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The Supplemental Expenditure Poverty Measure: A New Method for Measuring Poverty

ABSTRACT We propose a new measure of the rate of poverty we call the supplemental expenditure poverty measure (SEPM), based on expenditure in the Consumer Expenditure Survey. It treats household expenditure as a measure of resources available to purchase the minimum bundle necessary to meet basic needs. Our measure differs from conventional income and consumption poverty in both concept and measurement, and it has advantages relative to both. Poverty rates using our basic measure are very close in level and recent trend to those of the most preferred income-based poverty rate produced by the US Census Bureau. But the SEPM poverty rate differs from the US Census Bureau measure at different levels of the poverty line. For example, the number of individuals living in either poor or almost poor households is 5 percentage points greater (about 16 million individuals) using our measure. We also construct an augmented measure that adds additional potential liquid resources. This "maximal resources" measure indicates that if disadvantaged households used up all their bank balances and maximized their credit card borrowing, 9.6 percent of the population (over 31 million individuals) would still be poor and unable to purchase the goods necessary for the basic needs of life.

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The measurement of poverty has drawn the attention of economists for many decades. Both the level of poverty and its trend over time are important social indicators of the economic well-being of the most disadvantaged members of the society. Estimates of how poverty is affected by government policy in general, and by specific anti-poverty programs in particular, are also important indicators of the influence of government on improving the well-being of its poorest citizens. Nevertheless, how to best measure poverty has been the subject of significant disagreement among researchers and policy analysts.

There is renewed interest in the measurement of poverty in the United States. The US Census Bureau has recently conducted a major study of its most preferred poverty measure, the supplemental poverty measure (which the US Census Bureau abbreviates as SPM, and which we will designate SIPM for reasons given below), and how it could be improved. The study has recommended that the basic structure of the measure be retained but that a number of technical improvements be made.[1] A federal interagency working group established in 2019 and charged with studying alternative ways to measure poverty recently issued its report and recommended that an additional measure of poverty based on consumption rather than income be added to the measures produced by the US Census Bureau (OMB 2021). And the National Academies of Science, Engineering, and Medicine has formed an expert panel to spend two years studying additional improvements that might be made in the SIPM, with the panel slated to issue its final report in late 2022 or early 2023.

To supplement this activity, our study suggests a new method of measuring poverty that could be added to the two that have received the most attention in these discussions. The two methods are those that measure poverty by a household's income or its consumption. In both cases, the basic method is to start with some definition of the minimum bundle of goods that are needed to provide the basic needs of life. The minimum bundle is ultimately socially determined because what it means to be poor is a subjective concept that is up to the members of society to define. Starting with that minimum bundle, an income measure of poverty asks whether a household has enough income to purchase that bundle, while a consumption measure of poverty simply asks whether a household's level of consumption is sufficient to allocate enough consumption toward the goods in the

1. US Census Bureau, "Improvements to the Census Bureau's Supplemental Poverty Measure for 2021," https://www.census.gov/topics/income-poverty/supplemental-poverty-measure/library/working-papers/topics/potential-changes.html.

bundle to meet the minimum. In the language used in poverty measurement, both involve measuring a family's income (resources) or consumption to the threshold, which is the amount of income or consumption needed to meet the minimum bundle. A household is deemed poor if it does not have enough to meet that threshold and deemed not poor if it does. The poverty rate is the fraction of the population living in households that are poor.

We argue that both income and consumption measures have conceptual and measurement problems. Since the 1960s, the US Census Bureau has published an "official" poverty measure which compares cash income to a poverty threshold set in 1963. It has been heavily criticized because it uses income before taxes and transfers, excludes in-kind poverty program benefits (e.g., SNAP), and ignores costs that reduce the household's ability to purchase the minimum bundle. It is also what is called an absolute poverty measure because it uses what is called an absolute threshold, which is one held fixed in real dollars (since 1963 in this case), meaning that it does not pick up changes in how being poor is socially defined as a society develops. Use of absolute poverty thresholds also necessarily implies that, over long eras when general economic growth lifts real incomes across the income distribution, poverty rates must necessarily fall. While the magnitude of that ultimate decline is important to know, it presents an incomplete measure of socially defined well-being, at best.

The SIPM was begun by the US Census Bureau in 2009, motivated by an earlier report of the National Academy of Sciences (Citro and Michael 1995), which addresses many of the criticisms of the official measure and is widely accepted as superior to the official measure. It uses after-tax and transfer income, includes many major in-kind transfer benefits in income, and it subtracts certain costs from income as well. It uses a moving threshold based on how much it costs to purchase a minimum bundle of specifically defined necessities—food, clothing, shelter, and utilities—in the lower part of the expenditure distribution of those goods, and how that cost changes over time.

The conceptual problem with all single-period income measures is that they ignore the existence of spending out of assets and easily available borrowing, such as credit cards.[2] Conventional wisdom is that the poor, because of liquidity constraints, neither save nor borrow, so using single-period income should be accurate. We will show that, while this is true for some forms of intertemporal transfers, it is not true of all, with credit card

2. This omission is intentional and fully understood by its designers (Citro and Michael 1995, 71–72). It was argued there that current income is simply the best measure of resources and that assets are only a short-term resource.

debt being the most important. Current income does not fully represent the ability to purchase the minimum bundle if households can borrow to make such purchases, and we will show that low-income households appear to do just that. In addition to this conceptual issue, a well-known measurement issue with census income-based poverty measures is that many forms of income, particularly government transfers, are underreported in the Current Population Survey (CPS), which will tend to bias poverty rates upward.

An alternative measure which uses consumption as a measure of well-being has been proposed by Meyer and Sullivan (2012), following on work by Cutler and Katz (1991) and Slesnick (1993).[3] Many economists prefer consumption as a measure of poverty because it directly measures the flow of goods and services received by a household and therefore directly measures its economic well-being. It is also often regarded as a better measure of permanent income, which is frequently taken to be the best long-term measure of economic well-being. And, in regard to measurement, measures of consumption typically use the Consumer Expenditure Survey (CE) which is regarded by some to better measure spending than the CPS measures income.[4]

Two flaws in consumption measures make consumption a poor indicator of poverty. One is that, as agreed by all economists, a correct measure of consumption should include service flows from home, vehicles, and other durables. Yet those service flows are completely illiquid and cannot be used to purchase, with cash, food, clothing, or other components of the minimum bundle needed to satisfy basic needs. For example, almost 40 percent of low-income families are homeowners (Desilver 2021), which makes the illiquidity of housing service flows particularly important to such families. More generally, a household with a large fraction of its total consumption in the form of service flows is arguably more liquidity-constrained to buy the minimum bundle than a household with the same total consumption but which is financed entirely in the form of cash purchases.[5]

3. See Fisher and others (2009) and Fisher, Johnson, and Smeeding (2015) for additional estimates of consumption poverty.

4. The Panel Study of Income Dynamics (PSID) has now also developed enough spending measures to construct a consumption poverty measure. A comparison of its spending data to that in the CE can be found in Insolera, Simmert, and Johnson (2021).

5. In the poverty measurement literature, this is often called the problem of fungibility, meaning the degree to which some forms of income can be substituted for other forms of income. We should note, however, that the US Census Bureau includes housing in the minimum bundle, so if service flows are sufficient to satisfy the minimum housing need, that portion of the service flow is not constraining. We will discuss this below, but other durables like vehicles and household appliances are not in the minimum bundle, and hence imputing service flows to them is more potentially constraining.

The other problem with consumption measures of poverty is again related to whether intertemporal flows are possible. On the one hand, if the conventional wisdom is correct that low-income households neither save nor borrow, consumption should equal income, aside from measurement problems, and both poverty measures should produce the same poverty rate regardless of which is used because income equals consumption (Hurst 2012). But if intertemporal flows are possible—which is usually implied by the economic concept of permanent income in the first place—then consumption flows over more than one period must be included since different households may allocate their consumption differently over time. For example, a family with income just below the poverty threshold may decide to borrow on its credit card for a major purchase, raising its consumption above that threshold, while another family with exactly the same income may choose not to borrow. The first family will be counted as nonpoor and the second will be counted as poor by a single-period consumption measure, even though they have the same income and same command over resources. One family simply chooses to allocate its income to consumption in different periods than the other family.[6] Consumption in a given single period does not represent permanent income. In fact, income may be a better measure of command over resources if it is constant or fluctuating less than consumption.[7]

Our new poverty measure is intended to address both the conceptual and measurement issues with current income and poverty measures. Like most consumption poverty measures, we use data on household spending from the CE to construct our measure. However, unlike the consumption poverty concept, we consider how much a household spends to be a measure of its resources. So, for example, if a household spent $2,000 in a month, from whatever source, we simply consider that as available to spend on the minimum bundle. Almost by definition, those monies could have been spent on that bundle instead of whatever they were spent on. Using total spending as a measure of resources also differs from consumption measures

6. See Citro and Michael (1995, 210–14), who noted this issue as well.

7. We would argue that most people's intuitive definition of poverty is that it results from lack of resources, not because different families with the same resources make different choices on how to allocate their resources over time. We should also note that an old result from economic theory, called the theory of duality, states that well-being (utility) can be calculated either as a function of total resources available (using the so-called indirect utility function) or as a function of how those resources are spread across periods (e.g., discounted sum of utilities of consumption), and that the two are equivalent in their measurement of well-being. In this sense, a correct determination of available resources in each period makes an examination of consumption unnecessary and superfluous.

because the latter typically exclude spending on items that are regarded as saving and investment (e.g., cash contributions to pension plans or education and training expenses). From a resource viewpoint, those expenditures could have been spent on the minimum bundle and therefore were available to the family to have done so if they had wished and should be included in a measure of resources available.

In an important sense, our measure is closer in concept to income poverty measures because both are attempts to measure the resources available to a household. For that reason, we call our poverty measure the supplemental expenditure poverty measure (SEPM), analogous to the US Census Bureau's SIPM. But our measure of resources will exceed income if households make current purchases with credit cards that exceed their credit card debt payments or by drawing down liquid asset balances and will fall short of income if households save. If households do little of any of these activities, our expenditure poverty measure should produce poverty rates close to those of income poverty measures, apart from differing measurement error. In regard to measurement error, while many regard CE spending, in fact, to be more accurately reported, the evidence in support of that assumption is not as rigorous as one would like. There is indirect evidence that what underreporting there is in the CE is worse at the top of the income distribution (Bee, Meyer, and Sullivan 2015; Sabelhaus and others 2015; Dillman and House 2013; Attanasio and Pistaferri 2016). But there are no administrative or validated data to assess the accuracy of expenditure reporting the way there are for income reports, so most validation work, illustrated in the work just referenced, compares total expenditure reports in the CE to aggregates in the national income accounts.

Like consumption measures, using expenditures in the CE also avoids many of the constructs needed for income-based measures. We do not have to estimate taxes and tax credits, as all income-based poverty measures have to do because survey respondents cannot accurately estimate their taxes. Expenditures are, by definition, after-tax. We also do not have to impute in-kind transfers like Supplemental Nutrition Assistance Program (SNAP, food stamps) to households, as almost all income surveys have to do, because those transfers are already reflected in food expenditures reported by the household.

An important issue that has been insufficiently addressed in prior work on poverty measures but which we explicitly consider is that of liquidity. As we have already noted in our discussion of consumption poverty measures, service flows from physical assets and durables that are not part of the minimum bundle should not necessarily be considered to be available to purchase the bundle because of their illiquidity. But a similar issue arises if current spending is treated as a resource and includes current payments on installment loans for homes (i.e., mortgage payments and interest), vehicles, and other durables purchased in the past. It would be natural to regard those as commitments from past decisions and not available for purchasing the minimum bundle in the current period. However, income poverty measures implicitly regard them as available because those payments will generally come out of current income (that is, the US Census Bureau does not deduct installment loan payments on cars, for example, from income to estimate available resources to buy the minimum bundle). Those installment loans are the result of past decisions and were therefore a matter of choice. A household could have chosen not to purchase a vehicle in the past and could have saved those monies to buy the minimum bundle in the current period. The transportation expenses in a single year are probably less than the purchase price of the vehicle, so not having purchased the car would presumably have made more funds available to buy the items in the minimum bundle net of the replacement expenses the household would have to incur. Should those past decisions and their effect on currently available resources be considered in developing a resource-based poverty measure? We will calculate poverty rates with and without some of these loan payments included in available resources as a sensitivity test.[8]

Liquidity is also important in the consideration of credit cards. Many observers see disadvantages to credit cards for low-income households because those households often do not pay off their credit card debt immediately and hence incur onerous interest rate charges which will reduce available resources in the future, and they may even default on their debt and harm their credit rating. However, low-income households subject to short-term negative consumption shocks (e.g., the car breaks down and needs a $400 repair which must be paid to be able to drive to work) and negative income shocks should find credit cards of great value to address those shocks, given their lack of cushion in other dimensions. Including credit card purchases in excess of repayments over a short period represents an important source of resources to smooth transitory shocks faced by low-income families.[9]

8. As we discuss below, the largest loan payments are those for housing. The US Census Bureau's SIPM has a special treatment for housing which, as we discuss below, we will follow. This reduces the importance of the issue to some extent.

