus on whether the same equivalence scale should be used for both an income resource measure and a consumption resource measure. Empirical evidence can help determine the limits of what makes sense, but the setting of scales is more a matter of judgement than the application of scientific theory (National Research Council 1995; Nelson 1993). Questions to guide the selection of equivalence scales include the following:

- Would a sharing unit equivalence scale that accounts for the differing needs of adults and children and for economies of scale be used for monetary income but a per capita scale be applied to in-kind transfers like Medicaid and school meals? Would there be a different scale for WIC, LIHEAP, and subsidized housing?
- For an income resource measure that accounts for health insurance, would there be different equivalence scales to account for economies of scale in the purchase of a private family health insurance plan (e.g., a family plan for two adults and one child costs the same as for two adults and five children) as opposed to the provision of a public plan at the individual level?
- For a consumption resource measure that accounts for health insurance, would one account for economies of scale in purchasing a family plan or for per capita consumption of health insurance?
- For a consumption resource measure, would one apply different equivalence scales to various commodities as opposed to depending on a general equivalence scale to reflect differences in economies of scale across all consumption?
- And in addition, would the equivalence scale selected differ if the adults are related (i.e., by blood, marriage or other legal arrangement) or not, or by gender? For example, low economies of scale in shelter would be assumed when two adults are not related since each would require a separate bedroom, and when the gender of children differs since parents often prefer separate bedrooms for boys and girls.

¹¹⁴ Differences by housing tenure have also been reported. See Goedemé et al. (2017) who reported that housing costs are the primary driver of economies of scale and, in Europe, there is a difference between economies of scale for owners and renters. When housing costs increase, the relative cost of additional household members decreases, resulting in a flatter implicit equivalence scale. They note that the OECD equivalence scale neglects differences in economies of scale by tenure status, and across countries. In addition, the OECD scales appear to underestimate the additional cost of children, especially for families with older children and with low housing costs (outright owners or those who benefit from subsidized rent).

¹¹⁵ For an overview of equivalence scales, see Buhmann et al. (1988). For examples of model-based scales, see: Daley et al. (2020), Merz et al. (1994), Johnson and Garner (1994/95), Nelson (1993), Phipps and Garner (1994), and Renwick and Garner (2020). For scales based on responses to minimum income or spending questions, see: Bishop et al. (2014, 2017), Garner and Short (2003), Mysíková et al. (2020). And for expert scales see: OECD (2013) and ITWG SPM (2010).

Recommendations:

34. *The Working Group recommends that an expert panel conduct a study of and make a recommendation regarding the application of equivalence scales that would be most appropriate for the income and consumption resource measures recommended in this report. In the interim, the Working Group recommends that for any resource measures produced an equivalence scale be applied that accounts for the potentially differing needs of adults and children and economies of scale.*

Adjusting Poverty Thresholds Across Geographic Areas

When setting poverty thresholds, it must be determined whether thresholds should vary over different geographic areas, and if so, how. This section summarizes factors to consider when determining whether to geographically adjust poverty thresholds. It then describes some methods for implementing any potential geographic adjustment.

Factors to Consider When Determining Whether to Adjust Poverty Thresholds Across Geographic Areas

The cost of housing and other goods and services varies across geographic areas. The average market rent in New York City far exceeds the average market rent in rural Mississippi. As a result, when comparing two families with the same income, the family renting a home in New York City will generally have fewer resources available to meet other needs such as for food and other goods and services than a family renting a home in rural Mississippi. These differences in costs are reflected in other government policies. For example, “School districts in high-cost environments must spend more than school districts in low-cost environments just to provide the same level of educational services” (Cornman, Nixon, Spence, Taylor, and Gevertz 2019 p.1). While the OPM does not vary poverty thresholds by geography, the SPM accounts for these differences in prices by setting thresholds higher in high-cost places like New York City and lower in low-cost places like rural Mississippi (see Appendix for more on this method). Another approach is basic needs thresholds that tie thresholds to the budget needed to afford a specific subset of goods and services in a local area to account for these geographic price differences as well.

At the same time, price differences generally reflect differences in the attributes of a location, sometimes called amenities. Home prices are higher on average in locations with more costly attributes because consumers are willing to pay a premium to have access to those attributes. Such attributes include any characteristic of a location that affects the desire to live there such as employment opportunities, the quality of public schools and other services, and clean air and water.¹¹⁶ A full geographic adjustment of thresholds by price alone does not account for the differences in these attributes across areas that may have important benefits for lower income people.

¹¹⁶ Attributes that have been found to be associated with home prices or rents include wages and employment opportunities (Roback 1982; Ruggles 1990; National Research Council 1995; Hirsch 2011); the presence, number, and quality of public goods such as schools, parks, libraries, fire and police (Tiebout 1956, Oates 1969, Black 1999, Epplé 2008; Bayer et al. 2019); pollution (Davis 2004, Chay and Greenstone 2005); and safety net programs such as TANF (Glaeser 1998).

To the extent that people can choose their locations, it follows that when people live in high-cost areas, the value they place on that location's attributes exceeds the higher cost they must pay to live there. However, people, and in particular those with low incomes, may experience constraints on their choices to live in a particular area or to move to another, as well as their access to the attributes where they live. For example, high moving costs,¹¹⁷ strong social ties (Dawkins 2006),¹¹⁸ and historic and current racial discrimination and housing segregation (Turner et al. 2012; Massey and Denton 1993; Krysan and Crowder 2017) contribute to lower levels of long-distance mobility among low-income households (Gimpel 1999). As a result, lower-income people "often bear the costs of amenities through higher housing prices, regardless of whether or how much they actually value them" (Curran 2008, p.3). On the other hand, when costs prevent families from leaving low cost areas with undesirable attributes, geographic adjustments could remove from the poverty rolls those in a particularly unfortunate situation; those particularly disadvantaged who are unable to move.

To help inform the decision over whether to geographically adjust poverty thresholds, some researchers have examined whether geographic adjustment of thresholds would lead to a poverty measure that better identifies the most economically disadvantaged than would thresholds that are not geographically adjusted. For example, Meyer, Wu and Curran (2020) found that people near a non-geographically adjusted threshold in high-cost areas were significantly better off using many deprivation indicators than people near the threshold in low-cost areas.¹¹⁹ This finding implies that geographically adjusting thresholds by raising them in high-cost areas and lowering them in low-cost areas could lead to a poverty measure identifying a less deprived group of people. Other research is less conclusive but suggests that same pattern of higher well-being in high-cost areas (Renwick 2018, Baker et al. 2018).

¹¹⁷ Moving costs include the transportation of households, their belongings and, in some cases, the storage of those belongings (Amundsen 1985; Edin and Englund 1991; Nordvick 2001; Tunstall et al. 2013). Faced by these costs, low-income households are least likely to have the savings and wealth to afford them (Brown and Braga 2019). Using data from the 2017 American Housing Survey (AHS), Zamboni and Martin (2020) found respondents with lower incomes and lower levels of education were less likely to have financial resources to evacuate from disaster areas. In the Urban Institute's Well-Being and Basic Needs Survey, almost half (49.5%) of families below the Federal Poverty Line said they were not confident they could come up with \$400 to meet an unexpected expense (Brown and Braga 2019: 5). Barriers to mobility are higher for African-Americans who both have lower amounts of wealth than white households and face more housing discrimination (Oliver and Shapiro 1995; Conley 1999).

¹¹⁸ Social ties may play role in migration decisions when families must contend with losing economic and social supports of their extended families and communities in their origin location and weaker ties in their destination locations (Dawkins 2006). In a study of the role of social ties in migration processes during the Great Migration, Carrington (1996) found that migration is more likely when social ties are already established in the receiving location. He found that large numbers of individuals and families moving at one time and increases social ties between originating and receiving locations provided more places for new arrivals to stay as they searched for work and shelter. For more information on the history and causes of the Great Migration, see Tolnay (2003).

¹¹⁹ This research examined nine domains of material well-being. Across the two poverty measures used, seven of these domains had multiple statistically significant indicators that suggested that those identified as poor were better off with a geographic adjustment. These domains included measures of health; measures of assets and net worth; food security; housing problems like leaks or holes in floors; education; mortality; and a long-term income measured using tax records. One domain, material hardships, such as inability to pay bills, phone or electricity disconnected, or eviction, did not have any statistically significant indicators. The last domain, appliance ownership including dishwashers, computers, cell phones and the like, had multiple significant coefficients pointing in each direction.

Methods for Implementing Any Geographic Adjustments

If it were determined that a geographic adjustment should be applied to thresholds, methods for implementing the adjustment would need to be considered.

Across the federal government, as well as other places, and for a variety of different purposes, geographic cost adjustments are used. After reviewing these, the ITWG determined that there are two general categories of geographic cost adjustments: those which would be more appropriate for an alternative poverty measure, and those which would not. Appendix Table C1 summarizes the geographic cost adjustments that are better suited to a federal agency producing an alternative poverty measure; Appendix Table C2 summarizes several other geographic cost adjustments that the ITWG determined were inappropriate for the application at hand.

The geographic cost adjustments that are potentially useful when considering developing an alternative poverty measure include: Median Rent Index (MRI), Regional Price Parities (RPP), Regional Price Parities for Food, Apparel and Rent (RPP-FAR), and Comparable Wage Index (CWI).

The MRI, produced by the Census Bureau, is used to geographically adjust the housing portion of nationally defined poverty thresholds for the SPM. It only covers rent and utilities,¹²⁰ and is therefore considered a partial cost adjustment. It is calculated based on median gross rents using the ACS (see Appendix C. Choices for Geographic Cost Adjustments). RPPs are produced by BEA and used for price-adjustments of personal income. RPPs cover all goods and services measured in the CPI.¹²¹ The RPP-FAR is similar to the RPPs but focuses on expenditures included in the SPM threshold (namely, food, apparel and rent). Finally, the CWI, produced by the Census Bureau, could be utilized to geographically adjust the entire threshold based on wage differentials. The CWI is a modification of the Comparable Wage Index for Teachers (CWIFT), which is used to facilitate comparisons of educational expenditures across school districts by the National Center for Education Statistics.¹²²

Another possibility that one could consider is some partial adjustment of thresholds to prices. Both proportional scaling of adjustments (Hirsch 2011, Renwick 2018) and nonproportional adjustments have been suggested (Kaplow 1995, Glaeser 1998). However, there are difficulties with estimating the appropriate nonproportional adjustments that some have argued are daunting (Greenstone 2017).

If adjusting poverty thresholds by geography, it is necessary to determine which level of geography is appropriate. One may not want to adjust at such a local level of geography that would result in a different threshold in every neighborhood. On the other hand, adjusting at an aggregated level of geography (like state or region) would mask cost of living differences within those areas. An example of a possible level of geography for which to produce thresholds is the

¹²⁰ Calculated based on renter units, and then applied to both renter- and owner-occupied housing.

¹²¹ Some (see World Bank 2017) have argued that a Poverty Purchasing Power Parity (PPPP) could improve upon currently produced Purchasing Power Parity (PPP) for use in calculating poverty statistics. The idea is that if the spending patterns among the poor are different from the population on average, and that these differences are relevant across areas, then PPPPs could be used to adjust poverty thresholds. As a reference, see the work of Allen (2017) who has proposed a new basis for an international poverty measurement based on PPP methodology. Such a methodology could be applied to the U.S. if geographic adjustment of thresholds is deemed appropriate for poverty measurement.

¹²² The National Center for Education Statistics applied the CWI to data in the Congressionally mandated report entitled the Study of the Title I, Part A Grant Program Mathematical Formulas (NCES 2019-016).

one used to produce the SPM – the Metropolitan Statistical Area (MSA) level which mirrors labor market areas. For more information on this, see Appendix C. Choices for Geographic Cost Adjustments.

Other considerations in deciding whether to geographically adjust poverty thresholds include those related to whether implementing an adjustment is feasible. For example, the difficulty of appropriately measuring prices has frequently been given as a reason to not adjust thresholds. Additionally, producing a consistent historical time series could be challenging if the data and/or methodology underlying the geographic adjustment changes.

Recommendations:

35. The Working Group recommends that expert review be sought on all of the considerations described above because whether and if so how to adjust poverty thresholds across geographic areas is a complex topic.

Accounting for Units With Child Support Obligations and Work And Childcare Expenditures

With regard to the thresholds, the Working Group considered the specific circumstances of several subpopulations including noncustodial parents making child support payments and families paying for childcare, commuting costs, or other expenditures required to obtain employment. Theoretically, poverty metrics could make adjustments for these groups by creating population-specific thresholds or by altering the resource totals.

An influential commentary on this topic was included in *Measuring Poverty*, which recommended that out-of-pocket payments for child support and work expenditures (including childcare) be subtracted from available resources instead of adjusting the thresholds for these perceived needs of various types of families. One reason for this decision was that the creation of many additional thresholds was believed to complicate their presentation and add too much complexity to capture all variants. Moreover, the average expenditures¹²³ for these categories varied considerably even among families with similar characteristics, and the sample sizes in the CE Survey—the primary source of consumption measurement in the United States—were too small to support reliable estimates of multiple thresholds.

One potential disadvantage of accounting for these expenditures in resources instead of creating alternative thresholds based on each families' estimated needs is that efforts to provide public services for these efforts—through policies such as subsidies and tax credits—are only captured to the extent to which they reduce the out-of-pocket costs for these items. Subtracting these expenditures from resources instead of creating different thresholds cannot fully capture public investments such as: transportation vouchers, childcare subsidies, and educational scholarships or reductions in tuitions at public institutions. It can also produce some unintuitive outcomes when the introduction of public benefits intended to assist the poor result in increases in statistical poverty rates. For instance, expansions in public programs providing subsidized

¹²³ For example, while some families require full-time paid childcare, other families utilize uncompensated care from relatives for their care needs. For work-related expenditures some persons are able to work at or near their homes while other persons have long commutes to and from their places of employment.

childcare sometimes increase poverty rates as measured by the SPM because the small out-of-pocket contributions that the families make for these childcare plans are just enough to decrease their incomes to below the thresholds. This concern could theoretically be mitigated by estimating the values for these investments and adding them to resources.

Other Elements of a Poverty Measure

Other elements of a poverty measure must be specified as well, including the time interval, and whether to use a headcount or poverty gap measure.

The time interval is the period of time during which resources are aggregated and poverty status is determined by comparing resources against thresholds. Poverty measures based on annual time intervals are the most common and benefit from the current availability of annual data from most potential data sources. The Working Group discussed other possible time intervals as well.

Headcount poverty measures, such as the OPM, count the number of people in sharing units whose resources fall below their poverty thresholds. Poverty gap measures calculate the difference between resources and thresholds for each poor sharing unit, and sum these differences across all poor sharing units. The Working Group discussed the advantages and disadvantages of headcount and poverty gap measures.

Consensus Recommendations Worthy of Further Research by the Federal Statistical System

As this Working Group's time is limited, the Working Group finds it important to focus on the alternative measures previously discussed more extensively, but to acknowledge additional research areas worthy of further research by the Federal Statistical System. Additional information on these additional research areas follows.

Additional Research on Income and Consumption Poverty

Throughout this report the Working Group has identified numerous areas in the measurement of income and consumption poverty that will require additional research. While these are described in the body of the final report, some of the major areas requiring additional research are listed here:

- Continued work to improve measurement of childcare and other work-related expenses and methods to cap them.
- Additional research on how to treat MOOP.
- Research on a precise method to tie the value of health insurance to a person's resources: specifically, the feasibility of developing a method to downwardly adjust the market value.
- Continued research and additional stakeholder and expert engagement on whether and how to treat education within resource measures, including whether to deduct out-of-pocket education expenditures on tuition and other educational items.
- Research to impute the net value of service flows from owner-occupied shelter and the net value of service flows from owned vehicles given current CPS ASEC and ACS data limitations.

- Research to assess ways in which survey data might be made more comparable to administrative data (e.g. changing the reference period for income from the previous 12 months to the previous calendar year).
- Continued research to improve regression-based modeling such as Sequential Regression Multiple Imputation (SRMI) as new tools and techniques become available.
- Continued research into availability and applicability of administrative records.
- Research on ways to reduce survey burden and improve the quality of resulting data through increased access and use of administrative data in surveys including the CPS ASEC, ACS, and CE.
- Research to develop a consumption-based resource measure by BLS using the CE Interview Survey
- Research to identify an interim solution for each set of the measures for applying thresholds to produce a full poverty measure by the time the proposed research measures are ready to be published.
- Study by an expert panel regarding the application of equivalence scales for use with for the income and consumption resource measures recommended in this report.
- Expert review on the entire topic of geographically adjusting thresholds with all of the considerations described in the report.
- Study of price indexes appropriate for use in updating thresholds that would be used in combination with consumption and income as defined in this report by BLS.

To investigate these areas as well as others, the Working Group recommends that federal agencies seek expert input through the establishment of a National Academy of Sciences panel and potential a new Interagency Technical Working Group. A list of recommendations is available in Appendix D. List of Working Group Recommendations.

Other Measures of Well-being Beyond Income and Consumption

There are other poverty measurement approaches that may be worthy of further research by the Federal Statistical System. One approach is to directly measure hardships (Mayer and Jenks 1989) such as food insecurity or rent burden. Another approach is to examine multiple dimensions of well-being beyond income and consumption, including material well-being, education, and health.¹²⁴ Yet another would be the approach on social exclusion described in the recent UNECE report.

Material Hardship

There have been many studies of material hardship indicators, completed inside and outside the federal statistical system. (See Bauman 2003; Short and Shea 1995; U.S. Census Bureau 2003, 2005; Short 2005; Carle et al. 2009; Short 2015; Mykyta and Pilkauskas 2016; Mayer and Jencks 1989; Meyer and Sullivan 2003, 2011, 2012.)

¹²⁴ See Federman et al. (1996) for an approach to consider a number of related but independent measures. Also see a recently published UNECE report on social exclusion (UNECE 2020) that identifies financial wellbeing as one aspect of social exclusion (a term some refer to as multidimensional poverty), but is not the only nor necessarily the most important concern. Yet, in Europe most definitions of poverty include social exclusion as an underlying concept. For example, the poverty definition adopted by the European Union in 1975 states that “people are said to be living in poverty if their income and resources are so inadequate as to preclude them from having a standard of living considered acceptable in the society in which they live” (Nolan and Whelan, 2010).

