

Health Insurance and Income Inequality

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Most analyses of economic inequality have focused on wage rates, earnings, or incomes. Wages or earnings are the appropriate measures to study the changes in the return to skills, the structure of the labor market, and shifts in the demand and supply for different types of labor (for example, Murphy and Topel 2016). Income is a broader measure of living standards and is therefore more useful when studying how government taxes and transfers affect inequality and control over real resources. However, health insurance and other in-kind forms of compensation and government benefits are typically not included in measures of income and analyses of inequality. This omission is important: for example, health expenditures in 2014 accounted for over 17 percent of GDP, and nearly 70 percent of these expenditures were made by public or private health insurance plans.¹ Given the large and growing cost of health care in the United States and the presence of large government health insurance programs such as Medicaid and Medicare, it is crucial to understand how health insurance and related public policies contribute to measured economic well-being and inequality.

¹ Figures are from the National Health Expenditure Accounts at Centers for Medicare and Medicaid Services: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html>.

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Consider Medicaid, which is targeted at low-income families and accounts for about 16 percent of national health expenditures. Medicaid spending on a family of three (say, a mother and her two children) was, on average, \$9,125 in 2011 (Young, Rudowitz, Rouhani, and Garfield 2015), which represents approximately 80 percent of mean income of families in the bottom quintile of the income distribution in that year.² As these figures indicate, Medicaid has the potential to significantly raise well-being among low-income families and reduce inequality. Medicare, which is targeted at the elderly, accounts for about 20 percent of national health expenditures. In 2014, spending per enrollee was \$11,400, which is approximately one-third of median family income among the elderly. Given that the elderly tend to have lower incomes than the nonelderly, Medicare will tend to reduce inequality (Cooper and Gould 2013).

Government tax policy regarding health insurance also influences inequality because employer contributions for employer-provided health insurance are not subject to income or payroll taxes. In 2016, this tax expenditure is estimated to be about \$348 billion (US Office of Management and Budget 2015, Table 14.1). In contrast to Medicaid and Medicare, however, the tax deductibility of employer-provided health insurance will increase inequality because the tax exclusion is larger for higher-income persons, who are more likely to have employer-provided insurance and face higher marginal tax rates. Consider a family with combined income of about \$135,000 (approximately the 90th percentile of family income in 2013), which faces a combined federal, state, and payroll tax rate of 40 percent and receives employer-provided health insurance that costs \$16,000 per year. If the premium were taxed as income, the family would owe an additional \$6,400 in taxes. The tax benefit for employer-provided insurance for high-income families in this example is thus about two-thirds of the size of Medicaid expenditures, although it obviously represents a far smaller share of family income.

The importance of integrating health policies into an analysis of inequality is underscored by the well-known inequality in health across the income distribution. Based on our calculations from the Medical Expenditure Panel Survey (MEPS) data, 25 percent of those in the bottom quintile of the family income distribution reported being in poor or fair health in 2012, while only 7 percent of those in the top quintile of family income report the same.³ This pattern of those with low incomes being in worse health extends to many other measures of health including mortality (Deaton and Paxson 2004; Cutler, Deaton, and Lleras-Muney 2006).

² Medicaid spending is from Kaiser Family Foundation, "Medicaid Spending per Full-Benefit Enrollee," <http://kff.org/medicaid/state-indicator/medicaid-spending-per-full-benefit-enrollee/>. Measures of the distribution of income are from the US Census Bureau "Historical Income Tables: Income Inequality: <https://www.census.gov/hhes/www/income/data/historical/inequality/>.

³ The calculations are derived from the 2012 full year Medical Expenditure Panel Survey for people age 18 and older. Family income is total family income (of all persons in family) and is adjusted for family size by dividing by the square root of family size. Respondents are asked to rate their health as being Excellent, Very Good, Good, Fair, or Poor. We define poor health as responses of "Fair" or "Poor," which is standard in the literature.

Low-income families face a relatively greater burden of disease, which has direct effects on their well-being and makes health care spending particularly important to their well-being.

Our paper assesses the effect on inequality of the primary government programs that affect health insurance. First, we begin with descriptions of the principal government transfers and tax expenditures related to health insurance and their changes over time. We highlight how these programs may affect measurement of income inequality. Second, we review the small literature that has included health care in the analysis of income inequality. We augment this review with empirical analyses that illustrate the effects on inequality of various components of health care policy. Third, we discuss conceptual and empirical issues that arise when trying to integrate health care into the analysis of income inequality, including the potential behavioral responses and distortionary effects of government health care transfers and tax policies. Finally, we discuss the implications of our analysis for future research and policy.

Our analyses lead us to the following conclusions. First, including the value of Medicare and Medicaid in income reduces the ratio of the 90th to the 10th percentile (the so-called 90–10 ratio) of the after-tax income distribution in 1995 by about 24 percent and in 2012 by about 30 percent. These programs clearly have the effect of reducing inequality, broadly defined to include more than income. Second, adding the value of employer-provided insurance to income raises measured inequality. On net, including both publicly-provided and employer-provided insurance in a more comprehensive measure of income results in a downward revision in measured inequality at a point in time and reduces the growth in inequality that has occurred over the last 20 years. Third, the tax exclusion for employer-provided insurance has modest effects on income inequality. Taxing employer contributions to employee health insurance plans would reduce the 90–10 ratio in 2012 by approximately 4 percent. Fourth, behavioral responses to public health insurance programs such as reductions in labor supply to qualify for Medicaid are unlikely to alter these conclusions unless they were much larger than estimates in the literature suggest. Finally, income inequality is not the same as inequality in well-being or utility. Policies could improve the health or overall well-being of the poor and thereby lower inequality more broadly construed, but still lead some measures of inequality to rise.

An Overview of Government Transfers and Tax Expenditures for Health Care

Government health policy affects inequality primarily through the in-kind provision of health insurance and through the tax treatment of employer-provided health insurance and out-of-pocket expenses. As noted earlier, the amount of in-kind transfers associated with government health insurance policies are large and are not equally distributed throughout the income distribution. Thus, in-kind transfers

related to health care may have a substantial effect on the level of inequality, and changes over time in the generosity and extent of these government transfers—most recently, in the aftermath of the Patient Protection and Affordable Care Act in 2010—may have affected the trend in inequality.

Medicare and Medicaid are the primary publicly provided health insurance programs. Medicare is a federal health insurance program that covers nearly all Americans aged 65 and older, as well as some people under 65 who are disabled. It is financed through a 2.9 percent payroll tax, plus an additional 0.9 percent tax on incomes above a threshold (in 2015, the threshold is \$200,000 for Single or Head of Household taxpayers and is \$250,000 for Married Couples filing jointly).⁴ In fiscal year 2014, total Medicare spending was \$619 billion or about \$11,400 per beneficiary (Centers for Medicare and Medicaid Services 2014a).

Medicaid and the State Children’s Health Insurance Program (CHIP) are health insurance programs for low-income persons. Most Medicaid beneficiaries are children and mothers, but also included are a significant number of elderly (who also have dual eligibility for Medicare). Medicaid and CHIP are jointly financed by the federal government and the states through general revenue sources. Federal law sets minimum standards for eligibility and covered services, while states have flexibility to cover additional people or services. In fiscal year 2014, total Medicaid and CHIP expenditures were \$476 billion and covered nearly 60 million people.

