Supplemental Poverty Measure: Technical Documentation

Poverty Statistics Branch, Social Economic and Housing Statistics Division
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1 Introduction

This document provides background on the Supplemental Poverty Measure (SPM) and details its construction using data from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC). Section 2 reviews the measure's history and revisions made to past SPM microdata files. Section 3 discusses the CPS ASEC and where to find SPM variables in corresponding microdata files. Section 4 details the measure's components and methodology.[1]

Although this document provides an overview of the SPM, data users are strongly encouraged to explore cited references and relevant publications available on the Census Bureau's website. Specific yearly technical notes will continue to be included in the report appendix.

2 SPM History

The SPM was developed following decades of research on poverty measurement. Concerns about the adequacy of the official measure culminated in a congressional appropriation in 1990 for an independent scientific study of the concepts, measurement methods, and information needed for a poverty measure. In response, the National Academy of Sciences (NAS) convened a Panel on Poverty and Family Assistance, which released its report, "Measuring Poverty: A New Approach," in 1995 (Citro and Michael, 1995).

The Interagency Technical Working Group (ITWG) on Developing a Supplemental Poverty Measure was formed in 2009 and charged with developing a set of initial starting points to permit the Census Bureau, in cooperation with the Bureau of Labor Statistics (BLS), to produce the SPM. In 2010, this ITWG (which included representatives from the BLS, the Census Bureau, the Economics and Statistics Administration, the Council of Economic Advisers, the U.S. Department of Health and Human Services, and the Office of Management and Budget [OMB]) issued a series of suggestions to the Census Bureau and the BLS on how to develop the SPM.[2] Their suggestions drew on the recommendations of the 1995 NAS report and the subsequent extensive research on poverty measurement. These suggestions were published in the Federal Register and the Census Bureau and the BLS reviewed comments from the public.[3] In November 2011, the Census Bureau released the first SPM report, providing SPM estimates for 2009 and 2010.

In 2016, OMB convened a new ITWG on improving the SPM to provide advice on challenges and opportunities brought before it by the Census Bureau and the BLS concerning data sources, estimation, survey production, and processing activities for development, implementation, publication, and improvement of the SPM. With OMB as chair, the SPM working group is comprised of career federal employees representing their respective agencies. The agencies

[1] All dollar valuations discussed in this document apply to the 2021 calendar year unless otherwise noted.
[2] Refer to <www.census.gov/content/dam/Census/topics/income/supplemental-poverty-measure/spm-twgobservations.pdf>.
[3] Federal Register notice Vol. 75, No. 101, p. 29513 was issued on May 26, 2010, soliciting public comments regarding specific methods and data sources in developing the SPM.

currently represented include the Bureau of Economic Analysis, the BLS, the Council of Economic Advisors, the Census Bureau, the Economic Research Service, the Food and Nutrition Service, the Department of Health and Human Services, the Department of Housing and Urban Development, the Internal Revenue Service, the National Center for Education Statistics, the National Center for Health Statistics, OMB, and the Energy Information Administration, and the Social Security Administration. The "Supplemental Poverty Measure: 2020" report implemented many changes to the SPM methodology that were recommended by the ITWG. For more details on these changes and their effects on 2019 poverty estimates please refer to the working paper by Burns and Fox (2021).

In 2020, the U.S. Census Bureau commissioned the National Academies' Committee on National Statistics to convene a panel to evaluate the Supplemental Poverty Measure and offer recommendations to improve the measure in the future. The expert panel produced a consensus report in April 2023 that outlined key areas of research for the U.S. Census Bureau and the Bureau of Labor Statistics to work on in the coming years. The panel's report can be found at <https://nap.nationalacademies.org/catalog/26825/an-updated-measure-of-poverty-redrawing-the-line>.

The Census Bureau conducts ongoing research on improvements and will consider the recommendations of the CNSTAT Panel alongside research by external and governmental experts in developing a research agenda and roadmap for improvements to the SPM. In considering any changes that would be made to the SPM, the Census Bureau will continue to work with the Bureau of Labor Statistics and the current ITWG on the SPM. The ITWG on the SPM has an established process for making changes to the SPM, with major changes only occurring only after a multi-year process of research and public engagement.

3 CPS ASEC and SPM Data Files

3.1 Relevant Changes to the CPS ASEC

The CPS ASEC has undergone two major survey changes across the SPM historical series. In 2014, a redesigned CPS ASEC questionnaire was introduced to better capture health insurance characteristics and estimates of income. In 2018, the survey's data processing system was updated to reflect these questionnaire changes. Additionally, in 2021, methodological changes were made to improve the SPM. These changes were implemented for estimates from 2019 to the present.