9. Although not specifically about poor families, the Survey of Household Economics and Decisionmaking (SHED) asks how families would cover a $400 emergency expense. Of those who could not cover it with cash, credit cards are reported as the most common method (Board of Governors of the Federal Reserve System 2021). See also Fisher and Hardy (2022) for evidence on within-year volatility of consumption among the poor.

A final issue from our approach to using spending as a measure of resources is created by the implicit inclusion of spending from assets and credit card loans in our measure, since they are included in CE spending totals (but without separate identification). While we regard those as available to have been spent on the minimum bundle, it generates an inconsistent treatment between households that conduct this activity and those that do not. A household that draws down its bank balance to purchase the minimum bundle may be counted as nonpoor while another household that has the same initial balance but does not draw it down might be counted as poor. Or one household may borrow on its credit card and generate total spending in excess of the threshold and not be counted as poor, while another does not so borrow and ends up being counted as poor even though they could have borrowed (this issue is similar to that we discussed before for consumption poverty measures). To address this issue, we also calculate a resource measure that includes the potential—but unused—asset drawdown and credit card borrowing the household could have made, thereby eliminating variation in discretionary choices on how much to spend in the current period. For assets, we only include available liquid bank balances in order to restrict our measure only to easily available resources (e.g., we do not assume they could sell their car or house), and we only include credit card borrowing—not other forms of loans the household might have available—because credit cards are the easiest and most liquid form of borrowing. This liquid potential resources measure (LPRM) will represent the maximum amount of resources that are easily available to a household to purchase the minimum bundle. This maximal resource measure will count as poor households that could not buy the minimum bundle even if they pulled out every possible, easily available resource they have to do so. The LPRM will consequently count as poor those who are even more resource-deprived than those counted as poor in our main measure.

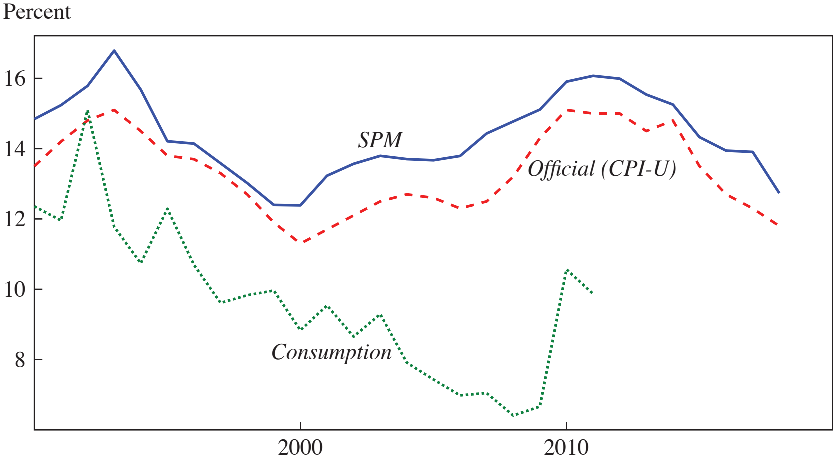
We have a number of key findings. First, we find that our main SEPM poverty rates are very close to those in the census income-based SIPM when we use the US Census Bureau's SIPM threshold. We also find that both have trended in approximately the same way (namely, downward), at least since 2010. This perhaps unexpected finding—unexpected because underreporting of CPS income and drawdown of assets and credit card borrowing should all make our CE spending totals greater than CPS income and hence our poverty rates lower—is shown to be a consequence of the precise location of the threshold combined with the differing shapes of the CPS income distribution and the CE spending distribution. Underreporting of income appears quite likely because there are many more (reportedly) very low-income households than very low spending households. However, there is also a larger number of households with spending just below the threshold than there are households with income just below it. The two forces cancel each other out when the total number of households below the US Census Bureau threshold are counted. But thresholds just below the regular poverty threshold have more income values below the line than spending values, resulting in lower SEPM expenditure-based poverty rates than SIPM income-based rates, while the opposite occurs for slightly higher thresholds that include the nearly poor—there, SEPM poverty rates are higher than those using income by about 5 percentage points. The latter implies that there are more poor or almost poor households by expenditure than by income.

Second, we find that poverty rates for many different demographic groups are quite similar between our SEPM poverty measure and income poverty measures, with differences in the rates of less than 1 percentage point. But we find some differences between the two poverty measures that are larger than that, depending on marital status, race or ethnicity, and education level. But the largest and most notable difference occurs in poverty rates for children, where our SEPM rates are up to 2 percentage points greater than income poverty rates since 2010.

Third, we find that government transfers have a large impact in reducing expenditure poverty, by up to 5 percentage points in some years. The impact is slightly less than that implied by income poverty measures. Finally, our LPRM, consistent with conventional wisdom, shows that the liquid asset balances from bank accounts for those in the lower portion of the expenditure distribution are quite small, and their inclusion in resources has only a small effect on SEPM poverty rates. But unused and potential credit card borrowing has a greater possible impact. We find that adding these potential resources could reduce poverty rates as much as 4 percentage points. However, 9.6 percent of households, equivalent to about 31 million individuals in 2019, could still not afford to purchase the minimum bundle even after using all possible liquid resources.

The paper has three sections. The first briefly reviews previous poverty measures in the United States, with more detail than we have given in this introduction, and shows their trends reported in other work. We also describe the construction of our new measures. Section II presents our SEPM measure based solely on current expenditures and compares its level and trend to poverty rates using income measures. We also present some demographic breakdowns, including child poverty and poverty of the older population, and we show the impact of government transfer programs on

Figure 1. Official (OPM), SIPM, and Consumption Poverty Rates, 1990–2018



Sources: Fox and Burns (2021); Columbia Center for Poverty and Social Policy; Fisher, Johnson, and Smeeding (2015).

Note: Consumption rate is anchored to 2015 official threshold.

poverty rates. Section III enlarges our definition of available resources and shows its effect on poverty rates. A short summary concludes.

I. Currently Used Poverty Measures and the SEPM

We briefly review poverty rate estimates from current work on what is called the official poverty measure (OPM), the supplemental poverty measure (which we term the SIPM, with "I" for income to be analogous to the SEPM), and consumption poverty. We then present a summary of how we construct the SEPM, with details left to the online appendix.

Figure 1 shows estimates of the level and trend of poverty using three different measures after 1990. The OPM compares cash income before taxes and in-kind transfers to a threshold defined in 1963 as the amount of income needed to purchase a minimum level of food expenditure plus additional goods. It has been held constant in real CPI-U dollars since then. In addition to omitting in-kind transfers from income, it makes no adjustment for cross-area differences in the cost of living and uses a nonstandard equivalence scale to adjust for family size and composition.

The interesting aspect of the trend in OPM poverty is how little it has changed over time, despite the expectation that poverty rates should eventually decline for any absolute poverty measure. While there are clear business cycle effects, the last value in 2018 is only slightly lower than that in 1990. In part this reflects the growth in wage inequality and the associated slow rate of growth of wages for unskilled workers. But its omission of taxes and transfers and in-kind benefits programs makes its poverty rates too high because taxes have declined for low-income families and transfers have grown over time.

The SIPM bases its threshold on a minimum bundle composed of food, clothing, shelter, and utilities and on a measure of how much is spent on those four goods in the lower part of its distribution. The threshold is updated over time as expenditures on those goods rise in that lower part, intended to represent changing social norms for where households are relative to others in the distribution of ability to purchase that bundle. This obviates the need for a price index because the threshold is defined in nominal dollars, but it implicitly picks up growth in prices of the goods in the minimum bundle. The income measure subtracts from gross money income an estimate of net taxes paid, which can be negative because of federal and state tax credits to lower-income families, and it includes estimates of in-kind transfers received by each family (SNAP plus four others noted below). The SIPM also considers working families to incur work-related expenses, which are subtracted from income, as are childcare expenses and any child support paid to a custodial parent outside the household. Somewhat more controversially, it subtracts from income a measure of medical out-of-pocket expenses, including health insurance premiums paid plus medical costs not reimbursed by insurance (Medicaid is otherwise ignored in the SIPM).[10] The SIPM also deals with homeowning by using a separate threshold for homeowners with mortgages, homeowners without mortgages, and renters, on the assumption that homeowners with mortgages need more income to purchase the rest of the minimum bundle and those without mortgages need less. It also adjusts the thresholds for a state- and metro-area level price index.

10. The total of these expenses is capped, partly because high-income families may have high medical expenses that are mostly discretionary. The latest census report describing the details of this deduction, as well as other details on how the SIPM is constructed, can be found in Fox and Burns (2021). We should note that work is currently under way to address the knotty problem of including Medicaid and health insurance in the SIPM. See Korenman, Remler, and Tyson (2019) for an important contribution on that topic. The US Office of Management and Budget (2021) also recommended that new measures adding health insurance be used to create an additional poverty index.

Given the dramatic differences in the way the SIPM and OPM are constructed from the OPM, the surprise in figure 1 is how little they differ in level and trend. The SIPM is slightly higher in level, which is not so much because of differences in the thresholds as because the subtractions from income outweigh the addition of tax credits and in-kind transfers (Fox and others 2015). The two follow similar trends over time.

Consumption poverty estimates are less standardized and differ from study to study. Those shown in figure 1 are drawn from Fisher, Johnson, and Smeeding (2015), which go through 2011.[11] The authors construct a measure of consumption which adds to nondurable spending an estimate of service flows from houses and automobiles. It also excludes expenditure items like educational expenses and pension contributions on the grounds that these constitute saving rather than consumption. The threshold used is the 2019 nominal OPM threshold, updated over time for inflation with the CPI-U-RS (after 2021 this series was renamed by BLS to R-CPI-U-RS). The consumption poverty series is lower than that of the income measures in the early years but declines at about the same rate through 2000. But after that, consumption poverty declines while income poverty rises. While consumption poverty took a large jump in 2010 (oddly, since that was the end of the Great Recession, not the beginning), its difference with the income series is dramatic.

The problem with the poverty rate estimates in figure 1, and those produced in other studies, is that they differ in too many ways to make it possible to determine why they differ. There are three basic decisions required in the construction of any poverty rate: the choice of threshold, the definition of resources, and the way the two of them are updated for inflation. The OPM rate uses a fixed real threshold established in 1963 and a narrow definition of resources and updates with the CPI-U. The SIPM uses a threshold that is adjusted in real terms over time (generally upward) and a more comprehensive definition of income and implicitly uses a price index for food, clothing, housing, and utilities. The consumption measure uses a constant real threshold similar to the OPM and imputed service flows for durables and employs the CPI-U-RS for price updating. Because none of these studies analyze which of these three building blocks is responsible for the differences in level and trend, the reason for their differences cannot be determined. One goal of our study is to compare our SEPM poverty series

11. Meyer and Sullivan (2019) have the latest consumption poverty series using their methodology, but they use a very different price index than other studies, making it noncomparable to the other series in figure 1.

to that of the SIPM on a comparable basis so that we can determine exactly what difference is made by using spending instead of income alone, and at least address this issue with two of the poverty measures.[12]

Turning to the construction of SEPM, our basic SEPM poverty measure uses consumer expenditure from the CE as the building block of available resources.[13] We do not exclude any items that might be regarded as investment or saving because those could have been used, instead, to buy the minimum bundle and hence should be included in resources. We also include all down payments on durables in our expenditure measure, because the household could have chosen not to purchase the durable in question and could have applied that expenditure toward the minimum bundle instead. For installment loans, the CE only collects data on such payments for housing and cars and not on those for any other durables.[14] We include outlays for both in our measure of expenditures on the grounds that those are cash payments and are therefore liquid. We recognize that their inclusion could be objected to on liquidity grounds but, unlike service flows, they represent actual cash outlays that could in principle have been redirected toward the purchase of the minimum bundle if the debt had not been incurred in the first place.[15] However, we include installment loan payments on houses (i.e., mortgage payments) in our expenditure measure for a second and independent reason, which is that this is required to be comparable with the SIPM treatment of housing. The SIPM recognizes the importance of housing to low-income families and that treating homeowners the same whether or not they have a mortgage, and the same as renters, misrepresents differences in implicit income and hence ability to purchase the minimum bundle (and housing is in the minimum bundle). On the grounds that estimating service flows is too difficult as a practical matter, given existing data and methods, the SIPM instead adjusts the threshold upward for homeowners who have mortgages and downward for

12. Constructing a new consumption poverty measure is beyond the scope of our paper and is left for future work.

13. We note that the CE uses the word *outlays* for our measure. We use the word *expenditures*, which is more commonly used outside the CE.