To provide some sense of the potential effects of Medicaid and Medicare on inequality, Table 1 shows the share of individuals in each decile of family income in 1995, 2004, and 2012 that participated in these programs during the year.⁵ The data come from the 1996, 2005, and 2013 Annual Social and Economic Supplement of the Current Population Survey, which collects information on respondents’ income and program participation during the prior calendar year. Individuals are assigned to one of ten deciles of “adjusted” family income, which is total family income divided by the square root of family size (following Burkhauser, Larrimore, and Simon 2012).

Two patterns are evident from the figures in Table 1. First, those in the lower half of the income distribution are more likely to receive government-financed health insurance, particularly Medicaid. For example, between 35 and 45 percent of those in the first deciles are covered by Medicaid. Thus, adding the value of this insurance to income would tend to flatten the income distribution. Indeed, the potential distributional impact of Medicaid is likely significantly understated in the figures because of the known and substantial underreporting of Medicaid participation in the Current Population Survey (Call, Davern, Klerman, and Lynch 2013; Meyer, Mok, and

⁴ We do not discuss the effect on inequality of the tax policies that finance government health programs. For an example of a study that integrates an analysis of spending and tax policy, see McClellan and Skinner (2006).

⁵ We begin our analysis with data from 1996 since this is the first year where the Current Population Survey identifies whether a respondent has employer-sponsored coverage in their own name or that of a family member. We chose 2012 (2013 CPS) as the endpoint because the health insurance questions in the Current Population Survey were redesigned in 2014.

Table 1
Medicare and Medicaid Participation Rates by Decile of Adjusted Family Income

<i>Decile of adjusted family income</i>	<i>Medicare participation rate (%)</i>			<i>Medicaid participation rate (%)</i>		
	<i>1995</i>	<i>2004</i>	<i>2012</i>	<i>1995</i>	<i>2004</i>	<i>2012</i>
Bottom decile	7.2	9.8	8.4	44.8	35.7	41.6
2	23.3	23.8	21.6	22.7	23.4	31.6
3	21.4	23.1	24.8	9.2	13.2	17.7
4	18.5	18.4	22.0	4.6	7.6	11.0
5	14.5	13.8	16.9	2.8	3.9	6.5
6	10.7	10.1	13.7	1.5	2.6	3.8
7	8.7	8.7	12.5	0.8	1.5	2.2
8	7.3	6.9	10.5	0.6	1.0	1.5
9	6.2	6.8	9.3	0.6	0.6	0.8
Top decile	6.6	6.5	9.3	0.5	0.4	0.8

Source: Data are from the 1996, 2005, and 2013 Annual Social and Economic Supplement to the Current Population Survey in which respondents report sources of health insurance coverage in the prior year.

Notes: The table shows the fraction of families in each decile in which at least one member participates in Medicare or Medicaid. Adjusted family income is total family income divided by the square root of family size.

Sullivan 2015).⁶ Second, there has been some growth in Medicaid and Medicare participation in 2012 relative to earlier years. If the value of these benefits is taken into account in calculating “income” broadly understood as ability to consume, then the growth in participation in these two programs will tend to moderate growth in income inequality.

Recently, the Patient Protection and Affordable Care Act of 2010 has had a major impact on health insurance coverage and its impact has not been uniform throughout the income distribution. The Affordable Care Act created income-based subsidies for the purchase of individual health insurance on state or the federal health insurance “marketplaces” for persons with incomes up to 400 percent of the federal poverty level. The law also allowed states to expand Medicaid to all adults with incomes below 138 percent of the federal poverty level, and approximately half the states did so.

The subsidies in the newly created health insurance “marketplaces” and the expansion of Medicaid were fully implemented in 2014, and as a result, a substantially greater proportion of people in the lower part of the income distribution are

⁶ The measurement error is also revealed by the presence of a surprising proportion of persons in the upper deciles of the income distribution that have Medicaid. Other surveys such as Survey of Income and Program Participation (SIPP) also underreport Medicaid participation.

Table 2

Health Insurance Coverage Rates of the Nonelderly in 2012 and 2014 by Decile of Adjusted Family Income

Decile of adjusted family income	Fraction uninsured			Fraction on Medicaid			Fraction with private insurance		
	2012	2014	$\Delta 2014-2012$	2012	2014	$\Delta 2014-2012$	2012	2014	$\Delta 2014-2012$
Bottom decile	39.3%	31.1%	-8.2	43.1%	47.6%	4.5	22.7%	26.5%	3.8
2	37.8	28.3	-9.5	34.4	38.9	4.5	34.3	40.0	5.7
3	30.9	23.3	-7.6	21.6	23.9	2.3	54.8	60.4	5.6
4	22.5	16.5	-6.0	15.3	17.1	1.8	69.2	73.6	4.4
5	15.5	11.8	-3.7	12.3	13.1	0.8	79.1	81.8	2.7
6	11.1	8.4	-2.7	9.9	11.1	1.2	85.3	87.0	1.7
7	7.8	6.1	-1.7	8.7	8.9	0.2	89.7	90.8	1.1
8	5.6	4.3	-1.3	7.4	7.7	0.3	92.6	93.4	0.8
9	4.1	3.3	-0.8	6.5	6.7	0.2	94.8	95.1	0.3
Top decile	2.8	2.3	-0.5	5.1	5.2	0.1	96.4	96.6	0.2

Source: Data are from the 2012 and 2014 one percent samples of the American Community Survey in which respondents report their current sources of insurance coverage. The sample is adults ages 22 to 64.

Notes: Medicaid category includes all public insurance programs. Adjusted family income is total family income divided by the square root of family size. Row totals do not add to 100 percent because people report more than one type of health insurance coverage. Figures in Tables 1 and 2 differ because of differences in survey design and sample.

now covered by health insurance. Table 2 shows the changes between 2012 and 2014 in health insurance coverage by decile of family income.⁷ It is clear that the proportion of people without health insurance decreased between 2012 and 2014, and the decrease was largest for those in the lowest income decile and smallest for those in the highest income decile. Among those in the three lowest deciles of family income, the proportion of people without health insurance declined by between 8 and 10 percentage points, and among those in the three highest deciles of family income, the proportion of people without health insurance decreased by only 1 percentage point. While it is unlikely that the entire change in insurance coverage shown in Table 2 is due to the Patient Protection and Affordable Care Act of 2010, it is reasonable to attribute a substantial portion of the change to that law. The relatively large increase in health insurance in the lowest income deciles was due to a relatively large increase in Medicaid coverage, which was likely almost all due to the Affordable Care Act, as the recovering economy would have

