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# How Should Health Insurance Transfers be Included in Income Measurement?

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**Abstract:** Valuing in-kind transfers is a perennial challenge for income measurement. This paper considers key issues in estimating the value of health insurance transfers from employers or the government for families and individuals. I begin by very briefly considering different reasons for measuring income as they relate to the valuation of health insurance transfers. My focus throughout the paper will be on measuring income for purposes of understanding income inequality. Next, I consider the problem of valuing transfers in practice: what have different agencies and researchers done to address this problem? Some of these income measures include the health insurance transfers and some do not; there have also been changes over time. I then discuss recent relevant academic research. This review suggests that the two leading conceptual approaches are a "market value" approach that includes average program spending on medical care in a beneficiary's income and a "recipient value" that is based on beneficiary willingness-to-pay for benefits that has been largely infeasible, in practical terms, until quite recently. I discuss the theoretical challenges that make it so hard to value health insurance transfers. I conclude that there is no single right approach to valuing transfers, and that the choice of the market value approach or, when feasible, the recipient value approach must be dictated by the purpose for which income is being measured.

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*[Suppose w]e are asked to measure the relative incomes of an ordinary officer serving with his troops and a Flügeladjutant to the sovereign. Both receive the same nominal pay; but the latter receives quarters in the palace, food at the royal table, servants, and horses for sport. He accompanies the prince to theater and opera, and, in general, lives royally at no expense to himself and is able to save generously from his salary. But suppose, as one possible complication, that the Flügeladjutant detests opera and hunting.*

*The problem is clearly hopeless.*

- Henry C. Simons, "Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy" (1938:52)

## 1. Introduction

Should health insurance transfers such as Medicare, Medicaid, and employer-provided coverage be counted as income, and if so, how? These are complex questions which arise from the fact that health insurance is not cash but rather an in-kind transfer, as well as from the ways in which health insurance is not like other goods. First, unlike some in-kind transfers such as SNAP, health insurance transfers are not at all fungible. Medicaid and Medicare benefits cannot be traded for cash, even at a discount. Second, recipients may value them at only a fraction of their face value. Third, even their face value is not easily measured, because insurance has both an *ex ante* and an *ex post* value. A health insurance policy with an *ex ante* premium of $10,000 may provide $100,000 of medical care *ex post* – or it may provide nothing.

These difficulties notwithstanding, health insurance transfers must be considered when measuring income. Health spending in the US in 2020 was $4.1 trillion, or one-fifth of GDP (Hartman et al. 2022). More than two-thirds of this spending is on health insurance and threequarters of spending on insurance is done by businesses or governments on behalf of households that are the beneficiaries of this coverage (Hartman et al. 2022; Office of the Actuary, Center for Medicare and Medicaid Services n.d.).[1] Thus, health insurance transfers are about half of all health spending, or $2 trillion; this amount is equal to 10 percent of aggregate personal income (U.S. Bureau of Economic Analysis 2021).

How, then, to approach this problem? Ultimately, whether and how to include health insurance transfers to households from businesses and governments in the income of those households depends on why income is being measured. There are multiple reasons income is measured: to monitor aggregate economic activity; to understand how economic well-being is

[1] The estimate of aggregate health spending compared to GDP is from Hartman et al. (2022), Exhibit 2 and the fraction of that spending that is for health insurance is from Hartman et al. (2022), Exhibit 3. The breakdown of health insurance spending by payer – businesses, households, government – is from the Office of the Actuary, Center for Medicare and Medicaid Services: it is from Table 16, "National Health Expenditure Amounts and Average Annual Growth From Previous Year Shown By Type of Sponsor.xlsx," downloaded from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-andReports/NationalHealthExpendData/NationalHealthAccountsProjected on Nov 17, 2022.

distributed; to track the extent of poverty; to determine who qualifies for means-tested programs; and to impose taxes. Each of these purposes raises distinctive considerations about how income should be measured and what should be done about in-kind transfers in general, and health insurance in particular. And different types of health insurance transfers – employer contributions to health insurance premiums, Medicare, and Medicaid – raise different conceptual and measurement concerns.[2]

I begin by very briefly considering different reasons for measuring income. My focus throughout the paper will be on measuring income for purposes of understanding income inequality. Next, I consider the problem of valuing transfers in practice: what have different agencies and researchers done to address this problem? I review different official income measures and how they treat the value of health insurance transfers, including the estimates from the Bureau of Economic Analysis (BEA), the Census Bureau, and the Congressional Budget Office (CBO). Some of these income measures include health insurance transfers and some do not; there have also been changes over time. I then discuss recent relevant academic research. This review suggests that the two leading conceptual approaches are a "market value" approach that includes average program spending on medical care in a beneficiary's income and a "recipient value" approach that is based on beneficiary willingness-to-pay for benefits. The recipient value approach has been largely infeasible, in practical terms, until quite recently. I discuss the theoretical challenges that make it so hard to value health insurance transfers. I conclude that there is no single right approach to valuing transfers, and that the choice of the market value approach or, when feasible, the recipient value approach must be dictated by the purpose for which income is being measured.

## 2. Background and some history

Why do we measure income?[3] First and foremost, it is an indicator of economic well-being. In the aggregate, measures of national income such as Gross Domestic Product (GDP) per capita reflect the overall productivity of the economy. At the micro level, measuring the distribution of individual or household incomes allows us to go beyond per capita measures to understand how widely economic gains or losses may be distributed. In recent decades, gains have been larger at the top of the distribution than the bottom, suggesting an increase in inequality (Piketty, Saez, and Zucman 2018; Larrimore et al. 2021).