For each survey and methodological change, there is a break in the SPM series (2013, 2017, 2019). At each break, consecutive years are no longer comparable. Consequentially, two sets of SPM estimates are produced with and without the incorporation of new changes. This section briefly summarizes the reasoning and context behind each change and reviews the availability of data files associated with each break in series. The next section provides links to the data files discussed below.

3.2.1 Breaks in the SPM Series

Redesigned Questionnaire

In 2014, a redesigned CPS ASEC questionnaire was fielded for the first time. The questionnaire was designed to better capture health insurance coverage, and total income and assets. The entire sample was eligible to receive new questions regarding current coverage, and participation in health insurance exchange and employer-sponsored plans.[4] However, a split panel design was used to field redesigned income questions. Approximately 3/8ths of the sample was eligible to receive redesigned questions to address under and misreporting of income.[5] Consequentially, there are two 2014 CPS ASEC microdata files available for users and two SPM estimates for the 2013 reference year. One CPS ASEC microdata file corresponds to the 5/8ths of the sample that was eligible to receive new health insurance questions but not the redesigned income questions. SPM estimates produced using this file are comparable to prior years. The other CPS ASEC microdata file corresponds to the 3/8ths of the sample that received the redesigned health insurance and income questions. SPM estimates produced using the Redesigned file can be used to make comparisons with 2015 to 2017 CPS ASEC data files.

Updated Processing System

Modifications were made to the CPS ASEC questionnaire between 2015 and 2017. In 2015, follow up questions were added in attempt to capture data from respondents who were unsure or refused to answer questions about earnings and income.[6] A new, expanded relationship question was also introduced to a subsample of the 2015 survey. This revised relationship question was fully implemented into the survey by 2017.[7] The CPS ASEC processing system was then updated in 2018 to account for same-sex couples and their families. Revised imputation procedures for income and health insurance characteristics were also implemented into the updated processing system.[8] Consequentially, there are two 2018 CPS ASEC microdata files available for users and two SPM estimates for the 2017 reference year. One microdata file uses the legacy processing system and another, called the 2018 CPS ASEC Bridge file, uses the updated processing system. SPM estimates produced using the Bridge file are comparable to subsequent, but not prior, years.

[4] See Pascale (2016) for a review of criticisms and changes to the CPS, including those for the health insurance variables.
[5] See Semega and Welniak (2015) for a detailed summary of the redesign income questions and an analysis on the effects of such changes.
[6] See page D-11 of the 2015 CPS ASEC Technical documentation <https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar15.pdf> for more information.
[7] For additional details see the *Background* section of the *Household Relationship Content* in the 2017 CPS-ASEC readme available at <https://www2.census.gov/programs-surveys/demo/datasets/income-poverty/time-series/data-extracts/2017/cps-asec-research-file/README-%20Household-Relationship-Content.pdf>.
[8] See <https://www.census.gov/data/datasets/time-series/demo/income-poverty/cps-asec-design.html> for specific details on processing changes related to income and poverty, health insurance coverage, and family and household relationships.

New SPM Methodology

Research on improvements to the SPM is ongoing and guided by the SPM ITWG since the measure's public release in 2011. In 2021, methodological improvements were incorporated into the measure for the first time and used to produce 2019 and 2020 SPM estimates. Improvements were made to the supplemental poverty threshold and estimation of noncash resources in the measure.[9] Due to the update in methodology, there are two sets of supplemental poverty estimates for 2019. Each set uses either the original or improved methodology.

3.2 SPM Extracts and Variables

Prior to the release of the 2019 CPS ASEC, SPM variables were annually published in separate research file extracts.[10] [11] Researchers interested in both CPS ASEC and SPM variables prior to 2019 must merge the SPM Research extracts to corresponding CPS ASEC person files. This merge can be done using the variables *H_SEQ* and *PPPOS*. Note that SPM extracts are labeled according to their reference year, not the corresponding survey year. For example, a researcher interested in using SPM variables associated with the 2011 CPS ASEC needs to use the 2010 SPM Research extract.

Beginning with the release of the CPS ASEC 2019 microdata, all SPM variables are now included in the main person file. Separate SPM Research extracts using the CPS ASEC were subsequently no longer regularly released. One exception to the rule is that the public use file for the updated SPM methodology (reference year 2019) was separately released, providing complementary estimates to compare to the previous methodology. Prior years will be posted on the SPM webpage as available and weblinks to their location will be added to this document.