In 2004, the U.S. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation released a final report¹²⁵ of their 2002 Roundtable Meeting on Measuring Material Hardship attended by over 35 researchers and experts from both inside and outside the government (Isaacs 2004). This report:

- Discusses the ways in which material hardship had been conceptualized and operationalized by researchers;
- Highlights where there was consensus and differences across material hardship definitions and measurement approaches;
- Summarizes what they knew about the material hardship measures that had been used to date in domestic research;
- Presents new analyses of the SIPP for the purpose of furthering the understanding of material hardship measurement among families and children.

Multidimensional Poverty

The United Nation's Sustainable Development Goals recognize that poverty has multiple dimensions and include a target to reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions by 2030. The Global Multidimensional Poverty Index (MPI) developed by the Oxford Poverty and Human Development Initiative (OPHI) and released by the United Nations Development Program (UNDP) in the Human Development Report since 2010 is an internationally comparable measure of acute multidimensional poverty.¹²⁶ The MPI developed at Oxford University with the UNDP's Human Development Report Office uses ten indicators to measure three critical dimensions of poverty at the individual level: education, health, and material living standards.

Following this trend, in October 2018, the World Bank presented its own multidimensional poverty measure (World Bank 2018). The World Bank's Atkinson Commission Report "Monitoring Global Poverty" (World Bank 2017), advised to use a six-dimensional measure of overlapping deprivations. The report advised that this measure should cover health, nutrition, education, work, living standards, and violence.

Multidimensional poverty indices (MPIs) have also been developed by many countries as official national poverty statistics.¹²⁷ The MPIs that are in place include a range of indicators such as health, education, living standards, social inclusion, violence, and employment, among others. National MPIs reflect national priorities and are constructed using national datasets. However, they cannot be compared. Some examples of dimensions used in official multidimensional poverty measures include health, education, work, housing, living standards, basic services, environment, personal security (safety from violence), food security, and childhood and youth. Suggestions for several new indicators surfaced to build national MPIs based on updates in the EU-SILC surveys after 2013. For example, an indicator for education could include assessments of

¹²⁵ Available at <https://aspe.hhs.gov/report/measures-material-hardship-final-report>

¹²⁶ See the Oxford Poverty & Human Development Initiative's Global Multidimensional Poverty Index (Oxford University, 2014), or UNICEF's Child Poverty Report (Fanjul, 2014) for other examples of multidimensional poverty.

¹²⁷ The governments of Colombia, Mexico, Bhutan, Chile, El Salvador, Costa Rica, Honduras, Malaysia, Vietnam, South Africa, Ecuador, Pakistan, Armenia, Mozambique, Panama, Nepal, Dominican Republic, Nigeria, Sierra Leone, the Philippines, and Afghanistan, among others, have implemented and included nationally adapted multidimensional measures of poverty in their long term social development strategies.

an individual's obtained skills (e.g., via adult education, national education schemes, vocational training, open learning). The previous indicator consisted of the level of education.¹²⁸

Some work has been done to develop these types of measures for the U.S., including two 2019 reports using ACS data, one from the Census Bureau (Glassman 2019) and a paper by Dhongde and Haveman (2019).¹²⁹ Indicators used in these studies include income poverty status, incompleteness of high school education, lack of health insurance, number of disabilities experienced by an individual, overcrowding, housing costs, English fluency, and neighborhood characteristics but there are important differences in the specific dimensions selected and the definition of deprivation for each dimension across studies. For example, Glassman includes official poverty status and neighborhood characteristics as dimensions while Dhongde and Haveman do not. On the other hand, Dhongde and Haveman examine English fluency while Glassman does not. The ACS does not include any questions on health status so these studies have either omitted health status or attempted to impute it from other surveys. The Census Bureau is continuing to refine the work on its multidimensional measure, presenting working papers at conferences and consulting with academics, including Dhongde and Haveman, engaged in this research.

While these multidimensional approaches offer many advantages, this interim report does not cover them in any depth given their complexity, the limited research with U.S. data, and the limited time of the Working Group. The federal statistical system may want to convene another Working Group to examine the challenges and opportunities for developing this type of multidimensional measure for the United States.

Recommendations:

36. The Working Group recommends continued research and additional stakeholder and expert engagement on whether and how to develop multidimensional measures. Focus should be on operationalizing such a measure in the policy context, ideally with indicators that are directly linked to policy levers.

Populations Included in Poverty Measures

Another topic that merits further evaluation is the exclusion of certain individuals. In particular, those experiencing homelessness are generally excluded from the frames of most of the household surveys the Working Group has considered.¹³⁰ If the purpose of the poverty measure

¹²⁸ UNECE (United Nations Economic Commission for Europe), 2017, Guide on Poverty Measurement, United Nations, New York.

¹²⁹ See Dhongde et al. (2019) for an examination of well-being and deprivation in a multidimensional framework using American Community Survey data from 2008 through 2017 and Glassman, Brian, "Multidimensional Deprivation in the United States: 2017 American Community Survey Report (U.S. Census Bureau, 2019). Earlier work used the National Health Interview Survey (Alkire and Foster, 2011), the CPS ASEC (Mittra and Brucker, 2016), the American Community Survey (Reeves et al., 2016), the Survey of Income and Program Participation (Short, 2005), the Panel Study of Income Dynamics (Ciula and Skinner, 2015), and the General Social Survey (Wagle, 2014) to measure multidimensional deprivation in the United States.

¹³⁰ The ACS and the CPS ASEC includes those experiencing homelessness who are staying in shelters, but not those who are un-sheltered. The number of noninstitutional group quarters in the CPS ASEC sample tends to be small and is not nationally representative.

is to count the number of individuals and families experiencing extreme hardship, measures that exclude some of the least privileged members of society are problematic. Each year, HUD publishes an Annual Homelessness Assessment Report (AHAR) to Congress. Part 1 of the AHAR reports Point-in-Time (PIT) estimates of sheltered and unsheltered homelessness collected by Continuums of Care (CoC) across the United States on a single night in January, and Part 2 reports annual estimates of homeless prevalence using data from Homelessness Management Information Systems (HMIS). When the data collection time periods align with those of household surveys, PIT estimates provide a potentially useful way to quantify undercoverage of homeless persons in household surveys. HUD's 2019 AHAR Part I reported that roughly 568,000 people experienced homelessness on a single night in 2019, including 396,000 persons experiencing homelessness as individuals and 172,000 persons experiencing homelessness in families with children (U.S. Department of Housing and Urban Development 2020). The number of persons experiencing homelessness may be even higher with several factors potentially contributing to underestimates, including difficulties inherent in locating and obtaining cooperation from persons experiencing unsheltered homelessness, logistical issues of collecting in-person point-in-time data over large geographic areas, and underestimates of persons experiencing homelessness on Indian reservations (U.S. Department of Housing and Urban Development 2007, Link et al. 1994, National Academies of Sciences, Engineering, and Medicine 2018).¹³¹ The AHAR does not report on the incomes of homeless individuals and families, but research by Burt et al. (1999) using the National Survey of Homeless Assistance Providers and Clients (NSHAPC) found that mean incomes of homeless individuals and families were about half of the Official Poverty Line.

In addition, other excluded populations would also benefit from additional research. These excluded populations include unrelated individuals under age 15 (i.e. Foster Children), persons living in military barracks, incarcerated individuals, people living in nursing facilities and those living in college/university housing. In addition, research on the impact of undercoverage and nonresponse bias on poverty estimates would be useful. At a minimum, the Census Bureau and other federal statistical agencies should explicitly acknowledge the limitations of their household survey frames and explore ways to examine the well-being of these excluded groups.

Accounting for Other Types of Services

Not being considered as part of income or consumption are what are often referred to as “unpaid domestic services.” These include, for example, own-produced services such as laundry, cooking meals, caring for adults and children, housekeeping and management, and growing one’s own food. The production of these services clearly impacts the well-being of the household (see Zacharias 2017; Folbre et al. 2018; Suh and Folbre 2016; Wolff et al. 2012). Although time use data can be used to value these, this information is not currently collected in conjunction with available income and consumption data, so the Working Group is not currently including these types of services in the alternative measures more extensively examined.¹³²

¹³¹ Continuums of Care are asked to use sampling and extrapolation methods consistent with HUD standards to address undercount issues when a census (complete coverage) is not conducted. (U.S. Department of Housing and Urban Development 2014: 8, U.S. Department of Housing and Urban Development 2018a: 22).

¹³² However, modeling can be used to produce such measures, for example, see Fernando Rios-Avila (2018) for a statistical match of CPS ASEC, American Time Use, and Survey of Consumer Finance data for the Levy Institute Measure of Economic Well-being (LIMEW).

Failure to take into account unpaid domestic services is a concern for both income and consumption poverty measures. For a consumption measure, if childcare services are included as consumption, families purchasing childcare will appear to be better off than families with a stay-at-home parent providing these services. For an income measure, families paying for childcare may be deemed “not in poverty” despite the fact that the resources available to purchase other basic necessities may be constrained by their childcare outlays.¹³³ Similar arguments can be made about other unpaid domestic services.

Identifying Poverty Status of Individuals within a Sharing Unit

The Working Group also acknowledges that there are limited data available about how a defined sharing unit actually shares their resources, but that it may be important to better understand whether individuals may be deprived within sharing units that are not identified as poor.¹³⁴ In their recent report, “Piecing Together the Poverty Puzzle,” the World Bank devotes an entire chapter to concerns about intrahousehold sharing (World Bank 2018, p.125). While there has been some work done with the EU-SILC and by UNICEF to look at individual level hardship indicators, the Working Group agreed that for the United States, there are not currently sufficient data to pursue these types of measures.

Timeliness of Income, Consumption, Poverty, and Other Well-being Measures

The COVID-19 pandemic brought to the fore the value of timely poverty measurement. In such times of rapid economic change, it is especially valuable to track the income of the American population overall and by demographic group. Unfortunately, official estimates of income and poverty from the CPS ASEC lag at least 9 months and up to a year and 9 months behind a given 12-month reference period. These official statistics are of little use to policymakers who would like to understand the dimensions of an economic crisis and respond. To address this gap, real-time information is needed. The Household Pulse Survey (HPS) was designed by the U.S. Census Bureau in conjunction with numerous other federal agencies, and fielded during the coronavirus pandemic and to meet such a need; the focus is on how households across the country have been impacted economically and socially.¹³⁵ The HPS collects direct indicators of well-being including, for example, food insecurity and insufficiency, not being able to pay one’s rent or mortgage, eviction from one’s home, difficulty in meeting expenses, lack of internet access, loss of employment income, interruptions in education, loss or lack of health insurance, and mental health concerns.¹³⁶ Such data provide insights regarding how individuals and families are dealing with the pandemic and have been reported on in the popular press and by policy makers. However, information on levels of income and income poverty is not collected. For monitoring large changes, it is also helpful to have a long baseline of prior history to interpret and validate measures. While some of the HPS questions have been asked in prior surveys (supplemental collections of the CPS ask about, for example, food insecurity and insufficiency, and the National Health Interview Survey asks about mental health concerns), some questions are being asked for the first time and the survey itself is new.

¹³³ The Supplemental Poverty Measure handles this issue by subtracting work-related out-of-pocket child-care expenses from resources before evaluating poverty status.

¹³⁴ For example, see Piccoli, (2017).

¹³⁵ <https://www.census.gov/programs-surveys/household-pulse-survey.html>

¹³⁶ See the following for tabulations of data for these and additional variables:
<https://www.census.gov/data/tables/2020/demo/hhp/hhp20.html#tables>

There are many models for a timely poverty measurement program that are income based. A convenient approach with some attractive properties has been employed by Han, Meyer and Sullivan (2020, 2021) relying on CPS Monthly data.¹³⁷ Several important features of these data should be noted. The income data needed to construct poverty measures are available with a lag of only a few weeks after the end of the 12-month reference period. While the sample is representative of U.S. families and individuals, only one-quarter of the full CPS Monthly sample is asked the income question. Finally, the income information is from a single global question and is recorded in intervals (that are narrow at low incomes).

Combining timeliness and accuracy presents a number of challenges and considerations. Is the CPS Monthly the best source? If so, could the sample be easily expanded? Should any significant changes be made to current CPS Monthly survey questions without hurting the availability of baseline and validation data? Should timely consumption poverty measurement be pursued as well? These and other questions seem appropriate for future discussion.

¹³⁷ Another approach was employed by researchers from Columbia University (Parolin et. al. 2020) who do not use timely income measures, but instead predict poverty using employment status and other variables.

Summary of and Responses to Public Comment

On February 14, 2020, OMB issued a Federal Register Notice seeking public comment on the Working Group's interim report, and in particular, the Working Group requested public comment on the following questions. For reference those questions are listed below, followed by the summary of and responses to the public comments received.

Questions Posed in Federal Register Notice for Public Comment

Definitions

1. How should a sharing unit be defined?

Resource measures

2. What standards should the group use to determine which resource measures should be preferred? Specifically, to what extent should the group consider the following standards: (i) association with other measures of material hardship, (ii) conceptual advantages, (iii) simplicity, (iv) feasibility (including data availability), (v) reproducibility?
3. Should the value of health insurance be incorporated? And if so, how?
4. Should the value of education be incorporated? And if so, how?

For a potential income resource measure:

5. What income sources should be included (aside from health insurance, which is addressed by question 3)? If so, how?
6. What expenses, if any, should be subtracted from income? For example, how should medical out of pocket (MOOP) expenditures be treated in a new measure? Should other expenses such as childcare and commuting costs be subtracted?
7. How should the Working Group address the problem of survey misreporting of income in household surveys?

For a potential consumption resource measure:

8. What types of spending should be included as consumption (aside from spending on health care or insurance, which is addressed by question 3)? If so, how?
9. How should vehicles and housing be included?
10. How should the Working Group address the problem of survey misreporting of consumption in household surveys? Should the group consider using only those types of consumption that are reported with greater accuracy, while excluding less accurately measured types of consumption? What are the tradeoffs in using only well-measured consumption versus full consumption?

Thresholds

11. How should the thresholds be set initially?
12. How should they be updated over time?
13. Should thresholds be adjusted for geographic areas? If so, how?
14. How should a sharing unit's size and composition be accounted for?

Summary of and Responses to Public Comments

A 60-Day Federal Register Notice (FRN) was published on February 14, 2020 and asked for comments to 14 questions on the Interim Report of the Interagency Technical Working Group on Evaluating Alternative Measures of Poverty.¹³⁸ The 14 questions centered around five themes: definitions, resource measures, “for a potential income resource measure,” “for a potential consumption resource measure,” and thresholds. This summary is structured following these themes and includes additional comments regarding general concepts and implementation.

By the closing date of April 14, 2020, almost 25,000 comments were received, with most of those being solely requests to extend the 60-Day comment period. Additionally, an extension was discussed by 37 of the 71 other commenters. Dozens of commenters stated, “The public comment period on this notice and interim report should be extended until after the current National Emergency is over.” The researchers believed that adequate attention could not be given to the FRN with the overwhelming disruption the coronavirus pandemic has created.

Response:

While a formal extension of the comment period was not provided during the deliberations of this Working Group,¹³⁹ many of the Working Group’s consensus recommendations call for further public input in the process of developing new measures. For example, the second recommendation of the report reads:

The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics engage with stakeholders and other experts throughout the development of the recommended measures, including soliciting additional public comment as needed. In particular, the Working Group recommends expert input through a National Academy of Sciences panel.

Below is a summary of the 71 responses that mentioned more than an extension of the 60-Day FRN comment period. The commenters usually included multiple criticisms or suggestions in their emails, letters, and responses.

Many commenters noted the profound implications of the measurement of poverty and noted that how poverty is measured has many lasting ramifications for how public policy is developed, administered, and assessed.

Counting the number of responses that mentioned a particular issue or position is difficult. For example, three Columbia University researchers sent a letter of comments co-signed by 30 other academic researchers and these comments were also repeated almost word-for-word by 10 other researchers who were not signatories to the letter and instead sent separate submissions. Another group of very similar responses was received from 14 organizations, mostly advocating on behalf of children.

¹³⁸ <https://www.federalregister.gov/documents/2020/02/14/2020-02858/request-for-comment-on-considerations-for-additional-measures-of-poverty>

¹³⁹ Comments received after April 14, 2020, were also considered by the Working Group.

Recommendations made by the Working Group are available throughout the report within discussion context, as well as in Appendix D. List of Working Group Recommendations.

Definition

1. How should a sharing unit be defined? A sharing unit is meant to reflect the set of people sharing resources in a household.

Only three commenters addressed this issue directly. Two suggested that the sharing unit reflect those people who jointly purchased core goods used to determine the thresholds (food, housing, clothing). A third argued against broadening the sharing unit to the whole household because this would not capture the impact of families forced to double up with non-relatives and suggested a NAS panel consider this issue in more depth.

Response:

The Working Group considered various possible sharing units. Further discussion of the Working Group's considerations is available in the section titled Sharing and Adjusting for Different Sharing Unit Sizes.

Resource Measures

2. What standards should the Working Group use to determine which resource measures should be preferred? Specifically, to what extent should the Working Group consider the following standards: (i) Association with other measures of material hardship, (ii) conceptual advantages, (iii) simplicity, (iv) feasibility (including data availability), (v) reproducibility?

Only a handful of commenters addressed this question directly. One commenter explicitly rejected the criterion of association with other measures of material hardship while others endorsed this criterion. Comments were made in support of conceptual advantages, reproducibility and feasibility as criteria. One commenter expressly opposed the criteria of simplicity. The comments in support of the criterion of association with other measures of material hardship emphasized the importance of looking at trends in these measures over time and whether or not the proposed poverty measure exhibits the same trend over time as measures of material hardship.

Most commenters responded to this question by giving their opinions on whether the Working Group should recommend any new measure, a new income measure, a consumption measure, or both. Most felt that income measures were preferable although some supported improvements to the Supplemental Poverty Measure (SPM) rather than a new measure noting that the SPM could incorporate administrative records.