A second reason to measure income, motivating a different vein in the literature, focuses on poverty measurement: comparing household income to a numerical threshold, adjusted for

[2] This review focuses on these three types of health insurance transfers, which are the largest ones in the US. Smaller health insurance transfer programs include the Low-Income Subsidy program for Medicare Part D and Premium Tax Credits for the purchase of Marketplace coverage.

[3] Another reason to measure income in addition to those I discuss here is to determine eligibility for means-tested transfers. Different programs, like Medicaid and SNAP, have different eligibility criteria that use different definitions of income. I do not discuss these definitions in this paper, other than noting here that if the income measure used to define eligibility for a given program includes the value of transfers from another program, this potentially creates a situation in which potential beneficiaries must strategize about the optimal ordering of applications for benefits.

household size and possibly other factors, in order to assess the adequacy of resources at the lower end of the scale.

And, inevitably, we measure income for the purpose of taxing it. Adjusted Gross Income, the IRS definition of household income for tax purposes, does not include the value of health insurance or other in-kind transfers. Tax-related income concepts have nonetheless been influential for other purposes. In particular, the Haig-Simons comprehensive income concept,

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developed in order to help define a base for the income tax (Alm 2018; Haig 1921; Simons 1938), is cited as the conceptual basis for measures of income that researchers use for tracking changes in economic well-being over time (Armour, Burkhauser, and Larrimore 2014; 2013; Burkhauser, Larrimore, and Simon 2012; Larrimore et al. 2021). Modern interpretation of the Haig-Simons framework suggests that the value of health insurance and other in-kind transfers should be counted as income in the Haig-Simons framework because they reflect an increase in potential consumption (Alm 2018: 382).

Looking to the original authors of the Haig-Simons framework, Haig (1921) did not address the treatment of in-kind transfers, but Simons (1938) recognized them as a thorny problem in his treatise on income taxation. Here is Simons on the "conundrum" of in-kind transfers posed by the Austrian economist Friedrich von Kleinwächter in *Das Einkommen und seine Verleitung* (Kleinwächter 1896; in English, *Income and its Distribution*):[4]

> A similar difficulty arises with reference to receipts in the form of compensation in kind. Let us consider here another of Kleinwächter's conundrums. We are asked to measure the relative incomes of an ordinary officer serving with his troops and a Flügeladjutant to the sovereign. Both receive the same nominal pay; but the latter receives quarters in the palace, food at the royal table, servants, and horses for sport. He accompanies the prince to theater and opera, and, in general, lives royally at no expense to himself and is able to save generously from his salary. But suppose, as one possible complication, that the Flügeladjutant detests opera and hunting.
>
> The problem is clearly hopeless. To neglect all compensation in kind is obviously inappropriate. On the other hand, to include the perquisites as a major addition to the salary implies that all income should be measured with regard for the relative pleasurableness of different activities - which would be the negation of measurement. (Simons 1938: 52)

Having decided that the problem of in-kind transfers was insoluble, Simons went on to assert that it was of little practical importance: "Fortunately…such difficulties in satisfactory measurement of relative incomes do not bulk large in modern times" (Simons 1938: 53). He was not wrong about this as far as health insurance was concerned in his own time and place. Health

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[4] I was unable to obtain a copy of the (unpublished) English translation of *Das Einkommen und seine Verleitung*. Kleinwächter survives in English largely through the references to his work in Simons (1938) and, more recently, to discussions by Brooks (2003) and Brooks (2018).

insurance barely existed in the US when the seminal works on income measurement by Haig (1921) and Simons (1938) were written. As of 1940, fewer than 10 percent of Americans had any health insurance coverage (Thomasson 2003). Both men would be dead – Simons in 1949 and Haig in 1953 – before the creation of Medicare and Medicaid in 1965. Thus, it may not be surprising that neither of them dwelt on this problem.[5] But ignoring the problem is no longer an option, given how large transfers of health insurance are now.

## 3. The problem, in practice: Different approaches to measuring income and how they treat health insurance

This section offers a selective review of how different measures of income treat health insurance transfers. I begin with some official measures of income produced by different parts of the federal government: the Bureau of Economic Analysis, the Census Bureau, and the Congressional Budget Office. Next, I consider different income constructs that are used to measure poverty, and the definition of income for tax purposes. Finally, I consider recent studies that integrate survey and administrative data on income in order to estimate trends in inequality and review what these studies have to say about including the value of health insurance transfers in income. Table 1 summarizes how the income measures discussed in this section treat Medicare, Medicaid, and employer-sponsored health insurance.

**BEA Personal Income:** The Bureau of Economic Analysis measure of personal income based on aggregate data is comprehensive, including all private and public health insurance transfers (U.S. Bureau of Economic Analysis 2022b).[6] The drawback of aggregate data, of course, is that it does not readily provide insight into the distribution of economic growth (or decline), as has long been noted; see Fixler and Johnson (2014) for a discussion of this topic, including a summary of the earlier literature.

**Census Bureau Money Income** The Census Bureau publishes annual estimates of household income; see, most recently, Semega and Kollar (2022). The primary income measure for this purpose is "money income," which does not include the value of health insurance or any other in-kind transfers. The Census Bureau does not currently produce estimates of income that include the value of health insurance transfers, but has used various methods to do so in the past. In 1980, amid concern about the growth of welfare programs (Primus 1989), Congress directed the Secretary of Commerce to collect data on in-kind transfers and figure out methods for calculating their value:[7]

[5] Kleinwächter, in contrast, would likely have been aware of social insurance programs including sickness insurance established in Germany in the mid-1880s. The cost of the programs was split between employers, who nominally bore one-third of the cost, and workers, who bore the rest (Khoudour-Castéras 2008). Khoudour-Castéras (2008)

[6] Specifically, the value of employer contributions to health insurance premiums are included in the category "supplements to wages and salaries" and the value of Medicare, Medicaid, and Premium Tax Credits for the purchase of private non-group Marketplace coverage are all included in the category "personal current transfer receipts" as "government social benefits to persons"(U.S. Bureau of Economic Analysis 2022a).