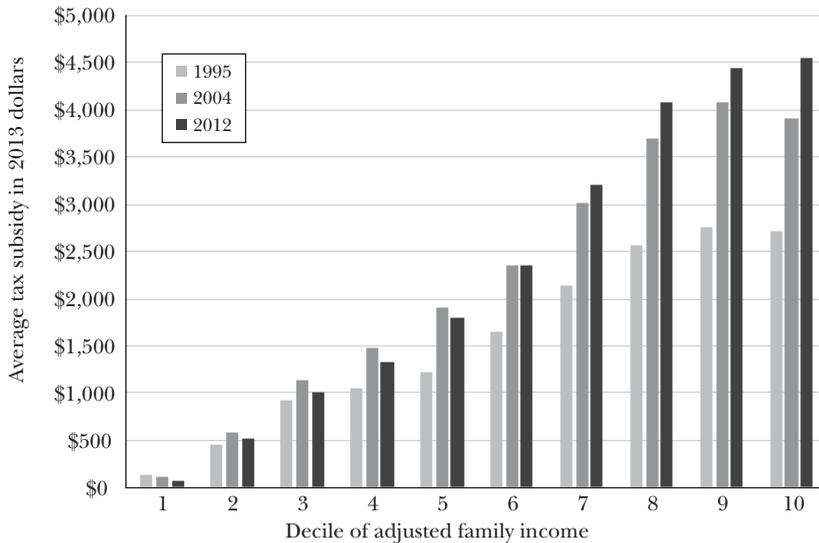
⁷ Data are from the 2012 and 2014 one percent samples of the American Community Survey in which respondents report their current sources of insurance coverage. Note that the ACS was begun after 2000 and did not collect information on health insurance coverage prior to 2008. The ACS is arguably preferable to the Current Population Survey (CPS) for measuring health insurance coverage because of the survey design and consistency of the survey question over time. The CPS redesigned its health insurance questions in 2014.

dampened Medicaid enrollment in the absence of the 2010 law. Increases in private insurance coverage between 2012 and 2014 were also concentrated in the lowest deciles, which is consistent with the income-based subsidies available in the health “marketplaces,” but some of this increase may be due to an improving economy.

The implication of the figures in Table 2 is that the Patient Protection and Affordable Care Act of 2010 has reduced inequality. The increase in Medicaid coverage in 2014 relative to 2012 is highly concentrated in the lower deciles of the income distribution. The increase in private insurance coverage is also concentrated in the lower half of the income distribution. Notably, according to the Centers for Medicare and Medicaid Services, 85 percent of the people who obtained private insurance through the health insurance “marketplaces” received some amount of subsidy (in-kind benefit) and the probability of receiving a subsidy and the amount of the subsidy decreases with income (Centers for Medicare and Medicaid Services 2015). Thus, the government transfer associated with the increase in private insurance coverage is likely to be even more concentrated in the lower deciles of the income distribution than the observed increase in private insurance coverage. Moreover, the reduction in uninsured and increase in other types of health insurance coverage are expected to grow over time because of greater awareness of the Affordable Care Act, increased tax penalties for people who do not obtain health insurance, and the expansion of Medicaid in states that occurred post-2014 (for example, Pennsylvania and Indiana).

Government tax policy for health care affects inequality because employer-provided health insurance is generally not taxed as individual income at the federal or state level, or through the payroll tax. To the extent that individuals, rather than firms, capture the incidence, the tax exclusion provides a benefit that increases with the cost of insurance and with the workers’ marginal tax rate (and hence total income). This tax exclusion is estimated to cost the US Treasury about \$216 billion in foregone income taxes and \$132 billion in foregone payroll taxes in fiscal year 2016 (US Office of Management and Budget 2015, Table 14.1).

The tax treatment of employer-provided health insurance has potentially large effects on inequality. Employer-sponsored coverage is more prevalent among higher-income families. Approximately 80 percent of those in the top three income deciles have employer-provided insurance (either in their own name or as a dependent of someone else’s policy), whereas only 10 to 30 percent of those in the lowest three income deciles have this type of insurance. In addition, our estimated measure of average household premiums for employer-provided health insurance is much higher in the top income deciles. Premiums for employer-provided health insurance are not reported in the Current Population Survey. Therefore, we impute premiums by single-digit industry and firm size using data from the Medical Expenditure Panel Survey–Insurance Component. By this metric, the average value of employer-provided health insurance premiums for those in the top two income deciles exceeds \$10,000, while the average value for those in the bottom two deciles (including values of zero for many in the bottom deciles who do not have employer-provided health insurance) is less than \$1,000. Thus, including

*Figure 1***Average Tax Subsidy for Employer-Provided Health Insurance by Decile of Adjusted Family Income**

Source: Authors' calculations from the 1996, 2005, and 2013 Annual Social and Economic Supplement to the Current Population Survey.

Notes: Adjusted family income is total family income divided by the square root of family size. The calculation of the subsidy is described in the text. Calculations include zeros for families not covered by employer-provided insurance. Insurance coverage, family income, and the tax subsidy refer to the year prior to each survey.

the value of employer-sponsored health insurance as income will tend to increase measured inequality. Its inclusion may also exacerbate the growth in measured inequality since premiums have been rising over time and coverage among lower-income families has been falling over time.

The tax treatment of employer-sponsored insurance will also increase income inequality since marginal tax rates and premiums rise with income. Figure 1 shows our estimated tax subsidy for employer-sponsored insurance per family, by year and decile of adjusted family income and including zeros for families without employer-provided insurance. To calculate these figures, we used the TAXSIM program of the National Bureau of Economic Research.⁸ We estimate the total tax bill for families in the 1996, 2005, and 2013 Current Population Survey, first ignoring any employer-sponsored health insurance and then including imputed health insurance premiums as wage income. The difference between these is our estimate of the

⁸ TAXSIM version 9.3. For details, see Feenberg and Coutts (1993) and TAXSIM related files at the NBER: <http://www.nber.org/taxsim/>.

subsidy for employer-provided health insurance.⁹ The tax subsidy grows with income and has been growing over time. For example, the tax subsidy among families in the bottom three deciles is under \$1,000 (in 2013 dollars). The subsidy in the top three deciles was about \$2,500 in 1995 (in 2013 dollars) and was \$4,000 to \$4,500 in 2012.

Several other ways in which the government subsidized healthcare spending—much smaller in size than Medicare, Medicaid, and the tax exemption for employer-provided health insurance—are worth mentioning. For example, individual spending on medical care is deductible from income if it exceeds a threshold level of adjusted gross income (currently 10 percent of income for people under age 65). People can also make tax-deductible contributions to a medical savings account, which can be used for medical expenses after retirement. In 2016, deductibility of out-of-pocket expenses cost the US Treasury about \$7.6 billion, and the deductibility of medical savings accounts cost another \$5.6 billion (US Office of Management and Budget 2015, Table 14.1).

The government also spends money on public health, for example, the Centers for Disease Control (CDC) and National Institutes of Health (NIH). These and other types of public health spending may affect inequality through their direct effect on population health (Miller, Roehrig, Hughes–Cromwick, and Lake 2008). However, government spending on what may be called public health is relatively small with estimates in the 1 to 2 percent range of all government health care spending (Miller et al. 2008).

Accounting for Taxes and Transfers in Measured Inequality

A natural place to begin an assessment of how health policies affect inequality is to adjust family income for in-kind health insurance benefits and for tax subsidies. In this section, we review the small number of studies that have done this and also provide some new estimates. The existing papers assess how including the value of government-provided health insurance and employer-provided health insurance in income affected inequality, both at a point in time and with respect to changes over time.