The table below contains links to microdata files with SPM variables from 2009 onwards.

[9] See Burns and Fox (2021) for a full discussion of implemented changes.
[10] All SPM microdata are available on the SPM webpage at <https://www.census.gov/topics/income-poverty/supplemental-poverty-measure/data/datasets.html>.
[11] The data dictionary for the SPM research extracts from (reference years) 2009 to 2017 is available in the SPM Readme at < https://www2.census.gov/programs-surveys/supplemental-poverty-measure/datasets/spm/readme.pdf>.

Table 3. Links to CPS ASEC and SPM Microdata Files.

CPS ASEC Year(s)	Reference Year(s)	Traditional/Legacy/Original	Redesigned/Updated/Revised
2021 - Present	2020 - Present	<https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.[*CPS ASEC Year*].html>	
2020	2019	*Original SPM Methodology* <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.2020.html>	*Revised SPM Methodology* <https://www.census.gov/data/datasets/2019/demo/supplemental-poverty-measure/revised-research.html>
2019	2018	<https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.[*CPS ASEC Year*].html>	
2018	2017	*CPS ASEC Legacy File* <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.2017.html> *SPM Research File* <https://www.census.gov/data/datasets/[*Reference Year*]/demo/supplemental-poverty-measure/spm.html>	*CPS ASEC Bridge File*[*] <https://www.census.gov/data/datasets/2018/demo/income-poverty/cps-asec-bridge.html>
2015 - 2017	2014 - 2016	*CPS ASEC*: <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.[*CPS ASEC Year*].html> *SPM Research File:* <https://www.census.gov/data/datasets/[*Reference Year*]/demo/supplemental-poverty-measure/spm.html>	
2014	2013	*CPS Traditional and Redesigned ASEC Files* <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.2014.html> *SPM Research File (redesign):* <https://www.census.gov/data/datasets/2013/demo/supplemental-poverty-measure/spm-redes.html> *SPM Research File (traditional):* <https://www.census.gov/data/datasets/2013/demo/supplemental-poverty-measure/spm.html>	
2010 - 2013	2009 - 2012	*CPS ASEC:* <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.[*CPS ASEC Year*].html> *SPM Research File:* <https://www.census.gov/data/datasets/[*Reference Year*]/demo/supplemental-poverty-measure/spm.html>	

[*]The 2018 CPS ASEC Bridge File contains SPM variables within it. From this year onwards, users no longer need to merge research extracts to CPS ASEC person files.

4 SPM Methodology

This section details how SPM units, thresholds and resources of the SPM are constructed and differ from the official poverty measure.

4.1 Units

The ITWG suggested that the resource unit in the SPM include all related individuals who live at the same address, any coresident unrelated children who are cared for by the family (such as foster children), and any cohabiters and their children.[12] [13] This definition corresponds broadly with the unit of data collection (the consumer unit) that is employed for the CE data that are used to calculate poverty thresholds. They are referred to as SPM Resource Units. For all resource units that contain a set of male/female unmarried partners, the female partner's weight is used as the SPM family weight. For all other units, there is no change in family weight.[14]

4.1.1 Treatment of Unrelated Individuals Under the Age of 15

Unrelated children under the age of 15 are excluded from the official poverty measure universe but included in the SPM universe. To compare the two measures in the SPM report, unrelated individuals under the age of 15 are assigned an official poverty status to match that of the reference person of the household in which they reside. The official poverty status is not recalculated for anyone else in the household. A comparison of official poverty estimates using different methods is available at Fox (2017). Prior to the 2016 SPM report, all unrelated children under the age of 15 were considered poor in the official poverty estimates used in the SPM reports. Since these children were not asked any income questions, they were assigned income of $0 and a poverty threshold for a single-person unit.

4.2 Thresholds

Consistent with the NAS panel recommendations and the suggestions of the ITWG, the SPM thresholds are based on out-of-pocket spending on a basic set of goods and services that includes food, clothing, shelter, utilities, telephone, and internet (FCSUti), and a small additional amount to allow for other needs (e.g., household supplies, personal care, nonwork-related transportation). SPM thresholds are produced by the Bureau of Labor Statistics Division of Price and Index Number Research (BLS DPINR), using 5 years of quarterly Consumer Expenditure Survey (CE) interview data for all consumer units with children, lagged 1 year.[15,16]

[12] Foster children up to the age of 22 are included in the new unit.
[13] The official measure of poverty uses the Census Bureau-defined family that includes all individuals residing together who are related by birth, marriage, or adoption and treats all unrelated individuals aged 15 and older independently.
[14] Appropriate weighting of these new units is an area of additional research at the Census Bureau.
[15] For information on the CE, refer to <https://stats.bls.gov/cex/>.
[16] Changes to the threshold estimation were implemented in 2021. Refer to the working paper by Burns and Fox (2021) and <www.bls.gov/pir/spmhome.htm> for details.