14. For other durables, such as refrigerators, dishwashers, and washing machines and dryers, for example, the CE just includes in spending the purchase price at the time of purchase and ignores whether they are purchased on credit. We note that Bruce Meyer's comment in the general discussion—that we exclude consumption on housing and transportation—is incorrect because we include all cash expenditures on those goods. We do not include illiquid implicit service flows.

15. Online appendix 1 describes many of the details involved in implementing these decisions. The CE only includes purchase price for some durables, even if financed by a loan, which we can do nothing about.

homeowners who do not have mortgages on the grounds that the former group needs more income to be able to purchase the nonhousing items in the minimum bundle and the latter need less. Thresholds for renters are adjusted based on average rents paid by lower-income renters, consistent with the notion of a socially defined threshold for low-income households. With this adjustment of the threshold, mortgage payments must be included in any resource measure, including our expenditure construct.[16] However, we conduct a sensitivity test to the inclusion of vehicle loan payments in spending, reported in the online appendix.

For credit cards, we have emphasized that purchases made with credit cards are implicitly included in the CE expenditure measure, although the respondents are not asked how many purchases are actually made with cards and hence those purchases cannot be separated from purchases made from other resources. In addition, the CE does not ask households about their interest and fees on credit cards in every interview nor does it ask the amount by which households pay down their credit card balances. However, fortunately, the CE excludes credit card interest, fees, and debt payments from its expenditure measure, so they are not counted in our expenditure totals. Since purchases made with credit cards are implicitly included in our spending measure, this means that any household which pays off its credit card balances every period will have no greater calculated available resources than a household which makes no credit card purchases; the net will be zero in either case. But households that make purchases in excess of their interest, fees, and debt payments will be implicitly regarded as having additional resources, and the opposite will be the case for households whose new charges are less than their interest, fees, and debt payments.[17] The annual time frame for our SEPM and most other poverty measures makes this an internally consistent approach.[18]

16. See Fox and Burns (2021) for details. The threshold is adjusted only for the housing cost portion of the minimum bundle. Implicitly, this treatment subtracts from income any housing expenditures deemed necessary to purchase the housing portion of the minimum bundle, leaving remaining income to purchase the rest of the bundle (and other things, including more housing). We note that this treatment of housing therefore partly reduces the problem of putting illiquid housing service flows into income. A recent commission in the United Kingdom has also recommended that mortgages be subtracted from income for poverty measurement (Social Metrics Commission 2020).

17. Our original conference paper proposed counting both credit card spending and repayment as expenses, as is noted in the general discussion of our paper. This revision eliminates that double counting.

18. If the net adds to zero across the population (i.e., the sum of new charges in excess of interest, fees, and debt payments equals the sum of new charges less those items), as will be the case if some households are net creditors and others are net debtors in different periods,

Because we want to make the SIPM our main poverty measure of comparison and to have our measure as comparable to it as possible save for the use of expenditures in place of income, we adopt all other methods used by the census in constructing that measure. We use the same thresholds as the SIPM, the same differentiation of those thresholds by homeowner and mortgage status (as already noted), the same type of geographic cost-of-living adjustments, and the same family size equivalency scale used in threshold construction.[19] We also add to our expenditure total estimated amounts of the four in-kind transfers other than SNAP which the SIPM adds to income and which are not recorded as expenditures in the CE: implicit rent subsidies to those in government-subsidized housing who pay below-market rents, lunch subsidies received by schoolchildren, transfers in federal nutrition programs for pregnant women and mothers of young children, and energy assistance. We recognize that liquidity issues can be raised with these estimates as well and hope that they will be small enough in magnitude as not to constrain the family in its ability to purchase the minimum bundle. Finally, like the SIPM does for income, we also deduct from our expenditures work-related and childcare expenses, child support paid, and capped out-of-pocket medical expenses, though all necessarily must be computed with CE data instead of the CPS. These adjustments are an important feature of both the SEPM and SIPM poverty measures.[20]

One issue with the CE worth noting is that the CE data are collected in quarterly interviews, not annual interviews like the CPS Annual Social and Economic Supplement (ASEC). In the construction of annual totals, the Bureau of Labor Statistics (BLS) treats each quarter as an independent observation and then averages them with weights to arrive at calendar year estimates. This approach contrasts with some authors who use only a subsample—for example, Bavier (2014), who uses only the Q2 interview—or authors who use only households that complete all interviews—for

then the impact of credit cards on poverty rate estimation depends only on the distribution of the two types of households in the region of the poverty threshold where households are moved either above it or below it by the inclusion of their net values in resources. We thank Henry Aaron for making this point.

19. We thank Caroline Hoxby for noting that low-income families are members of networks that share resources and consumption, including family members outside the unit, neighbors and friends, absent fathers, and others. These networks could also be the source of some of the additional spending over income found in low-income household data. Spending which arises from outside the family unit will be included in our measure of spending but would be excluded by an income-based measure.

20. See the online appendix for details on the implementation of these procedures with the CE data.

example, Fisher, Johnson, and Smeeding (2015). If a sample of consumer units present in all four quarters is required, significant sample loss occurs from attrition, for about 45 percent of the sample leaves the survey. Further, attrition is non-ignorable because those remaining in the sample are more educated, more likely to be homeowners, more White, and more elderly, and thus less likely to be poor. Given the difficulties in correcting for attrition, we follow BLS in constructing annual expenditures from quarterly amounts, but this may have some effect on calculated poverty rates because quarterly expenditure may fluctuate more than annual expenditure. In this case, our SEPM poverty rates may be higher than those from an annual measure like the SIPM to some extent. We leave this issue for future work.

Finally, we will construct a "maximal" estimate of resources by expanding the definition of total available resources to include liquid assets and potential liquid borrowing in our calculations. We calculate our measure of liquid potential resources as

$$\begin{aligned} LPR = {} & \mathit{Current\ Expenditures} + \mathit{Additional\ Available\ Liquid\ Assets} \\ & + \mathit{Additional\ Available\ Liquid\ Borrowing} \end{aligned}$$

We use data on current savings and checking bank balances at the end of the year recorded in the CE to calculate additional available liquid assets.[21] Calculating additional potential credit card borrowing is more difficult both for data and conceptual reasons. For those with credit cards, calculating additional borrowing potential requires knowing current balances plus credit limits on those cards, and the CE asks credit card balance information but not limits. We need to use other data for limits and impute those to CE households. Traditional credit card rating agencies have data on limits but not income, which is needed to identify low-income households. We use the Survey of Consumer Finances (SCF)—a representative survey of US households focusing on financial information—which has data on income, credit card usage, and credit card limits. We impute credit card limits from the SCF to the CE using methods (which are based on income and age strata) described in the online appendix, and we calculate unused credit as the imputed limit minus the balance reported in the CE. We impute to those who report zero CE credit card balances some fraction to have a card (the CE does not ask if households have a card), again from the SCF, and credit limits to those households, for whom unused credit equals the limit.[22] Because of the large number of imputations necessary to construct unused

21. The CE only collects these data in the last quarterly interview, so we must restrict our sample to non-attriting households for this calculation.

22. See the online appendix for details.

credit, given the available data, our calculations should only be considered as suggestive.

We recognize that if the household were to draw its full potential in the current period, it would reduce its potential resources in future periods. It cannot draw those resources down period after period. But this is a consequence of the annual time frame used in most resource measures (including income poverty measures that include saving in resources). Annual time frame poverty measures ask only whether resources in a current year are large enough to buy the minimum bundle in that year, not whether resources over multiple years are large enough to buy the minimum bundle repeatedly. But an interesting extension of the standard annual measure would be to estimate the current value of assets and borrowing taking into account their impact in constraining future ability to purchase the minimum bundle or, phrased differently, how available resources vary as the time frame lengthens.

II. Results

II.A. Levels in 2017–2019

Before comparing trends in our SEPM to that of the SIPM, we present levels of the two measures averaged over our last three years of data, 2017–2019, to illustrate the building blocks for each and the nature of their construction (averaged over three years to smooth out short-term fluctuations in the measures). We also present a first major finding on the relationship between our expenditure poverty measure and income measures in this initial exercise.

Table 1 shows the building blocks for our SEPM using the CE and the SIPM using the CPS for 2017–2019. The first rows present statistics on the distributions of gross CE expenditure and gross adjusted CPS income.[23] In the whole population, CE mean and median expenditures are much lower than for income in the CPS, but this deserves little attention because it is the lower tails of each that are relevant to poverty measurement. However, an important result in the table is that the income distribution in the CPS has a much longer left-hand tail than the expenditure distribution in the CE, and the difference gets larger the lower in the distribution one goes. The best explanation for this is simple underreporting of income in

23. Adjusted CPS income is CPS income after tax and with the most important in-kind transfer—SNAP—added. This is a closer concept to CE spending than before-tax cash income and should improve comparability relative to using before-tax CPS cash income alone.

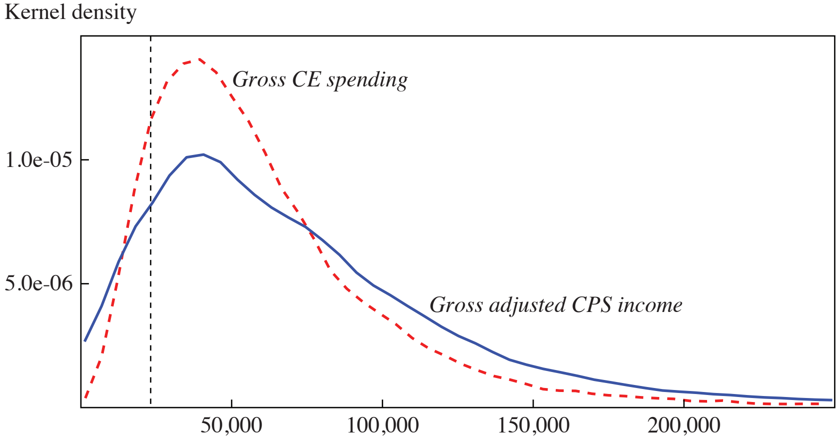
Table 1. CE SEPM and CPS SIPM Poverty Rates and Components, 2017–2019

	CE		*CPS*	
	Statistic	*SE*	*Statistic*	*SE*
Gross expenditure or gross adjusted income				
Mean	62,957	192	78,268	160
Median	51,628		61,672	
1st percentile	9,436		0	
3rd percentile	13,654		6,947	
5th percentile	16,542		11,245	
10th percentile	21,662		18,629	
20th percentile	29,596		30,489	
Net expenditure or net adjusted income				
Mean	56,251	185	70,711	156
Median	44,605		53,422	
1st percentile	8,047		0	
3rd percentile	11,634		5,204	
5th percentile	14,013		9,191	
10th percentile	18,472		15,546	
20th percentile	25,389		25,551	
Poverty rates				
Gross SEPM or SIPM	0.089		0.096	
Net SEPM or SIPM	0.133		0.130	
Means adjustments and in-kind in bottom quintile of the distribution				
Adjustments				
Medical out-of-pocket spending	2,911	23	2,632	12
Work expenses and childcare	798	10	986	5
Child support	20	1	42	2
Total adjustments	3,729	24	3,660	13
In-kind transfers				
School lunch subsidy	198	3	241	2
Energy assistance	29	1	40	1
WIC	55	2	51	1
Housing subsidy	897	20	786	11
Total in-kind	1,179	22	1,118	12
Demographics				
Family size	2.453	0.012	2.267	0.006
Children	0.741	0.009	0.695	0.005
Adults	1.713	0.006	1.572	0.003
Presence of elderly	0.304		0.286	
Own with a mortgage	0.151		0.155	
Own no mortgage	0.307		0.305	
Renters	0.542		0.539	
Sample size	62,867		205,618	

Source: Authors' calculations.