Pierce (2001) was one of the first papers to extend the inequality literature to include “nonwage” aspects of income by incorporating employee fringe benefits into the analysis. His focus was on explaining inequality in the returns to market work, rather than inequality in well-being more broadly defined, and thus did not incorporate publicly provided insurance into his analysis. Health insurance is one of the most important fringe benefits accounting for approximately 5 percent of total compensation for civilian employees in 1997. Because health insurance coverage rises with employee earnings, as mentioned earlier, Pierce showed that the inclusion of employer-provided health insurance widens compensation

⁹ When we include employer-provided health insurance as taxable income, we compute the Earned Income Tax Credit and Child Tax Credit based on wage income alone.

inequality slightly at a point in time (Pierce 2001; see also Chung 2003). In addition, employee health insurance has grown as a share of compensation: by 2015, health insurance costs accounted for 8.4 percent of compensation (Bureau of Labor Statistics 2016). This growth would have caused both a rise in inequality in total compensation and a larger discrepancy between inequality in wages and inequality in total compensation.

Pierce (2001) also showed how changes in fringe benefits affected changes in inequality in hourly compensation between 1982 and 1996, exacerbating the increase in inequality that occurred between 1982 and 1996 by 15 percent. Pierce did not separately identify the effect of health insurance, although he did report that the incidence of employer-provided health insurance was declining over the period. Health care costs and insurance premiums were also rising during this period (General Accounting Office 1997). Given that most of the decline in health insurance coverage was concentrated at the low-end of the earnings distribution, changes in health insurance benefits likely increased the change in inequality during the period. Chung (2003) used different data (Current Population Study and Chamber of Commerce Employee Benefits Survey) than Pierce (2001) and reached similar conclusions.

In a series of papers, Burkhauser and colleagues provided assessments of integrating employer-provided health insurance, Medicaid, and Medicare into the analysis of inequality (Burkhauser and Simon 2010; Burkhauser, Larrimore, and Simon 2012, 2013). An important measurement issue highlighted in these studies is how to value Medicare and Medicaid benefits (Burkhauser, Larrimore, and Simon 2013). The US Census Bureau has developed an approach that estimates the “fungible” value of Medicare and Medicaid, which measures the resources from a family’s budget freed up by Medicare or Medicaid that the family can use for other purposes. This definition presumes that no money is freed up if the family has insufficient income to cover their basic food and housing costs, and thus the fungible value is set to zero.¹⁰ This definition seems problematic if the purpose is to assess inequality in resources; after all, Medicaid benefits do make a family better off in terms of consumption, even if all nonmedical spending by that family remains the same. Therefore, Burkhauser et al. (2012, 2013) impute the value of Medicaid benefits as the per person Medicaid expenditures by state, year, and age group. The value of Medicare benefits is set equal to Medicare expenditures per person by state and year. They impute a value to employer-provided insurance using average premium information from the Medical Expenditure Panel Survey–Insurance Component, by state, year, and firm size.

¹⁰ Specifically, the fungible value is an imputed value of medical expenditures for households who have sufficient income to cover their basic food and housing costs and enough income left over to purchase insurance on their own. The fungible value is zero for families who do not have sufficient income to cover to their food and housing costs and is prorated for families who have enough to cover their food and housing needs but not enough to cover the full cost of insurance. See “Calculating Fungible Values: Medicare, Medicaid” at the US Census Bureau website: <https://www.census.gov/cps/data/fungible.html>.

The Burkhauser et al. (2012, 2013) studies yield several important results. First, the overall effect of including the value of employee health insurance and Medicaid/Medicare reduces the amount of inequality at a point in time. In Burkhauser et al. (2013), for example, the ratio of the 90th to 10th percentiles of the income distribution is 8.2 in 1995 when pre-tax (post-transfer) income is the measure of income, but this ratio declines to 6.0, or by 27 percent, when the value of employee health insurance and Medicaid/Medicare are included in the income measure. Second, accounting for employee health insurance benefits and government healthcare programs had modest effects on overall changes in inequality over time. Burkhauser et al. (2012) reported that the Gini coefficient for family income increased by 13 percent between 1979 and 2007 when employer-provided health insurance and Medicaid/Medicare benefits were ignored, while including these benefits resulted in the Gini coefficient increasing by 10 percent. In contrast, accounting for the value of health insurance had a much larger effect on income inequality between the top and bottom income quintiles. Between 1979 and 2007, mean income in the top income quintile grew 3.3 times faster than in the bottom quintile when the value of health insurance is ignored, but including the value of health insurance reduces this figure to 2.0. A contemporaneous study of inequality by the Congressional Budget Office (2011) reported similar results.

Burkhauser et al. (2013) also assessed how the Patient Protection and Affordable Care Act of 2010, which expanded Medicaid to more low-income adults (in states that agreed to participate in the expansion) and also provided subsidies to families to purchase health insurance through exchanges, would affect income inequality. Aaron and Burtless (2014) conducted a similar analysis using similar data from the Medical Expenditure Panel Survey and methods. As shown in Table 2, the Affordable Care Act expanded insurance coverage and provided monetary benefits mostly to those in the lower half of the income distribution with benefits increasing as income decreases. Aaron and Burtless (2014) concluded that the largest effects of the Affordable Care Act will be to increase full income (income plus in-kind benefit of health insurance) for the 15th to 30th percentiles of the income distribution. This prediction is consistent with the data in Table 2. Thus, Medicaid expansions and insurance premium subsidies from the Affordable Care Act will reduce income inequality generally, but particularly between the top income categories and the first to third deciles.

In two recent papers, Meyer and Sullivan (2003, 2012) have argued that inequality in consumption is preferable to income as a way to measure inequality in wellbeing, primarily because consumption is conceptually a better way to measure long-run, permanent resources than income, which has a substantial transitory component. Meyer and Sullivan (2012) compare and contrast the level and trends in inequality using income- and consumption-based approaches, and their results are consistent with the other studies. Accounting for noncash transfers including, but not limited to, the (fungible) value of public and private health insurance reduces the level of inequality at a point in time, but has little effect on changes in inequality over time, whether measured using income- or consumption-based measures of inequality.

To illustrate more clearly the effect of including employer-provided health insurance benefits in the analysis of inequality, we conducted an analysis similar to those in Burkhauser et al. (2013) using data from the 1996, 2005, and 2013 Current Population Surveys (which report income and insurance coverage for the prior years). Table 3 presents the results, showing the 10th, 50th, and 90th percentiles of various measures of family income adjusted for family size, and the ratio of the 90th to the 10th, the 50th to the 10th, and the 90th to the 50th percentiles of adjusted family income. For all measures of family income, we assign each household member their family income and then compute the percentiles across all people. Inequality is rising between 1995 and 2012. This is true whether income is measured pre-tax or post-tax. For example, the 90–10 ratio of the distribution of pre-tax adjusted family income rose from 9.7 to 10.3 to 11.7 across the three years, an increase of 21 percent. The 90–10 ratio of post-tax income rose from 6.6 to 7.9 (20 percent). The 50–10 and 90–50 ratios in post-tax incomes each rose by 10 percent from 1995 to 2012.