There were more reservations expressed about a consumption measure, mostly focusing on concerns about the CE, specifically data quality concerns and the inability of the existing survey to support estimates for states or smaller geographies and/or smaller demographic groups. There was also concern about the failure of consumption measures to take into account debt. Some also expressed concerns regarding the sensitivity of consumption measures to methodological choices pointing to existing research that different consumption measures yield very different poverty levels. Others expressed concern that consumption measures currently produced by

outside researchers show poverty declining during the Great Recession when other measures of material hardship were on the rise. One comment argued that consumption measures of poverty do not reflect the lived experience of scarcity and expressed concern that consumption on housing rises, making one appear less poor, when a household's rent rises.

Many commenters noted that a consumption measure should only be produced as an experimental alternative and should not replace income measures. One commenter strongly favored a consumption measure because it was more closely correlated to material hardship.

Most commenters seemed to favor the development of both income and consumption measures. There were also some who encouraged the development of a multidimensional measure.

Response:

The final report discusses these advantages and disadvantages of the income versus consumption measures of poverty in the section titled Advantages/Disadvantages of Income- and Consumption-based Resource Measures. The Working Group's recommendations call for the production of both as research measures. The Working Group also recommends funding support to develop these measures, such as the proposal to provide that BLS be given funding to improve the CE, including sufficient funding to support state-level poverty estimates. The section on future research urges continued research into the development and implementation of a multidimensional measure as well as direct measures of material hardship.¹⁴⁰

3. Should the value of health insurance be incorporated? And if so, how?

Most responses to this question focused on the importance of consistency between the resource measure and the poverty threshold (the value of health insurance should not be added to resources unless the cost of health insurance is added to the thresholds) and that no person should be taken out of poverty by the value of health insurance if the person does not have enough cash income to meet other basic needs.

The Columbia commenters stated that a "poverty threshold implicitly or explicitly represents a set of basic needs, and only those resources that a family could use to meet those needs should

¹⁴⁰ The report does not directly address the concern that under inflationary periods, tenants who are locked into fixed rent leases in multi-month rental agreements, will spend less than the current market rental value of the shelter service they are consuming. That is, the consumption value of the housing unit could be higher (or lower) than the transactional expenditure of the tenant who is in a multi-month fixed rental lease, when general market conditions are inflationary (or deflationary). The Working Group notes here that the price index in an absolute poverty measure adjusts for changes in nominal consumption in relation to changes in the price index. However, price indexes usually measure average price changes for an area or group, which are different than the specific price changes that individual households experience. Rents paid by tenants living in a unit for a longer period of time also tend to represent underestimates of consumption (see Gallin and Verbrugge 2019 regarding rent stickiness and tenure discounts). The Working Group also notes that while the prices some people face may differ from the market price and that this would have unintended effects on poverty, this is a problem for both consumption and income measures. For example, if rent rises above the market rent for a particular household, the household would be no more likely to fall into income poverty despite having fewer resources available for other goods. Similarly, the household forced to reallocate more resources from other areas to rent would be no more likely to fall into consumption poverty.

be counted and compared against that poverty threshold in determining a family’s poverty status.”

There was disagreement as to whether or not it was feasible to incorporate the cost of health care in the thresholds, one commenter deeming this impossible but many others noting the work on the Health Inclusive Poverty Measure (HIPM) produced by Dahlia Remler, Sanders Korenman, and their colleagues as a promising approach. One commenter argued that along with the value of health insurance the resource measure should include the implicit insurance value of uncompensated care under the Emergency Medical Treatment and Active Labor Act of 1986. There were several comments in support of using market value or the price of an insurance plan as a basis of the value incorporated and one commenter explicitly rejected the notion of “willingness to pay”. There were arguments for and against the use of fungibility. Others opposed any addition of the value of health insurance while others called for additional expert guidance on this issue.

Response:

Recognizing the conceptual and implementation challenges surrounding the inclusion of the value of health insurance in any poverty measure, the Working Group recommends that both the alternative measures (income and consumption) be produced with and without a value of health insurance. The Working Group agreed that for poverty measures that include a value of health insurance, thresholds should be either explicitly adjusted (e.g. Korenman and Remler 2016; Remler and Korenman 2020) or implicitly adjusted (e.g., Meyer and Sullivan 2012a; Burkhauser et al. 2019) to account for the additional resources. For further discussion, see the section titled Valuing health insurance.

4. Should the value of education be incorporated? And if so, how?

On this question, two researchers felt that education should be added as a value or as a long-term benefit. One commenter argued that government education payments for education beyond K-12 should be considered transfer payments and income to the receiving household. However, four comments opposed including education as a resource, specifying that education is an investment and would require including education as a need and cost in the poverty threshold. Another commenter added that valuing education should be included, more specifically that technical and vocational schools should be included.

Response:

The Working Group recommends continued research and additional stakeholder and expert engagement on whether and how to treat education within resource measures. For further discussion, see the section titled Treatment of Education.

For a Potential Income Resource Measure

5. What income sources should be included (aside from health insurance, which is addressed by question 3)? If so, how?

The comments addressing this question strongly supported the inclusion of in-kind benefits and tax credits but again emphasized that any change to the resource measure should be accompanied by a change to the thresholds. One commenter urged the Working Group to recommend that poverty estimates be provided with and without these in-kind transfers so one could compare market income

poverty to post-transfer poverty to gauge the effectiveness of transfer programs. Another comment echoed this sentiment – asking for a full-income measure and a self-sufficiency measure.

Comments on including the flow of services from housing and vehicles were generally supportive but again emphasized the need for consistency between the resource measure and the threshold and the need for an expert panel to determine how to measure the values of the flows of these services.

One commenter noted the importance of including COVID relief payments in the resource measure.

Response:

As explained in the final report, the Working Group supports the inclusion of in-kind benefits and tax credits in the resource measure. While conceptually agreeing with the advantages of including the flow of services from housing and vehicles in both measures, the Working Group found that data was not currently available to do these imputations in an income measure. The Working Group outlined a variety of approaches to doing these imputations for a consumption measure, recognizing that the methodological decisions on these imputations should be left the discretion of the implementing agency. This would not preclude input from experts on the precise methodology. The final report notes that when any new resources are added to the resource measure, thresholds under the two non-basic needs threshold concepts are automatically adjusted.

6. What expenses, if any, should be subtracted from income? For example, how should medical out of pocket (MOOP) expenditures be treated in a new measure? Should other expenses such as childcare and commuting costs be subtracted?

Several commenters believed childcare and healthcare expenditures should be deducted from income. On the contrary, one commenter was strongly against subtracting childcare expenditures. Another commenter stated childcare, commuting, and other work expenses should be deducted from income, but capped. Another commenter stated that no expenses should be deducted from income. One commenter made the overall comment that actual expenditures reflect need, not just differences in preferences and choices.

Only a handful of comments addressed the specific issue of MOOP. Several suggested that the Working Group use the SPM approach of subtracting these expenses from resources, with a particular emphasis on “necessary” expenses. Several commenters suggested that this was such a complicated issue that it should be studied by a NAS panel of experts while several others supported the HIPM approach.

Response:

The Working Group made the following recommendation on accounting for childcare expenditures:

The Working Group recommends subtracting child support payments from resource totals for income-based measures. No adjustments are required for child support payments for consumption-based measures because the transfer of income from one family to another is indirectly captured through increased consumption of families receiving the transfers

and decreased consumption among families with nonresident parents making child support payments.

When considering how to treat MOOP in a poverty measure, the Working Group considered concerns about discretionary spending on MOOP, inconsistent treatment of people who suffer the same adverse health shock but choose to consume different amounts of care, and inconsistent treatment of people with different insurance plans (e.g. low-premium/high-copay vs high-premium/low-copay plans). While concerns may exist about discretionary MOOP expenditures, it may be difficult or infeasible to separate out unavoidable costs from avoidable ones in existing datasets. The Working Group agreed that additional research is needed on these issues and did not make any specific recommendations. For further discussion, see the section titled Treatment of Medical Out of Pocket Expenses.

7. How should the Working Group address the problem of misreporting of income in household surveys?

Comments in response to this question were mixed but generally supportive, again with the caveat that any correction for underreporting be accompanied with an increase in the thresholds. Several favored direct substitutions of administrative records for survey reports while others cautioned about the quality of administrative data and recommended adjusting survey reports to match national and state control totals. One commenter warned the Working Group to avoid any method that would automatically choose the higher of the survey report or the administrative report. Some commenters suggested that the Census Bureau should create Working Groups to determine the best practices for reconciling differences between administrative and survey income reports and expand the administrative records acquisition program.

Response:

The Working Group considered three approaches: rules-based approaches; (2) statistical- or regression-based modeling; and (3) direct substitution of survey reports with administrative records. These three approaches could be used independently or in combination. The Working Group made recommendations on this topic available in the section titled Administrative Data Use Considerations.

For a Potential Consumption Resource Measure

8. What types of spending should be included as consumption (aside from spending on health care or insurance, which is addressed by question 3)? If so, how?

There were very few direct responses to this question. One commenter expressed the need to count technology needs of students, particularly given the nature of education during the pandemic. There was a discussion of the complexity of these issues resulting in a suggestion that any consumption measure be only experimental until these issues can be resolved by an expert panel. Several comments mentioned the sensitivity of consumption measures to these decisions as a rationale for an expert panel.

Response:

The Working Group considered these issues and further discussion is available in the section titled Consumption-based Resource Measures Using the CE Interview Survey. The Working Group recommends producing a consumption-based resource measure and has recommended additional research to support development and implementation of such a measure.

9. How should vehicles and housing be included?

There was little consensus amongst commenters regarding the inclusion of vehicles and housing. One commenter suggested that vehicle and housing flows should be imputed but admitted this would be difficult practically. Another comment simply claimed that housing value should be a rental-equivalence measure and that the Census Bureau, BEA, and BLS should jointly create this measure that avoids the upward bias from not adjusting housing stock appropriately for aging. This commenter further added that estimating flow of services with capital models that depend on interest rates are inappropriate. Finally, another comment concludes that since there is not a clear consensus on a method to include vehicles and house, this issue should be referred to a NAS panel study for further research.

Response:

The Working Group agreed that value of service flows from owner-occupied shelter and owned vehicles should be included in consumption resources but did not specify the methodology to be used to assign these values.

10. How should the Working Group address the problem of misreporting of consumption in household surveys? Should the Working Group consider using only those types of consumption that are reported with greater accuracy, while excluding less accurately measured types of consumption? What are the tradeoffs in using only well-measured consumption versus full consumption?

There were only a handful of direct responses to this question. There was a concern about the need for better consumption/expenditure data and the need for funding for an expanded survey that would be capable of yielding reliable state-by-state poverty estimates. One commenter suggested that the quality of data from the CE was deteriorating. One commenter suggested that CE reported expenditures should be adjusted to control totals using microsimulation and imputation. One commenter was strongly opposed to selecting a subset of consumption items.

Response:

The Working Group considered these issues and further discussion is available in the section titled Consumption-based Resource Measures Using the CE Interview Survey. The Working Group recommends producing a consumption-based resource measure and has recommended additional research to support development and implementation of such a measure.

Thresholds

11. How should the thresholds be set initially?

The most prevalent comment on the thresholds was the need for the threshold definition to be consistent with the resource definition, as described in the previous sections.

There were also numerous comments that nothing should be done that would lower the poverty thresholds (and thereby decrease the poverty rate) since studies of material deprivation show that a higher percentage of the population, particularly children, face material hardship than current poverty rates using either the OPM or the SPM. One comment had the opposite position – arguing that OPM poverty rates were too high.

Several comments suggested that thresholds be based on the money needed to purchase of a minimum bundle of core goods and services as is done in expert budgets. The United Ways' ALICE (Asset Limited, Income Constrained, Employed)¹⁴¹ budgets were mentioned explicitly by at least five commenters. These comments expressed the importance of including health care and childcare in this bundle.

Some commenters supported the use of a relative measure based on 50 or 60 percent of median income in addition to other alternative measures. One commenter was opposed to a relative measure.

At least five comments focused on the need to use public opinion to set the thresholds, discussing the results of polling as to what a family needs to “get by”.

One comment was strongly opposed to the strategy of setting poverty thresholds at a level that would anchor the poverty rate to the current poverty rate.

Response:

The Working Group recommended additional stakeholder and expert engagement on these issues. For further discussion, see the section titled Considerations and Consensus Recommendations for Thresholds.

12. How should they be updated over time?

Most of the responses to this question were statements that no change to the updating mechanism should be made that would result in thresholds that are lower than the current thresholds. One commenter supported a group-specific consumer price index while another supported the PCEPI rather than the CPI.

A number of comments urged the Working Group to reduce reliance on any price index to update the thresholds but suggested that the bundle of goods and services included in the thresholds be updated on a regular basis – at least every five years.

¹⁴¹ See Hoopes (2020).

Response:

The Working Group recommended additional stakeholder and expert engagement on these issues. For further discussion, see the section titled Considerations and Consensus Recommendations for Thresholds.

13. Should thresholds be adjusted for geographic areas? If so, how?

Nine responses commented on this question of including geographic adjustments, with six commenters advocating for including geographic adjustments. Several commenters suggested both geographically and non-geographical adjusted poverty measures should be reported. One commenter noted that prevailing wages should not be used to adjust poverty thresholds. Several suggested that differences in transportation costs (both time and cash) should be included in the adjustments as well as housing cost differences. Another commenter emphasized the need to adjust core good bundles geographically with as many goods as possible and within as small areas as possible. Two comments opposed any consideration of amenities in the cost index and one opposed using prevailing wages in the index. One commenter expressed concern that the geographic adjustment of the SPM thresholds did not improve their correlation with other measures of material hardship. As with other issues, some suggested that this be taken under consideration by a NAS panel.

Response:

The Working Group recommended additional stakeholder and expert engagement on these issues. For further discussion, see the section titled Considerations and Consensus Recommendations for Thresholds.

14. How should a sharing unit's size and composition be accounted for? (See Adjusting for different sharing unit sizes.)

Only two commenters addressed this directly, one arguing against the use of the OPM equivalence scales or the square root of family size and the other asking for more research. Others addressed this indirectly by arguing that the thresholds need to include the special needs of children and the disabled, particularly the needs of infants and pre-school children and the extra costs of children's development and educational needs.

Response:

The Working Group recommended additional stakeholder and expert engagement on these issues. For further discussion, see the section titled Considerations and Consensus Recommendations for Thresholds.

Implementation

Although not specifically mentioned in the FRN, commenters discussed how to implement the Working Group's recommendations. As noted in the beginning of this summary, almost all comments asked that the public comment period on this notice and interim report should be extended until after the current National Emergency is over.

Many others commented that there should be long-term experimentation and exploration with any new measures, with some advocating for rigorous impact analysis of proposed measures, disaggregated by race and gender. One commenter concluded by emphasizing the need for the Working Group to "go slow and get it right".

There was also overwhelming support for a NAS or similar expert panel to adjudicate the issues raised in the report and develop recommendations prior to any implementation.

Comments called for deliberations to include the scientific community as well as both providers who serve low-income families and low-income individuals themselves.

Response:

The Working Group recommended additional engagement with stakeholder and experts throughout the development process of the recommended measures. In particular, the Working Group recommends expert input through a National Academy of Sciences panel. In addition, the Working Group has recommended an advisory structure be setup to help the Census Bureau and the Bureau of Labor Statistics on issues related to implementation.

Other Issues

There was a plethora of other issues raised in the comments. These included:

- 1) The intergenerational transmission of poverty
- 2) Asset poverty and student debt
- 3) Inequal access to public goods
- 4) Human capital formation
- 5) Concern for those left out of household surveys, particularly the homeless, the institutionalized and the incarcerated
- 6) Need to consider near-poverty
- 7) Economic instability and income volatility
- 8) Need for multidimensional poverty measures

Response:

Some of these issues are discussed in the section titled Consensus Recommendations Worthy of Further Research by the Federal Statistical System, particularly the issue of multidimensional poverty measures and the concern for those left out of household surveys.

References

- Aguiar, M. & Bils, M. (2015). Has consumption inequality mirrored income inequality. *American Economic Review*, 105(9), 2725-2756.
- Alkire, S. & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7–8), 476–487.
- Allen, Robert C. (2017). “Absolute Poverty: When Necessity Displaces Desire,” Luxembourg Income Study Working Paper No. 707.
- Alstadsaeter, A. (2009). Measuring the consumption value of higher education [CESIFO Working Paper No. 2799, Category 5: Economics of Education].
- Amundsen, E.S. (1985) Moving costs and the microeconomics of intra-urban mobility. *Regional Science and Urban Economics*, 15(4, November), 573-583.
- Arévalo, R. & Ruiz-Castillo, J. (2004). *The rental equivalence approach to nonrental housing in the consumer price Index. Evidence From Spain* [Economics Working Papers we041704]. Universidad Carlos III, Departamento de Economía.
- Armour, P., Burkhauser, R., & Larrimore, J. (2013). Deconstructing income and income inequality measures: A crosswalk from market income to comprehensive income. *American Economic Review: Papers and Proceedings*, 103(3), 173–77.
- Aten, B.H. (2018). *Valuing owner-occupied housing: an empirical exercise using the American community survey (ACS) housing files*. Bureau of Economic Analysis – Regional Directorate. Available at <https://www.bea.gov/research/papers/2018/valuing-owner-occupied-housing-empirical-exercise-using-american-community>
- Atkinson, A.B. (2019). *Measuring poverty around the world*. Princeton: Princeton University Press.
- Atkinson, T., Cantillon, B., Marlier, E., & Nolan, B. (2002). *Social indicators: The EU and social inclusion*. Oxford: Oxford University Press.
- Baker, M., Currie, J., & Schwandt, H. (2019). Mortality inequality in Canada and the United States: Divergent or convergent trends? *Journal of Labor Economics* 37(S2). (July 2019). Available at <https://www.journals.uchicago.edu/doi/pdf/10.1086/703259>
- Baker, B.D., Taylor, L., Levin, J., Chambers, J. & Blankenship, C. (2013). Adjusted poverty measures and the distribution of Title I Aid: Does Title I really make the rich states richer? *Education Finance and Policy*, 8(3), Cambridge, MA: MIT. Available at <https://www.jstor.org/stable/10.2307/educfinapoli.8.3.394>

- Balcazar, C., Ceriani, L, Olivieri, S. & Ranzani, M. (2104). *Rent imputation for welfare measurement: A review of methodologies and empirical findings* [Policy Research Working Paper 7103]. World Bank Group, Poverty Global Practice Group.
- Bargain, O., Donni, O. & Kwenda, P. (2014). Intrahousehold distribution and poverty: Evidence from Côte d'Ivoire. *Journal of Development Economics*, 107, 262–276.
- Bauman, K. (2003). Extended measures of well-being: Living conditions in the United States: 1998. U.S. Census Bureau. *Household Economic Studies*, 70-87.
- Bavier, R. (2008). reconciliation of income and consumption data in poverty measurement. *Journal of Policy Analysis and Management*, 27(1), 40-62.
- Bayer, P. J., Blair, P.Q., & Whaley, K. (2019). *Is spending on schools valuable and efficient? A national study of the capitalization of school spending and local taxes* [Working Paper]. Duke University.
- Becker, Gary S. 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* [National Bureau of Economic Research Number 80, General Series].
- Bee, C. A., Meyer, B., & Sullivan, J. (2015). The validity of consumption data: Are the consumer expenditure interview and diary surveys informative? In *Improving the Measurement of Consumer Expenditures*, Carroll, C., Crossley, T., & Sabelhaus, J (Eds.). University of Chicago Press.
- Bee, A. & Mitchell, J. (2017). *Do Older Americans Have More Income Than We Think?* [SESHD Working Paper 2017-39]. Washington, D.C.: U.S. Census Bureau.
- Ben-Shalom, Y., Moffitt, R.A., & Scholz, J.K. (2012). An assessment of the effectiveness of anti-poverty programs in the United States. In Jefferson, P.N. (Ed.) *The Oxford handbook of the economics of poverty*, Oxford University Press.
- Benítez-Silva, H., Eren, S., Heiland, F., & Jiménez-Martín, S. (2008). *How well do individuals predict the selling prices of their homes?* [Economics Working Paper 1065]. Barcelona, Spain: Universitat Pompeu Fabra, Department of Economics and Business.
- Berchick, E. R., & O'Hara (2017). Measuring the dollar value of employer-provided health insurance contributions: a synthetic approach [Conference Presentation]. APPAM Fall Research Conference. Available at <https://appam.confex.com/appam/2017/webprogram/Paper22061.html>
- Besanko, D., & Braeutigan, R. (2011). *Microeconomics, 4th Edition*. John Wiley & Sons.
- Bhuller, M., Mogstad, M., Salvanes, K. (2017). Life-Cycle Earnings, Education Premiums, and Internal Rates of Return. *Journal of Labor Economics*. 35. 993-1030.
- Bishop, J. A., Grodner, A., Liu, H., Ahamdanech-Zarco, I. (2014). Subjective poverty equivalence scales for Euro Zone countries. *Journal of Economic Inequality*, 12(2): 265–278.