All individuals who share expenses with others in the household are included in the consumer unit.[17] FCSUti expenditures are converted to equivalized values using a three-parameter equivalence scale (refer to the "Equivalence Scales" section for more detail). The three-parameter equivalence scale is used to convert the estimation sample FCSUti expenditures to those of a reference consumer unit composed of two adults with two children.

SPM thresholds are produced for three housing tenure groups to account for differences in housing costs. The three groups are owners with mortgages, owners without mortgages, and renters. Thresholds reflect 83 percent of the median of FCSUti expenditures for the estimation sample, multiplied by 1.2 to account for additional basic needs, with adjustments for shelter and utilities for each housing group. Refer to the BLS DPINR Research Experimental Poverty Measures Web page for specifics regarding the production of the SPM thresholds and related statistics.[18]

The thresholds used here include the value of all noncash benefits included in the resources. CE data used to produce the thresholds reflect the use of SNAP benefits for food since these benefits are considered equivalent to cash. However, the CE data as collected does not account for the value of in-kind benefits from other food programs, rent, and energy assistance. The value of these other in-kind benefits are imputed to the CE data using data collected in the CPS ASEC to assign recipiency of school lunch, and energy assistance, CE data on rental assistance receipt and program data on average benefit levels. This method produces thresholds that are consistent with the resource measure.[19]

The 2022 SPM thresholds reflect updates to the statistical programming used to estimate in-kind benefits. The changes include expanding the WIC universe to include women over age 45 who have children under 5; using annual monthly average WIC based on fiscal year rather than rolling 3-month averages; removing WIC from the calculation of food, clothing, shelter, utilities, telephone, and internet (FCSUti) expenses once a state has fully implemented electronic benefit transfers of these benefits (the same assumption is made in the thresholds for SNAP); and a revision to the method for assigning free and reduced price school lunches based on pretax money income and official poverty thresholds. The 2023 thresholds add the imputed value of broadband subsidies to the threshold.

4.2.1 Equivalence Scales

The ITWG guidelines state that the "three-parameter equivalence scale" is to be used to adjust SPM reference thresholds for the number of adults and children.[20] The three-parameter scale allows for a different adjustment for single parents (Betson, 1996). This scale has been used in

[17] This includes unmarried partners and others making joint expenditure decisions. For full definition, refer to <https://stats.bls.gov/cex/csxfaqs.htm>.
[18] These are referred to as BLS DPINR Research Experimental Supplemental Poverty Measure (SPM) Thresholds. Additional information available at <https://stats.bls.gov/pir/spmhome.htm>.
[19] Additional information available at <www.bls.gov/pir/spm/smp-thresholds-and-missing-data-problem-6-16.pdf>.
[20] The official measure adjusts thresholds based on family size, number of children and adults, as well as whether or not the householder is aged 65 or older.

several BLS and Census Bureau studies (Short et al., 1999; Short, 2001). The three-parameter scale is calculated in the following way:

One and two adults: scale = $(\text{adults})^{0.5}$

Single parents: scale = $(\text{adults} + 0.8 * \text{first child} + 0.5 * \text{other children})^{0.7}$

All other families: scale = $(\text{adults} + 0.5 * \text{children})^{0.7}$

In the calculation used to produce thresholds for two adults, the scale is set to 1.41. The economy of scale factor is set at 0.70 for other family types, which is within the 0.65 to 0.75 range recommended by the NAS panel.

4.2.2 Geographic Adjustments

The American Community Survey (ACS) is used to adjust the housing portion of the FCSU thresholds for differences in prices across geographic areas. The geographic adjustments are based on 5-year ACS estimates of median gross rents for two-bedroom units with complete kitchen and plumbing facilities. Separate medians were estimated for each of the 260 metropolitan statistical areas large enough to be identified on the public-use version of the CPS ASEC file. For each state, a median is estimated for all nonmetropolitan areas (47 areas) and for a combination of all smaller metropolitan areas within a state (34 areas). This results in 341 adjustment factors.[21] For details, refer to Renwick (2011).[22] The movement of telephone expenditures from the utility category to the telecommunications category reduced the share of the thresholds subject to geographic adjustment for all tenure categories.