Row 3 of Table 3 presents measures of inequality in which we added to family income an imputed value of Medicare or Medicaid. We follow Burkhauser et al. (2012, 2013) and assign to each recipient average Medicare expenditures by year and state and average Medicaid expenditures by age, year, and state.¹¹ The 90–10 ratio of after-tax family income in 1995 falls from 6.6 to 5.0, or by 24 percent, when our imputed value of Medicare and Medicaid is added to family income. Including these benefits has a slightly larger effect on measured inequality in 2012. The 90–10 ratio in 2012 falls from 7.9 to 5.6, a fall of 29 percent. Not surprisingly, all of the effects of including Medicare and Medicaid on inequality are within the lower half of the income distribution.

Rows 4 and 5 of Table 3 demonstrate what happens to the measures of income inequality if we add employer contributions for employer-provided health insurance to family income.¹² When employer-provided insurance is not taxed as income (as is currently the case), overall inequality increases when we add employer-contributions to family income. Comparing rows 2 and 4, in 2012, the 90–10 ratio in after-tax family income rises from 7.9 when employer-provided health insurance is ignored in the calculation of family income to 8.2 when employer contributions are added to

¹¹ Data on Medicare expenditures are from the State Health Expenditures files at the Centers for Medicare and Medicaid Services, which contain data from 1991 to 2009. We impute Medicare expenditures for respondents in the 2013 CPS (which contains program participation for 2012) using Medicaid data from 2009, adjusted for the overall growth in Medicare spending from 2009 to 2012. Data on Medicaid expenditures are from Medicaid Statistical Information System (MSIS). The MSIS has expenditures by state and age groups from 1999 to 2012, though many states are missing from the 2012 data. For respondents in the 1996 CPS (which reports insurance for 1995), we impute Medicaid expenditures from 1999 and discount the figure back to 1995 using the overall change in Medicaid expenditures between 1995 and 1999. For respondents in the 2005 CPS, we impute Medicaid expenditures from 2004. For respondents in the 2013 CPS, we impute Medicaid expenditures from 2011 and adjust the figures for the overall change in Medicaid spending between 2011 and 2012. Details are available upon request.

¹² Like total premiums, we impute employer contributions by single-digit industry and firm size using data from the Medical Expenditure Panel Survey–Insurance Component.

Table 3

Measures of Points in the Distribution of Family Income and Income Inequality in 1996, 2005, and 2012*(in 2013 dollars)*

	<i>10th percentile</i>	<i>50th percentile</i>	<i>90th percentile</i>	<i>90/10</i>	<i>50/10</i>	<i>90/50</i>
Panel A: 1995						
1. Pre-tax family income	\$8,369	\$32,654	\$80,976	9.7	3.9	2.5
2. After-tax family income	\$8,219	\$25,364	\$54,492	6.6	3.1	2.1
3. After-tax income plus imputed value of Medicare and Medicaid	\$11,078	\$27,179	\$55,894	5.0	2.5	2.1
After-tax family income plus employer-provided health insurance (EPHI) premiums						
4. where EPHI is not taxed	\$8,472	\$27,545	\$57,807	6.8	3.3	2.1
5. where EPHI is taxed	\$8,399	\$26,490	\$55,904	6.7	3.2	2.1
After-tax family income plus EPHI premiums and imputed value of Medicaid and Medicare						
6. where EPHI is not taxed	\$11,637	\$29,354	\$59,121	5.1	2.5	2.0
7. where EPHI is taxed	\$11,341	\$28,337	\$57,162	5.0	2.5	2.0
Panel B: 2004						
1. Pre-tax family income	\$8,829	\$35,222	\$90,726	10.3	4.0	2.6
2. After-tax family income	\$8,879	\$28,297	\$63,339	7.1	3.2	2.2
3. After-tax income plus imputed value of Medicare and Medicaid	\$12,082	\$30,682	\$65,092	5.4	2.5	2.1
After-tax family income plus employer-provided health insurance (EPHI) premiums						
4. where EPHI is not taxed	\$9,366	\$31,748	\$68,262	7.3	3.4	2.2
5. where EPHI is taxed	\$9,293	\$30,127	\$65,625	7.1	3.2	2.2
After-tax family income plus EPHI premiums and imputed value of Medicaid and Medicare						
6. where EPHI is not taxed	\$13,071	\$33,879	\$69,709	5.3	2.6	2.1
7. where EPHI is taxed	\$12,814	\$32,332	\$67,234	5.2	2.5	2.1
Panel C: 2012						
1. Pre-tax family income	\$7,610	\$33,122	\$89,401	11.7	4.4	2.7
2. After-tax family income	\$8,100	\$27,549	\$64,189	7.9	3.4	2.3
3. After-tax income plus imputed value of Medicare and Medicaid	\$11,941	\$30,973	\$66,911	5.6	2.6	2.2
After-tax family income plus employer-provided health insurance (EPHI) premiums						
4. where EPHI is not taxed	\$8,502	\$31,169	\$70,101	8.2	3.7	2.2
5. where EPHI is taxed	\$8,460	\$29,560	\$66,919	7.9	3.5	2.3
After-tax family income plus EPHI premiums and imputed value of Medicaid and Medicare						
6. where EPHI is not taxed	\$12,624	\$34,478	\$72,307	5.7	2.7	2.1
7. where EPHI is taxed	\$12,478	\$32,849	\$69,354	5.6	2.6	2.1

Source: Authors calculations' from the 1996, 2005, and 2013 Annual Social and Economic Supplement of the Current Population Survey, as described in the text. Survey respondents report sources of health insurance coverage in the prior year.

Notes: The table shows the 10th, 50th, and 90th percentiles of various measures of family income adjusted for family size, and the ratio of the 90th to the 10th, the 50th to the 10th, and the 90th to the 50th percentiles of adjusted family income. All incomes are expressed in 2013 dollars.

income but are not taxed. The effect of including employer contributions towards insurance in 1995 and 2004 is the same order of magnitude as the effect in 2012. The increase is entirely driven by increased inequality in the 50–10 ratio, where the disparity in employer-provided health insurance is larger.

The tax subsidy for employer-provided health insurance increases income inequality modestly. Comparing rows 4 and 5, in 2012, the 90–10 ratio would fall from 8.2 to 7.9 if employer-provided insurance were taxed, a decline of about 4 percent.¹³ This effect comes from declines in inequality in the lower half of the distribution (the 50–10 ratio). Taxing employer-provided health insurance has slightly smaller effects in 1996 and 2005.

Finally, in Rows 6 and 7 we present measures of inequality in post-tax family income that include the imputed values of Medicare, and Medicaid, and employer-contributions to health insurance. The net effect of including all three sources of insurance is to reduce measured inequality in after-tax income. The percentage change in inequality between rows 2 and 6 is 23 percent in 1995, 25 percent in 2004, and 28 percent in 2012. Moreover, the growth in after-tax income inequality is moderately smaller when health insurance is included in income. Inequality in after-tax income (row 2) increased by 20 percent between 1995 and 2012, while inequality inclusive of public and private insurance (row 6) increased by 13 percent. A comparison of the final two rows of Table 3 indicates that taxing employer-provided health insurance would reduce the 90–10 ratio by about 4 percent in 2012 and would have slowed the growth in equality from 1995 to 2012 by 2 percent.