[7] This statement is included as Appendix G on p. 169 of U.S. Bureau of the Census (1991)

> [T]he Secretary of Commerce [is directed] to expedite the program of collecting, through surveys, data on benefits received and data on participation in federally funded, in-kind benefit programs…[the Secretary] is further directed to continue research and testing of techniques for assigning monetary value to inkind benefits and for calculating the impact of such benefits on income and poverty estimates…[and] is also directed to include in survey reports, beginning no later than October 1, 1981, appropriate summaries of data on in-kind benefits and estimates of the effect of in-kind benefits on the number of families and individuals below the poverty level.

There was, of course, already debate in the literature as of 1980 on the valuation of inkind transfers for purposes of income and poverty measurement (T. M. Smeeding 1977;

argues that these benefits – mainly health insurance – may explain relatively low rates of emigration from Germany during this period.

Browning 1976; T. Smeeding and Moon 1980; Smolensky, Stiefel, and Schmundt 1977; Paglin 1980; Browning 1979; T. M. Smeeding 1979). The debate boiled down to whether noncash benefits should be valued at their market price or their cash value in terms of utility to the recipient.[7]

Building on this literature, the Census Bureau's initial report in 1982 outlined three different approaches for incorporating the value of noncash benefits into income and poverty measurement: (1) a "market value" approach equal to average spending on the good; (2) a "recipient or cash equivalent value" defined as "the amount of cash that would make the recipient just as well off as the in-kind transfer"[8]; and (3) a "poverty budget share value" approach that capped the value of the transfer added to household resources at each good's share of household resources for individuals near the poverty line in 1960-1961 (U.S. Bureau of the Census 1982). The report also included estimates of how incorporating the value of food-related transfers (Food Stamps and school lunches), housing subsidies, Medicare, and Medicaid using each of these three approaches would have affected the measured poverty rate in 1979 compared with the standard approach that did not incorporate them at all. The market value approach reduced poverty rates by the most, and the poverty budget share approach by the least. Similar reports using these methods were published annually through 1988 (U.S. Bureau of the Census 1984a; 1985; 1984b; 1986b; 1987; 1988a).

These approaches were criticized on both conceptual and practical grounds (US General Accounting Office 1987; U.S. Bureau of the Census 1986a). However, there appears to have

[7] The intuition underlying these two concepts should be obvious to anyone who has ever given or received an unappreciated gift.

[8] In approach (2), the recipient values were estimated by using data from the 1973-73 Consumer Expenditure Survey to calculate average medical spending within for groups defined by income, family size, age, and insurance status; average spending for those with no coverage or with only limited coverage was treated as the recipient value of benefits for an individual with similar income, family size, and age. This approach yielded recipients values that were on average 58 to 74% of market values (see Table 4 on p. 37 of the 1982 report). The report notes that this is an imperfect approach to the problem. Chiswick (1986: 45-47) offers a detailed and useful critique of this approach.

been little consensus about what the correct approach should be. In December 1985, the Census Bureau hosted a conference on "The Measurement of Noncash Benefits," which included papers by David Ellwood and Larry Summers on "Measuring Income: What Kind Should Be In?" with comments from Alan Blinder and Albert Rees and a paper by Barry Chiswick titled "Evaluation of Census Bureau Procedures for the Measurement of Noncash Benefits and the Incidence of Poverty" with comments from Henry Aaron and Edgar Browning (US Bureau of the Census 1986a). It is worth reviewing these contributions in some detail; they are remarkable for their lack of consensus, beyond a shared rejection of the Census Bureau's then-current methods, and also because they raise questions that remain unanswered today.

Ellwood and Summers argued that from a theoretical perspective, a recipient value approach was preferable to market value for valuing most in-kind transfers; but in the case of health care spending, which they discussed at length, they suggested that the value of health insurance transfers should not be included in income; and, for consistency, that out-of-pocket health care spending on medical care by households should be deducted from income.

The other conference participants had very different views. Blinder and Rees both objected to excluding all health insurance and medical spending, instead advocating that the value of both public and private transfers should be counted as income and, at least implicitly, endorsing a market value approach. Browning also favored the market value approach, pointing out that if recipient utility is used to define poverty (an implicit assumption of the recipient value approach), then the government should simply convert all noncash transfers to cash: "[t]he very existence of in-kind transfers would seem to be good evidence that poverty is not conceived of in terms of utility levels" (US Bureau of the Census 1986a: p. 64). Chiswick, like Ellwood and Summers, preferred the recipient value approach on theoretical grounds, but argued that it was not actually feasible and that the Census Bureau's procedure for implementing it was fatally flawed, so that overall, the Census Bureau's version of the market value approach was the preferred one.[9] Providing yet a different view, Henry Aaron argued that all three of the Census Bureau's approaches were conceptually and practically flawed; he also firmly rejected Ellwood and Summer's suggestion. Instead, he proposed a fifth approach, which he credited to a suggestion from Gary Burtless: a "two-index method of defining poverty" in which a person would be considered poor if their household income fell below the poverty threshold *or* "if it lacked 'adequate' health coverage and if the direct purchase of such coverage would cost enough to reduce residual income below the [poverty] threshold."