4.3 Resources

4.3.1 Noncash Benefits

Supplemental Nutrition Assistance Program (SNAP)

SNAP benefits (formerly known as food stamps) are designed to allow eligible low-income households to afford a nutritionally adequate diet. Households that participate in the SNAP program are assumed to devote 30 percent of their countable monthly cash income to the purchase of food, and SNAP benefits make up the remaining cost of an adequate low-cost diet. This amount is set at the level of the USDA's Thrifty Food Plan. In the CPS ASEC, respondents report whether anyone in the household received SNAP benefits in the previous calendar year

[21] There were 342 geographic adjustment factors produced between reference years 2017 and 2022. Refinements to the programming code to produce these adjustments for reference year 2023 updated the adjustments and removed the South Carolina combined metropolitan area adjustment.
[22] Renwick, Figueroa, and Aten (2017) examined an alternative method of calculation for the geographic indexes using Regional Price Parities from the U.S. Bureau of Economic Analysis.

and, if so, the face value of those benefits. The annual household amount is prorated to the SPM Resource Units within each household.

The Families First Coronavirus Response Act (FFCRA), passed in 2020, authorized states to distribute P-EBT payments to households with children who would have received free or reduced-price school lunches under the National School Lunch Act, if not for a reduction in in-person learning due to the pandemic. These temporary food benefits were provided to help cover the cost of meals children would have otherwise received at school. For SNAP recipients, the value of P-EBT was added to existing SNAP EBT cards. As such, CPS ASEC respondents who reported SNAP values likely included the value of P-EBT in their SNAP amount as expansions to SNAP values happened at the same time and respondents were likely unable (and were not asked) to separate out SNAP benefits from P-EBT benefits in their response. Due to the potential of commingled response, reports since 2020 show the joint marginal impacts of SNAP and school lunch, as well as the individual impacts.

National School Lunch Program

This program offers children free school lunches if family income is below 130 percent of federal poverty guidelines, reduced-price school meals if family income is between 130 and 185 percent of the federal poverty guidelines, and a subsidized school meal for all other children.[23] In the CPS ASEC, the reference person is asked how many children "usually" ate a complete lunch at school, and if so, if it was a free or reduced-price school lunch. The value of school meals is assigned based on the assumption that the children received the lunches every day during the last school year. Note that this method may overestimate the benefits received by each family. To value benefits, we obtain amounts on the cost per lunch from the USDA Food and Nutrition Service, which administers the school lunch program. There is no value included for school breakfast.

The COVID-19 pandemic impacted the provision of school lunch, as students transitioned from in-person to virtual school and school lunch benefits for some free/reduced-price school lunch recipients were dispersed via P-EBT cards. As a result, the methodology has varied from the traditional method for 2020, 2021, and 2022. The school lunch methodology for 2020 and 2021 considers state-level variation in average number of in-person school days, the implementation of universal free lunch in many districts, potential reporting of P-EBT benefits in SNAP values, and responses to an ASEC survey question regarding meal receipt during virtual schooling in 2020, and P-EBT receipt in 2021. [24,25]

In 2022, the school lunch methodology uses the U.S. Department of Agriculture's reimbursement rate for paid, reduced price, and free lunches together with survey responses.

[23] The poverty guidelines are issued each year by the Department of Health and Human Services. The guidelines are a simplified version of the Census Bureau's poverty thresholds used for administrative purposes—for instance, determining financial eligibility for certain federal programs. For more details and guidelines, refer to <https://aspe.hhs.gov/poverty-guidelines>.
[24] The traditional school lunch valuation is still available on the public use CPS ASEC file at the family level as F_MV_SL, while the new valuation is available at the SPM unit level as SPM_SCHLUNCH.
[25] The details of the revised 2021 school lunch valuation methodology can be found in the working paper by Shrider (2021).

Individuals who reported they did not receive free or reduced price lunches were given the paid value for the year. Otherwise, individuals were given the free value for the spring semester and either the free or reduced value for the fall, depending on their income-to-poverty ratio and whether their state extended free school meals. As in previous years, to avoid double-counting of benefits, the summer P-EBT benefits are only included in the school lunch value when respondents report receiving P-EBT but did not receive benefits from the Supplemental Nutritional Assistance Program (SNAP).[26] The 2023 values were estimated using 2023 reimbursement rates and the same methodology as was used for fall 2022.