- Bishop, J. A., Lee, J., & Zeager, L. A. (2017). Adjusting for family size in the supplemental poverty measure. *Applied Economics Letters*, 25(8), 553–556.
- Black, S. (1999). Do better schools matter? Parental valuation of elementary education. *The Quarterly Journal of Economics*, 114(2), 577-599.
- Blank, R. (2011). *The supplemental poverty measure: A new tool for understanding U.S. poverty*. Pathways.
- Brewer, M., Etheridge, B, & and Cormac O'Dea. 2017. “Why are households that report the lowest incomes so well-off?” *Economic Journal*, 127(605) F24-F49.
- Broda, C., Leibtag, E., & Weinstein, D. (2009). The role of prices in measuring the poor’s living standards. *Journal of Economic Perspectives*, 23(2), 77-97.
- Brown, B.K., & Braga, B. (2019). *Financial distress among American families: Evidence from the well-being and basic needs survey*. Washington, DC: Urban Institute.
- Brzozowski, M. & Crossley, T.F. (2011). Viewpoint: Measuring the well-being of the poor with income or consumption: A Canadian perspective. *Canadian Journal of Economics*, 44(1), 88–106.
- Buhmann, B., Rainwater, L, Schmaus, G., & Smeeding, T.M. (1988). Equivalence scales, well-being, inequality, and poverty: Sensitivity estimates across ten countries using the Luxembourg income study (LIS) database. *Review of Income and Wealth*, 34, 115–142.
- Bureau of Labor Statistics. (2018). *BLS Handbook of Methods*. Washington, D.C.: U.S. Dept. of Labor, Bureau of Labor Statistics
- Bureau of Labor Statistics. (2020). Consumer price index: Additional resources. Available at <https://www.bls.gov/cpi/additional-resources/historical-changes.htm>
- Bureau of the Budget. (1969). *Definition of poverty for statistical purposes. Exhibit L. Circular no. A-46*. Available at <https://www.cia.gov/library/readingroom/docs/CIA-RDP86-00244R000300400009-1.pdf>
- Burt, M.R., Laudan, A., Douglas, T., Valente, J., Lee, E., & Iwen, B. (1999). *Homelessness: Programs and the people they serve, summary report: Findings of the national survey of homeless assistance providers and clients*. Washington, DC: Urban Institute. Available at <https://www.urban.org/sites/default/files/publication/66286/310291-Homelessness-Programs-and-the-People-They-Serve-Findings-of-the-National-Survey-of-Homeless-Assistance-Providers-and-Clients.PDF>
- Burkhauser, R., Larrimore, J., & Simon, K. (2012). A ‘second opinion’ on the economic health of the American middle class. *National Tax Journal*, 65(1), 7–32.

- Burkhauser, R., Larrimore, J., & Simon, K. (2013). Measuring the impact of valuing health insurance on levels and trends in inequality and how the Affordable Care Act of 2010 could affect them. *Contemporary Economic Policy*, 31(4), 779–94.
- Burkhauser, R., Corinth, K., Elwell, J., & Larrimore, J. (2019). *Evaluating the success of President Johnson’s war on poverty: Revisiting the historical record using a full-income poverty measure* [NBER Working paper]. Cambridge, MA: National Bureau of Economic Research. DOI 10.3386/w26532
- Buttler, F. (2013). *What determines subjective poverty? An evaluation of the link between relative income poverty measures and subjective economic stress within the EU*. Horizontal Europeanization, DFG Research Unit. Available at https://horizontal-europeanization.eu/fileadmin/user_upload/proj/horizontal/downloads/pre-prints/PP_HoEu_2013-01_buttler_subjective_poverty_0.pdf
- Calvi, R., Penglase, J., Tommasi, D., & Wolf, A. (2020). The more the poorer? resource sharing and scale economies in large families,” *Institute of Labor Economics*, IZA DP No. 13948. ><http://ftp.iza.org/dp13948.pdf><
- Canberra Group. (2001). *Expert group on household income statistics: Final report and recommendations*. Ottawa.
- Canberra Group. (2011). *Handbook on household income statistics* (second edition). Geneva: United Nations Economic Commission for Europe.
- Carbonnier, C. (2019, July). *Estimating local basic standard of living: Impact on overall poverty and inequality measures* [Conference paper]. ECINEQ meeting, Paris, France. Available at http://www.ecineq.org/ecineq_paris19/papers_EcineqPSE/paper_211.pdf
- Card, D. (1999). The causal effect of education on earnings. In Ashenfelter, O., & Card, D. (Eds.) *Handbook of Labor Economics, Volume 3*, 1801-1863.
- Carle, A., Bauman, K., & Short, K. (2009). Assessing the Measurement and Structure of Material Hardship in the United States. *Social Indicators Research*. 92, 35-51.
- Carrington, W.J., Detragiache, E., & Vishwanath, T. (1996). Migration with endogenous moving costs. *The American Economic Review*, 86(4), 909-930.
- Carter, G. R. (2012). Housing units with negative equity, 1997 to 2009. *Cityscape: Journal of Policy Development and Research*, 14(1), 149-165.
- Chay, K.Y., & Greenstone, M. (2005). Does air quality matter? Evidence from the housing market. *Journal of Political Economy*, 113(2), 376-424.
- Cellini, S. R., McKernan, S-M., & Ratcliffe, C. (2008). The dynamics of poverty in the United States: A review of data, methods, and findings. *Journal of Policy Analysis and Management* 27(3), 577-605.

- Centers for Medicare and Medicaid Services. (2019). *NHE Fact sheet*. Available at <https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html>
- Cherchye, L., de Muynck, T., De Rock, B. & Vermeulen, F. (2017). Household consumption when the marriage is stable. *American Economic Review*, *107*, 1507–1534.
- Cherchye, L., de Rock, B., Lewbel, A., & Vermeulen, F. (2015). Sharing rule identification for general collective consumption models. *Econometrica*, *83*, 2001–2041.
- Cherchye, L., De Rock, B., Surana, K., & Vermeulen, F. (2016). Marital matching, economies of scale and intrahousehold allocations. *Review of Economics and Statistics*, 1–45.
- Ciula, R., & Skinner, C. (2015). Income and beyond: Taking the measure of child deprivation in the United States. *Child Indicators Research*, *8*, 491–515.
- Coder, J. & Scoon-Rogers, L. (1996). *Evaluating the quality of income data collected in the annual supplement to the March current population survey and the survey of income and program participation* [Working Paper Number SEHSD-WP1996-20]. Housing and Household Economic Statistics Division. Washington D.C.: U.S. Census Bureau. Available at <https://www.census.gov/library/working-papers/1996/demo/SEHSD-WP1996-20.html>
- Cohen, S. B. 2013. The influence of health care preferences on insurance enrollment and medical expenditure behaviors. *Journal of Economic and Social Measurement*, *38*: 325-345.
- Coibion, O., Gorodnichenko, Y., & Koustas, D. (2017). *Consumption inequality and the frequency of purchases* [NBER Working Paper No. 23357]. Cambridge, MA: National Bureau of Economic Research.
- Collins, B.C., Garin, A., Jackson, E., Koustas, D. & Payne, M. (2019). *Is gig work replacing traditional employment? Evidence from two decades of tax returns* [IRS Working Paper]. Washington, DC: Internal Revenue Service.
- Congressional Research Service. (2010). *Poverty measurement in the United States: History, current practice, and proposed changes*. Available at https://www.everycrsreport.com/files/20100412_R41187_abcd0b92f0d81427d5787812b3c450146a6d744d.pdf
- Congressional Budget Office. (2012). *The distribution of household income and federal taxes, 2008 and 2009*. Available at <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53597-distribution-household-income-2014.pdf>
- Congressional Budget Office. (2018). *The distribution of household income, 2014*. Available at <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53597-distribution-household-income-2014.pdf>
- Conley, D. (1999). *Being Black, living in the red: Race, wealth, and social policy in America*, University of California Press.

- Cornman, S.Q., Nixon, L.C., Spence, M.J., and Taylor, L.L., Gevert, D.E. (2019). *Education demographic and geographic estimates (EDGE) program: American community survey comparable wage index for teachers (ACS-CWIFT)* (NCES 2018-130). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Available at <http://nces.ed.gov/pubsearch>.
- Council of Economic Advisers. (1964). *The problem of poverty in America*. In Economic Report of the President. Washington: U.S. Government Printing Office. Available at https://fraser.stlouisfed.org/files/docs/publications/ERP/1964/ERP_1964.pdf
- Council of Economic Advisers. (1966). *“Strengthening human resources.”* In Economic Report of the President. Washington: U.S. Government Printing Office. Available at https://fraser.stlouisfed.org/files/docs/publications/ERP/1966/ERP_1966.pdf
- Council of Economic Advisers. (2014). *“The war on poverty 50 years later: A progress report.”* In Economic Report of the President. Available at <https://obamawhitehouse.archives.gov/administration/eop/cea/economic-report-of-the-President/2014>
- Council of Economic Advisers. (2019). *Reducing poverty and increasing self-ufficiency in America*. In Economic Report of the President. Available at <https://www.whitehouse.gov/wp-content/uploads/2019/03/ERP-2019.pdf>
- Crain, V. & Wilson, T. (2017). Use with caution: interpreting Consumer Expenditure income group data. *Beyond the Numbers: Pricing & Spending*, 6(5), U.S. Bureau of Labor Statistics. Available at https://www.bls.gov/opub/btn/volume-6/use-with-caution-interpreting-consumer-expenditure-income-group-data.htm?view_full
- Crone, T., Nakamura, L.I., & Voith, R.P. (2004). *Hedonic estimates of the cost of housing services: rental and owner-occupied units* [Federal Reserve Bank of Philadelphia, Working Paper #04–22, October 2004]. In Diewert, Balk, Fixler, Fox and Nakamura, *Price and Productivity Measurement*, vol. 1 — Housing. Trafford Press. Available at <http://www.indexmeasures.com>
- Curran, L. B., Wolman, H, Hill, E.W., & Furdell, K. (2008). Poverty, programs, and prices: How adjusting for costs of living would affect federal benefit eligibility. *Brookings Institution Metropolitan Policy Program Brief*, March, 1-28.
- Curran, B., Meyer, B.D., & Wu, D. (2020). A note on comparisons of well-being between the supplemental poverty measure and the official poverty measure [University of Chicago, Working Paper]. Available at https://drive.google.com/file/d/1g9zp6Yp7QkKVOAJbZlQTQsM4r_8WGIM0/view
- Cutillo, A., Raitano, M. & Siciliani, I. (2019). *Income-based and consumption-based measurement of absolute poverty: insights from Italy* [Working Papers Series - Num. 2/2019]. Centro Interuniversitario di Ricerca – Interuniversity Research Center.

- Cutler, D. M., & Katz, L.F. (1991). Macroeconomic performance and the disadvantaged. *Brookings Papers on Economic Activity*, 2, 1–74.
- Daley, A., Garner, T., Phipps, S. & Sierminska, E. (2020). Difference across countries and time in household expenditure patterns: Implications for the estimation of equivalence scales. *International Review of Applied Economics*, 34(6), 734-757.
- Dasgupta, P. (1993). *An inquiry into well-being and destitution*. Oxford: Oxford University Press.
- Davis, L.W. (2004). The effect of health risk on housing values: Evidence from a cancer cluster. *American Economic Review*, 94(5): 1693 – 1704
- Dawkins, C. (2006). Are social networks the ties that bind families to neighborhoods? *Housing Studies*, 21(6), 867-881.
- De Vos, K., & Garner, T.I., (1991). An evaluation of subjective poverty definitions. Comparing results from the U.S. and the Netherlands. *The Review of Income and Wealth*, 37, 267-285.
- De Vreyer, P., Lambert, S. & Ravallion, M. (2020). Unpacking household Engel curves [NBER Working Paper 26850]. Cambridge, MA: National Bureau of Economic Research. <https://www.nber.org/papers/w26850>
- Dhonde, S., & Haveman, R. (2019). *A decade-long view of multidimensional deprivation in the United States* [Working Paper]. Institute for Research on Poverty. Available at <https://www.irp.wisc.edu/resource/a-decade-long-view-of-multidimensional-deprivation-in-the-united-states/>
- Dhongde, S., Prasanta K., Pattanaik K., & Xu, Y. (2019). Well-being, deprivation, and the great recession in the U.S.: A study in a multidimensional framework. *Review of Income and Wealth*. Available at <https://onlinelibrary.wiley.com/doi/full/10.1111/roiw.12411>
- Diewert, W. E. (2008a) The treatment of owner occupied housing and other durables in a consumer price index. In Diewert, W.E., Greenlees, J., & Hulten, C. (eds.), *Price index concepts and measurement*. NBER Studies in Income and Wealth, University of Chicago Press.
- Diewert, W. E. (2008b, November 6-7). *Conclusions and future directions* [workshop presentation]. The Paris OECD-IMF Workshop on Real Estate Price Indexes, Paris, France.
- Dunbar, G. R., Lewbel, A., & Pendakur, K. (2013). Children’s resources in collective households: Identification, estimation, and an application to child poverty in Malawi, *American Economic Review*, 103, 438–71.
- Edin, K. & Lein, L. (1997). *Making ends meet: How single mothers survive welfare and low-wage work*. New York: Russell Sage Foundation.
- Epple, D. (2008). Tiebout hypothesis. In S.N. Durlauf, S.N., & Blume, L.E. (Eds.), *The New Palgrave Dictionary of Economics*, 2nd edition.

Erard, B., & Ho, C-C. (2003). Explaining the US Income tax compliance continuum." *Journal of Tax Research*, 2, 93-109.

European Commission. (2011). *The measurement of extreme poverty in the European Union*. Luxembourg. Available at <https://ec.europa.eu/social/BlobServlet?docId=6472&langId=en>

Eurostat (2020). *Living conditions in Europe - poverty and social exclusion*. Luxembourg. ISSN 2443-8219. Available at https://ec.europa.eu/eurostat/statistics-explained/index.php/Living_conditions_in_Europe_-_poverty_and_social_exclusion

Falk, G., Lynch, K. & Tellestrup, J. (2018). *Federal spending on benefits and services for people with low income: In brief*. Washington DC: Congressional Research Service. Available at <https://fas.org/sgp/crs/misc/R45097.pdf>

Fanjul, G. (2014). *Children of the recession: The impact of the economic crisis on child well-being in rich countries*. Florence, Italy: UNICEF Report. Available at <https://www.unicef-irc.org/publications/733-children-of-the-recession-the-impact-of-the-economic-crisis-on-child-well-being-in.html>

Federman, M., Garner, T.I., Short, K., Cutter IV, W.B., Kiely, J., Levine, D., McGough, D. & McMillan, M. (1996). What does it mean to be poor in America? *Monthly Labor Review*, 119(5), 3-17.

Finkelstein, A., Hendren, N., & Luttmer, E. (2019). The value of medicaid: Interpreting results from the Oregon health insurance experiment. *Journal of Political Economy*, 127(6).

Finkelstein, A., Hendren, N., & Shepard, M. (2019). Subsidizing health insurance for low-income adults: Evidence from Massachusetts." *American Economic Review*, 109(4), 1530-1567.

Fisher, G.M. (1992). The development and history of poverty thresholds." *Social Security Bulletin*, 55(4). Available at <https://www.ssa.gov/history/fisheronpoverty.html>

Fisher, G. M. (1997). *The development of the Orshansky poverty thresholds and their subsequent history as the official U.S. poverty measure*." Washington DC: U.S. Census Bureau. Available at <https://www.census.gov/content/dam/Census/library/working-papers/1997/demo/orshansky.pdf>

Fisher, G. M. (2008). Remembering Mollie Orshansky – the developer of the poverty thresholds. *Social Security Bulletin*, Vol. 68(3). Available at <https://www.ssa.gov/policy/docs/ssb/v68n3/v68n3p79.html>

Fisher, J. (2006). Income imputation and the analysis of expenditure data in the consumer expenditure survey [Bureau of Labor Statistics Working Paper 394]. Washington, DC: US Bureau of Labor Statistics.