To summarize, our reading of the evidence is that adjusting for public and private health insurance has a considerable effect on inequality at a point in time. Incorporating Medicare and Medicaid tends to flatten the distribution of income because the benefits of Medicaid, and to a lesser extent Medicare, accrue largely to those at the bottom of the resource distribution. Moreover, these programs have lessened the growth in inequality over time. The Patient Protection and Affordable Care Act of 2010 strengthened this effect by expanding Medicaid and providing subsidies for those with incomes up to 400 percent of the federal poverty line. Our conclusion is similar to that from the literature on poverty, which shows that accounting for noncash transfers has a substantial poverty-reducing effect (Burtless and Smeeding 2001; Haveman, Blank, Moffitt, Smeeding, and Wallace 2015). Accounting for employer-provided health insurance tends to increase measured inequality since coverage and total premiums tend to rise with income, and focusing on the tax subsidy for employer-provided insurance further exacerbates measured inequality.

¹³ In these calculations, we assume that both the employer and employee portions are taxed at the federal and state level, including payroll taxes for Social Security and Medicare. We assume that the Earned Income Tax Credit and Child Tax Credit are not affected by the tax treatment of employer-provided health insurance.

Conceptual and Empirical Issues

Valuing Government- and Employer-Provided Health Insurance

In this section, we highlight some significant issues for assessing the effect of health policy on inequality. Perhaps the most important issue is how to value government and employer-provided insurance for the purposes of assessing inequality, an issue we briefly discussed above. Suppose that a person on Medicaid receives insurance that would have cost \$6,000 if purchased through other means (such as the individual market or through an employer-sponsored plan). Does providing Medicaid to this person have the same effect as increasing the person's income by \$6,000? In one view, the answer is "yes," because Medicaid allows the person to spend \$6,000 less on health insurance and thus spend \$6,000 more on other goods. The Census Bureau's "estimated fungible value" is based on this reasoning. On the other hand, in the absence of the publicly provided health insurance, the person might have chosen to spend less on insurance, or have gone without insurance, depending on their risk of illness, income, and preferences. In that case, assigning the full cost of Medicaid to such a family overstates the degree to which their access to other resources that they value has changed.

Indeed, Finkelstein, Hendren, and Luttmer (2015) estimate that Medicaid enrollees in Oregon value a \$1 of Medicaid benefits at between \$0.20 and \$0.40. That is, they would be unwilling to enroll in Medicaid if they had to pay a premium equal to the government's cost of providing such insurance. One primary reason for this finding is that most people who are enrolled in Medicaid pay only 20 to 30 percent of the cost of care when uninsured, which greatly reduces the out-of-pocket savings and insurance value of Medicaid.¹⁴ Therefore, they would be unwilling to pay the government's cost of care, or to buy insurance on the private market, which would be even costlier than the government's cost of providing care.

To illustrate how the approach to valuing Medicare and Medicaid benefits that is used by the Census Bureau affects the income distribution, in Table 4 we show the average fungible values (fungible values are determined by the US Census Bureau) and our imputed values of Medicaid and Medicare from the 2013 Current Population Survey by decile of family income. In the calculations, we included zeros for families that do not participate in these programs. As noted earlier, the Census Bureau's estimated fungible value of Medicare and Medicaid is zero for families whose income is below that required to provide their own food and shelter. A notable feature of Table 4 is the very low value of the fungible Medicaid benefits in the first two deciles of the income distribution, even though participation is high among these families. This fact explains why using the fungible values has a far

¹⁴ The 20 to 30 percent figure does not include potential costs associated with unpaid bills such as higher costs of borrowing or restricted access to credit. Evidence in Finkelstein et al. (2012) and Dobkin, Finkelstein, Kluender, and Notowidigdo (2016) support this approach of ignoring potential future consequences of unpaid bills. Conversely, Mazumder and Miller (forthcoming) reported that gaining health insurance was associated with improved credit scores after four years.

Table 4
Fungible and Imputed Values of Medicare and Medicaid, by Decile of Family Income, 2012

<i>Decile of adjusted family income</i>	<i>Medicare</i>		<i>Medicaid</i>	
	<i>Fungible value</i>	<i>Imputed value</i>	<i>Fungible value</i>	<i>Imputed value</i>
Bottom decile	\$25	\$2,054	\$70	\$3,560
2	\$624	\$4,846	\$785	\$3,049
3	\$2,750	\$5,569	\$1,099	\$1,638
4	\$4,191	\$5,019	\$893	\$1,026
5	\$3,713	\$4,010	\$633	\$683
6	\$3,150	\$3,355	\$358	\$424
7	\$2,896	\$3,083	\$217	\$269
8	\$2,551	\$2,705	\$157	\$195
9	\$2,212	\$2,363	\$81	\$107
Top decile	\$2,174	\$2,335	\$71	\$107

Source: Authors' calculations from the 2013 Annual Social and Economic Supplement of the Current Population Survey.

Notes: Adjusted family income is total family income divided by the square root of family size. Average values include zeros for nonparticipants and are expressed in 2012 dollars. The US Census Bureau determines fungible values. For our imputed values of Medicare or Medicaid, we assign to each recipient average Medicare expenditures by year and state and average Medicaid expenditures by age, year, and state. See footnote 11 for further details.

smaller effect on measured income inequality compared to using, for example, a measure based on average medical expenditures. For assessing the effect of health insurance on well-being, an expenditure-based measure is probably better than the fungible value, although in light of the findings in Finkelstein et al. (2015), the use of the total Medicaid cost/expenditure likely overstates the value of Medicaid. The problem highlighted by Finkelstein et al. (2015) is less likely to be present for Medicare because the elderly would likely pay a larger proportion of medical costs out-of-pocket when uninsured than Medicaid recipients.

A similar issue arises in valuing employer-provided health insurance. In the canonical model of compensating wage differentials (Rosen 1986; Currie and Madrian 1999), employees' trade off lower wages for employer-provided health insurance. A full accounting of employee compensation should, therefore, include the value of employer-provided insurance. Yet the value of the health insurance to the employee, as measured by what insurance the employee would have purchased in the individual market in the absence of employer-provided coverage, will generally differ from employer's cost of insurance. Employers' cost reflects the average medical care use over all employees. Employees who place a higher value on the insurance, either because they use more medical care or because they have stronger preferences for insurance, will earn rents that are not properly valued when the average health insurance premium is assigned to all persons in a firm (or type of firm).

In general, people's demand for health insurance depends on several factors, but most importantly, on their risk of illness, income, and preferences (such as the extent of risk aversion). Low-income people have a greater prevalence of illness, which would cause them to have relatively strong demand for health insurance and place a relatively higher value on insurance relative to the cost to provide it. On the other hand, low-income persons have a lower willingness to pay for insurance (a higher marginal cost of consumption), which tends to reduce their demand vis-à-vis higher income persons. Similarly, older people are sicker and use more medical care; indeed, the ratio of health care spending between older and younger persons can be a factor of three or four.¹⁵ Accordingly, older people have a relatively high demand for health insurance.