Note: Values are expressed in 2014 dollars. Gross expenditure is total household spending on all items in the year. Gross adjusted income is total income in the year after tax and with SNAP benefits added. Net adjusted income includes four in-kind transfers and excludes three types of capped adjustments. Poverty rates weighted by person, household weighted by consumer unit weight. See online appendix for details.

Figure 2. Distribution of Gross CE Spending and Gross Adjusted CPS Income, 2017–2019



Source: Authors' calculations.

Note: Gross CE spending is total household spending on all items in the year. Gross adjusted CPS income is total income in the year after tax and with SNAP benefits added. Vertical dashed line denotes average threshold.

the CPS, but whatever the cause, it implies that poverty rates may differ simply because of this difference, as we now illustrate.[24]

Figure 2 shows the two distributions graphically but in dollar terms and not percentile terms. The vertical dashed line shows the average SIPM threshold (approximately $26,000 in 2019) so that poverty rates can be viewed as the fraction of the distribution to the left of that line. The most important difference, as suggested by table 1, is that expenditures are much more concentrated in a mass just above the threshold, unlike the more dispersed income distribution. Because the density curves cross and hence neither distribution first-order stochastically dominates the other, the relative poverty rates of the SEPM and SIPM will depend on where the threshold is located. In figure 2, it is not visually apparent whether expenditures or income have a greater fraction to the left of the line. But table 1, showing gross SEPM and SIPM poverty rates, shows that the percentage of reported income observations below the threshold, 9.6 percent, is slightly higher but

24. We thank our discussants, Kathryn Edin and Luke Shaefer, for noting that the gap may not be entirely a result of literal underreporting of income and income transfers but rather partly reflecting the adoption of (costly) survival strategies by low-income families to find ways to obtain more consumption in light of incomes too low to survive.

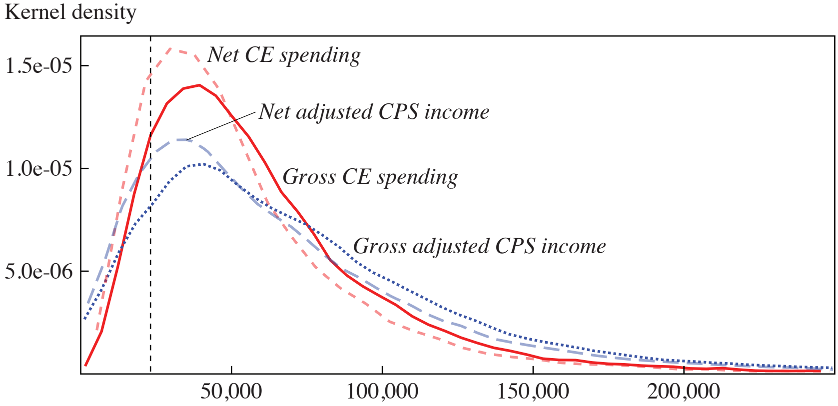
very close to the fraction of expenditures below the threshold, 8.9 percent. Thus, the differences in the distributions of income and expenditure below the poverty line almost cancel out.

As we noted above, the US Census Bureau SIPM adds certain in-kind transfers to income and subtracts certain adjustments representing costs before calculating ability to purchase the minimum bundle. What we term the net poverty rate is that based on net expenditure and net income after these additions and subtractions. Table 1 shows the distributions of net expenditure and net income, in parallel to those for the gross distributions. Not surprisingly, we continue to find a longer left tail of net income than net expenditures, which should be the case if the in-kind transfers and deducted adjustments are roughly the same in the two data sets. The means of those in-kind transfers and deducted adjustments are shown in the lower half of the table and demonstrate that their means are not much different in the CE and CPS.

However, the relationship between the two poverty rates changes slightly when going to net expenditures and income. Both the SEPM and SIPM net poverty rates are higher than their gross counterparts because the deductions for cost factors are larger than the additions from in-kind values. However, the SEPM rises more than the SIPM (4.4 percentage points compared to 3.4 percentage points), resulting in an almost identical net poverty rate for the two—13.3 percent for the SEPM and 13.0 percent for the SIPM. The major reason for the change is illustrated in figure 3, which adds the distributions of net expenditure and net income to those for their gross counterparts which were shown in figure 2. Both distributions are shifted to the left, but because of the greater mass of the gross expenditure distribution just above the threshold, more household expenditures are moved below the threshold than are household incomes, when netting out the cost factors.

The important lesson for poverty measurement is that the relationship between income and expenditure poverty rates depends critically on where the threshold is fixed. Since all observers agree that the choice of threshold is socially determined and has arbitrary elements, most observers think that poverty rates at different thresholds should be calculated. Figure 4 shows one such calculation, illustrating the importance of the threshold by showing net SEPM and SIPM poverty rates for what are designated, in the literature, "deep poverty" and "near poverty." The first is calculated as the fraction of the population which has income or expenditure less than 50 percent of the threshold, and the latter is calculated as the fraction of the population which has income or expenditure less than 150 percent of the threshold (approximately \$13,000 and \$39,000, respectively in 2019).

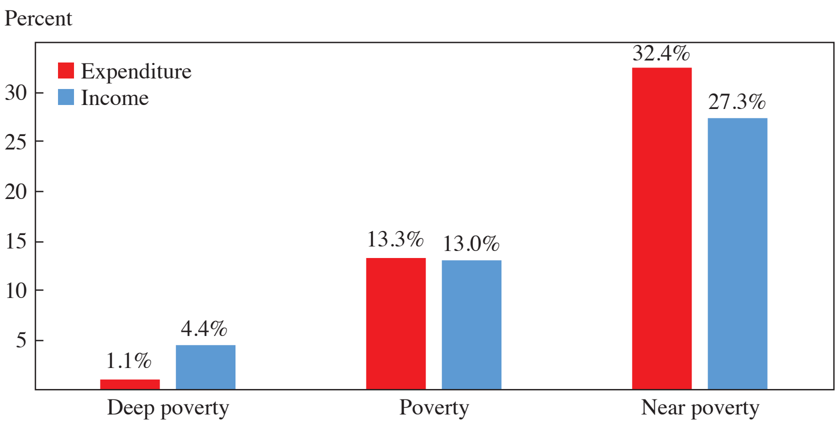
Figure 3. Gross and Net CE Spending and Adjusted CPS Income, 2017–2019



Source: Authors' calculations.

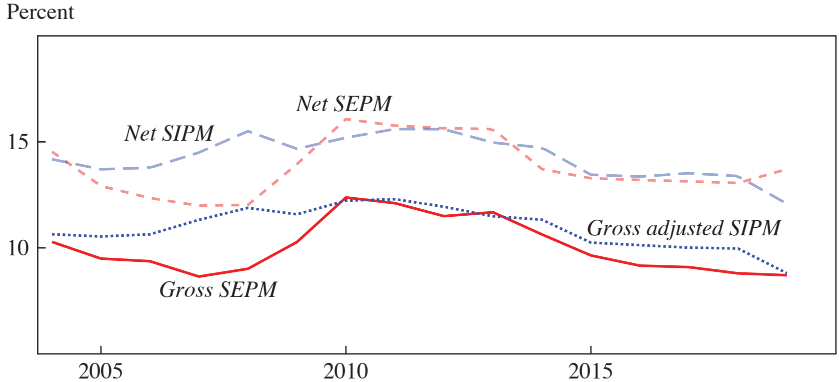
Note: Gross CE spending is total household spending on all items in the year. Gross adjusted CPS income is total income in the year after tax and with SNAP benefits added. Net measures include four in-kind transfers and exclude three types of capped adjustments (work-related and childcare costs, child support paid, and out-of-pocket medical expense). Vertical dashed line denotes average threshold.

Figure 4. SEPM and SIPM Net Poverty Rates by Threshold Location



Source: Authors' calculations.

Figure 5. SEPM and SIPM Poverty Rates, Gross and Net, 2004–2019



Source: Authors' calculations.

Note: Gross SEPM poverty rate is based on total household spending on all items in the year. Gross adjusted SIPM poverty rate is based on total income in the year after tax and with SNAP benefits added. Net poverty rates are based on total spending and income after tax and with SNAP benefits that include three in-kind transfers and exclude three types of capped adjustments (work-related and childcare costs, child support paid, and out-of-pocket medical expense).

The figure reveals that SEPM net poverty rates are lower than those for the SIPM when looking at deep poverty, but higher than those for the SIPM when looking at near poverty. There is more SIPM deep poverty than SEPM deep poverty (4.4 percent versus 1.1 percent) but more SEPM near poverty than SIPM near poverty (32.4 percent versus 27.3 percent, a 5 percentage point difference of about 16 million individuals). There are very few households with extremely low expenditures but a large fraction of households with expenditures that are still fairly low. There may be more households that are very poor by income standards, but there are also many households that are almost poor by expenditure standards. The latter group should not be considered particularly well-off in terms of economic resources.

II.B. Trends, 2004–2019

Trends in gross and net SIPM and SEPM poverty rates from 2004 to 2019 are shown in figure 5. We show both net and gross rates since there are some differences between them, as there were in 2017–2019. The gross SEPM poverty rate was approximately 11 percent in 2004, fell to about 8 percent in 2007, then rose through 2010 to about 12 percent (no doubt because of the Great Recession). It then began a gradual decline to a 2019 value of 8.7 percent (the decline coinciding with a general economic growth period in the country). The gross SIPM poverty rate shows higher values in the 2004–2007 period, a somewhat sharper rise from 2007 to 2011, and then a sharper fall through 2019, ending at its final value of 8.8 percent, almost identical to that for the SEPM.[25]

The difference in the measures from 2004 to 2010 has been noted before although not using quite the same income and expenditure poverty rates we calculate (Bavier 2014; Wimer 2014). The difference has not been resolved, but the SEPM exhibits a pattern more consistent with the business cycle in this period—strong economic growth from 2004 to 2007 followed by the Great Recession from 2007 to 2010, which is consistent with falling then rising poverty rates—than the SIPM. However, from 2010 to 2019, both the gross SEPM and SIPM follow approximately the same downward trend on average. The economic growth over this period is the likely cause of both, together with expanded social safety net transfers. When moving to the net poverty rates, both the SEPM and SIPM shift upward, as already discussed, but the shift upward results in a similar pattern of time trends of each over the entire 2004–2019 period. Both have continued to decline since the Great Recession, as was the case for the gross measures.[26]

Given the importance of the location of the threshold, we show trends in deep poverty and near poverty in figure 6. The greater rates for SIPM than for SEPM for deep poverty have been present since 2004, and both show very flat trends with very little reduction in the rates. The lack of improvement in deep poverty rates is a result of a combination of declining labor market earnings at the bottom of the distribution and a decline in transfers going to the worst-off families. Near poverty SEPM rates were not higher than those for SIPM over the whole period but have been for most of it, and both show approximately the same declines since about 2010.

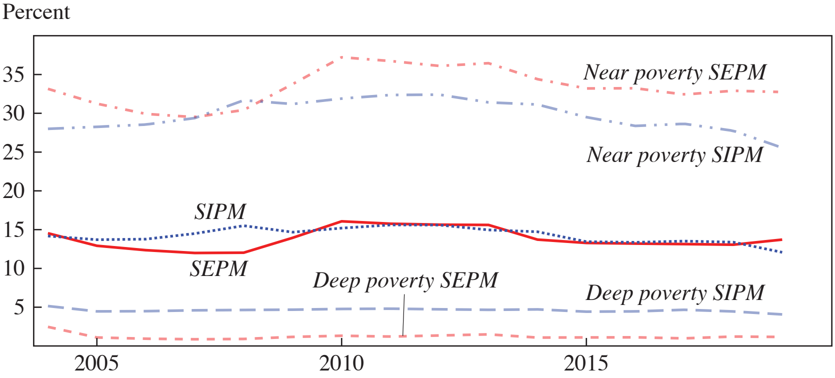
II.C. Comparison of Demographic Patterns

Table 2 shows SEPM and SIPM gross and net poverty rates in 2017–2019 for different demographic groups to determine whether the two measures yield different rates. Different poverty rates can arise for the same reason

25. Our SIPM poverty rates are calculated from the public-use CPS historical files produced by the Columbia Center for Poverty and Social Policy (CPSP). Those rates differ slightly from those produced by the US Census Bureau since 2009. Our rates also differ slightly from those produced by the CPSP because we modify their procedures for medical and work expense imputations, geographic adjustments, and household weights, as described in the online appendix.