Supplementary Nutrition Program for Women, Infants, and Children (WIC)

This program is designed to provide food assistance and nutritional screening to low-income pregnant and postpartum women and their infants and to low-income children up to the age of 5. Incomes must be at or below 185 percent of the poverty guidelines and participants must be nutritionally at-risk (having abnormal nutritional conditions, nutrition-related medical conditions, or dietary deficiencies). Benefits include supplemental foods in the form of food items or vouchers for purchases of specific food items. There are questions on current receipt of WIC in the CPS ASEC. Lacking additional information, we assume 12 months of participation and value the benefit using state-level average monthly WIC values obtained from the USDA.[27] As with school lunch, assuming yearlong participation may overestimate the value of WIC benefits received by a given SPM unit. In these estimates, we assume that all children less than 5 years old in a household where someone reports receiving WIC are also assigned receipt of WIC. If the child is aged 0 or 1 year, then we assume that the mother also gets WIC. If there is no child in the family, but the household reference person said “yes” to the WIC question, we assume this is a pregnant woman receiving WIC.

Energy Assistance

Energy assistance typically falls into three categories. Under the federal Low-Income Home Energy Assistance Program (LIHEAP) or similar state/local programs, states may help pay heating or cooling bills, provide allotments for low-cost weatherization, or provide assistance during energy-related emergencies. States determine eligibility and can provide assistance in various ways, including cash payments, vendor payments, two-party checks, vouchers/coupons, and payments directly to landlords. In the CPS ASEC, the question on energy assistance asks for information about the entire previous year. Many households receive both a “regular” benefit and one or more crisis or emergency benefits. Since energy assistance payments are often made directly to a utility company or fuel oil vendor, many households may have difficulty reporting the precise amount of the payment made on their behalf.

[26] Details on the school lunch methodology can be found in the working paper by Shrider (2023).
[27] Details of changing from national average WIC benefit values to state-varying average WIC values can be found in the working paper by Fox and Wilson (2020).

Internet Assistance

The Coronavirus Aid, Relief, and Economic Security Act (CARES Act) provided funding to increase access to broadband internet for low-income households, called Emergency Broadband Benefit (EBB). As of March 2022, this program is now called the "Affordable Connectivity Program". The table below provides values for different geographic areas for each year the benefit has been considered in the SPM.

Table 4. Affordable Connectivity Program Monthly Resources

	Standard Benefit Value	Benefit Value for Tribal Areas[1]	Benefit for Maryland[2]
2021[3]	$50	$75	$65
2022-2024	$30	$75	$45

Data accessed from <https://www.fcc.gov/broadbandbenefit>.
[1]Tribal areas do not include the Oklahoma City, Tulsa, and Anchorage MSAs.
[2]For more information on Maryland's additional Affordable Connectivity Program benefit, please refer to <https://dhcd.maryland.gov/Broadband/Pages/Individual-Resources.aspx>.
[3]The months of receipt was capped at 8 months to reflect program benefits beginning in May 2021.

In order to qualify, households' income must meet certain income restrictions.[28] The program began dispersing funds in May 2021, meaning that recipients could only receive benefits for 8 months in 2021. Preliminary estimates by Universal Service Administrative Company (USAC), the distributing company for EBB, show that approximately 9 million households (7 percent) were beneficiaries of the program by December 2021. Given the novelty of this program, it is expected that there is underreporting of the program relative to the number of households that actually participated in the program.

The following question was added to the CPS ASEC for 2022 onwards to capture participation in EBB, "At any time during 2022, did you or anyone in this household receive benefits from the Affordable Connectivity Program or any other program that provided reduced price WIFI, broadband, or other home internet services?" If a household responded yes, then the household was asked how many months they received the benefits (with a maximum of 8 months in 2021, up to 12 months beginning in 2022). The value is then estimated multiplying the reported months of receipt, with the value of the benefit varying if the household is located in an area with an additional benefit or not. If there is more than one SPM unit in a household, then the value of EBB is prorated based on the number of people in the SPM unit relative to the total number of people in the household.

The Affordable Connectivity Program (ACP) ended in June 2024 with households receiving a maximum of 5 months of payments under the program. In 2024, the methodology to estimate the part-year value of these benefits is the same as it has been in the last three years as the monthly value of the program remained at $30 dollars per month of receipt for most states.

[28] More information about income restrictions for EBB can be found here: <https://www.fcc.gov/broadbandbenefit>.