- Fisher, J., Johnson, D., Marchand, J., Smeeding, T., & Torrey, B. (2009). Identifying the poorest older Americans. *Journal of Gerontology: Social Sciences*, 64B(6).
- Fisher, J. & Johnson, D.S. (2012, November 8), *Inequality of income and consumption: Measuring the trends in inequality from 1985-2010 for the same individuals* [Conference paper]. Association for Public Policy Analysis and Management 2012 Fall Research Conference.
- Fisher, J. D., Johnson, D. S., & Smeeding, T. M. (2013). Measuring the trends in inequality of individuals and families: Income and consumption. *American Economic Review*, 103(3), 184-88.
- Fisher, J., Johnson, D. S. & Smeeding, T. M. (2015), Inequality of income and consumption in the U.S.: Measuring the trends in inequality from 1984 to 2011 for the same individuals. *Review of Income and Wealth*, 61(4), 630-650. <https://doi.org/10.1111/roiw.12129>.
- Folbre, N., Murray-Close, M., & Suh, J. (2018). Equivalence scales for extended income in the U.S. *Review of Economics of the Household*, 16, 189–227.
- Fox, L. (2019). *The supplemental poverty measure: 2018, Current population reports*. Washington, DC: U.S. Census Bureau.
- Fox, L., Wimer C., Garfinkel, I., Kaushal, N., & Waldfogel, J. (2015). Waging war on poverty: Poverty trends using a historical supplemental poverty measure." *Journal of Policy Analysis and Management*, 34(3), 567-592.
- Frick, J.R., Grabka, M.M., Smeeding, T.M., & Panos, P. (2010). Distributional effects of imputed rents in five European countries. *Journal of Housing Economics*, 19(3), 167-179.
- Friedberg, L., Sun, W. & Webb, A. (2008). *How much do older workers value employee health insurance?* [Center for Retirement Research, Issues in Brief ib2008-8-9] Revised Jul 2008.
- Gallen, T. S. (2015). *Using participant behavior to measure the value of social programs: The case of medicaid* [Working paper]. Available at http://www.tgallen.com/Papers/TGallen_Using_Participant_Behavior_2015.pdf
- Gallin, J. & Verbrugge, R.J.. (2019). A theory of sticky rents: Search and bargaining with incomplete information. *Journal of Economic Theory*, 183, 478-519. Available at <https://doi.org/10.1016/j.jet.2019.06.003>
- Garner, T. I. (1993). Consumer expenditures and inequality: An analysis based on decomposition of the Gini coefficient." *The Review of Economics and Statistics*, 75(1), 135-138.
- Garner, T.I., & De Vos, K. (1995). Income sufficiency v. poverty: Results from the United States and the Netherlands. *Journal of Population Economics*, 8, 117-134.

Garner, T.I., Johnson, D.S., & Kokoski, M.F. (1996). An experimental consumer price index for the poor. *Monthly Labor Review*, September 1996, 32-42. Available at <https://www.bls.gov/opub/mlr/1996/09/art5full.pdf>

Garner, T. I., & Short, K. (2002). Experimental poverty measures under alternate treatments of medical out-of-pocket expenditures. *Monthly Labor Review*, 125(8), 3-13.

Garner, T.I, & Short, K.S. (2003). Personal assessments of minimum income and expenses: What do they tell us about minimum living thresholds and equivalence scales? In Amiel, Y. & and Bishop, J.A. (eds). *Inequality, welfare and poverty: Theory and measurement. Volume 9*. Elsevier Science: The Netherlands, 191-243. Available at <https://www.bls.gov/osmr/research-papers/2005/ec050050.htm>

Garner, T.I, & Short, K.S. (2004). Economic well-being based on income, consumer expenditures and personal assessments of minimum needs. In Bishop, J.A. & Amiel, Y. (Eds.), *Studies on economic well-being: Essays in the honor of John P. Formby, Vol. 12 of the series research on economic inequality* (pp. 319-361). Oxford, UK: Elsevier Science.

Garner, T.I, & Short, K.S. (2009). Accounting for owner-occupied dwelling services: Aggregates and distributions. *Journal of Housing Economics*, 18(3), 233-248.

Garner, T.I., & Verbrugge, R. (2009a). Reconciling user costs and rental equivalence: Evidence from the US consumer expenditure survey. *Journal of Housing Economics*, 18(3), 172-192.

Garner, T.I, & Verbrugge, R. (2009b). The puzzling divergence of rents and user costs, 1980-2004: Summary and extensions. In Diewert, W.E., Balk, B.M., Fixler D., Fox, K.J. & Nakamura, A.O. (Eds.), *Price and productivity measurement: Volume 1 – Housing* (pp. 125-146). Trafford Press.

Gathright, G. & Crabb, T.A. (2014). *Reporting of SSA program participation in SIPP* [Working Paper]. Washington, D.C.: U.S. Census Bureau.

Garthwaite. C., Notowidigdo, M. & Gross, T. (2018). Hospitals as insurers of last resort. *American Economic Journal: Applied Economics* 10(1), 1-39.

Gillingham, R. (1983). Measuring the cost of shelter for homeowners: Theoretical and empirical considerations. *Review of Economics and Statistics*, 65(2), 254-265. Available at <https://www.bls.gov/pir/journal/gj02.pdf>

Gimpel, J. G. (1999). *Separate destinations: Migration, immigration, and the politics of places*. Ann Arbor: University of Michigan Press.

Glaesser, E.L. (1998). Should transfer payments be indexed to local price levels? *Regional Science and Urban Economics*. Available at <https://www.sciencedirect.com/science/article/pii/S0166046297000227>.

Glaesser, E.L. (2011). Measuring local poverty rates. In Ziliak, J.P. (Ed.), *Cost of living and the supplemental poverty measure*. University of Kentucky.

- Glassman, B. (2019). *Multidimensional deprivation in the United States: 2017 American community survey report*. Washington, DC: U.S. Census Bureau. Available at <https://www.census.gov/content/dam/Census/library/publications/2019/demo/acs-40.pdf>
- Goedemé, T., Penne T., Hufkens, T., Karakitsios, A., Bernát, A., Simonovits, B., Alvarez, E.C., Kanavitsa, E., Parcerisas, I.C., Romani, J.R., Mäkinen, L., Matsaganis, M., Arlotti, M., Kopasz, M., Szivós, P., Ritakallio, V-M, Kazepov, Y., Van den Bosch, K. and Storms, B (2017). *What does it mean to live on the poverty threshold? Lessons from reference budgets* [Working Paper No. 17.07]. Herman Deleeck Centre for Social Policy.
- Goedhart, T., Halberstadr, V., Kapteyn, A., & van Praag, B.M.S. (1977). The poverty line: Concept and measurement. *The Journal of Human Resources*, 12(4), 503–520.
- Gould, E., Mokhiber, Z. & Bryant, K. (2018). *The economic policy institute's family budget calculator: Technical documentation*. Available at <https://www.epi.org/publication/family-budget-calculator-documentation/>
- Greenstone, M. (2017). The continuing impact of Sherwin Rosen's "Hedonic prices and implicit markets: Product differentiation in pure competition. *Journal of Political Economy*, 125(6), 1891–1902.
- Guio, A-C., & Van den Bosch, K. (2020). Deprivation of women and men living in a couple: Sharing or unequal distribution. *Review of Income and Wealth*, 66(4), 958-984. Available at <https://onlinelibrary.wiley.com/doi/10.1111/roiw.12449>
- Hall, J.B., & Rector, R. (2018). Examining Extreme and Deep Poverty in the United States. Backgrounder No. 3285. Washington, D.C.: The Heritage Foundation.
- Han, J., Meyer, B.D., & Sullivan, J.X. (2020). Real-time poverty estimates during the COVID-19 Pandemic through November 2020. University of Chicago. Available at <http://povertymeasurement.org/wp-content/uploads/2020/12/Real-time-Poverty-Estimates-through-November-2020.pdf>
- Han, J., Meyer, B.D. & Sullivan, J.X. (2021). Income and poverty in the COVID-19 Pandemic. [NBER Working paper No. 27729]. Forthcoming, Brookings Papers on Economic Activity. Cambridge, MA: National Bureau of Economic Research. <https://www.nber.org/papers/w27729>
- Heckman, J.J., Lochner, L.J., & Todd, P.E. (2006). Earnings equations and rates of return: The Mincer equation and beyond. In Hanushek, E.A., & Welch, F. (Eds.), *Handbook of the economics of education*. Amsterdam: Elsevier.
- Heisz, A. (2019). *An update on the market basket measure: comprehensive review* [Income Research Paper Series no. 75F0002M]. Ottawa, Canada: Statistics Canada. Available at <https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2019009-eng.htm>

- Herring, B. (2005). The effect of the availability of charity care to the uninsured on the demand for private health insurance. *Journal of Health Economics*, 24(2), 225-252.
- Hirsch, B. (2011). Adjusting poverty thresholds when area prices differ: Labor market evidence. In Ziliak, J.P. (Ed.), *Cost of living and the supplemental poverty measure*. University of Kentucky.
- Hokayem, C., Bollinger, C., & Ziliak, J.P. (2015). The role of CPS nonresponse in the measurement of poverty. *Journal of the American Statistical Association*, 110(511), 935-945, DOI: [10.1080/01621459.2015.1029576](https://doi.org/10.1080/01621459.2015.1029576)
- Hokayem, C., Raghunathan, T., & Rothbaum, J. (2015, August). *Sequential regression multivariate imputation in the current population survey annual social and economic supplement* [Conference paper]. Joint Statistical Meetings – Survey Research Methods Section. Available at <http://www.asasrms.org/Proceedings/y2015/files/233986.pdf>
- Hoopes, S. (2020). *ALICE research methodology overview and rationale, Biennial update*. Available at <https://www.unitedforalice.org/methodology>
- Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Bullock Mann, F., Barmer, A., & Dilig, R. (2020). Public school expenditures. In *The condition of education 2020* (NCES 2020-144). U.S. Department of Education, National Center for Education Statistics. Available at https://nces.ed.gov/programs/coe/pdf/coe_cmb.pdf
- Iams, H.M., & Purcell, P.J. (2013a). The impact of retirement account distributions on measures of family income. *Social Security Bulletin*, 73(2), 77-83. Available at <https://www.ssa.gov/policy/docs/ssb/v73n2/v73n2p77.html>
- Iams, H.M., & Purcell, P.J. (2013b). Social security income measurement in two surveys." *Social Security Bulletin*, 73(3), 1-10. Available at <https://www.ssa.gov/policy/docs/ssb/v73n3/v73n3p1.html>
- Interagency Technical Working Group on Developing a Supplemental Poverty Measure. (2010). *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure*. Available at https://www.bls.gov/pir/spm/spm_twg_observations.pdf.
- Internal Revenue Service. (2016). *Tax gap estimates for tax years 2008-2010*. Washington, DC: IRS. Available at <https://www.irs.gov/pub/newsroom/tax%20gap%20estimates%20for%202008%20through%202010.pdf>.
- International Labour Organization. (2004.) *Consumer price index manual: Theory and practice*. Geneva: ILO. Available at https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/presentation/wcms_331153.pdf.
- International Labour Organization. (2003, 24 November-3 December). *Report II: Household income and expenditure statistics* [Conference presentation]. Seventeenth International

- Conference of Labour Statisticians, Geneva. Available at <https://www.ilo.org/public/english/bureau/stat/download/17thicls/r2hies.pdf>.
- International Monetary Fund, OECD, United Nations, World Bank, and European Commission. (2009). *System of National Accounts, 2008*.
- Isaacs, J. (2004). *Measures of material hardship*. U.S. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation. Contract #282-98-0006(TO#31). Available at <https://aspe.hhs.gov/system/files/pdf/73366/report.pdf>
- Janicki, H.P., O'Hara, B., & Zawacki, A. (2013). Comparing methods for imputing employer health insurance contributions in the Current Population Survey [Conference proceedings]. Joint Statistical Meetings' Proceedings, Government Statistics Section: 1061-1075.
- Jaravel, X. (2018). The unequal gains from product innovations: Evidence from the US retail sector. *The Quarterly Journal of Economics*, 134(2), 715-783.
- Jencks, Christopher. 1997. "Foreword." *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*, by Kathryn Edin and Laura Lein, ix-xxvii. New York: Russell Sage Foundation. JSTOR, www.jstor.org/stable/10.7758/9781610441759. Accessed 7 Jan. 2021.
- Jenkins, S. P. (1991). Poverty measurement and the within-household distribution: Agenda for action. *Journal of Social Policy*, 20, 457-483.
- Johnson, D., & Garner, T. I. (1995). Unique equivalence scales: Estimation and implications for distributional analysis. *Journal of Income Distribution*, 4(2), 3.
- Johnson, D. S., Rogers, J.M. & Tan, L. (2001). A century of family budgets in the United States. *Monthly Labor Review*, May, 28-45. Available at <https://www.bls.gov/opub/mlr/2001/05/art3full.pdf>
- Johnson, D. S., Smeeding, T. M., & Torrey, B.B. (2005). Economic inequality through the prisms of income and consumption. *Monthly Labor Review*, April, 11-24.
- Johnson, L. B. (1965). *Public papers of the Presidents of the United States: Lyndon B. Johnson: Containing the public messages, speeches, and statements of the President 1963-64*. Washington: U.S. Government Printing Office. Available at <https://quod.lib.umich.edu/p/ppotpus/4730949.1964.001?view=toc>
- Jones, M.R., & Ziliak, J.P. (2019). *The antipoverty impact of the EITC: New estimates from survey and administrative records* [Working Papers 19-14]. Washington, DC: Center for Economic Studies, U.S. Census Bureau.
- Jorgenson, D., & Fraumeni B.M. (1989). Investment in Education. *Educational Researchers*, 18(4), 35-44. Available at <https://www.jstor.org/stable/1176649>

- Kaestner, R. & Lubotsky, D. (2016). Health insurance and income inequality." *Journal of Economic Perspectives*, 30(2), 53-78.
- Kaplan, G., & Schulhofer-Wohl, S. (2017). Inflation at the household level." *Journal of Monetary Economics*, 91: 19-38.
- Kaplow, L. (1995). *Regional cost-of-living adjustments in tax-transfer schemes [NBER Working Paper No. 5008]*. Cambridge, MA: National Bureau of Economic Research. Available at <https://www.nber.org/papers/w5008.pdf>.
- Kapteyn, A., Kooreman, P., Willemse, R. (1988). Some methodological issues in the implementation of subjective poverty definitions. *The Journal of Human Resources*, 23(2): 222–242.
- Katz, A.J. (2004). *Estimating dwelling services in the candidate countries: Theoretical and practical considerations in developing methodologies based on the user cost of capital measure* [BEA Working Paper #BE-54]. Washington, DC: Bureau of Economic Analysis.
- Katz, A.J. (2017). *Imputing rents to owner-occupied housing by directly modelling their distribution* [BEA Working Paper WP2017-7]. Washington, DC: Bureau of Economic Analysis.
- Kiel, K.A., & Zabel, J.E. (1999). The accuracy of owner-provided house values: The 1978–1991 American housing survey. *Real Estate Economics*, 27, 263–298.
- King, S. & Wilson, T.J. (2018). *An overview of the state-level weighting procedure for the consumer expenditure survey*. Washington, D.C.:U.S. Dept. of Labor, Bureau of Labor Statistics.
- Kish, L., & Lansing, J.B. (1954). Response errors in estimating the value of homes. *Journal of the American Statistical Association*, 49, 520–538.
- Korenman, S. D., & Remler, D. K. (2016). Including health insurance in poverty measurement. *Journal of Health Economics*, 50, 27-35.
- Krueger, A.B. and Kuziemko, I., 2013. The demand for health insurance among uninsured Americans: Results of a survey experiment and implications for policy. *Journal of Health Economics*, 32(5), 780-793.
- Krysan, M.,& Crowder, K. (2017). *Cycle of segregation: Social process and residential stratification*. Russell Sage Foundation.
- Lanjouw, P. (2009, March 16-17). *Constructing a consumption aggregate for the purpose of welfare analysis: Principles, issues and recommendations arising from the case of Brazil* [Conference paper]. OECD/University of Maryland Conference on Measuring Poverty, Income Inequality and Social Exclusion: Lessons from Europe, Paris, France.
- Larrimore, J., Burkhauser, R., & Armour, P. (2015). Accounting for income changes over the great recession relative to previous recessions: The impact of taxes and transfers. *National Tax Journal*, 68(2), 218–318.

- Lechene, V., Pendakur, K. & Wolf, A. (2020). OLS estimation of the intra-household distribution of consumption [IFS Working Paper W20/6]. Institute for Fiscal Studies.
><https://www.ifs.org.uk/publications/14748><
- Lewbel, A., & Pendakur, K. (2020). Inefficient collective households: Cooperation and consumption [Boston College Working Papers in Economics WP 1000]. Boston College. Available at ><https://econpapers.repec.org/paper/bocbocoec/1000.htm><
- Link, B.G., Susser, E., Stueve, A., Phelan, J., Moore, R.E. & Struening, E. (1994). Lifetime and five-year prevalence of homelessness in the United States. *American Journal of Public Health*, 84(12), 1907-1912.
- LoSasso, A.T., & Meyer, B.D. (2006). *The health care safety net and crowd-out of private health insurance* [NBER Working Paper No. 11977]. Cambridge, MA: National Bureau of Economic Research.
- Lundberg, S., Pollak, R.A., & Stearns, J. (2016). Family inequality: Diverging patterns in marriage, cohabitation, and childbearing. *Journal of Economic Literature*, 30(2), 79–102.
- MacLeod, W. B., & Urquiola, M. (2018). *Is education consumption or investment? Implications for the effect of school competition* [NBER Paper No. w25117]. Cambridge, MA: National Bureau of Economic Research.
- Massey, D., & Denton, N. A. (1993). *American apartheid: Segregation and the making of the underclass*. Cambridge: Harvard University Press.
- Mayer, S. E., & Jencks, C. (1989). Poverty and the distribution of material hardship. *Journal of Human resources*, 88-114.
- McGranahan, L., & Paulson, A. L. (2005). *Constructing the Chicago fed income based economic index-consumer price index: Inflation experiences by demographic group: 1983-2005*, [Working Paper 2005-20]. Available at <https://www.chicagofed.org/~media/publications/working-papers/2005/wp2005-20-pdf.pdf>
- Merz, J., Garner, T.I., Smeeding, T.M., Faik, J., & Johnson, D. (1994) *Two scales, one methodology – expenditure based equivalence scales for the United States and Germany*. MPRA Paper No. 7233. Available at <https://mpra.ub.uni-muenchen.de/7233/>
- Meyer, B. D., & Mittag, N. (2019). Using linked survey and administrative data to better measure income: Implications for poverty, program effectiveness, and holes in the safety net. *American Economic Journal: Applied Economics*, 11(2), 176-204.
- Meyer, B. D., Mittag, N., & George, R. M. (2020). Errors in survey reporting and imputation and their effects on estimates of food stamp program participation. *Journal of Human Resources*, 0818-9704R2.