26. The uptick in the net SEPM measure in 2019 is largely a result of stagnant net expenditure spending in CE from 2018 to 2019 but a rise in the SIPM threshold, resulting in higher poverty. The fall in net SIPM in 2019 reflects a significant rise in net incomes in CPS ASEC from 2018 to 2019.

Figure 6. Near and Deep Net Poverty Rates, 2004–2019



Source: Authors' calculations.

Note: SEPM based on adjusted expenditure below the SPM threshold. SIPM based on adjusted income below the SPM threshold. An individual is in deep poverty if their adjusted resources are less than 50 percent of the poverty threshold. An individual is in near poverty if their adjusted resources are less than 150 percent of the poverty threshold. Resources include SNAP benefits and three in-kind transfers and exclude three types of capped adjustments (work-related and childcare costs, child support paid, and out-of-pocket medical expense).

Table 2. Poverty Status by Demographic Groups, 2017–2019

	SEPM Gross	*SEPM Net*	*SIPM Gross*	*SIPM Net*
Home				
Owner w/mortgage	0.027	0.052	0.035	0.057
Owner w/o mortgage	0.082	0.154	0.079	0.119
Renter	0.171	0.219	0.191	0.237
Family type				
Unmarried	0.141	0.187	0.167	0.215
Married	0.059	0.102	0.053	0.079
Poverty status by age				
Elderly poverty rate	0.069	0.150	0.096	0.158
Child poverty rate	0.118	0.160	0.111	0.135
Race and ethnicity				
White	0.053	0.092	0.062	0.088
Black	0.153	0.188	0.172	0.213
Hispanic	0.167	0.236	0.160	0.216
Other	0.097	0.138	0.109	0.147
Education				
Less than high school	0.259	0.333	0.254	0.325
High school	0.106	0.161	0.115	0.156
College degree, including associates	0.029	0.055	0.046	0.065
Poverty rate	0.089	0.133	0.096	0.130
Sample size	62,867		205,618	

Source: Authors' calculations.

Note: Demographic characteristics refer to the household reference person. The sample is weighted by person weights. See online appendix for details.

already noted, which is simply that the distributions of the two are different below the SIPM threshold and some groups may have more expenditures just below the poverty threshold than others. Differences in net poverty rates can also differ, in principle, if the values of the in-kind transfer additions or the deduction subtractions are different for some unknown reason in the CPS and CE, although we have not found those to be dramatically different in the two data sets. The last few rows in table 1 show that there are some differences in a few demographic variables in the CPS and CE.

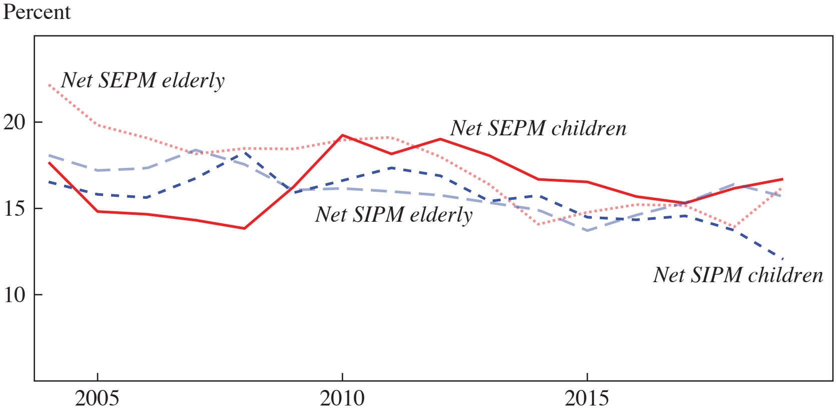
Most of the differences in SEPM and SIPM poverty rates in table 2 are not large by demographic characteristic, often less than 1 percentage point and varying in which poverty rate is the higher. But there are a few differences that are more than 2 percentage points. Owners without a mortgage have a net poverty rate over 3 percentage points greater for the SEPM than for the SIPM, while renters have a lower SEPM poverty rate. SEPM poverty rates are lower for unmarried households than for the SIPM, but the opposite is the case for married households.[27] Elderly persons have about the same gross SIPM and SEPM poverty rates. For children, the net SEPM is higher than the net SIPM. Black households, but also households with heads who have a college degree, have lower SEPM poverty rates than those for income.[28]

However, one major difference in the rates between the two measures is for children. Child poverty rates have always been calculated to be higher than those for adults by all poverty measures because more children tend to live in poor families. Figure 7 shows trends from 2004 to 2019 in net SEPM and SIPM poverty rates for children and the elderly. While those for the elderly are, on average, quite close to one another, consistent with the 2017–2019 average result in table 2, the SEPM child poverty rates are much higher than SIPM poverty rates since 2010. At their peak in the period 2010–2013, SEPM child poverty rates were almost 19 percent, about two percentage points higher than rates based on income. This reflects the greater concentration of expenditures of households with children just below the poverty threshold. However, child poverty rates have also declined over time.

27. It should be emphasized that family size is taken into account in the determination of the thresholds, so they differ, for example, for single individuals and married individuals.

28. Online appendix table A1 shows differences in various characteristics for the SEPM and SIPM poor. As expected, the SEPM poor have higher expenditures than the SIPM poor have income. There are a few demographic differences as well. For example, the SEPM poor have larger family sizes, and the household reference person has less education.

Figure 7. Net SEPM and SIPM Poverty Rates, Children and Elderly, 2004–2019



Source: Authors' calculations.
Note: Net poverty rates are based on total spending and income after tax and with SNAP benefits that include three in-kind transfers and exclude three types of capped adjustments (work-related and childcare costs, child support paid, and out-of-pocket medical expense).

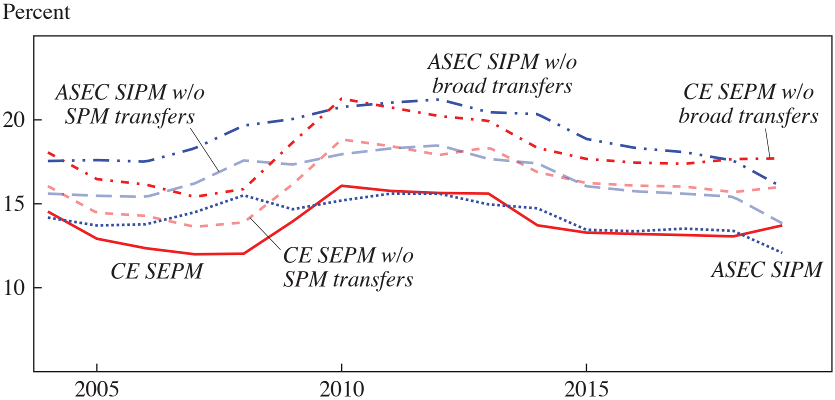
Online appendix table A1 shows a comparison of the demographic characteristics of SIPM poor and SEPM poor to determine whether they identify the same or different types of households as poor. The SEPM poor and SIPM poor are not, in fact, very different by the majority of measures shown in the table. The few larger differences include a greater fraction of lower-educated household heads among the SEPM poor as well as larger family sizes. There are also differences in how many homeowners have and do not have a mortgage. But these are the exceptions rather than the rule.[29]

II.D. Impact of Government Transfers

Assessing the impact of government transfers with our expenditure measure requires assumptions not needed for assessing that impact with income measures. With income used as a measure of transfers, transfers represent a simple addition to income and hence a straightforward calculation of their impact on poverty rates can be conducted (ignoring behavioral responses). But for expenditure measures, an assumption is needed on how an increase

29. As noted by our discussants, Kathryn Edin and Luke Shaefer, it would be useful to know how the two measures classify as poor families with particular material hardships, such as food insecurity or defaulting on rents, mortgages, or utility bills. Unfortunately, the CE does not have information on measures of hardship.

Figure 8. Impact of Selected Transfers on Poverty, All Persons, 2004–2019



Source: Authors' calculations.

Note: SIPM measures use TAXSIM, geographic cost-of-living adjustment, and 15 group imputation. SPM transfers are SNAP, WIC, housing assistance, energy assistance, and school lunch. Broad transfers are SPM transfers plus the EITC, cash welfare, and SSI.

in income is spread out across expenditures in different periods, as well as an assumption of whether drawdowns from liquid assets or credit card borrowing are affected. The simplest assumption is to assume that neither of the latter are affected by transfers and that all transfers result in increased expenditure in the current period.

With that assumption, figure 8 shows the impact on net SEPM and SIPM poverty rates when transfers are removed. In the first case, we consider the impact on poverty rates of removing the in-kind transfers alone—SNAP and the four others discussed previously. In the second step, we consider the impact on poverty of removing cash transfers, which is primarily the Earned Income Tax Credit (EITC) but also cash welfare and Supplemental Security Income (SSI) (both smaller in magnitude than the EITC). Focusing on the period since 2010, we find that the removal of in-kind transfers raises both SEPM and SIPM poverty rates by approximately 3 percentage points, with no large difference, on average, between the measures. But we also find that removing cash transfers increases the SEPM less than the SIPM. Online appendix table A2 shows that the removal of SSI, cash welfare, and other in-kind transfers has a greater impact on raising SIPM poverty than SEPM poverty. In any case, however, figure 8 shows that taxes and transfers to disadvantaged families in the United States make a major dent in poverty rates even with our SEPM, up to 4 or 5 percentage points.

II.E. Liquid Potential Resources

As described previously, we estimate an LPRM by adding available liquid bank balances and an estimate of available but unused credit card borrowing resources to obtain a maximal measure of resources and to estimate how many individuals would remain in poverty even after using all available liquid assets and credit. Table 3 shows the mean and median bank balances (liquid assets) at the final interview for households in the bottom quartile of the CE current expenditure distribution for 2017–2019, shown separately by the three housing statuses employed by the US Census Bureau in its threshold calculations, and also broken out by whether the household head is or is not age 65 or older. Median bank balances are zero for those with heads under age 65 and small for those over age 65 but a substantial fraction, sometimes over 50 percent, have a positive bank balance. Mean assets are small for those under age 65 but quite large for some of those over age 65, but this reflects a large upper tail of the distribution.

Figure 9 shows the impact of adding these bank balances to available resources on the SEPM net poverty rate, in level and trend. The rate declines by about 1.5 percentage points on average. There is very little change in the impact over time from 2004 to 2019, reflecting little change in the amount and distribution of bank balances relative to total household spending.[30]

Table 3 also shows estimates of unused credit calculated with two different imputation methods from the SCF, with little difference between them (see the online appendix). For the main method, median unused credit is again zero or small for households with heads under age 65 but often sizable for households with elderly heads. Mean unused credit is again much higher than median values, reflecting right-skewed distributions, and is generally modest for the non-elderly but greater for the elderly. Figure 9 shows the impact of adding unused credit to resources in addition to bank balances (using the main method), showing that poverty rates are reduced by about 3 percentage points from this addition, a nontrivial reduction. Given the crudeness of the estimates, this is only a rough estimate, but it does establish the potential importance of the issue. Interestingly, the impact varies little over time, implicitly meaning that credit card non-utilization (in dollar terms) has not changed very much for lower-income families.[31] Nevertheless, the poverty rate, even if all bank balances were used and all

30. Results omitting the elderly (available upon request) are very close to those in figure 9.

31. The approximate constancy of unused credit is a result of offsetting fluctuations from year to year in the proportion with cards, the proportion of those with cards but zero balances, and the utilization rate.