Maryland continued to add an additional $15 dollars per month to their benefit, but this amount was only available for two months as the program was ended in February 2024. [i] The value of the benefit remained at $75 dollars per month of receipt for households in Tribal lands in Oklahoma and Alaska (not including the Oklahoma City, Tulsa, and Anchorage MSAs).[ii]

Housing Assistance

Households can receive housing assistance from a plethora of federal, state, and local programs. Federal housing assistance consists of a number of programs administered primarily by the U.S. Department of Housing and Urban Development (HUD). These programs traditionally take the form of rental subsidies and mortgage-interest subsidies targeted to very-low-income renters and are either project-based (public housing) or tenant-based (vouchers). The value of housing subsidies is estimated as the difference between the "market rent" for the housing unit and the total tenant payment. The "market rent" for the household is estimated using a statistical match with HUD administrative data from the Public and Indian Housing Information Center and the Tenant Rental Assistance Certification System. For each household identified in the CPS ASEC as receiving help with rent or living in public housing, an attempt was made to match on state, core-based statistical area (CBSA), and household size.[29] The total tenant payment is estimated by applying HUD program rules to total household income reported in the CPS ASEC. Generally, participants in either public housing or tenant-based subsidy programs administered by HUD are expected to contribute the greater of 30 percent of their "adjusted" income or 10 percent of their gross income towards housing costs.[30] More details on this method are available in Johnson et al. (2010). Initially, subsidies are estimated at the household level. If there is more than one SPM unit in a household, then the value of the subsidy is prorated based on the number of people in the SPM unit relative to the total number of people in the household.

Housing subsidies help families pay their rent and, as such, are added to income for the SPM. However, there is general agreement that, while the value of a housing subsidy can free up a family's income to purchase food and other basic items, it will do so only to the extent that it meets the need for shelter. Thus, the values for housing subsidies included as income are limited to the proportion of the threshold that is allocated to housing costs. The subsidy is capped at the housing portion of the appropriate threshold minus the total tenant payment.

[29] HUD operates two major housing assistance programs: public housing and tenant-based or voucher programs. Previous research has found that households misreport whether they receive public housing or rental assistance in the CPS ASEC and that the value of public housing is not unambiguously worth less than the value of rental assistance (Renwick, 2017). Given these ambiguities and increasing challenges in the reporting of housing subsidy values across various types of housing assistance, beginning in the 2016 SPM report, we have eliminated the adjustment factor previously applied to public housing subsidy values.

[30] HUD regulations define "adjusted household income" as cash income, excluding income from certain sources minus numerous deductions. Three of the income exclusions can be identified from the CPS ASEC: income from the employment of children, student financial assistance, and earnings in excess of $480 for each full-time student 18 years or older. Deductions that can be modeled from the CPS ASEC include $480 for each dependent, and $400 for any elderly or disabled family member, child care, and medical expenses.

4.3.2 Necessary Expenses Subtracted from Resources

Taxes

The NAS panel and the ITWG recommended that the calculation of family resources for poverty measurement should subtract necessary expenses that must be paid by the family. The measure subtracts federal, state, and local income taxes and Social Security payroll taxes (FICA) before assessing the ability of a family to obtain basic necessities such as FCSUti. Taking account of taxes allows us to account for receipt of the federal or state Earned Income Tax Credit (EITC) and other tax credits. The CPS ASEC does not collect information on taxes paid, but instead relies on a tax calculator to simulate taxes paid (Lin 2022). These simulations include federal and state income taxes and FICA taxes.[31] These simulations also use a statistical match to the IRS Statistics of Income public-use microdata file of tax returns.

Economic Impact Payments are included in the CPS ASEC Tax Model and are modeled based either on 2020 (for first two EIPs) or 2021 (for third EIP), adjusted gross income, number of dependents under age 17, and filing status (Bee, Hokayem, and Lin 2021). Presumed nonfilers were assigned EIP values if they either reported receiving Social Security, SSI, and VA payments, or responded affirmatively to the receipt of stimulus payment question asked in the 2021 and 2022 CPS ASEC. This methodology assumes less than 100 percent take-up among potentially eligible recipients.

Work-Related Expenses

Going to work and earning a wage often entails incurring expenses such as travel to work and purchase of uniforms or tools. For work-related expenses (other than child care), the NAS panel and original SPM ITWG recommended subtracting a fixed amount for each earner 18 years or older. Their calculation was based on the 1987 Survey of Income and Program Participation (SIPP) data that collected information on work expenses in a set of supplementary questions. They calculated 85 percent of median weekly expenses—$14.42 per week worked for anyone aged 18 or older in the family in 1992. Total expenses were obtained by multiplying this fixed amount by the number of weeks respondents reported working in the year. Each person in the SIPP reports their own expenditures on work-related items in a given week. The most recent available data are used to calculate median weekly expenses. The number of weeks worked, reported in the CPS ASEC, is multiplied by 85 percent of median weekly work-related expenses for each person to arrive at annual work-related expenses.[32]

[31] Wheaton and Stevens (2016) compare the Census Bureau's tax calculator to TAXSIM and the Bakija tax model and find consistency in tax estimates across the models.
[32] Edwards et al. (2014) examined an alternative method of valuing work-related expenses using the ACS.