[9] "…in principle, the cash equivalent value methodology, in which the value of the benefit is measured as the amount of income that would exactly compensate in a utility sense for a noncash benefit, is the most appropriate procedure for measuring the value of the benefit to the recipient. In practice, however, it cannot yet be implemented to obtain robust estimates" (US Bureau of the Census 1986a: p. 47). Chiswick illustrates the central problem of market versus recipient value with a hypothetical poor Kansas family given a $2,000 surfboard that is worth $10 as firewood for them (p. 45).

Thus, the 1985 conference yielded little consensus about what new procedure the Census Bureau ought to adopt, other than a rejection of the approaches embodied in Technical Paper 50 and related reports. The last report using these approaches was published in 1988 (U.S. Bureau of the Census 1988a).

The Census Bureau tried a different tack in a new report released in 1988 using a different method to incorporate the value of in-kind transfers into income with the goal of measuring the impact of benefits and taxes on income and poverty (U.S. Bureau of the Census 1988b).[10] The method used in these reports were as follows. For each family receiving Medicare and/or Medicaid, first calculate the following inputs into the calculation of fungible value:

(1) Family resources, defined as money income plus the value of Food Stamps and housing subsidies (Y)
(2) The mean Medicare outlay for the family's risk class (MCR)
(3) The mean Medicaid outlay for the family's risk class (MCD)
(4) The cost of basic food and housing, defined as the cost of basic housing from the Department of Housing and Urban Development's Fair Market Rent series plus the cost of the Thrifty Food Plan from the Department of Agriculture ($Y_{min}$)

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The fungible value of Medicare and Medicaid is then calculated and added to household resources following these rules:

- If $Y < Y_{min}$, nothing is added to resources
- If $Y_{min} \leq Y \leq Y_{min} + MCR + MCD$, add $Y - Y_{min}$ to resources
- If $Y > Y_{min} + MCR + MCD$, add MCR + MCD to resources
-

Figure 1 presents graphically the relationship between fungible values of Medicare and Medicaid and family resources:

[10] Interestingly, the 1988 Census report P60-164RD quotes Ellwood and Summers' general observations about the importance of fungibility in valuing noncash benefits, but method actually used in that report is not the one suggested by Ellwood and Summers (1986). I could not find any documentation of how the method for valuing health insurance transfers in P60-164RD (1988) was developed.

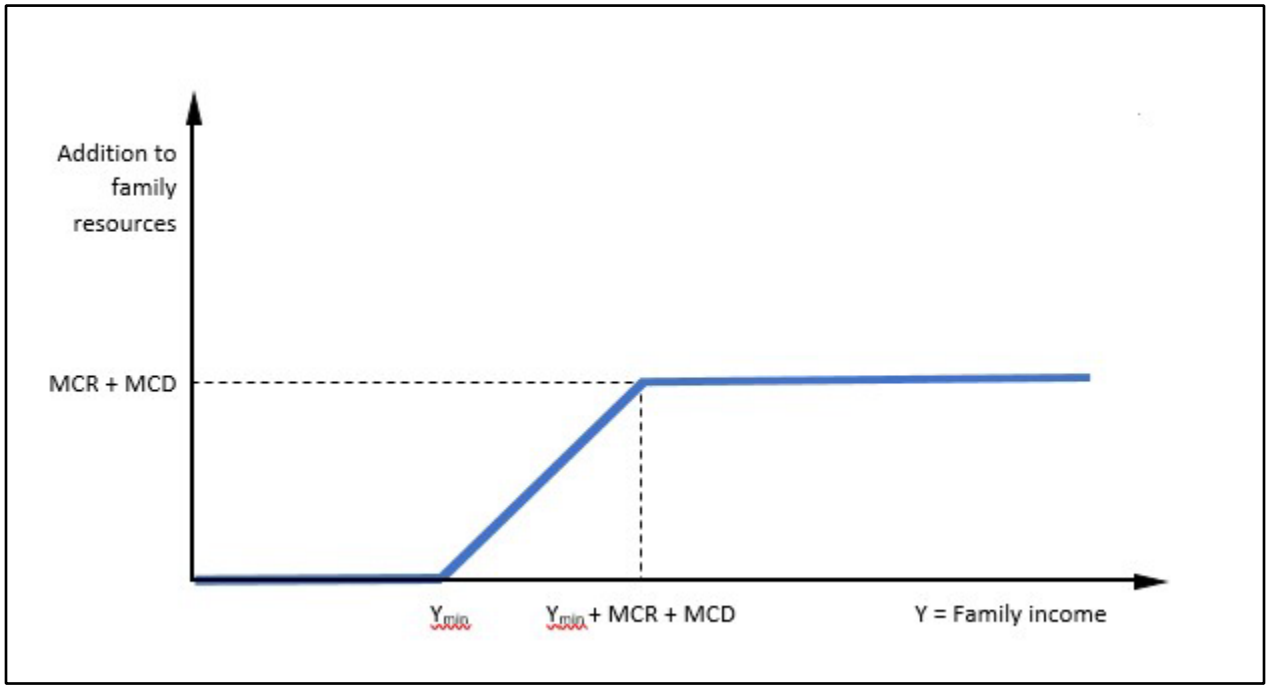


Figure 1. The Census Bureau's "Fungible Value" Approach to Estimating the Value of Medicaid and Medicare (in use by the Census Bureau from 1988 to 2005)