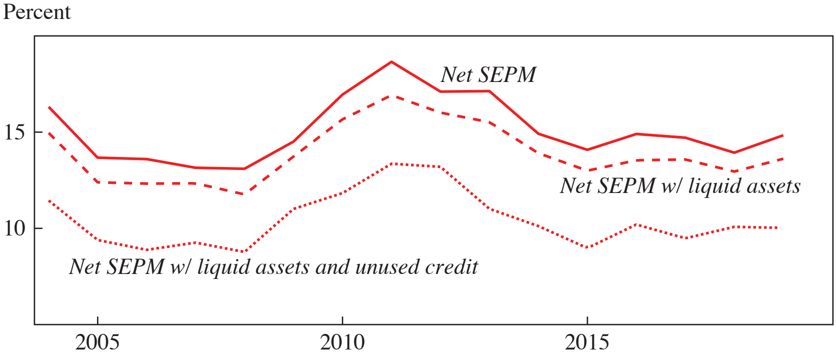
Table 3. Liquid Assets and Unused Credit for Bottom Quartile of Households, 2017–2019

	Under age 65	*Age 65 or older*	*Total*
Owners w/mortgage			
Median			
Liquid assets	0	47	0
Unused credit	506	4,625	1,222
Unused credit, alternative imputation	0	3,039	565
Mean			
Liquid assets	1,011	4,346	1,966
Unused credit	2,862	6,264	3,836
Unused credit, alternative imputation	2,277	4,002	2,771
Positive liquid asset balance (%)	44.5	54.0	47.2
Positive credit balance (%)	22.3	29.8	24.4
Owners w/o mortgage			
Median			
Liquid assets	0	370	1
Unused credit	352	4,625	1,665
Unused credit, alternative imputation	675	4,625	2,412
Mean			
Liquid assets	3,811	20,038.0	11,852
Unused credit	3,062	5,369	4,205
Unused credit, alternative imputation	3,093	5,065	4,070
Positive liquid asset balance (%)	43.2	58.3	50.7
Positive credit balance (%)	17.4	19.2	18.3
Renters			
Median			
Liquid assets	0	1	0
Unused credit	0	476	0
Unused credit, alternative imputation	0	541	0
Mean			
Liquid assets	739	2,371	970
Unused credit	1,518	3,550	1,805
Unused credit, alternative imputation	1,479	3,170	1,718
Positive liquid asset balance (%)	37.2	50.5	39.1
Positive credit balance (%)	12.3	13.6	12.5
Frequency	4,365	1,893	5,096

Source: Authors' calculations.

Note: Sample is composed of the bottom quartile of the gross expenditure distribution. Having a credit card is imputed based on income and age groups. Unused credit is the difference between an individual's imputed limit and their balance. Credit limits are imputed based on income, age, and credit balance. The alternative imputation of credit limits uses only income and age groups. The sample is weighted by person weights. See online appendix for details.

Figure 9. Net SEPM Poverty Rates with and without Liquid Assets and Unused Credit, 2004–2019



Source: Authors' computations.

Note: SEPM based on adjusted expenditure below the SPM threshold. Resources include SNAP benefits and three in-kind transfers and exclude three types of capped adjustments (work-related and childcare costs, child support paid, and out-of-pocket medical expense). SEPM with geographic cost-of-living adjustment is used. Liquid assets include checking and savings account balances. Unused credit is imputed from the SCF based on income, age, and credit utilization rate.

available credit were utilized, is still 9.6 percent in 2019, leaving almost 31 million individuals still in poverty and without the resources to meet basic needs. This constitutes a particularly resource-deprived group of poor families.

III. Summary and Conclusions

This paper has proposed a new poverty measure that we argue has advantages over income poverty and consumption poverty measures. Our measure is based on observed, realized spending as a measure of the resources available to a household, either alone or supplemented with access to resources from bank balances and credit cards. We argue that it has advantages relative to income measures because it includes in resources spending from credit cards and spending out of liquid bank balances, and it is superior to consumption measures because it does not count illiquid service flows from housing and vehicles as resources and better accounts for households that allocate their consumption differently across years. Empirically, it is preferable to income if CE expenditures are measured more accurately than income in surveys like the CPS. Our measure also has several practical advantages over income poverty measures because it does not require estimation of taxes, adjustments for underreporting of transfers, or the imputation of some in-kind transfers.

We implement our SEPM on the CE data from 2004 to 2019. We find that SEPM poverty rates—based just on total household expenditures in a period—were nearly the same in 2017–2019 as those estimated with income data from the CPS. However, expenditure poverty rates depend critically on exactly where the poverty line is drawn because there is a large mass of households with expenditures only just above the most widely accepted threshold used by the US Census Bureau. Moving the poverty line up slightly to capture those households who are almost poor but not quite poor makes SEPM poverty rates 5 percentage points (about 16 million individuals) higher than those using income. Overall, we find that there are many more low-expenditure households in the United States than low-income households, in percentage terms.

We also assess the ability of households to escape poverty by drawing on available liquid bank balances and by using available, but unused, credit debt to finance purchases of basic goods. Many low-income households already do that, but some do not use all the potential borrowing they could. We find that bank balances are quite small and, when counted toward ability to escape poverty, make only a small difference in reducing poverty rates. But we find that available credit card borrowing could potentially lower poverty rates further by up to 3 percentage points. However, the arguably most important finding is that even if households were to draw down their liquid assets completely and completely max out their credit cards, 9.6 percent of the US population (about 31 million adults and children) could still not afford the set of goods necessary for the basic needs of life. These estimates are highly uncertain because of weaknesses in the data, and much more research is needed on credit cards as an available resource over a relevant time horizon before any definite conclusion can be reached.

We suggest that our work be considered only as a preliminary, initial investigation of our new conceptual measure. There are many data issues with the CE that make implementation of our measure difficult, and better data are needed to implement what we regard as the best approach to measuring poverty. Further work should result in improved measures of estimated poverty in the United States.

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The Supplemental Expenditure Poverty Measure:

A New Method for Measuring Poverty

Appendices

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Supplementary Appendix 1: Main

This Appendix discusses treatment of data from the Consumer Expenditure Survey. For definitions of resources for the CPSP historical series using ASEC data, see Fox et al. (2015).

The Consumer Expenditure Survey (CE) is a nationally representative survey of U.S. consumer units conducted by the U.S. Bureau of Labor Statistics designed to produce expenditure weights for the consumer price index. It conducted five quarterly interviews of households selected for the survey which we label Q1-Q5, and with the first interview just a "bounding" interview, but the BLS stopped that in 2015 and now just has four quarterly interviews (labeled Q2 to Q5). We use CE data starting in 2004, the first year that the BLS starting imputing income for the (large number) of missing income values, which we use to compare to our expenditure series. Imputation of income in the CE is an important feature of the data and the distribution of income on the data files changed markedly in 2004. Our last year of data is 2019. The CE collects data on expenditure, income, and a limited number of asset and debt variables.

A.1 Survey Calendar Year Dating

Each CE interview period asks about the prior three months. The interviews done in the first quarter (Jan-Mar) reach back into the prior calendar year. We follow Garner and Gudrais (2018) and define the data year as the year of interview for the last 3 quarters of the year, and define the data year as the prior year for interviews from the first quarter. Any CPI adjustment is based on the calendar data year.[1] For the CPS, the data year is the year prior to the March interview year.

A.2 Sample Units

For CE data we use the consumer unit CU, a unit sharing resources. BLS defines it as follows: "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." BLS https://www.bls.gov/cex/csxgloss.htm, cited 1-27-22.

The Center for Poverty and Social Policy (CPSP) ASEC comparison files use the SPM poverty unit as constructed by Fox et al. (2015). These are family units sharing resources, broadening the definition of families to include unmarried partners and their families, unrelated children under 15, and foster children under age 22. See Fox et al. for more details.

A.3 Weights

We construct our samples on a consumer unit basis (one record per consumer unit) and weight them by unit size when computing proportion of persons poor.

For the CE data, we use the fnlwg21/4 for consumer units for each quarterly observation. It is divided by four so that sum of weights of all 4 quarters is the number of CU units in that year. For proportions of persons we multiply that weight by the number of members in the CU unit

Perpopwt=fnlwgt21/4*fam _size

For the CPSP ASEC data, the population numbers published numbers are on a person basis and use the marsupwt (March supplement weight) on a person level file. To make a method more comparable to the CE method, we extract a sample with one record per SPM unit and construct a weight equal to the SPM unit weight, times the number of persons in the unit,

[1] As noted in the text, we have put several of our variables into real dollars for convenience in comparisons across years, but price adjustments have no effect on our poverty rate calculations.

SPM_perWeight = SPMu_Weight* SPMu_NumPer.
This produces poverty rates weights very similar to those using the marsupwt on the full sample of persons (within .001).

For the graphs and tables of children or elderly in poverty, we construct the weight based on SPMu_Weight times either number of children in the unit or number of elderly (age>64) in the unit.

B Resources

After 2004, the CE uses a method to impute income described on the CE website. For many aggregates, they prepare 5 imputations and provide a mean imputation. We used the mean of the imputations.

B.1 Income

In CE, gross income is money income and selected money receipts received in the 12 months prior to interview for all members of the CU age 14 or over. Income is asked in the Q2 and Q5 interviews.

B.2. Expenditures

In the CE, expenditures are aggregate outlays for each quarter (etotalcq+etotalpq) multiplied by 4 to annualize it. Each quarter is treated as an independent observation. Outlays come closer to out-of-pocket spending than BLS "total expenditure." Outlays include interest, principle and down payments for housing and vehicles and excludes the purchase price. For other durables the purchase price is included as an outlay. (E.g. for an early discussion, see Rogers and Gray, 1994, *Monthly Labor Review* Vol. 117, No. 12 (December 1994), pp. 32-37).

B.3 In-kind aid

We assume the amount for Food Stamps (SNAP) is represented in food expenditures. We impute the value of four in-kind aid programs which are not represented in CE expenditures, to be consistent with the SPM, which imputes values for them. The first three are the National School Lunch Program, the Women, Infants, and Children program (WIC), and the Low Income Heating Assistance Program (LIHEAP) program. The CE does not ask about participation in these programs, so participation must be imputed. The CPS does ask participation in all three, so we imputed participation from the CPS. We follow the methods of Garner and Gudrais (2018), who imputed participation from the CPS by estimating participation equations on the CPS and using the estimated equations to impute participation to the CE, and Fox et al. (2015, Appendix) whose methods for historical imputation from the CPS are used. After imputing participation in the three to the CPS, we impute values for benefits for imputed participants for all three using the same data and methods described in the just-referenced papers, who also imputed benefits. The fourth program is subsidized housing assistance, whose participation is asked on the CE, so we only need to impute a value for the subsidy amount to participants. We modify prior work by imputing the subsidy value as the difference between estimated rent paid and the shelter-and-utility portion of the FCSU, following Fox et al. (2015) with some modifications (this is different from the Census method).

C.1 Adjustments: Medical out of pocket expenditures (MOOP).

MOOP includes health insurance premiums and out-of-pocket medical expenses. We impute MOOP following the CPSP method described in Fox et al. (2015). We define 15 imputation cells based on family size (1,2+), number of elderly (0,1,2+) and a 3 category poverty ratio. For the CPSP ASEC data we use income poverty (pre-tax gross income/SPM threshold <1, 1 to 2, and 2+), and for CE we use expenditure poverty (gross expenditure/SPM threshold <1, 1 to 2, and 2+). From the CE we compute the deciles of MOOP expenditure in each cell, and randomly assign a value to all in the cell. The MOOP expense is capped at a maximum real value times family size.[2] We differ from Fox et al. in that we use three poverty ratio groups whereas CPSP uses two (poverty ratio <2, 2+), which we found to make a difference and to improve the imputation for poverty calculation purposes. We use three groups because adjustments have different impacts for expenditure poverty and income poverty and we wanted a finer distinction across poverty groups. This was done for CE and ASEC.

We make a correction to values prior to 2014 when the CE made a change in the survey that resulted in greater reporting of health insurance. BLS concluded that the new survey questions were an improvement, so we inflate prior values of the health insurance component by 26% so that it is consistent over time. See the Supplementary Appendix 2.

C.2 Adjustments: Child Care and Work Expense

We followed the CPSP method described in Fox et al. (2015) to impute to both CE and ASEC households. Child care cost is computed from CE data and by cells based on number of children, family size, and a three category poverty ratio (<1, 1-2,2+) using a gross income poverty ratio for ASEC and using a gross expenditure poverty ratio for CE. These are imputed to households based on the probability of using paid childcare. Annual work expenses are based on annual weeks worked times 85% of median weekly work expenses estimated from the SIPP. The sum of child care and work expense is capped at the earnings of the lower earner of the head or spouse.

C.3 Adjustments: Child Support Paid

Child support paid is deducted from resources. (Child support received is counted as income.). Child support is measured in both the CE and ASEC surveys.

C.4 Adjustments: Taxes paid

Taxes paid for federal, state and local, and FICA are deducted from income for SIPM calculations for both the ASEC and CE. For the CE, we did our own calculations using the NBER TAXSIM program. For the SEPM, we look at expenditures not including FICA but make no other tax adjustment because expenditures are already on an after-tax basis.