- Meyer, B. D., Mok, W. K., & Sullivan, J. X. (2015). Household surveys in crisis. *Journal of Economic Perspectives*, 29(4), 199-226.
- Meyer, B. D., & Rosenbaum, D. T. (2000). Welfare, the earned income tax credit, and the labor supply of single mothers. *Quarterly Journal of Economics* CXVI, August 2001, 1063-1114.
- Meyer, B. D., & Sullivan, J. X. (2003). *Measuring the well-being of the poor using income and consumption* [NBER Paper No. w9760]. Cambridge, MA: National Bureau of Economic Research.
- Meyer, B. D., & Sullivan, J. X. (2007). *Further results on measuring the well-being of the poor using income and consumption* [NBER Paper No. w13413]. Cambridge, MA: National Bureau of Economic Research.
- Meyer, B. D., & Sullivan, J. X. (2011a). Consumption and income poverty over the business cycle. *Research in Labor Economics* 32, 51-81.
- Meyer, B. D., & Sullivan, J. X. (2011b). Further results on measuring the well-being of the poor using income and consumption. *Canadian Journal of Economics/Revue canadienne d'économique*, 44(1), 52-87.
- Meyer, B. D., & Sullivan, J. X. (2012a). Identifying the disadvantaged: official poverty, consumption poverty, and the new supplemental poverty measure. *Journal of Economic Perspectives*, 26(3), 111-36.
- Meyer, B. D. & Sullivan, J. X. (2012b). "Winning the War: Poverty from the Great Society to the Great Recession," *Brookings Papers on Economic Activity*, Fall, p. 133-183.
- Meyer, B. D., & Sullivan, J. X. (2017). *Consumption and income inequality in the US since the 1960s* [NBER Paper No. w23655]. Cambridge, MA: National Bureau of Economic Research.
- Meyer, B. D., & Sullivan, J. X. (2018a). *Annual report on US consumption poverty: 2017*. American Enterprise Institute.
- Meyer, B. D. & Sullivan, J. X. (2018b). *Levels and changes in income poverty, consumption poverty and material well-being: A response to Shaefer and Rivera (2017)* [University of Chicago, Working Paper]. Available at https://www3.nd.edu/~jsulliv4/Meyer_Sullivan_response.pdf.
- Meyer, B. D., & Wu, D. (2018). The poverty reduction of social security and means-tested transfers. *Industrial and Labor Relations Review*, 71(5), 1106-1153.
- Meyer, B. D., Wu, D., & Curran, B. (2020). *Does geographically adjusting poverty thresholds improve poverty measurement and program targeting?* [Presentation Poster]. Annual Meeting of the Association for Public Policy Analysis and Management, University of Chicago.

Meyer, B. D., Wu, D., Finley, G., Langetieg, P., Medalia, C., Payne, M., & Plumley, A. (2020). *The accuracy of tax imputations: Estimating tax liabilities and credits using linked survey and administrative data* [NBER Working Paper w28229]. Cambridge, MA: National Bureau of Economic Research. Available at <https://www.nber.org/system/files/chapters/c14441/c14441.pdf>.

Meyer, B. D., Wu, D., Mooers, V., & Medalia, C. (2021). The use and misuse of income data and extreme poverty in the United States. *Journal of Labor Economics*, 39(S1), S5-S58. Available at <https://doi.org/10.1086/711227>

Mincer, J. (1974). *Schooling, experience, and earnings*. Human Behavior & Social Institutions No. 2.

Mitra, S., & Brucker, D.L. (2016). Income poverty and multiple deprivations in a high-income country: The case of the United States," *Social Science Quarterly*.

Moore, J. C., Stinson, L. L., & Welniak, E. J. (2000). Income measurement error in surveys: A review. *Journal of Official Statistics*, 16(4), 331-362.

Moulton, B. R. (2018). *The measurement of output, prices, and productivity*. Available at <https://www.brookings.edu/wp-content/uploads/2018/07/Moulton-report-v2.pdf>

Mykyta, L., & Pilkauskas, N. (2016). *Household composition and family wellbeing: Exploring the relationship between doubling up and hardship* [SEHSD Working Paper, 10]. Washington, DC: US Census Bureau. Available at <https://www.census.gov/library/working-papers/2016/demo/SEHSD-WP2016-10.html>

Mysíková, M., Želinský, T., Garner, T. I., & Fialová, K. (2019). *Subjective equivalence scales and income poverty in eastern vs western European countries* [BLS Working Paper 519]. Washington, DC: U.S. Bureau of Labor Statistics.

Nadeau, A.C. (2019). *Living Wage Calculator User's Guide / Technical notes*. In National Academies of Sciences, Engineering, and Medicine. 2019. A Roadmap to Reducing Child Poverty. Washington, DC: The National Academies Press. Available at <https://doi.org/10.17226/25246>

National Academies of Sciences, Engineering, and Medicine. (2012). *National research council and institute of medicine: Medical care economic risk*. Washington, DC: The National Academies Press.

National Academies of Sciences, Engineering, and Medicine. (2018). *The 2014 redesign of the survey of income and program participation: An assessment*. Washington, DC: National Academies Press. Available at <https://doi.org/10.17226/24864>

National Academies of Sciences, Engineering, and Medicine. (2018). *Permanent supportive housing: evaluating the evidence for improving health outcomes among people experiencing chronic homelessness*. Washington, DC: National Academies Press.

National Academies of Sciences, Engineering, and Medicine. (2019). *A roadmap to reducing child poverty*. Washington, DC: The National Academies Press. Available at <https://doi.org/10.17226/25246>.

National Center for Education Statistics. (2020). *Revenues and expenditures for public elementary and secondary school districts: FY 17 finance tables* [NCES Report 2020-30]. Washington, DC: National Center for Education Statistics.

National Research Council. (1995). *Measuring poverty: A new approach*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/4759>.

National Research Council. (2005). *Experimental poverty measures: Summary of a workshop*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11166>.

Nelson, J. A. (1993). Household equivalence scales: Theory versus policy? *Journal of Labor Economics*, 11(3), 471-493.

Nicholas, J., & Wiseman, M. (2010). Elderly poverty and supplemental security income, 2002-2005. *Soc. Sec. Bull.*, 70(1). Available at <https://www.ssa.gov/policy/docs/ssb/v70n2/v70n2p1.html>.

Nichols, A. L., & Zeckhauser, R. J. (1982). Targeting transfers through restrictions on recipients. *The American Economic Review*, 72(2), 372-377.

Nolan, B., & Whelan, C. T. (2010). Using non-monetary deprivation indicators to analyze poverty and social exclusion: Lessons from Europe? *Journal of Policy Analysis and Management*, 29(2), 305-325.

Norris, S., & Pendakur, K. (2013). Imputing rent in consumption measures, with an application to consumption poverty in Canada, 1997–2009. *Canadian Journal of Economics/Revue canadienne d'économique*, 46(4), 1537-1570.

Oates, W. (1969).). The effects of property taxes and local public spending on property values: An empirical study of tax capitalization and the tiebout hypothesis.. *Journal of Political Economy*, 77 (6) 957-71.

Organization for Economic Co-operation and Development. (2013). *What Are equivalence scales?* OECD Publishing: Paris. Available at <http://www.oecd.org/economy/growth/OECD-Note-EquivalenceScales.pdf>

Organization for Economic Co-operation and Development. (2019) *Measuring distance to the SDG targets 2019: An assessment of where OECD countries stand*. OECD Publishing: Paris. Available at <https://doi.org/10.1787/a8caf3fa-en>.

Organization for Economic Co-operation and Development. (2019). *Society at a glance 2019: OECD social indicators*. OECD Publishing: Paris. Available at https://doi.org/10.1787/soc_glance-2019-en

- Office of Management and Budget. (2019). *Request for comment on the consumer inflation measures produced by federal statistical agencies*. Available at <https://www.federalregister.gov/documents/2019/05/07/2019-09106/request-for-comment-on-the-consumer-inflation-measures-produced-by-federal-statistical-agencies>
- Office of National Statistics. (2020). *Measuring changing prices and costs for consumers and households, proposed updates: March 2020*. Available at <https://www.ons.gov.uk/economy/inflationandpriceindices/articles/measuringchangingpricesandcostsforconsumersandhouseholdsproposedupdates/march2020>
- O'Hara, A. (2004). *New methods for simulating CPS taxes*. [U.S. Census Bureau SEHSD Working Paper # 2004-08]. Washington, D.C.: U.S. Census Bureau.
- O'Hara, A., Bee, A., & Mitchell, J. (2016). *Preliminary research for replacing or supplementing the income question on the American community survey with administrative records* [US Census Bureau Working Paper]. Washington, DC: US Census Bureau. Available at https://www.census.gov/content/dam/Census/library/working-papers/2016/acs/2016_Majercik_01.pdf
- Oliver, M. L., & Shapiro, T. M. (1995). A sociology of wealth and racial inequality. In Martin, M.T. & Yaquinto, M. (Eds.) *Redress for historical injustices in the United States: On reparations for slavery, Jim Crow, and their legacies*. Duke University Press.
- Orshansky, M. (1965). Counting the poor: Another look at the poverty profile. *Soc. Sec. Bull.*, 28(1), 3-30. Available at <https://www.ssa.gov/policy/docs/ssb/v28n1/v28n1p3.pdf>
- Oxford Poverty and Human Development Initiative. (2014). *Global multidimensional poverty index*. Oxford Department of International Development. Available at <http://www.ophi.org.uk/multidimensional-poverty-index/>
- Passero, W., Garner, T., & McCully, C. (2015). Understanding the relationship CE Survey and PCE. *Studies in Income and Wealth*, 74. Available at <https://www.nber.org/system/files/chapters/c12659/c12659.pdf>
- Pearce, D.M. (2020). *The self-sufficiency standard for Washington state, 2020 update*. Center for Women's Welfare, University of Washington School of Social Work.
- Pelletiere, D. (2008). *Getting to the heart of housing's fundamental question: How much can a family afford? A primer on housing affordability stands in U.S. housing policy*. National Low Income Housing Coalition.
- Penglase, J. (2020). Consumption inequality among children: Evidence from child fostering in Malawi. *The Economic Journal*, ueaa104.
- Phipps, S. & T.I. Garner (1994). Are equivalence scales the same for the United States and Canada? *The Review of Income and Wealth*, 40, 1–17.

- Piccoli, L. (2017). Female poverty and intrahousehold inequality in transition economies. *IZA World of Labor*. Article #353.
- Poterba, J. M. (1991). Is the gasoline tax regressive? *Tax policy and the economy*, 5, 145-164. MIT Press.
- Pseiridis, A., Lianos, T.P., & Agiomirgianakis, G. 2018. Is university education an investment or a consumption good in a small open economy? *International Journal of Education Economics and Development*, 9(3), 268-279.
- Ravallion, M. (2016). *The economics of poverty: History, measurement, and policy*. Oxford: Oxford University Press.
- Reeves, R., Rodrigue, E. & Kneebone, E. (2016). *Five evils: Multidimensional poverty and race in America*. The Brookings Institution.
- Remler, D. K., Korenman, S., & Hyson, R. T. (2020). *Incorporating health insurance in poverty measurement: Estimating trends* [Conference presentation]. 2020 APPAM Fall Research Conference. APPAM.
- Renwick, T. (2011). *Geographic adjustments of supplemental poverty measure thresholds: Using the American community survey five-year data on housing cost* [U.S. Census Bureau SEHSD Working Paper SEHSD-WP2011-21]. Washington, DC: Census Bureau.
- Renwick, T. (2018). *Incorporating amenities into geographic adjustments of the supplemental poverty measure* [U.S. Census Bureau SEHSD Working Paper # SEHSD-WP2018-32]. Washington, DC: U.S. Census Bureau.
- Renwick, T. (2020). *Using ACS earnings data to adjust supplemental poverty measure thresholds* [U.S. Census Bureau SEHSD Working Paper#2020-04]. Washington, DC: Census Bureau.
- Renwick, T., Aten, B., Figueroa, E. & Martin, T. (2014). *Supplemental poverty measure: A comparison of geographic adjustments with regional price parities vs median rents from the American community survey* [U.S. Census Bureau SEHSD Working Paper SEHSD-WP2014-22]. Washington, DC: Census Bureau. Available at <https://www.census.gov/content/census/en/library/working-papers/2014/demo/SEHSD-WP2014-22.html>
- Renwick, T., & Bergmann, B. (1993, Winter). A budget-based definition of poverty: With an application to single-parent families. *The Journal of Human Resources*, 28(1), 1-24
- Renwick, T., Figueroa, E. & Aten, B. (2017). *Supplemental poverty measure: A comparison of geographic adjustments with regional price parities vs. median rents from the American community survey: An update* [U.S. Census Bureau SEHSD Working Paper 2017-36]. Paper presented at the 2017 International Statistical Institute World Statistics Congress in Marrakech, Morocco.

- Renwick, T., & Garner, T.I., (2020). *Changing the housing share of poverty thresholds for the supplemental poverty measure and equivalence scales: Does consumer unit size matter?* [BLS Working Paper 257]. Washington, DC: U.S. Bureau of Labor Statistics.
- Rios-Avila, F. (2018). *Quality of match for statistical matches using the american time use survey 2013, the survey of consumer finances 2013, and the annual social and economic supplement 2014* [Levy Economics Institute of Bard College Working Paper 914]. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Roback, Jennifer. 1988. Wages, Rents, and Amenities: Differences Among Workers and Regions. *Economic Inquiry*, 26(1): 23-41.
- Roemer, M. I. (2000). *Assessing the quality of the March current population survey and the survey of income and program participation income estimates, 1990-1996* [Staff Papers on Income, Housing and Household Economic Statistics Division]. Washington D.C.: U.S. Census Bureau.
- Rogers, J. M., & Gray, M. B. (1994). CE data: quintiles of income versus quintiles of outlays. *Monthly Lab. Rev.*, 117, 32.
- Rothbaum, J. L. (2015). *Comparing income aggregates: how do the CPS and ACS match the national income and product accounts, 2007-2012* [SEHSD Working Paper 2015-01]. Washington, DC: U.S. Census Bureau. Available at <https://www.census.gov/library/working-papers/2015/demo/SEHSD-WP2015-01.html>
- Royalty, A. B. (2008). Estimating workers' marginal valuation of employer health benefits: Would insured workers prefer more health insurance or higher wages?. *Journal of health economics*, 27(1), 89-105. (see page 24)
- Ruggles, P. (1990). *Drawing the line—alternative poverty measures and their implications for public policy*. Washington: Urban Institute Press.
- Sabelhaus, J., & Groen, J. A. (2000). Can permanent-income theory explain cross-sectional consumption patterns? *Review of Economics and Statistics*, 82(3), 431-438.
- Sabelhaus, J., Johnson, D., Ash, S., Swanson, D., Garner, T., Greenlees, J., & Henderson, S. (2013). *Is the consumer expenditure survey representative by income?* [NBER Working Paper No. w19589]. Cambridge, MA: National Bureau of Economic Research.
- Scholz, J. K., Moffitt, R., & Cowan, B. (2009). *Trends in income support. Changing poverty, changing policies*, 203-41. Washington, D.C.: Russell Sage Foundation.
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 1-17.
- Semega, J., Kollar, M., Shrider, E.A., & Creamer, J.F., (2020). *Income and poverty in the United States: 2019* [Current Population Reports]. Washington, D.C.: U.S. Census Bureau.

- Shaefer, H. Luke and Joshua Rivera. 2018. "Comparing Trends in Poverty and Material Hardship over the Past Two Decades," Poverty Solutions at the University of Michigan Working Paper Series #5-17.
- Shantz, K. & Fox, L. E. (2018). *Precision in measurement: using state-level supplemental nutrition assistance program and temporary assistance for needy families administrative records and the transfer income model (TRIM3) to evaluate poverty measurement* [Census Bureau SEHSD Working Paper #2018-30]. Washington, DC: U.S. Census Bureau.
- Short, K. S. (2005). Material and financial hardship and income-based poverty measures in the USA, *Journal of Social Policy*, 34(1), 21-38.
- Short, K. S. (2015). Hardship, debt, and income-based poverty measures in the USA. In Garner, T.I. & Short, K.S. (Eds.). *Measurement of poverty, deprivation, and economic mobility-Volume 23*. Emerald Group Publishing Limited.
- Short, K. S., Federman, M., & Garner, T.I. (1996). What does it mean to be poor in America? *Monthly Labor Review*, 119(5).
- Short, K. S., Garner, T. I., & Johnson, D. S. (1999). *Experimental poverty measures: 1990 to 1997* [Census Paper No. 205]. Washington, DC: Bureau of the Census.
- Short, K. S., & Shea, M. (1995). *Beyond Poverty: Extended Measures of Well-being, 1992* [Current Population Reports, Series P-70, No. 50rv]. Washington, DC: Census Bureau.
- Slemrod, J. (2017). Tax compliance and enforcement: an overview of new research and its policy implications. In Auerbach, A. & Smetters, K. (Eds). *The economics of tax policy* (pp. 81-102). Oxford: Oxford University Press.
- Slesnick, D. T. (1993). Gaining ground: poverty in the postwar United States. *Journal of Political Economy*, 101(1), 1-38.
- Slesnick, D. T. (2001). *Consumption and social welfare: Living standards and their distribution in the United States*. Cambridge: Cambridge University Press.
- Snyder, T., Dinkes, R., Sonnenberg, W., & Cornman, S. (2018). *Study of the title i, part a grant program mathematical formulas (2019-016)* [U.S. Department of Education Report]. Washington, DC: National Center for Education Statistics. Available from <http://nces.ed.gov/pubsearch>.
- Smeeding, T. M. (1982). *Alternative methods for valuing selected in-kind transfer benefits and measuring their effect on poverty* [Technical Paper 50]. Washington, DC: Census Bureau. Available at <https://www2.census.gov/prod2/popscan/TP-50.pdf>
- Smeeding, T. M. (1984). Approaches to measuring and valuing in-kind subsidies and the distribution of their benefits. In Moon, M. (Ed.), *Economic transfers in the United States* (pp. 139-176). Chicago: University of Chicago Press.