The 1988 report also described a method for imputing the value of employer health insurance contributions so that these amounts could for the first time be included in some measures of income (Census 1988 p.225). Employer contribution amounts were imputed using data from the 1977 National Medical Care Expenditure Survey, matched to the CPS ASEC using worker and firm characteristics and also using information reported in the CPS ASEC on whether a worker had employer-sponsored coverage from their own job, and for those who did, whether the employer paid all, part, or none of the premium. Similar estimates were released, with imputed values for employer health insurance and the fungible value of Medicare and Medicaid in almost every year through 2005 (U.S. Bureau of the Census 1991; 1992; 1993; 1995; DeNavas et al. 1996; DeNavas-Walt, Cleveland, and Roemer 2001a; U.S. Bureau of the Census 1998; 1999; 2000; DeNavas-Walt, Cleveland, and Roemer 2001b; U.S. Bureau of the Census 1997; DeNavas-Walt, Cleveland, and Webster Jr 2003; DeNavas-Walt, Carmen and Cleveland, Robert 2002; Cleveland 2005).

Beginning in 2006, however, the Census Bureau stopped publishing imputed values of health insurance transfers as part of their income estimates. The variables containing imputed values – both the market values and the fungible values of Medicare and Medicaid and the imputed value of employer contributions to health insurance premiums – were dropped from the public-use version of the CPS ASEC microdata file as of 2015 (Medicare and Medicaid) and 2019 (employer contributions).

**Congressional Budget Office Income after Taxes and Transfers** CBO's methods for measuring the value of health insurance have changed over time (Perese 2017). Prior to 2001, CBO did not include the value of health insurance transfers in its analyses of the income distribution. With the publication in 2001 of *Effective Federal Tax Rates, 1979 – 1997* (CBO 2001), CBO added the value of Medicare and Medicaid to some income measures using the Census Bureau's fungible values described above. (Employer contributions to health insurance premiums were also added in this year, presumably using the market values imputed by the Census Bureau.) CBO continued this approach until 2012 when, with the publication of *The Distribution of Household Income and Federal Taxes, 2008 and 2009* (2012) they switched from the fungible value approach to using the market value of Medicare and Medicaid, "defined to equal the Census Bureau's estimate of the average cost to the government for providing those benefits" (CBO 2012: p. 40).

CBO still uses the market value approach to valuing Medicare and Medicaid as components of income in their annual reports on the distribution of household income; see, most recently, U.S. Congressional Budget Office (2022). The most recent report presents data on several successively broader definitions of income: (1) *market income*, which includes labor income (including employers' contributions for health insurance), business income, capital income, and income from other non-governmental sources; (2) *income before taxes and transfers*, which is market income plus social insurance benefits, including Medicare; (3) *income after transfers but before taxes*, which adds to (2) the value of Medicaid and other means-tested transfers; and (4) *income after transfers and taxes*, which subtracts taxes from (3). For both Medicaid and Medicare, the value added for each beneficiary is the average cost to the government of providing the benefit. The report notes, in regard to Medicaid:

> CBO did not attempt to estimate the value that households place on [Medicaid and CHIP]. Although sick people enrolled in federal health programs that provide assistance to low-income families may value those benefits more than the average cost to the government of providing them, some empirical evidence suggests that, on average, Medicaid recipients value the benefits at less than the average cost to the government of providing those benefits. See Amy Finkelstein, Nathaniel Hendren, and Erzo F. P. Luttmer, "The Value of Medicaid: Interpreting Results from the Oregon Health Insurance Experiment," Journal of Political Economy, vol. 127, no. 6 (December 2019), pp. 2836–2874. (CBO 2022, p. 12)

**Adjusted Gross Income:** Employer contributions to health insurance premiums are not treated as income for tax purposes, nor is any part of the value of Medicare or Medicaid included in AGI.[11] The Affordable Care Act, enacted in 2010, requires employers to report the total value

of employer-sponsored health insurance on form W2; this information can be used to allocate the value of such spending to tax filing units, as several recent studies have done (Piketty, Saez, and Zucman 2018; Gerald Auten and David Splinter 2022).

[11] Economists have long debated the implications of ending the exclusion of employer-sponsored insurance from income (Gruber 2011), but this has proved politically infeasible. An excise tax on so-called "Cadillac" plans

**Poverty measurement:** Poverty measurement raises additional questions about the value of health insurance transfers. In addition to deciding whether/how to incorporate the value of health insurance transfers into a household's resources, poverty measurement must also address whether and how health insurance is included as a need.

The Census Bureau currently releases two measures of poverty annually. The Official Poverty Measure (OPM) has been published since the 1960s and the Supplemental Poverty Measure (SPM) has been published since 2011; see, most recently, Creamer et al. (2022). The OPM resource measure is pre-tax money income as defined by the Census Bureau; it does not include the value of health insurance transfers or any other in-kind transfers. The OPM needs threshold does not explicitly incorporate a need for health insurance or medical care. As a result, the OPM neither reflects the hardship-reducing effects of federal spending on Medicare and Medicaid nor does it capture the unmet needs of uninsured households who forego medical care they cannot afford. These criticisms, among others, led a 1995 National Academies Panel on the measurement of poverty to recommend changes to the OPM treatment of health care and insurance (Citro and Michael 1995). These changes are reflected in the SPM, which does not add anything to household resources to capture the value of in-kind transfers of health insurance, but rather deducts all out-of-pocket spending on health insurance and medical care from household resources.[12] While this is an imperfect response to the criticisms above – in particular, it does not address the fact that uninsured households may have unmet needs for health care – it does capture the hardship-reducing effects of health insurance transfers, to the extent that they reduce out-of-pocket spending.