D.1 Poverty Thresholds

We use the SPM thresholds from the Census Bureau. These are based on CE data for expenditure for the basic bundle of food, clothing, shelter, utilities plus a little more. The SPM threshold is equivalence scaled based on family size and single parenthood. See Fox et al. (2015). The threshold is revised annually and is not anchored in real terms. That is, in any year we compare nominal adjusted income or expenditure to the nominal threshold. The thresholds are adjusted for geographic differences in cost of living. The ASEC adjustment (metadj) is based on median gross rent differences. The CE geographic adjustment is based on area differences in HUD Fair Market Rent (FMR) differences for two-bedroom rental units. See Supplementary Appendix 3. To make our CE and ASEC poverty thresholds consistent with each other, we normalized the geographic cost of living adjustment to have a weighted mean of one in each year, for each survey separately.

D.2 CPI

[2] We use the 2011 maximum of $6,700 as in Fox et al. (2015) but put it in real dollars for every year.

Although CPI adjustments are not needed for SPM poverty measures over time (because. both the threshold and resources change together in nominal terms), when we report dollar values, they are adjusted to 2014 dollars using the annual CPI-U-RS for ease of comparison.

E.1 Liquid Assets

The CE Survey collects liquid asset data in the final interview for each consumer unit. This is the 5th interview until 2015 and relabeled as the 4th interview after 2015. We construct estimates of liquid assets for each unit by adding balances for checking account, money market accounts, and savings account. Respondents who said that they did not have a particular asset or account are "valid blanks" and were assigned zero for that asset. For years prior to 2014, we sum the values reported in the survey for checking and savings. For years 2014 and later, respondents were asked for the sum of liquid balances.

If a respondent was a nonresponse (refused, said "don't know" or nonresponse) they were offered the option of giving an answer by bracket category. Of this group of initial nonrespondents, some provide a bracket value and some do not. Those who do not are treated as missing. For those who provided a bracketed amount, we then imputed an amount to the bracket category by assuming that the distribution of amounts within a bracket category is the same as the distribution of amounts from those with continuous data that fell within that bracket. This was done separately by year and by official poverty status (the same three income ratio groups used for the MOOP imputation). For example, the lowest bracket response was 0-500 dollars. Based on the continuous data for those with 0-500 dollars in the income/poverty threshold<1 group, 96% of households were zeros and the rest positive. So for the bracketed data 0-500 asset households in the poorest group, we randomly assigned 96% to zero, and the rest to median value for those with positive values in the bracket. For higher brackets, we assigned the median asset value for those in the bracket group, done separately by poverty status. To be clear, this imputation applies only to the bracketed cases—we used the reported value for nonbracketed cases if liquid assets were coded as valid data or "valid blanks" and assign missing if no response and no bracket was reported.

E.2 Unused Credit

The CE Survey collects information on credit debt (=balance) in the final interview for each consumer unit. We measure credit card balances for major credit cards and store credit cards. The procedure is the same as that for liquid assets. We compute the credit balance (amount owed) for those with valid data and assign zero to "valid blanks." Many households have a zero balance. Credit card interest and fees are not included in annual expenditure in the CE.

Unused credit is defined as the unit's credit card limit minus credit card balance for those with a credit card. The CE does not collect data on either limits or whether a household has a card, so we must impute both (for the latter, only for those with zero balances since those with positive balances have a card, by definition). We use data from the Survey of Consumer Finances (SCF) to estimate percentage of consumer units with credit cards, credit limits, and unused credit. We compute two alternative measures of credit limits. These estimates are based on income and age groups. We then impute these values to CE based on these imputation groups.

Estimating from SCF.

1. We form 15 cells based on income quintiles (computed each available year), age group (<45, 45-64,65+). Call these "imputation cells". Data is at a household level, so age is age of the reference person.
2. In each imputation cell we compute proportion who have major credit card or store credit cards.
3. Define three credit balance groups: cc balance group=1 if have no credit card, =2 if have a credit card and zero balance, =3 if have a credit card and a positive balance.

4. In each cell (imputation cell by credit balance group): For those without cards, credit limit is zero. For those with cards, compute the median credit limits and the median credit utilization rate (CUR) equal to the credit balance/limit. Thus we have 45 cells (15 imputation cells by 3 credit balance groups).
5. The SCF is fielded every 3 years. We adjusted values to 2014$ and assumed values applied until the subsequent survey. Also, the SCF provides 5 replicates for these credit and income variables. We use the mean of the replicates.

Imputing to CE

1. In CE we compute an imputation group indicator using same dollar income quintile limits as above and age groups. (15 groups) The procedure assumes that any positive balance reported in CE is accurate. For units without a positive balance, we then impute "having a credit card with zero balance" to consumer units so that the proportion with credit cards matches the proportion from SCF in each imputation group. We then impute limits to those who are imputed to have cards.

2. Let cchave indicate having a credit card. Assign cchave = 1 if the unit reports having a positive balance. For those without a card or with a zero reported balance, impute cchave=1 randomly within each imputation group such that the total proportion imputed to have a card matches the group proportion who have a card in SCF. For example, in the lowest income and youngest age group , the SCF shows 45% have cards. In the CE we have 17% with positive credit card balances. So from the CE units with zero balance or no card, we impute cchave=1 and zero balance to an additional 28% so that the CE mean cchave equals 45%. (Note that this results in matching the proportion who have a card, but not necessarily the proportion with zero balance because the two surveys differ in the proportion with a positive balance.)

3. We next define credit balance groups and compute credit balance: for those CE units with positive balance, we assign ccbal=reported balance. For those CE units imputed to have a card and zero balance, we assign ccbal=0. And for those CE units imputed to have no card, we assign ccbal=0.

We assign credit limits to the groups based on credit limits from the SCF, for each of our imputation groups by credit balance group. If unit has no card (cchave=0) then cc_limit=0. If unit is imputed to have a card but zero balance (cchave=1 but ccbal=0) we assign the median SCF credit limits by imputation group. If units have a card and positive balance, we compute two alternative limits. Our primary method assigns cc_limit = reported balance/ estimated CUR for each group, where the CUR is the median CUR computed from the SCF for each imputation group. This imputation is thus based on income, age, and reported credit card balance. As an alternative, we assign the limit not using CUR, but the median limit based only on imputation group, that is, only on income and age groups.

E.4 Excluding Vehicle Payments

Vehicle outlays for new, used, and other vehicles are included in expenditures. For our sensitivity test, we exclude vehicle payments for finance charges and interest, and payments for reduction of principal on vehicles. We refer to these two items as "vehicle payments" in the text. We do not exclude down payments or other vehicle expenses. Our examination of the distribution of payments show a large right tail so we cap the payments, somewhat arbitrarily, at the 33rd percentile for the sample that had positive payments. Valid blanks are assumed to be zeros.

Appendix Table A3 and Appendix Figure A1 show the results. Table A3 shows that, average over the final three years of our data, 7.8 percent of those in the bottom quintile of the net expenditure distribution had positive payments with a small mean of $225 if zeros are included but a sizable $2,905 for those with positive payment. Uncapped, the latter mean is $3,515. Without interest alone, the poverty rate rises by only one-tenth of a percentage point. Without interest and payments on principal, the poverty rises by about one percentage point. Figure A1 shows the addition to be about the same in all years of our data and hence not to alter trends.

Supplementary Appendix 2: Medical Out-of-Pocket Expenditures (MOOP)

MOOP is measured using the Consumer Expenditure Survey (CE) using consumer units (CU). These expenditures must be imputed to CPS data as done in the Columbia Center on Poverty and Social Policy (CPSP) historical series (Fox, et al. (2015)). Although MOOP can be directly measured in the CE, we impute it in the same way for both data sets. This makes the series more comparable. In addition, the raw recorded data on MOOP in the CE has some significant outliers and negative values. These are smoothed in the imputation.

In the CE, MOOP includes medical out-of-pocket expenditures on medical services, supplies, and drugs, and expenditures on health insurance. The imputation process is the same as that used in the CPSP historical series, except for items 1 and 5:

1. In the CPSP method, the annual mean of MOOP is measured in CE by 10 imputation groups based on family size (1,2 or more), number of elderly (0,1, 2 or more), and poverty status (income<=200% OPM, or >200% OPM). Prior to taking the mean, negative MOOP values are recorded to zero. We instead use 15 groups based on family size, elderly, and either a 3 category income poverty status for the ASEC data, or a 3 category expenditure poverty status for the CE (<=100% SPM threshold, 100-200% SPM threshold, >200% SPM threshold)

2. The mean MOOP is imputed by year by imputation group. The deciles of MOOP are computed for each imputation group, then randomly assigned to members of the group. This preserves the variation within each group,

3. Following the imputation, the MOOP is capped at real value of $6700 (in 2011 dollars) per person in the household (consumer) unit.

4. The original CPSP series changes in 2013 to use the Census Research File. To make our series consistent, over time, we impute MOOP using the same method over our time frame 2004-2019.

5. We make an allowance for change in CE survey instrument in 2014 that revealed underreporting of health insurance. We adjust CE health insurance expenditures upward by 26% in the years prior to 2014 when the instrument was changed. This adjustment affects imputations for both our CE series and our revised CPSP series. (See Foster (2016)).

Supplementary Appendix 3: Geographic Cost of Living Adjustments for CE

The Supplemental Poverty Measure (SPM) adjusts poverty thresholds for cost of living in different locations. The Census bureau makes this adjustment based on 5 year averages of rental costs for a standardized unit in various MSAs and areas based on rental data from the American Community Survey (ACS). These adjustments are then applied to poverty thresholds based on the residence of families as identified in the Current Population Survey (CPS ASEC).[3] The CPS is used to calculate family resources which are then compared to the adjusted thresholds to determine poverty rates. The poverty threshold for an area is adjusted by multiplying the rent index by the proportion of shelter cost in the SPM threshold (Renwick 2011). Specifically, for area i, the
adjusted SPM threshold_i =
(sheltershare* ($\text{rentindex}_i/\text{rentindex}_{\text{national}}$) +(1-sheltershare)) * unadjusted SPM threshold.

We are using data from the public use Consumer Expenditure Survey (CE). This uses a different geographic coding so that the CPS adjustments cannot be easily applied. The residence information in the CE is less precise than that in CPS to protect confidentiality of respondents. The CE includes the state of residence for most people, an indicator for SMSA residence, and the Primary Sampling Unit codes for some respondents.[4] We develop an annual measure of median rents for these locations based on county level HUD Fair Market Rent (FMR) surveys for 2 bedroom apartments. We compute the mean FMR by location, weighted by county population. We then divide this mean FMR by the national population weighted mean to form a rental index that serves as an input to our geographic adjustment for poverty thresholds as explained above. These geographic factors are assigned to consumer units in the CE as follows:

By PSU if identified,
By State and metro/non-metro status if PSU is not identified,
By national average if state is not identified.

Table G1 shows values of the rental index by state and metro status for 2004 and 2019. There is some variation over time but large variation across areas. The rental index is higher in the Northeast. In 2019 the index varies from .587 in non-metro Tennessee to 1.217 in non-metro Hawaii, and from .691 in metro Kentucky to 1.799 in metro Hawaii.

Table G2 shows the PSUs identified in the CE and the mean rent index. The PSUs have shifted slightly over time, so cannot be compared directly, but there appears to be some small differences between the mean geographic adjustments in 2004 and 2019. In 2004 the index varies from 0.98 in Cleveland-Akron, OH to 1.963 in San Francisco-Oakland-San Jose, CA. In 2019, the range is slightly larger, ranging from 0.814 in St. Louis, MO-IL to 2.156 in San Francisco-Oakland-Hayward, CA.

Table G3 shows the rent index by state and metro status. There is some variation across the surveys by area but the indices are broadly consistent.

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[3] From Fox (2020), The Supplemental Poverty Measure: 2019 Current Population Reports P60-272 September 2020

[4] For example, in the 2018 public use CE data, State is identified for 89.5 % of responding units, and PSU is identified for 40% of the units.