Table 5. SPM Work Expense Values

	Median Work Expenses (in dollars)
2024	41.17
2023	39.30
2022	36.48
2021	44.78
2020	46.60
2019	46.73
2018	43.65
2017	42.76
2016	45.26
2015	47.17
2014	46.18
2013	46.35
2012	38.85
2011	31.95
2010	30.00
2009	33.00

Notes: Work expense values come from the Survey of Income and Program Participation (SIPP). Values for 2013, 2014, and 2015 were updated with 2014 SIPP, Wave 1 in 2016. Use of these parameters will match estimates in Table B-2 of the annual report but may vary from published estimates in historical reports.

Child Care Expenses

Another important part of work-related expenses is paying someone to care for children while parents work. These expenses have become important for families with young children in which both parents (or a single parent) work. To account for child care expenses while parents worked, the CPS ASEC asks parents whether they paid for child care in the previous calendar year and how much they spent on that care. The amounts paid for any type of child care while parents are at work are summed over all children. The ITWG, following the recommendations of the NAS report, suggested capping the amount subtracted from income, when combined with other work-related expenses, so that these do not exceed total reported earnings of the lowest earning reference person or spouse/partner of the reference person in the family. This capping procedure is applied before determining poverty status.[33]

Child Support Paid

The NAS panel recommended that since child support received from other households is counted as income, child support paid out to those households should be deducted from the resources of those households that paid it. Without this subtraction, all child support is double counted in overall income statistics. Questions ascertaining amounts paid in child support are

[33] 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.

included in the CPS ASEC, and these reported amounts are subtracted in the estimates presented here.

Medical Expenses

The ITWG recommended subtracting medical expenses from income, following the NAS panel. The NAS panel was aware that expenditures for health care are a significant portion of a family budget and have become an increasingly larger budget item since the 1960s. These expenses include the payment of health insurance premiums plus other medically necessary items such as prescription drugs and doctor copayments that are not covered or reimbursed by insurance. Subtracting these amounts from income, like taxes and work expenses, leaves the amount of income that the family has available to purchase the basic bundle of goods.

When reporting medical expenses, respondents are asked not to report Medicare Part B premiums. Instead, Medicare Part B premiums are estimated using other information collected in the CPS ASEC. If respondents received Social Security benefits, they may have reported Medicare premiums, and the reported amount is taken. For respondents aged 65 and older who reported that their Social Security payment was after deductions but did not report a deduction amount greater than $0, their Medicare Part B premium is set at the standard amount per month and added to income and medical expenditures. For the remaining respondents who reported being covered by Medicare, Medicare Part B premiums are simulated using the rules for income and tax filing status for people aged 65 and older (refer to <www.medicare.gov/>).[34] For married respondents with a "spouse present," combined reported income is used to determine the appropriate Medicare Part B premium assuming that these couples filed married, joint returns. Finally, the simulation model assumes two groups paid zero Part B premiums: (1) respondents enrolled in Medicare and Medicaid, and (2) those with a family income less than 135 percent of the federal poverty level.[35] This strategy for estimating Medicare Part B premiums largely follows the methodology developed by Caswell and Short (2011) and updated with the processing system change in 2017.[36]

[34] We make the simplifying assumption that respondents were insured by Medicare for the entire year.
[35] The family income assumption is based on a rough estimate of eligibility and participation in at least one of the following programs: Qualified Medicare Beneficiary, Specified Low-Income Medicare Beneficiary, or Qualified Individual or Qualified Disabled and Working Individuals. We do not take into account the possibility of (state-specific) asset requirements.
[36] For more details on changes to medical expenditure estimation, reference the working papers by Berchick and Jackson (2019) and the Health and Disability Statistics Branch (2019).

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[i] For more information on the Maryland's additional Affordability Connectivity Program benefit, please refer to <https://dhcd.maryland.gov/Broadband/Pages/Individual-Resources.aspx>.

[ii] For more information on the Affordability Connectivity Program, please refer to <https://www.fcc.gov/acp>.