The heterogeneity in the demand for health insurance, and thus the value of health insurance to the consumer, suggests that using the average expenditures in Medicaid and Medicare, or average premium for employer-provided health insurance as the value of insurance can result in large errors with respect to the person's actual valuation of those benefits. This point can be illustrated using the example of a person over age 65 who is working and who has employer-provided insurance. The average health insurance premium in the firm may be \$6,000 for an individual (Kaiser Family Foundation and Health Research Educational Trust 2013). If that person were to retire, the average Medicare expenditure would be over \$11,000 per person. Neither value is likely to be correct as a value for what that health insurance is worth to the consumer. The 65-year old probably has a higher value of insurance than the average employee in the firm and a lower value of insurance than the average Medicare recipient. To the extent that the heterogeneity of demands for insurance, for example, by age, differs across the income distribution, then these errors in valuation may mask important effects of health insurance on inequality. For example, young people are overrepresented in the lower part of the income distribution and they also have relatively low willingness to pay for health insurance because they are healthier and perhaps less risk averse. Thus, assigning them the average value of employer-sponsored health insurance premium represents an overstatement of the value that a young person places on the benefit.

Burtless and Svaton (2010) address this issue, at least in part. Instead of assigning an individual an average value for Medicaid, Medicare, or private health insurance, they calculated health care expenditures for each individual and added these expenditures (net of out-of-pocket payments) to income. The value of health insurance depends on the amount of expected health care expenditures and not the actual amount of expenditures in any one period. Therefore, using actual expenditures may seem incorrect as a measure of the value of insurance, but if individuals are aggregated into groups such as by income, then the average for

¹⁵ This multiple is based on a Fact Sheet from the Centers for Medicare and Medicaid Services, "U.S. Personal Health Care Spending by Age and Gender: 2010 Highlights," available at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/2010AgeandGenderHighlights.pdf>.

the group will equal the expected expenditure. Adjusting for these differences in health expenditures raised income in the bottom tenth of the income distribution by 65 percent in the population under 65, and by 130 percent in the 65-and-over population. In contrast, adding health care expenditures to the incomes of the top decile would raise income by 2 percent for nonelderly and 6 percent for the elderly. These results strengthen the conclusion that adding the value of health insurance to income reduces measured inequality.

A related issue is that the market price of health insurance—for example, employer-paid health insurance premiums—will overstate the average willingness to pay for such benefits because moral hazard increases the quantity of medical care use beyond the point where the marginal benefit equals the marginal cost. As studies have shown (for example, Newhouse and the Insurance Experiment Group 1993; Finkelstein et al. 2012), the use of medical care and presumably the overstatement of willingness to pay increases with the generosity of health insurance—that is, with the extent of moral hazard. If the generosity of insurance differs across the income distribution, then this measurement error could affect the level of inequality. In fact, we know that the generosity of private health insurance has declined over time, particularly in the recent period, as more private plans have raised copayment rates and deductibles (Kaiser Family Foundation and Health Research Educational Trust 2013). Also, public insurance (like Medicaid) is usually more generous than private health insurance because of low copayment rates and subsidized (Medicare) or no (Medicaid) premium requirements. Therefore, private health insurance premiums may better reflect a willingness-to-pay than Medicaid expenditures. This disparity may be growing over time because of the increasing use of high deductible plans in private insurance.

To summarize, current methods to value health insurance benefits for analyzing its effect on inequality are imperfect and there is room for improvement. Consider the different methods described for valuing Medicaid. For some families, the government assigns zero value because the family has no discretionary income and therefore providing this family with Medicaid does not increase consumption of nonmedical goods. This approach seems incorrect because in these instances the family's total consumption (inclusive of health care expenditures) increases. However, evidence in Finkelstein, Hendren, and Luttmer (2015) suggest that it is not too far off the truth, and arguably closer to the correct value than either using the average government expenditure for that person or the amount of medical expenditures incurred by that person. Perhaps a reasonable approach, which is driven primarily by practical considerations, would be to use 50 percent of health care expenditures as the value of Medicaid benefits.

The second major issue in properly valuing health insurance benefits is the heterogeneity in demand for health care and health insurance. The demand for health care and health insurance is correlated with age, illness, and other demographic factors. Therefore, using any average value of health insurance will result in errors, and the magnitude of the errors will be correlated with income because of the correlation between age, illness, and other factors and income. Therefore, it

is arguably preferable to use health care expenditures for each person. Calculating health care expenditures within an income group (say, an income decile) may be preferable because it will account for heterogeneity of demands for insurance by age, income, and other factors within that group and produce the average/expected expenditure, which in a well-functioning insurance market expenditures should equal health insurance premiums. Of course, there are market failures in health insurance markets that likely raise expenditures above the optimal amount. One crude approach, which we mainly justify on practical grounds, would be to use 80 percent of health care expenditures, assuming that 20 percent of expenditures are above the optimal amount due to market failures such as moral hazard (for example, Newhouse and the Insurance Experiment Group 1993).

Incorporating Behavioral Responses to Public Policies

Government programs and tax policies can lead to behavioral responses, which in turn may reduce or exacerbate measured income inequality. Consider Medicaid, and the possibility that it will affect labor supply (Baicker et al. 2013; Garrett and Kaestner 2014; Kaestner, Garrett, Gangopadhyaya, and Fleming 2016). Suppose a Medicaid expansion induces some people to drop out of the labor force (because they no longer must need to be employed to receive health insurance), which causes their incomes to decline. The decline in income could conceivably even be greater than the value of Medicaid benefit (however measured). A comparison of inequality before and after the Medicaid expansion would indicate that inequality in wage income rose and may indicate that inequality in the sum of wage income and an imputed value of Medicaid also rose. The labor supply response leads to an increase in measured inequality, even though the program itself clearly transfers resources to lower-income individuals.

This example highlights that analyses of inequality that focus on wage, incomes, and even on incomes plus transfers do not fully measure inequality of well-being because such measures ignore the value of time spent not working, which includes leisure and productive activities such as child-rearing that make life better for people. In the example above, the Medicaid expansion made recipients better off in terms of welfare, even if their income declined. The amount of time spent (not) working has changed over time and the change has been different for low-wage and high-wage workers; low-wage workers have increasingly spent less time working whereas high-wage workers have increasingly spent more time working (Aguiar and Hurst 2007; Kuhn and Lozano 2008; Mishel 2013). Accounting for these changes in the difference in time spent not working would suggest inequality has increased less than that suggested by changes in income.

One practical approach to this problem is to compute inequality using different assumptions about such behavioral responses. For example, Baicker et al. (2013) reported that, in the Oregon randomized control trial, obtaining Medicaid coverage was associated with a 3 percent decrease in employment and a 3 percent, or \$200, decrease in earnings in 2008 (which was not statistically different from zero). This was a study of childless adults, which are a small part of the Medicaid

population; and the estimates may differ across demographic groups. But if this response were incorporated into the analysis of income inequality, we would deduct \$200 from the value of Medicaid before adding Medicaid benefits to income. This adjustment would have a minimal effect on inequality because \$200 is a small fraction of the cost of Medicaid per person. However, this approach still ignores the improvement in well-being among people who choose not to work in response to receiving Medicaid.