Table G1
Rent Index by Geographic Area In the CE Survey

	Year			
	2004		2019	
	non metro	metro	non metro	metro
New England Region				
Connecticut	1.062	1.374	1.006	1.153
Maine	.821	1.176	.732	.893
Massachusetts	1.062	1.408	1.184	1.393
New Hampshire	1.029	1.305	.961	1.204
New Jersey		1.297		1.317
New York	.8	1.399	.727	1.421
Pennsylvania	.686	1.037	.658	1.185
Rhode Island	1.249	.943		.947
Vermont	.923	1.137	.899	1.285
Midwest Region				
Illinois	.583	1.163	.636	.966
Indiana	.636	.978	.644	.899
Iowa	.625	.665	.618	.754
Kansas	.608	.749	.658	.766
Michigan	.647	.998	.669	.811
Minnesota	.665	1.101	.676	.97
Missouri	.548	.777	.617	.797
Nebraska	.602	.744	.632	.772
North Dakota	.571	.796	.784	.758
Ohio	.643	.908	.647	.704
South Dakota	.667	.728	.64	.742
Wisconsin	.641	1.063	.674	.958
Southern Region				
Alabama	.522	.669	.589	.714
Arkansas	.549	.628	.593	.693
Delaware	.863	.986		1.066
Washington D.C.		1.422		1.542
Florida	.757	1.032	.739	1.069
Georgia	.634	1.073	.622	.896
Kentucky	.552	.632	.594	.691
Louisiana	.55	.669	.627	.779
Maryland	.85	1.196	.891	1.312
Mississippi	.555	.651	.644	.729
North Carolina	.647	.802	.658	.783
Oklahoma	.544	.715	.65	.713
South Carolina	.629	.676	.642	.766
Tennessee	.539	.715	.587	.769
Texas	.591	1.006	.685	.93
Virginia	.665	1.201	.689	1.339
West Virginia	.56	.942	.617	1.106
Western Region				
Alaska	1.173	.748	1.114	1.155
Arizona	.746	1.019	.709	.893
California	.858	1.414	.912	1.566
Colorado	.858	1.12	.864	1.183
Hawaii	1.336	1.061	1.217	1.799
Idaho	.671	.496	.67	.73

Montana	.709	.738	.711	.771
Nevada	.938	1.082	.796	.888
New Mexico	.618	.798	.69	.789
Oregon	.766	.9	.716	.993
Utah	.766	.823	.73	.815
Washington	.772	1.067	.784	1.319
Wyoming	.673	.826	.764	.783

Notes: Rent Index is the mean of HUD Fair Market Rents aggregated to CE areas, weighted by county population, as proportion of national average FMR each year. The metro means are for metro areas not specifically identified.
Table transferred to word doc with asdoc program; command: asdoc table regstate metro year if year == 2004 | year == 2019, c(mean geoadj) save(geoadjustmenttable.doc) replace

Table G2
Primary Sampling Units in the Consumer Expenditure Survey and Rental Costs In 2004 and 2019

Mean Geographic Rent Adjustments for Primary Sampling Units in 2004

PS_name	Geoadjust (mean)
Atlanta, GA	1.200
Baltimore, MD	1.062
Boston-Brockton-Nashua, MA-NH-ME-CT	1.398
Chicago-Gary-Kenosha, IL-IN-WI	1.211
Cleveland-Akron, OH	0.980
Dallas-Forth Worth, TX	1.096
Detroit-Ann Arbor-Flint, MI	1.058
Houston-Galveston-Brazoria, TX	0.987
Los Angeles Suburbs, CA	1.032
Los Angeles-Orange, CA	1.312
Miami-Fort Lauderdale, FL	1.099
Minneapolis-St. Paul, MN-WI	1.160
New Jersey Suburbs	1.385
New York, NY	1.416
New York-Connecticut Suburbs	1.492
Philadelphia-Wilmington-Atlantic City, P	1.165
Phoenix-Mesa	1.063
San Diego, CA	1.421
San Francisco-Oakland-San Jose, CA	1.963
Seattle-Tacoma-Brem	1.142
Washington, DC-MD-VA-WV	1.401

Mean Geographic Rent Adjustments for Primary Sampling Units in 2019

PS_name	Geoadjust (mean)
Anchorage, AK	1.146
Atlanta-Sandy Springs-Roswell, GA	0.930
Baltimore-Columbia-Towson, MD	1.247
Boston-Cambridge-Newton, MA-NH	1.467
Chicago-Naperville-Elgin, IL-IN-WI	1.073

Dallas-Fort Worth-Arlington, TX	0.954
Denver-Aurora-Lakewood, CO	1.239
Detroit-Warren-Dearborn, MI	0.848
Honolulu, HI	1.849
Houston-The Woodlands-Sugar Land, TX	0.932
Los Angeles-Long Beach-Anaheim, CA	1.531
Miami-Fort Lauderdale-West Palm Beach, F	1.235
Minneapolis-St.Paul-Bloomington, MN-WI	0.994
New York-Newark-Jersey City, NY-NJ-PA	1.501
Philadelphia-Camden-Wilmington, PA-NJ-DE	1.132
Phoenix-Mesa-Scottsd	0.909
Riverside-San Bernardino, Ontario, CA	1.110
San Diego-Carlsbad, CA	1.570
San Francisco-Oakland-Hayward, CA	2.156
Seattle-Tacoma-Belle	1.441
St. Louis, MO-IL	0.814
Tampa-St. Petersburg-Clearwater, FL	0.963
Washington-Arlington-Alexandria, DC-VA-M	1.532

Notes: Tables transferred manually from Stata using copy table command..

Table G3

Comparison of 2018 CE and CPS ASEC geographic rent adjustments based on rent costs

	CE Rent Index		ASEC Rent Index	
	non metro	metro	non metro	Metro
Alabama	.604	.712	.608	
Alaska	1.099	1.187	1.185	1.274
Arizona	.718	.886	.65	1.132
Arkansas	.597	.703	.647	.743
California	.934	1.442	.979	
Colorado	.868	1.082	.986	
Connecticut	1.008	1.169	1.108	
Delaware		.979		
Washington DC		1.57		
Florida	.753	1.009	.63	.858
Georgia	.64	.859	.674	.676
Hawaii	1.219	1.726	1.169	
Idaho	.679	.733	.712	.696
Illinois	.647	1.008	.679	.797
Indiana	.656	.732	.705	.774
Iowa	.623	.756	.66	.839
Kansas	.669	.781	.68	.898
Kentucky	.605	.692	.636	.695
Louisiana	.65	.778	.665	.777
Maine	.739	.88	.758	
Maryland	.932	1.353	.941	
Massachusetts	1.271	1.302	1.039	.915
Michigan	.682	.779	.779	.755
Minnesota	.688	.941	.753	.795
Mississippi	.66	.748	.639	.779
Missouri	.63	.79	.682	.66
Montana	.715	.77	.794	.821
Nebraska	.628	.767	.707	.816

Nevada	.814	.926	.865	.958
New Hampshire	.978	.941	1.034	
New Jersey		1.329		1.179
New Mexico	.693	.807	.751	
New York	.747	1.334	.754	.78
North Carolina	.673	.771	.667	.784
North Dakota	.798	.751	.863	.851
Ohio	.658	.712	.683	.696
Oklahoma	.656	.712	.667	.72
Oregon	.728	.959	.8	.909
Pennsylvania	.677	.928	.704	.815
Rhode Island		.952		
South Carolina	.663	.752	.641	
South Dakota	.641	.744	.674	.839
Tennessee	.598	.763	.656	
Texas	.694	.9	.78	.844
Utah	.728	.815	.709	.706
Vermont	.909	1.326	.958	
Virginia	.696	1.163	.668	.836
Washington	.778	1.148	.711	.823
West Virginia	.631	.675	.676	.679
Wisconsin	.688	.813	.734	
Wyoming	.775	.797	.787	.849

Notes: Rent Index is the mean of HUD Fair Market Rents aggregated to CE areas, weighted by county population, as proportion of national average FMR.
Source for ASEC data: https://www2.census.gov/programs-surveys/demo/tables/p60/268/pov-threshold-2018.xlsx

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Table A1: Means of SEPM and SIPM Poor, 2017–2019

	SEPM	SIPM
Median Resources		
Gross Expenditure or Gross Adjusted Income	16,888	11,101
Net Expenditure or Net Adjusted Income	13,469	8,650
Means Adjustments and In-Kind		
Adjustments		
MOOP	2,680	3,073
Work Expenses + Childcare	1,252	900
Age	53	51
Child Support	9	83
Total Adjustments	3,941	4,056
In-Kind Transfers		
School Lunch Subsidy	188	151
Energy Asst.	28	32
WIC	43	31
Housing Subsidy	601	648
Total In-Kind	860	863
Demographics		
Home		
Family Size	2.705	1.969
Children	0.770	0.458
Adults	1.935	1.511
Presence of Elderly	0.334	0.305
Own w/ Mortgage	0.111	0.160
Own w/o Mortgage	0.324	0.266
Renters	0.564	0.574
Education		
< High School	0.269	0.215
High School	0.541	0.521
AS, BA, or More	0.190	0.264
Race		
White	0.510	0.494
Black	0.186	0.194
Hispanic	0.231	0.221
Other Race	0.072	0.091

Notes: Values are expressed in 2014 dollars. Gross Expenditure is total household spending on all items in the year. Gross Adjusted Income is total income in the year after-tax and with SNAP benefits added. Net Adjusted Income includes four in-kind transfers and exclude three types of capped adjustments. Weighted by household weights. See Appendix.

Table A2. Impact of Transfers on Poverty, 2019

	Full Sample		Children		Elderly	
	SEPM	SIPM	SEPM	SIPM	SEPM	SIPM
Baseline SPM	0.137	0.121	0.167	0.121	0.163	0.157
Remove						
EITC	0.155	0.136	0.206	0.155	0.164	0.158
EITC, SSI	0.160	0.144	0.210	0.163	0.168	0.164
EITC, SSI, Welfare	0.160	0.146	0.211	0.166	0.168	0.165
EITC, SSI, Welfare, SNAP	0.168	0.152	0.224	0.178	0.171	0.168
EITC, SSI, Welfare, SNAP, In-Kind	0.177	0.160	0.238	0.192	0.178	0.174
Sample Size	16032	63092	4529	21250	4666	16031

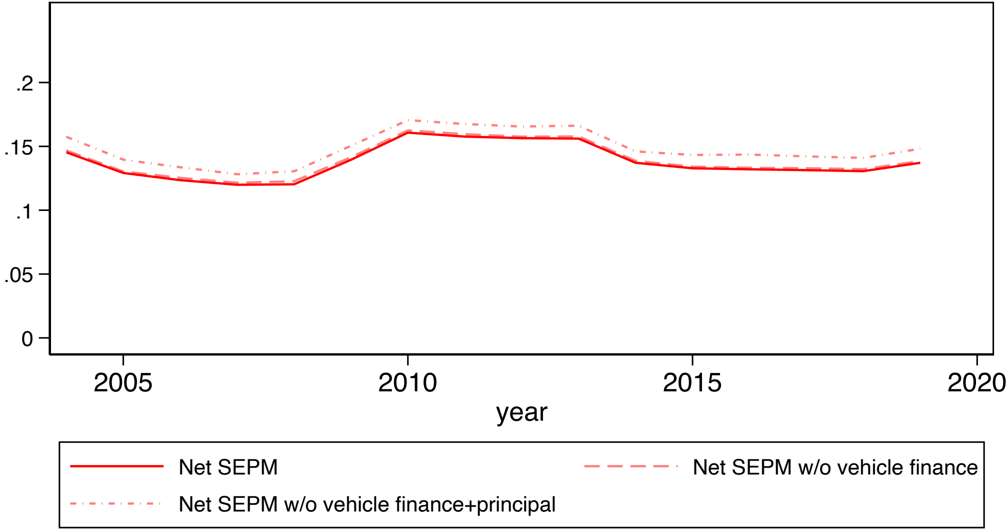
Notes: Values are weighted by household unit weight times number of persons, number of children or number of elderly in the unit. See Data Appendix for details. Welfare is cash welfare, primarily TANF. In-Kind transfers include WIC, housing assistance, energy assistance, and school lunch.

Table A3 Poverty Wiith and Without Vehicle Payments for 2017-2019

	Mean
Vehicle Payments, Bottom Quintile	
Capped Paymenet, All	225
CappedPayments if Positive	2905
Not CappedPayments	273
Not Capped Payments if Positive	3515
Proportion with Positive Payments	0.078
Sample size	12861
Poverty Rates	
SEPM	0.133
Without finance payments	0.134
Without finance and principal paymnt	0.143
Sample Size	62867

Notes: Bottom quinitile of Gross (Total) Expenditure. Vehicle finance and principal payments are for all vehicles (used, new,and other) Downpayments are not deducted. Positive payments are capped at the 33rd percentile for the full sample. Weighted by person weight.

Figure A1: CE Net SPM Poverty Rates with and without Vehicle Payments



SEPM including in-kind aid and adjusted for SPM expenses and geographic COL
Vehicle finance and principal payments are for all vehicles (used, new,and other)
Downpayments are not deducted. Positive payments topcoded
at median for full sample, about $3500-4000 per year