More recently, researchers have proposed a new approach to incorporating health insurance and medical care into poverty measurement (S. D. Korenman and Remler 2016; S. Korenman, Remler, and Hyson 2021). The Health Inclusive Poverty Measure (HIPM) adds an explicit need for health insurance to the poverty threshold; this need is defined as the premium for a "benchmark" health insurance plan. For households with insurance, the imputed net value of health insurance transfers, defined as the benchmark premium minus the household's actual spending on premiums, is added to resources. This imputed transfer value is constrained to be non-negative; households with reported out-of-pocket spending on premiums that exceed the benchmark premium are assigned a transfer value of zero. Thus, this approach captures the poverty-reducing value of increased federal spending on health insurance without an implicit assumption that such benefits are fungible, since the addition to resources cannot, by definition, exceed the addition to needs. In other words, these transfers mathematically cannot lift a household out of poverty. At the same time, the HIPM recognizes the unmet need of uninsured households, since a need for health insurance is included in the threshold and they receive no health insurance transfers. As a result, a household that is counted as near-poor by the OPM or

(employer health plans with high premiums) that was included in the Affordable Care Act was repealed before it took effect (Levy, Ying, and Bagley 2020).

[12] As noted by Citro and Michael (1995), this was the approach suggested by Ellwood and Summers (US Bureau of the Census 1986a).

the SPM may very well be poor under the HIPM. The Census Bureau is researching how to operationalize the HIPM (Creamer 2021).

It should be noted that the HIPM approach, which cleverly solves the problem of nonfungibility by offsetting the imputed value of the transfer added to resources with an equivalent addition to needs, cannot be applied to the context of measuring inequality because there is no analogous way to offset the addition to resources.

**Recent research on inequality** Several recent studies of income inequality have incorporated the value of health insurance transfers into their estimates (Piketty, Saez, and Zucman 2018; Larrimore et al. 2021; Piketty and Saez 2003; Burkhauser and Simon 2010; Burkhauser, Larrimore, and Simon 2012; Armour, Burkhauser, and Larrimore 2013; 2014). These studies take a comprehensive approach to measuring income, but for slightly different reasons. The starting point for Piketty, Saez, and Zucman (2018) is the desire to create "distributional national accounts" – in effect, to assign the value of national income to individuals, in order to study inequality both over time and, ultimately, across countries – so including all income, including health insurance transfers, is integral to their approach. Larrimore et al. (2021) and related earlier papers explicitly cite the Haig-Simons conceptual framework as the motivation for including the value of in-kind transfers in income. Both of the recent studies rely on tax data augmented with household survey data; as noted, Piketty, Saez, and Zucman (2018) also use data from the National Accounts.[13]

Despite these differences in motivation, the two ultimately end up in similar places in terms of their treatment of health insurance transfers: they include in income the full value of employer health insurance contributions and the full ex-ante market value of Medicare and Medicaid. They also both note the potential problems associated with this approach for Medicare and Medicaid – in effect, that market value may not be recipient value – and, like CBO, reference work by Finkelstein, Hendren, and Luttmer (2019):[15]

> The growth in Medicare and Medicaid transfers reflects an increase in the generosity of the benefits, but also the rise in the price of health services provided by these programs—possibly above what people would be willing to pay on a private market (see, e.g., Finkelstein, Hendren, and Luttmer 2016)—and perhaps an increase in the economic surplus of health providers in the medical and pharmaceutical sectors." (Piketty, Saez, and Zucman 2019: 583)

Larrimore et al. (2021) observe that any reduction in the value of the transfer to reflect low recipient willingness to pay would likely only exacerbate the existing bias from omitting the value of uncompensated care from income. Nonetheless, they report a set of

[13] Larrimore et al. (2021) also use data from the National Accounts; in their case, the purpose is to benchmark their measure of income to the relevant measure from the National Accounts (personal consumption plus changes in real net wealth). They find that the two measures are very close to one another (see Larrimore et al. 2021, p. 1340). [15] Piketty, Saez, and Zucman reference an earlier working paper version of Finkelstein et al. (Finkelstein, Hendren, and Luttmer 2015) but incorrectly give the publication year for the working paper as 2016.

estimates based on an income measure that includes only a fraction of the market value of Medicare and Medicaid:

> On the basis of the observation of Finkelstein, Hendren, and Luttmer (2019) that only 20%–40% of the welfare benefits of Medicaid accrue to beneficiaries, some have argued for valuing health insurance benefits at 20%–40% of their ex ante value. Since the estimate by Finkelstein, Hendren, and Luttmer (2019) is largely due to the uncompensated care for the uninsured, were an adjustment for this care to be included, it may be more appropriate to add the value of uncompensated care to the uninsured than to reduce the value of Medicaid or Medicare. Adding the value of uncompensated care to income would reduce top 1% income shares relative to those reported here. Valuing Medicaid and Medicare at 20%–40% of the ex ante value would increase the top 1% income share by between 0.3 and 0.7 percentage points in each year. (Larrimore et al. 2021: 1332, fn. 19)

Piketty et al. (2018), Larrimore et al. (2021), and CBO (2022) all refer to recent research on the value of Medicaid to beneficiaries by Finkelstein, Hendren, and Luttmer (2019). Finkelstein et al. (2019) use data from the Oregon Health Insurance Experiment to estimate the causal impact of Medicaid on total and out-of-pocket health care spending. They then use several different approaches to estimate beneficiary willingnessto-pay for this coverage. One striking finding from this work is that the majority (60%) of Medicaid spending for this population does not actually go to beneficiaries. The incidence of this transfer is unclear; it might go to medical care providers, to the uninsured themselves, to the privately uninsured, or to governments. Depending on the ultimate incidence of this transfer, it might be appropriate to add its value to the income of the uninsured, as discussed by Larrimore et al. (2021: 1332, footnote 19); but it should probably not be added to the incomes of Medicaid recipients. Finkelstein et al. (2019) also conclude that Medicaid beneficiaries value each dollar of Medicaid that is actually spent on them at $0.50 to $1.20. Thus, the *overall* ratio of beneficiary willingness-to-pay for Medicaid to what Finkelstein et al. refer to as its gross cost (corresponding to what is referred to in the context of this paper as market value) is between 20 and 40%.