- Smeeding, T. M., Saunders, P., Coder, J., Jenkins, S., Fritzel, J., Hagenaars, A., Hauser, R., & Wolfson, R. (1993). Poverty, inequality, and family living standards impacts across seven nations: the effect of non cash subsidies for health, education and housing. *Review of Income and Wealth*, 30(3):229-256.
- Smeeding, T.M., & Thornton, K.A. (2019). *Wisconsin poverty report: treading water in 2017. the eleventh annual report of the Wisconsin poverty project* [Paper WIPOV11-2019]. Madison, WI: Institute for Research on Poverty, University of Wisconsin-Madison.
- Snyder, T., Dinkes, R., Sonnenberg, W., & Cornman, S. (2018). *Study of the Title I, Part A Grant Program Mathematical Formulas* (2019-016) [U.S. Department of Education Report]. Washington, DC: National Center for Education Statistics. Available at <http://nces.ed.gov/pubsearch>
- Statistics Canada. (2016). *Low income lines: What they are and how they are created* [Income Research Paper Series no. 75F0002M2016002]. Ottawa, Canada: Statistics Canada. Catalogue. <https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2016002-eng.htm>
- Stone, M. E. (2004). Shelter poverty: The chronic crisis of housing affordability, *New England Journal of Public Policy* (20)1 , Article 16.
- Suh, J., & Folbre, N. (2016). Valuing unpaid child care in the US: A prototype satellite account using the american time use survey. *Review of Income and Wealth*, 62(4), 668-684.
- Tiebout, Charles M. 1956. A Pure Theory of Local Expenditures. *Journal of Political Economy*, 64(5): 416-424.
- Tseng, N., Brattland, J., Davis, J., Geisen, E., Kopp, B., & Stringer, M.C. (2012). *Exploring Underreporting and Respondent Records Usage in the Consumer Expenditure Survey* [Conference presentation]. Federal Committee on Statistical Methodology Conference.
- Turner, M.A., Santos, R., Levy, D.K., Wissoker, D.A., Aranda, C., & Pitingolo, R. (2013). *Housing discrimination against racial and ethnic minorities 2012: Full report*. Washington, DC: Urban Institute. Available at <https://www.urban.org/research/publication/housing-discrimination-against-racial-and-ethnic-minorities-2012-full-report>
- Tunstall, R., Bevan, M., Bradshaw, J., Croucher, K., Duffy, S., Hunter, C., Jones, A., Rugg, J., Wallace, A. & Wilcox, S (2013). *The links between housing and poverty: an evidence review*. New York: Joseph Roundtree Foundation.
- Tolnay, S. E. (2003). The African American “great migration” and beyond. *Annual Review of Sociology*, 29(1), 209-232.
- United Nations Department of Economic and Social Affairs, Statistics Division. (2018). *Classification of individual consumption according to purpose (COICOP) 2018* [Statistical Papers, Series M, No. 99].

United Nations Economic Commission for Europe. (2017). *Guide on poverty measurement*. United Nations, New York.

United Nations Economic Commission for Europe. (2020). *Approaches to measuring social exclusion*. Geneva, Switzerland: UNECE Task Force on Measuring Social Exclusion. https://unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.15/2020/mtg3/4_Dec_Work_under_the_Conference_of_European_Statisticians_Approaches_to_SE.pdf

U.S. Bureau of Labor Statistics. (Undated). *Consumer expenditures and income. Handbook of methods*. <https://www.bls.gov/opub/hom/cex/pdf/cex.pdf>

U.S. Census Bureau. (1965). *Low-Income families and unrelated individuals in the United States: 1963* [Working Paper Series P-60, No. 45]. Available at <https://www2.census.gov/library/publications/1965/demographics/p60-45.pdf>

U.S. Census Bureau. (1966). *Special census survey of the south and east Los Angeles areas: November 1965* [Current Population Reports. Series P-23. No. 17]. Washington, DC: Census Bureau. Available at <https://www2.census.gov/library/publications/1966/demographics/p23-017.pdf>

U.S. Census Bureau. (1968). *The extent of poverty in the United States: 1959 to 1966* [Working Paper Series P-60, No. 54]. Washington, DC: Census Bureau. Available at <https://www2.census.gov/library/publications/1968/demographics/p60-54.pdf>

U.S. Census Bureau. (1969). *Revision in poverty statistics, 1959 to 1968* [Working Paper Series P-23, No. 28]. Washington, DC: Census Bureau. Available at <https://www2.census.gov/library/publications/1969/demographics/p23-028.pdf>

U.S. Census Bureau. (1988). *Estimates of poverty including the value of noncash benefits: 1987* [Technical Paper 58]. Washington, DC: Census Bureau. Available at <https://www2.census.gov/prod2/popscan/tp-58.pdf>

U.S. Census Bureau. (1989). *Money income and poverty status in the United States: 1988*. Washington, DC: Census Bureau. Available at <https://www2.census.gov/library/publications/1989/demographics/p60-166.pdf>

U.S. Census Bureau. (1993). *Measuring the effect of benefits and taxes on income and poverty: 1992* [Current Population Reports, Series P60-186RD]. Washington, DC: U.S. Government Printing Office. Available at <https://www.census.gov/library/publications/1993/demo/p60-186rd.html>.

U.S. Census Bureau. (2004). *ASEC 2005 tax model documentation* [SEHSD Working Paper]. Washington, DC: Census Bureau. Available at <https://www.census.gov/content/dam/Census/library/working-papers/2005/demo/cpsasec2005taxmodeldoc.pdf>.

- U.S. Census Bureau. (2006). *The effects of government taxes and transfers on income and poverty: 2004* [Housing and Household Economic Statistics Division Working Paper]. Washington, DC: Census Bureau. Available at <https://www.census.gov/content/dam/Census/library/publications/2006/demo/effects2004.pdf>
- U.S. Census Bureau. (2007). *The effects of taxes and transfers on income and poverty in the United States: 2005*. Washington, DC: Census Bureau.
- U.S. Census Bureau. (2015). *Calculating fungible values: Medicare, medicaid*. Washington, DC: Census Bureau. Available at <https://www.census.gov/programs-surveys/cps/data-detail/fungible-values.html>
- U.S. Census Bureau. (2017). *Office of management and budget (OMB) in statistical policy directive 14 (May 1978)*. Available at <https://www.census.gov/topics/income-poverty/poverty/about/history-of-the-poverty-measure/omb-stat-policy-14.html>
- U.S. Department of Agriculture. (2019). *Supplemental nutrition assistance program participation and costs*. Washington, DC: USDA. Available at <https://fns-prod.azureedge.net/sites/default/files/resource-files/SNAPsummary-4.pdf>
- U.S. Department of Health and Human Services. (2000). *Reasons for measuring poverty in the united states in the context of public policy – a historical review: 1916–1995* [Office of the Assistant Secretary for Planning and Evaluation Report]. Washington, DC: HHS. Available at <https://aspe.hhs.gov/report/reasons-measuring-poverty-united-states-context-public-policy—historical-review-1916-1995>
- U.S. Department of Health and Human Services. (2019). *U.S. federal poverty guidelines used to determine financial eligibility for certain federal programs* [Office of the Assistant Secretary for Planning and Evaluation Report]. Washington, DC: HHS. Available at <https://aspe.hhs.gov/poverty-guidelines>
- U.S. Department of Housing and Urban Development. (2008). *The 2007 annual homelessness assessment report to congress*. Washington, DC: HUD. Available at <https://www.huduser.gov/publications/pdf/ahar.pdf>
- U.S. Department of Housing and Urban Development. (2014). *Point-in-time count methodology guide*. Washington, DC: HUD. Available at <https://files.hudexchange.info/resources/documents/PIT-Count-Methodology-Guide.pdf>
- U.S. Department of Housing and Urban Development. (2018a). *Notice for housing inventory count (HIC) and point-in-time (PIT) data collection for continuum of care (CoC) program and the emergency solutions grants (ESG) Program*. Washington, DC: HUD. Available at <https://files.hudexchange.info/resources/documents/Notice-CPD-18-08-2019-HIC-PIT-Data-Collection-Notice.pdf>
- U.S. Department of Housing and Urban Development. (2018b). *The 2018 annual homelessness assessment report (AHAR) to Congress, Part I: Point-in-time estimates of homelessness*,

- December 2018*. Washington, DC: HUD. Available at <https://www.hudexchange.info/resource/5783/2018-ahar-part-1-pit-estimates-of-homelessness-in-the-us/>
- U.S. Department of Housing and Urban Development. (2020). *The 2019 annual homelessness assessment report (AHAR) to Congress, part I: Point-in-time estimates of homelessness, January 2020*. Washington, DC: HUD. Available at <https://www.hudexchange.info/resource/5948/2019-ahar-part-1-pit-estimates-of-homelessness-in-the-us/>
- Van Praag, B.M.S., Goedhart, T. & Kapteyn, A. (1980). The poverty line – A pilot survey in Europe. *The Review of Economics and Statistics* 62(2): 461-465.
- Verbrugge, R. (2008). The puzzling divergence of rents and user costs, 1980–2004. *Review of Income and Wealth*, 54(4), 671-699.
- Wagle, U.R. (2014). The counting- based measurement of multidimensional poverty: The focus on economic resources, inner capabilities, and relational resources in the United States,” *Social Indicators Research*, 115, 223–240.
- Wagner, D., & Layne, M. (2014). *The person identification validation system: Applying the center for administrative records and research and applications' record linkage software* [Center for Administrative Records Research and Applications Report Series (# 2014-01)]. Washington, DC: Census Bureau.
- Ward, M. (1985). *Purchasing power parities and real expenditures in the OECD*. Paris: OECD.
- Wheaton, L. (2007). *Underreporting of means-tested transfer programs in the CPS and SIPP*. 2007 Proceedings of the American Statistical Association, Social Statistics Section.
- Wheaton, L., & Stevens, K. (2016). *The effect of different tax calculators on the supplemental poverty measure*. Washington, DC: Urban Institute.
- Winship, S. (2016). *Poverty after welfare reform*. Manhattan Institute.
- Wolff, E. N., & Zacharias, A. (2003). *The Levy Institute measure of economic well-being* [Working Paper No. 372]. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Wolff, E. N., & Zacharias, A. (2009). Household Wealth and the Measurement of Economic Well-Being in the United States. *Journal of Economic Inequality*, 7(2): 83–115.
- Wolff, E. N., Zacharias, A., Masterson, T., Eren, S., Sharpe, A., & Hazell, E. (2012). *A comparison of inequality and living standards in Canada and the United States using an expanded measure of economic well-being* [Working Paper No. 703]. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.

- World Bank. (2017). *Monitoring global poverty: Report of the commission on global poverty*. Washington, DC: World Bank. Available at <https://openknowledge.worldbank.org/handle/10986/25141>
- World Bank. (2018). *Poverty and shared prosperity 2018: Piecing together the poverty puzzle*. Washington, DC: World Bank.
- Yates, J. (1994). Imputed rent and income distribution. *Review of Income and Wealth*, 40(1), 43-66.
- Zacharias, A. (2017). *How time deficits and hidden poverty undermine the sustainable development goals* [Levy Economics Institute of Bard College Policy Note]. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Zacharias, A., Masterson, T., & Rios-Avila, F. (2018). *Stagnating economic well-being and unrelenting inequality: Post 2000 trends in the United States* [Levy Economics Institute of Bard College Public Policy Brief No. 146]. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College. Available at http://www.levyinstitute.org/pubs/ppb_146.pdf
- Zamboni, L. M., & Martin, E. G. (2020). Association of US households' disaster preparedness with socioeconomic characteristics, composition, and region. *JAMA network open*, 3(4), e206881-e206881. doi:10.1001/jamanetworkopen.2020.6881

Appendix A. Census Bureau Surveys

Current Population Survey Annual Social and Economic Supplement (CPS ASEC)

The **CPS ASEC** is the source of official annual estimates of national poverty levels and rates, as well as widely used estimates of household income, individual earnings, and the distribution of income. The CPS ASEC provides a consistent historical time series beginning in 1959 at the national level and can also be used to look at state-level trends and differences (through multi-year averages) going back to 1980. However, the relatively large sampling errors of state-level estimates for smaller states somewhat limit their usefulness.

The CPS ASEC is administered to about 95,000 households in February, March, and April each year and asks respondents about their income in the previous calendar year. Data from these respondents is processed throughout the summer each year with income and poverty estimates released typically in the first or second week of September. Estimates are released for the nation as a whole, major demographic subgroups, and regions. Users are encouraged to use three-year average estimates to look at income and poverty for individual states and smaller demographic groups. The questionnaire asks about income from more than 50 sources and records up to 27 different income amounts, including receipt of numerous in-kind benefits, such as Supplemental Nutrition Assistance Program (formerly known as the food stamp program), subsidized school lunches, and housing assistance.

American Community Survey (ACS)

The **ACS** is administered to approximately 3.5 million households each year on a continuous basis. Starting in 2006, the ACS replaced the decennial census long-form sample questionnaire. The ACS offers comprehensive information on social, economic, and housing characteristics and because of its large sample size, the ACS is exceptionally useful for subnational analyses, serving as the best source for survey-based state level income and poverty estimates. The ACS provides single-year estimates of income and poverty for all places, counties, and metropolitan areas with a population of at least 65,000 as well as the nation and the states, and provides estimates for all geographies, including census tracts and block groups using data pooled over a five-year period. Both one- and five-year estimates are updated every year.

ACS respondents are asked to report their income in the “previous twelve months.”¹⁴² Income questions in the ACS are less detailed than in the CPS ASEC with respondents asked to report income in eight broad income categories. The only in-kind benefit reported on the ACS is whether or not anyone in the household received SNAP benefits. There is no information on housing assistance, LIHEAP, WIC or school lunch. Since estimates from the ACS are provided for lower levels of geography, they are often used in funding formulas for government programs and eligibility for special tax credits.

Survey of Income and Program Participation (SIPP)

SIPP is a longitudinal survey most useful for understanding changes in monthly income and poverty status for the same individuals or households over time, typically 3 to 4 years, and for examining the nature and frequency of poverty spells. Unlike the ACS and CPS ASEC, the SIPP also

¹⁴² The upcoming ACS content test will explore the feasibility of changing the reference period for the ACS income questions from the previous 12 months to the previous calendar year in order to facilitate the matching of ACS responses to administrative records that tend to be provided with calendar year reference periods.

permits researchers to look at estimates of income and poverty for periods of more than or less than one year, including monthly poverty rates. The SIPP is a nationally representative survey and since the 2004 SIPP Panel reliable state-level estimates are available in select states, generally the most populous 20 states.¹⁴³

Whereas the CPS ASEC is a labor force survey with supplementary questions on income, the SIPP focuses on income and asks about income from up to 81 sources. The SIPP typically reports more income than the CPS ASEC does. The SIPP also contains detailed information on government program participation, asset-holdings, and other subject areas critical for understanding social and economic well-being. Most income estimates are collected at the monthly level.

Respondents are asked about receipt of all in-kind benefits covered by the CPS ASEC plus school breakfast and other assistance such as transportation, clothing and Meals on Wheels. Like income, program participation data are at the monthly level for most in-kind benefits. SIPP also includes a number of questions designed to estimate material hardship such as questions on whether or not a household had trouble paying its bills, skipped meals, or faced eviction.

Historically SIPP interviews were conducted in 4-month intervals, or “waves.” In the 2008 and earlier SIPP Panels, each wave included the same set of core questions about the previous 4 months, or reference period, and a set of topical questions that varied from wave to wave. The 2008 Panel had 16 waves spanning 6 years (May 2008 to November 2013). The SIPP was reengineered following the 2008 Panel, with the subsequent 2014 Panel collecting data in 12-month intervals over 4 annual waves asking about income and program participation for the period January 2013 through December 2016. A new SIPP panel began in 2018 with a calendar year 2017 reference period. In the 2014 and 2018 panels, all questions were asked in every interview. SIPP interviewers return to the same household (not housing unit) and attempt to follow people interviewed in the first wave, even if they move.

The 2014 SIPP panel started with a universe of 53,000 living quarters. Like other longitudinal surveys, SIPP has considerable attrition across waves of a panel. Survey weights are adjusted in an attempt to address any bias in estimates that may be introduced by attrition.

¹⁴³ The 2014 SIPP includes a state expansion sample of 13,800 addresses selected from 16 states: Alabama, Arizona, Arkansas, Georgia, Illinois, Indiana, Kentucky, Louisiana, Michigan, Mississippi, New Mexico, North Carolina, Ohio, Pennsylvania, South Carolina, and Tennessee. The size of the expansion in each state was determined by the amount of sample needed in order to reach a target coefficient of variation² (CV) of 6 percent on the estimate of low income. The four largest states – California, Florida, New York, and Texas – met this requirement without any additional sample. <https://www.census.gov/content/dam/Census/programs-surveys/sipp/methodology/2014-SIPP-Panel-Users-Guide.pdf>

Appendix B. Bureau of Labor Statistics Surveys

Consumer Expenditure Survey (CE)

The Consumer Expenditure Survey (CE) is a nationwide household survey conducted by BLS to find out how U.S. consumers spend their money. It is the only Federal government survey that provides information on the complete range of consumers' expenditures as well as their incomes and demographic characteristics. BLS publishes 12-month estimates of consumer expenditures twice a year with the estimates summarized by various income levels and household characteristics. BLS also produces annual public use microdata files to help researchers analyze the data in more detail.