## 4. The problem, in theory

Why is incorporating the value of health insurance transfers into income so hard? The previous section illustrates that decades of research on this problem have not yielded a fully satisfactory approach to this problem and that the fundamental difficulty of choosing between market value and recipient value approaches has not been resolved. In this section, I review some of the theoretical considerations underlying this challenge.

**Theoretical problem 1: Valuing any in-kind transfer is hard.** This is an obvious point, but most of the difficulty associated with valuing health insurance transfers is not specific to health insurance and would arise for any in-kind transfer that cannot be resold (Currie and Gahvari

2008).[14] Health insurance is the largest category of in-kind transfers in the US and raises some special considerations, which are noted below; but the fundamental problem of valuation would arise even for the transfer of a simple commodity if it could not be resold. Even valuing benefits that are quite close to cash is difficult; see, for example, Moffitt (1989) on the value of Food Stamps. The only circumstance where the problem would *not* arise is if all recipients were already consuming at least as much of the good as the transferred amount. In this case, the transfer is non-distortionary, and it can be inferred that recipients' value is at least as great as its market price. But if they were not buying it at all, or were buying less than the transferred amount, then the problem of valuation arises. The divergence between market and recipient value raises the question of why transfers are ever provided in kind rather than in cash, as discussed by Currie and Gahvari (2008).

**Theoretical problem 2: Health insurance transfers have both *ex ante* and *ex post* values.** Health insurance exists because health status and the demand for medical care are uncertain and consumers are risk averse. This uncertainty means that insurance has different values in different states of the world. Over the course of a year, it has both an *ex ante* expected value at the beginning of the year and an *ex post* realized value at the year's end. The *ex post* value to the consumer may be much higher than the *ex ante* value, if the consumer's realized health status that year is poor and their health spending high as a result; or it may be lower, if the consumer uses no medical care.

Which of these values should be used to measure the value of health insurance? This complexity is in addition to the choice of market value versus recipient value approaches. In practice, to date, all of the official estimates and studies that have added the value of health insurance to income have used average spending which should be approximately equal the *ex ante* value. I am not aware of studies that have used an individual's actual spending financed by Medicaid or Medicare, combined with a market value approach, to suggest that, for example, an individual with a $50,000 hospitalization and no cash income should be considered as having $50,000 in income. Finkelstein, Hendren, and Luttmer (2019) explicitly incorporate the insurance value of insurance by estimating separately recipients' valuation of a transfer equal to the average cost of the benefit and their valuation of the risk-reduction benefits.

**Theoretical problem 3: Health care prices** The approaches above to measuring the value of health care transfers all rely in some way on measured health care spending, which is price times quantity. But there are two problems with this. First, health care productivity is extremely difficult to measure (Cutler et al. 2022), and it is not entirely clear what health care spending means. Some studies conclude that real prices for treatment of health conditions are actually *declining* (Cutler et al. 1998; Dunn, Hall, and Dauda 2022). Second, health care prices are not set in competitive markets. For Medicare and Medicaid, which account for about one-third of all insured people in the US but more than half of insurance spending (Keisler-Starkey, K. and Bunch, L. N. 2022; Hartman et al. 2022), they are set by the government. Medicare and Medicaid rates are around 70 and 50 percent, respectively, of what private insurers pay

[14] Other in-kind transfers discussed by Currie and Gahvari (2008) are public education, housing, and child care.

(Zuckerman, Williams, and Stockley 2009; Zuckerman, Skopec, and Aarons 2021; Lopez et al. 2020). For private insurance, prices are set by private insurers in negotiation with medical care providers; health insurance and medical care markets are both highly concentrated (Gaynor and Town 2011).

The fact that medical prices are high, increasing, and not set by competitive markets raises concern about the market value approach, as has been noted in the literature. Reinhardt (1987) illustrates this point clearly for Medicaid:

> Suppose, for example, that the state of New Jersey decided to raise the relatively low fees paid physicians under that state's Medicaid program by, say, 25 percent. A natural inclination among politicians would then be to claim that much had been done for the state's poor. In fact, in their published reports state officials would measure their goodwill toward the poor precisely by this monetary transfer to physicians. The only reliable inference to be drawn from the assumed fee increase, however, would be that something had been done for New Jersey's physicians. Just what additional health services the physicians would ultimately bestow upon New Jersey's poor in return for the higher fees – the yardstick by which the benefits received by the poor ought to be assessed – would be an entirely different matter. (Reinhardt 1987: 157-158)

Case and Deaton (2020) make a related point about private insurance:

> [W]e must be careful not to count the exorbitant costs of American healthcare as if they were a cash benefit to working people. If the healthcare industry, by lobbying or mergers or lack of competition, raises prices, depriving some people of health insurance and holding down wages for those who are covered by their employers, this is a transfer of income from workers to the industry, and it would be outrageous to count it as making people better off; precisely the opposite is true. Since most of the increase in the costs of healthcare insurance benefits are attributable to rising prices, adding the price of health benefits to household incomes would almost certainly overestimate income growth more than omitting them underestimates income growth. (Case and Deaton 2020: 157)

It is also easy to construct an example in which spending on medical care *understates* its market value. For example, suppose anti-competitive behavior results in private market prices for medical care that are marked up by 40 percent. In this case, Medicare gets prices about right by paying 70 percent of the private rate, but Medicaid is actually paying providers significantly *less* than market value. Whether spending overstates of understates market value, the point of all these examples is that the usual economic assumption that spending on health care equals its market value does not necessarily hold, and the amount or even the direction of the error may depend on who is paying.