The CE consists of estimates derived from two separate surveys, the Interview Survey and the Diary Survey. The Interview Survey is designed to collect data on large and recurring expenditures that consumers can be expected to recall for a period of 3 months or longer, such as rent and utilities, and the Diary Survey is designed to collect data on small, frequently purchased items, including most food and clothing. Together, the data from the two surveys cover the complete range of consumers' expenditures. The Census Bureau collects CE data for BLS.

The CE Interview Survey is a rotating panel survey with approximately 22,000 interviews completed annually. Expenditures are reported for each consumer unit (CU), defined as either a group of individuals who are related by blood or marriage, a single or financially independent individual, or two or more persons who share resources. Expenditures on nearly all categories of goods and services are recorded in the survey, in addition to income, and the ownership of vehicles and housing.

Although the CE includes a Diary Survey component with a separate sample, the Interview Survey component is more suitable for analyses of poverty (and inequality more generally) because its longer reference period (a calendar quarter) as compared to the Diary Survey (two weeks) yields reported expenditures for more categories than do the diaries. Additionally, the Interview Survey's coverage of the universe of expenditures approximates that of the open-ended diary, with about 65 percent of all spending represented by detailed questions and another 25 percent by global questions.

More detailed information about the CE surveys is available in the online BLS Handbook of Methods section on Consumer Expenditures and Income.

Appendix C. Choices for Geographic Cost Adjustments

Choices for geographic adjustments for poverty thresholds are described here. There are two general categories of geographic cost adjustments: those which may be more appropriate for an alternative poverty measure, and those which would not. Brief descriptions for those which may be more appropriate for use in an alternative poverty measure are available below the table.

Table C1. Choices for geographic cost adjustments which may be appropriate for alternative poverty measure

Name	Produced by	Purpose	What is covered?	Geography	Advantages	Technical Limitations/Disadvantages
Median Rent Index (MRI)	Census Bureau	Geographically adjust the housing portion of the thresholds	Rent	342 geographies to match public use CPS ASEC	Transparent, currently in use for SPM	Only adjusts housing portion of threshold. Based on rents at median. Does not reflect differences in local attributes.
Regional Price Parities (RPP)	BEA	Geographically adjust the entire threshold using full RPPs	All expenditures in CPI*	Off-the-shelf: state level, or MSA level or state metro/non metro level Special run: 342 geographies to match public use CPS ASEC	Credible and widely used for price-adjustment	Requires special run by BEA. BEA methodology is changing. Not based on spending at bottom of income of income distribution. Weights are not representative of bottom of income distribution. Does not reflect differences in local attributes.

Name	Produced by	Purpose	What is covered?	Geography	Advantages	Technical Limitations/ Disadvantages
Regional Price Parities for Food, Apparel and Rent (RPP-FAR)	BEA	Geographically adjust the entire threshold using restricted set of expenditures	Rent, apparel and food	Special run only: 342 geographies to match public use CPS ASEC	Focused on expenditures included in SPM threshold	Requires special run by BEA. BEA methodology is changing. Not based on spending at bottom of income distribution. Weights are not representative of bottom of income distribution. Does not reflect differences in local attributes.
Comparable Wage Index (CWI)	Census Bureau	Geographically adjust the entire threshold based on wage differentials	Based on wages	342 geographies to match public use CPS ASEC	CWI reflects differences in local attributes as well as the cost of living.	CWI is an estimate from a sample survey and is subject to the usual criticisms of sample-based research. Need to define which workers go into calculation.

*rents, food, transportation, housing, education, medical, recreation, apparel, other

Median Rent Index (MRI)

The MRI is the ratio of the median gross rent of a two-bedroom unit with complete kitchen and plumbing facilities in a specific metro area or state to the U.S. median gross rent of the same type of unit using the ACS (see Renwick, 2011). For the SPM, the MRI is applied to the national threshold values, as defined by the Consumer Expenditure Survey (CE), in proportion to the national average shares of housing and utility expenditures from total expenditures. The result is a metro area- and state-specific threshold value, and the poverty rate is given by the estimated population below this threshold.

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

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

Both the Threshold and HousingShare vary by housing tenure status and the overall index is not normalized. The MRI is currently used for geographically adjusting SPM thresholds. Separate medians are estimated for each of the 260 MSAs large enough to be identified on the public-use version of the CPS ASEC. For each state, a median is estimated for all nonmetropolitan areas (47) and for a combination of smaller metropolitan areas within a state (35).

Regional Price Parities (RPP)

RPPs are spatial price indexes which measure price level differences across regions. They are based on rents from the ACS, combined with five-year rolling average price levels for inputs for other consumption expenditure classes including food, apparel, transportation, housing, education, recreation, medical and other goods and services from the Consumer Price Index (CPI). RPPs are produced by the Bureau of Economic Analysis (BEA) for either 51 states, 383 MSAs, or 98 state metro/nonmetro areas. By special run, BEA has produced RPPs at the same level of geographies used by the SPM and available on the public use CPS ASEC (260 MSAs, 47 nonmetropolitan areas and 35 smaller metro areas).

RPPs are constructed in two stages. The first stage estimates annual multilateral price level indexes for CPI areas and for several consumption expenditure classes such as apparel, food and transportation. CPI price data are available for 38 urban areas. In the second stage, price levels and expenditure weights are allocated from CPI areas to all counties in U.S. and then recombined for regions, such as states and metropolitan areas. This stage also merges data on rents from ACS, which are quality-adjusted using a hedonic model that controls for unit characteristics. The final RPPs are calculated by stacking five years of first-stage results, plus annual rent indexes, and calculating multilateral aggregate price index for all goods and services and rents. RPPs are then applied to the entire threshold (for full details see Renwick et al. 2014 and BEA 2020).

$$RPP\ Threshold_{ijt} = RPP \times Threshold_t$$

- i = state j=specific metro area, other metro or nonmetro area

- t= tenure: owner with mortgage, owner without a mortgage, renter

Regional Price Parities for Food, Apparel and Rent (RPP-FAR)

Since the RPP's track differences in prices for a much broader array of goods and services than those that are included in the SPM thresholds, the Census Bureau worked with BEA to produce a version of the RPPs that focused only on the specific expenditures categories included in the SPM thresholds: Food, Apparel and Rent (FAR). RPP-FARs were developed by the BEA as a special run as a method to potentially geographically adjust SPM thresholds. (See Renwick et al. 2014, 2017)

Comparable Wage Index (CWI)

Because of price differences, real resources are more expensive in some locations than in others and expenditures for the same services vary in different parts of the country (Cornman, Nixon, Spence, Taylor and Gevert 2019 p.1). In January of 2012, an expert panel recommended that the National Center for Education Statistics (NCES) annually produce and release geographic adjustment factors for educational expenditures (Cornman et al 2018, p. 2). In May of 2017, NCES convened a panel of recognized experts on school finances and Title I to review the framework of the Study of the Title I, Part A Grant Program Mathematical Formulas on the Title I Formula. The expert panel reached consensus that "The American Community Survey-Comparable Wage Index (ACS-CWI) cost of living adjustment should be used to compare purchasing power of funding across states and geographic locales" (Snyder, et al 2018, p. 9).

A comparable wage index (CWI) estimates the wage level for each location using a weighted GLS regression analysis of annual wage and salary earnings for individual workers, controlling for worker characteristics, occupation, industry, and location. The predicted local wage in each location is the model predicted wage for a person with average characteristics.

Researchers (Baker et al.) have suggested that similar approach be used to adjust poverty thresholds for differences in the cost of living. In a 2013 article in the journal of the Association for Education Finance and Policy, Baker et al. propose an index based on an estimate of the prevailing wage for individuals with the typical characteristics of the working poor. These estimates are created using a hedonic wage analysis that is designed to capture differences in the cost of living as well as access to desirable local amenities. As they summarize it, "Essentially, we presume that if the prevailing wage for Chicago for a worker with poverty-level characteristics is 10 percent above the national average, then the poverty income threshold in Chicago should also be 10 percent above the national average" (Baker et al., 2013, p.399). They argue that this approach is preferable to a market-basket approach because it incorporates amenities and allows for geographic differences in the cost and composition of the entire bundle of goods and services. For example, this approach allows for the possibility that families may choose a more modest dwelling in amenity-rich locations like San Francisco than they would choose in other parts of the country. Renwick (2020) applied this approach to SPM estimates for 2018 and compared these results to the MRI adjustment.

Table C2. Choices for geographic cost adjustments which may not be appropriate for alternative poverty measure

Name	Produced by	Purpose	Why not use?
Fair Market Rents (FMR)	HUD	Determine payment standard amounts for vouchers and initial rents for Section 8 and Housing Assistance Program	HUD does not support the use of FMRs for this purpose; FMRs are designed to measure differences in rental housing costs for recent movers – not homeowner costs, rest of consumption basket, nor established renters. FMRs are not calculated in a consistent manner across all geographies for which they are estimated. Calculation methods are frequently changed in response to program needs, so FMRs may not be historically consistent over time either.
Comparable Wage Index for Teachers (CWIFT)	NCES	Compare educational expenditures across districts	Specifically applies to wages and salaries for education. School districts use real resources—teachers, principals, classroom materials—to produce education. The CWIFT is limited to measuring uncontrollable differences in the purchasing power of school districts on real educational resources.
Geographic Practice Cost Indices (GPCI)	CMS	Set Medicare Physician Fee Schedules	Too specific to Medicare application – geographies are Medicare carrier-locality level; costs based on physician work, practice expenses, and malpractice insurance
CONUS Cost of Living Allowance (CONUS COLA)	DOD	Provide compensation for variations in non-housing costs in contiguous U.S.	Too specific to military application – geographies are Military Housing Area; deductions are made for commissaries and exchanges
Locality Pay Areas	OPM	Set locality pay for federal employees	Geographies are too broad – 46 Metropolitan Statistical Areas and the “rest of U.S.” is lumped together
Cost of Living Index (COLI)	C2ER	Local level cost of living index available for U.S.	Weights assigned to relative costs based on expenditure patterns for professional and executive households; commercial (need to purchase)

Appendix D. List of Working Group Recommendations

In this report, the Working Group has offered numerous recommendations in support of developing alternative measures of poverty. The recommendations are found throughout the report, placed within the context of the relevant discussion section. For ease of reference, a complete list of Working Group recommendations can be found below.

1. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics begin development of the recommended measures as soon as possible and that the research measures be published as soon as possible thereafter. 15
2. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics engage with stakeholders and other experts throughout the development of the recommended measures, including soliciting additional public comment as needed. In particular, the Working Group recommends expert input through a National Academy of Sciences panel..... 15
3. The Working Group recommends that an advisory structure, such as a new Interagency Technical Working Group, be established to engage with the Census Bureau and the Bureau of Labor Statistics on issues related to implementation of the detailed recommendations throughout this report and other new issues that arise. 15
4. The Working Group recommends that the Census Bureau develop and publish two new sets of research measures of income-based resources, one that includes a value of health insurance and one that does not. 16
5. The Working Group recommends that the Bureau of Labor Statistics develop and publish two new sets of research measures of consumption-based resources, one that includes a value of health insurance and one that does not. 16
6. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics use, where available and when appropriate, administrative data to supplement or replace the use of survey data for developing the recommended measures. 16
7. The Working Group recommends that the Census Bureau should attempt to produce the new income-based resource measures within 12 months of survey data collection. For example, estimates for calendar year 2020, for which data are collected in February-April 2021, should be made available by March 2022. The Working Group recognizes that in the first few years of implementation these time lags may be greater, but expects that over time the lags will decrease. The Bureau of Labor Statistics may be able to produce consumption resource measures with less of a lag..... 16
8. The Working Group recommends subtracting child support payments from resource totals for income-based measures. No adjustments are required for child support payments for consumption-based measures because the transfer of income from one family to another is indirectly captured through increased consumption of families receiving the transfers and decreased consumption among families with nonresident parents making child support payments. 18
9. The Working Group recommends that expenditures needed to work including childcare expenditures be subtracted from family resources for any new recommended poverty measures

and that total childcare expenditures be capped because it is difficult to distinguish between childcare necessary to work versus other childcare. 19

10. The Working Group recommends continued work to improve measurement of childcare and other work-related expenditures and methods to cap them. 19

11. The Working Group recommends that income be adjusted, as feasible, for federal, state and local income and payroll taxes and credits in a new income-based resource measure..... 20

12. The Working Group recommends that a new income-based resource measure include as resources in-kind benefits from SNAP, school meals, WIC, LIHEAP, and rental housing assistance. . 20

13. Two sets of income resource measures and two sets of consumption resource measures should be produced. For each type of resource measure, one set should not include a value of health insurance, and the other set should include some value of health insurance. 28

14. The value of health insurance should not depend on the disability or health status of individuals. 28

15. The value of health insurance should ideally depend on a person’s resources but the precise method to implement this should be the subject of further research. In the interim, the market value of health insurance (with values that do not depend on the health status of the recipient) should be capped at some share of total resources..... 29

16. The value of health insurance should ideally not constitute a majority of resources for people near the poverty threshold..... 29

17. The Working Group recommends that expenditures on education be excluded from the recommended extended income-based and consumption-based resource measures because education is generally considered an investment in human capital..... 31

18. The Working Group recommends that, at this juncture, personal educational expenses not be subtracted from the extended income-based resource measure. However, the Working Group recommends a future advisory structure revisit the issue of deducting out-of-pocket education expenditures on tuition and other educational items if the data quality makes it feasible..... 31

19. The Working Group recommends continued research and additional stakeholder and expert engagement on whether and how to treat education within resource measures. 31

20. The Working Group recommends that further research be undertaken to evaluate alternative methods to estimate the net value of service flows from owner-occupied shelter and the net value of the service flows from owned vehicles to be included in the income resource measures, including the possibility of imputing such values using statistical methods and data from the CE Survey. Such research should consider the availability of data from the CPS ASEC and ACS. 38

21. The Working Group recommends that the Census Bureau use CPS ASEC for an alternative income-based resource measure. 42

22. The Working Group recommends, taking into consideration the advantages and disadvantages for each of the above approaches for correcting for missing or misreported data, the application of all three approaches, where appropriate, in the following order: 45

Methods that combine administrative data with survey data are the preferred approach for adjusting survey data to correct for misreporting and missing data. These methods may involve direct replacement of survey responses with administrative reports when research supports the quality of the administrative records relative to survey reports. The administrative data need to

be available for use in production and the administrative data must also be available in a timely fashion.....45

When survey reports conflict with administrative records for particular individuals, research should examine criteria to determine which source to use for the poverty estimates.45

Consistent with Foundations for the Evidence-based Policymaking Act of 2018, efforts to encourage and facilitate data sharing across government agencies should be strengthened.45

Research to assess ways in which survey data might be made more comparable to administrative data (e.g. changing the reference period for income from the previous 12 months to the previous calendar year) should be encouraged.45

Regression-based modeling (with or without individual-level or aggregate administrative data) can also improve the quality of estimates of income, expenditures, and program participation. These regression-based techniques can be used, for example, when sharing agreements do not allow for direct substitution, there are significant lags in the availability of administrative data, or administrative data are not available for all geographies or years. Regression-based modeling such as Sequential Regression Multiple Imputation (SRMI) should replace hot deck imputations where feasible and continued research should be conducted to improve these methods as new tools and techniques become available.45

Some rules-based adjustment may be necessary for some programs and income sources. For example, if program rules assign automatic eligibility for Medicaid to all TANF and SSI recipients, it could be logical to assign program receipt to all survey respondents who are known to participate in either of these two programs. In a similar vein, if there are school districts in which all students are deemed eligible for free school lunch, they should be assigned participation in free school lunch if they report that their children regularly eat school meals.46

23. The Working Group recommends that the advisory structure recommended previously should vet decisions about data sources, adjustment strategies, and other assumptions. This advisory structure should consider and discuss continued research into availability and applicability of administrative data sources.....46

24. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics continue to research, and possibly implement, ways to reduce survey burden and improve the quality of resulting data through increased access and use of administrative data in surveys, including the CPS ASEC, ACS, and CE.....46

25. The Working Group recommends funding support of the work to develop the new recommended measures, including funding to support BLS to research the nature and construction of a potential consumption-based poverty measure and improve the CE program in support of improved poverty measurement. A proposal requesting \$7.1 million was included in the fiscal year 2021 President’s Budget.47

26. The Working Group recommends that the Bureau of Labor Statistics use the CE Interview Survey data to research and develop a consumption-based resource measure.....47

27. The Working Group recommends that the value of service flows from owner-occupied shelter and the value of the service flows from owned vehicles be included in the consumption resource measures.....48

28. The Working Group recommends that the CE Interview serve as the primary data source for the production of the consumption resource measures, with estimates produced at the state level. 51

29. The Working Group recommends that the current CE Interview Survey serve as the interim data source for the production of the consumption resource measures, with estimates produced at the Census Division level.51

30. The Working Group recommends that the Census Bureau and the Bureau of Labor Statistics seek additional stakeholder and expert engagement on the key decisions required in setting poverty thresholds.....58

31. The Working Group recommends that this engagement should occur in parallel with the Census Bureau and the Bureau of Labor Statistics developing research income- and consumption-based resource measures.58

32. The Working Group recommends that by the time the proposed resource measures are ready to be published, BLS and the Census Bureau should work to identify an interim solution for each set of the measures for applying thresholds to produce a full poverty measure. BLS and the Census Bureau should consider input from experts (per the previous recommendation) as available to inform the applied methodology. The interim methodology applied need not be the final methodology chosen for application to the resource measures. The intention of this recommendation is to ensure the ability to publish poverty measures using the proposed resource measure recommendations.58

33. The Working Group recommends that the BLS conduct a study of price indexes appropriate for use in updating thresholds that would be used in combination with consumption and income as defined in this report.....62

34. The Working Group recommends that an expert panel conduct a study of and make a recommendation regarding the application of equivalence scales that would be most appropriate for the income and consumption resource measures recommended in this report. In the interim, the Working Group recommends that for any resource measures produced an equivalence scale be applied that accounts for the potentially differing needs of adults and children and economies of scale.65

35. The Working Group recommends that expert review be sought on all of the considerations described above because whether and if so how to adjust poverty thresholds across geographic areas is a complex topic.....68

36. The Working Group recommends continued research and additional stakeholder and expert engagement on whether and how to develop multidimensional measures. Focus should be on operationalizing such a measure in the policy context, ideally with indicators that are directly linked to policy levers.72