My tentative conclusion is that the difficulty of incorporating the value of health insurance transfers into income is largely because of the first and third problems. The fact that it is *insurance* is less of a challenge than the fact that it is a good that cannot be resold and for which the prices are not set in a competitive market, but rather by fiat or by markets that are not competitive.

## 5. Discussion

The fundamental question for those grappling with how to measure the value of health insurance transfers is whether the outcome of interest is spending or utility, which dictates the choice of market value or recipient value. This choice may be implicit in some analyses; for example, a data-driven approach that starts with aggregate spending on Medicare and Medicaid and assigns average spending to recipients as income is implicitly embracing a market value approach without having to state this. This approach would capture the distribution of national income in an accounting sense but, if the goal is to measure well-being, is subject to the criticisms of Reinhardt (1987) and Case and Deaton (2020) that the true beneficiaries of such spending may not be the nominal recipients, a point that Finkelstein et al. (2019) have precisely quantified for Medicaid. There is no universally correct answer to this question, although recent history shows there are many wrong ones. The correct answer will ultimately depend on why income is being measured.

This difficulty – the choice of market versus recipient value - applies to all types of health insurance transfers. But there are also important differences between Medicare, Medicaid, and employer-provided health insurance. They represent different types of income; employerprovided insurance is an element of compensation, Medicare is a social insurance benefit, and Medicaid is a means-tested transfer program (Canberra Group 2001). These differences are reflected in their current treatment by CBO, as described above.

These are not simply accounting differences. There is a strong theoretical argument and moderate empirical evidence suggesting that employers choose health insurance benefits in response to employee demand and that there is a compensating wage differential in response, even if employers' process of selecting benefits may weigh the preferences of some workers more heavily than others in selecting benefits (Gruber and Krueger 1991; Gruber 1994; Qin and Chernew 2014; Tilipman 2022). If employees implicitly pay for these benefits themselves through lower cash wages, then workers are likely to value the benefits they receive at something close to what is spent on them.[15] Or at least, if labor markets are competitive, there is a mechanism to make sure that the benefits employers provide are not too far from what workers actually want. Therefore, the divergence between market value and recipient value may be smaller for employer health insurance than for Medicare or Medicaid.[16]

Medicare and Medicaid are also different from each other in important ways. Medicare beneficiaries are, on average, older, sicker, and richer than Medicaid beneficiaries, all of which may lead them to value health insurance more than Medicaid beneficiaries do. They may also have a stronger distaste for and/or less access to care that is free or for which they incur outstanding debt. On the other hand, Medicare prices are higher than Medicaid prices. The upshot is that it is not clear whether the divergence between average spending and recipient value is greater for Medicare or Medicaid.

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[15] The fact that employer-provided health insurance is not taxed as part of workers' income introduces a separate distortion that would lead to overprovision of such benefits.

[16] The analogous mechanism for Medicare and Medicaid would be the political process; but even if these processes worked well, current beneficiaries do not foot most of the bill for current transfers, so this would not necessarily act as a check.

A final important difference is that for Medicaid, but not Medicare, we have reliable estimates of what recipient value is: specifically, the willingness-to-pay estimates from Finkelstein et al. (2019) suggesting that Medicaid recipients value the benefits they received at 20 to 40% of its cost. As they note, someone could carry out a similar exercise for Medicare, using the variation generated by the sharp discontinuity in Medicare eligibility at age 65. This might yield a result similar to what Finkelstein et al. (2019) found for Medicaid or it might not.

Table 1: Definitions of income and whether they include the value of health insurance transfers

| Source | BEA | Census Bureau | CBO | IRS | Official Poverty Measure (Census) | HealthInclusive Poverty Measure | Piketty et al. (2018) | Larrimore et al. (2021) |
|---|---|---|---|---|---|---|---|---|
| Income construct | Personal income | Money income | Income after taxes and transfers | Adjusted Gross Income | Resources | Resources | Real national income per adult | Comprehensive income |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Are HI trans included? | | | | | | | | |
| EHI premium contributions | Yes | No | Yes | No | No | Yes | Yes | Yes |
| Medicare | Yes | No | Yes | No | No | Yes | Yes | Yes |
| Medicaid | Yes | No | Yes | No | No | Yes | Yes | Yes |
| Notes | All spending included as income | Formerly used "fungible values" (see text) | Formerly used "fungible values" approach, now uses market value | | | Imputed market value of transfer added to resources | Imputed market value included as income | Imputed market value; also included at 20-40% of market value |
| Reference | BEA 2022a, b | Semega and Kollar 2022 | CBO 2022 | | Creamer et al. 2022 | Korenman and Remler 2016 | Piketty, Saez, and Zucman 2018 | Larrimore et al. 2021 |

Notes: BEA is Bureau of Economic Analysis; CBO is Congressional Budget Office; IRS is Internal Revenue Service

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