On the other hand, Garthwaite, Gross, and Notowidigdo (2014) reported that between 63 and 90 percent of people who lost Medicaid coverage in Tennessee as a result of a policy change in 2005 gained employment. If we assume that earnings in Tennessee (which were not reported in the study) were about the same as in the Oregon sample, \$6,500 per year, then the labor supply response in Garthwaite et al. (2014) would imply that we should deduct between \$4,095 and \$5,850 from the value of Medicaid to account for the reduction in labor market earnings. A labor supply response of this magnitude would imply a very small net value of Medicaid, and so accounting for Medicaid benefits would not reduce measured inequality (and may even increase it). It is important to note that the relatively large labor supply effect reported by Garthwaite et al. (2014) is an outlier in the literature.¹⁶

Similar considerations would apply to Medicare, which may alter labor supply among the elderly (Madrian 2005). In the case of Medicare, there is evidence that it reduces labor supply, but modestly (French and Jones 2011; Blau and Gilleskie 2008). Thus, adding in the value of Medicare benefits to elderly income would modestly overstate the impact of this benefit on inequality of income plus transfers. It is unlikely that this behavioral response would significantly affect inequality, however, because the Medicare population is a small part of the total population, and those whose labor supply decisions would be affected are an even smaller part of the population when one considers the number who would not work regardless of the availability of Medicare. In addition, Medicare benefits are found throughout the income distribution.

Finally, the tax deductibility of employer-sponsored health insurance may bring forth a labor supply response because it may lower the effective wage.¹⁷ Workers may respond to the lower wage by working more or less depending on income and substitution effects. Here too, it would be necessary to account for changes in time spent not working to assess fully how this change will affect inequality.

Including the Value of Health

Health is also an important source of well-being, and like leisure, it has not been considered fully in analyses of inequality. This omission is significant because

¹⁶ A related issue is that publicly provided health insurance may crowd out employer-provided insurance (Cutler and Gruber 1996). Our calculations assume that the public and employer-provided insurance are equally valuable to the employee.

¹⁷ Since employer-provided health insurance is partly a fixed cost, taxing employer contributions for employer-sponsored health insurance may not change the after-tax wage rate appreciably. However, it could change the generosity and cost of employer-provided insurance and therefore change the mix of compensation firms and employees choose.

health is one of the most valued sources of wellbeing and consumers have a very high willingness to pay for health (Murphy and Topel 2006). Moreover, poor health may reduce both the value of leisure and of consumption.

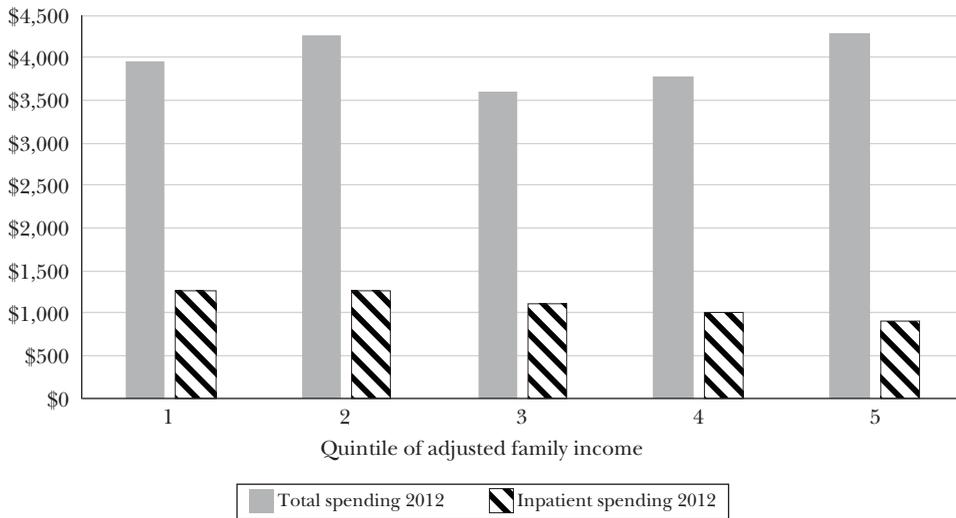
As noted earlier, health is strongly and positively correlated with income. Perhaps the most compelling evidence of this association is found in a recent National Academy of Sciences (2015) report, which reported that life expectancy of 50-year-old men in the top income quintile in 2010 was nearly 50 percent higher, or 12.7 years longer, than life expectancy of same aged men in the lowest income quintile. The analogous figure in 1980 was 20 percent (5.1 years). This is a large increase in the income–mortality gradient over a 30-year period. Thus, including the value of good health, an important source of well-being, in an analysis of inequality would likely significantly increase measured inequality and the growth in inequality because of the association between income and health that is independent of health insurance or spending on medical care.

The inclusion of health insurance benefits in analyses of inequality partly addresses this issue to the extent that health insurance reflects medical spending, and medical spending is arguably related to health. However, the association between health and spending on health care is relatively weak (Newhouse, and the Insurance Experiment Group 1993; Fisher et al. 2003; Baicker et al. 2013). A substantial part of healthcare spending reflects spending after illness that (often inadequately) restores a person to health. Figure 2 illustrates this point and shows total medical care spending and total inpatient spending for people age 18 and older in the full-year Medical Expenditure Panel Survey data for 2012. Total spending on health care is not strongly correlated with income, despite the strong correlation between health and income. However, there is a negative correlation between inpatient spending, which is usually for serious illness, and income. In the bottom quintile, inpatient spending is approximately \$1,300 (32 percent of total spending) whereas in the top quintile, inpatient spending is approximately \$900 (21 percent of total spending).

Conclusions

In contrast to analyses of inequality in the return to work, analyses of inequality of well-being more broadly defined should incorporate in-kind forms of compensation and government benefits. We have focused on how the inclusion of Medicaid, Medicare, and employer-provided health insurance influences measures of income inequality. While there is some debate about how to value Medicare and Medicaid benefits for the purpose of assessing how those programs influence inequality, our estimates and those in Burkhauser et al. (2013) indicate that measured inequality is about 25 to 30 percent smaller if the average cost of these programs are added to recipients' incomes. Incorporating employer-provided health insurance modestly increases measured inequality because the coverage rates and marginal tax rates rise with income. On net, however, including the value of both private and public

Figure 2

Total and Inpatient Spending on Medical Care in 2012 by Family Income

Source: Authors' calculations from the 2012 Medical Expenditure Panel Survey.

Notes: Adjusted family income is total family income divided by the square root of family size. Calculations include zeros for families with no medical care spending.

health insurance in measured income reduces inequality at a point in time and reduces the growth in inequality over the last 20 years. If employer-provided insurance were taxed as income, the 90–10 ratio would be about 4 percent smaller than it currently is. Though the effect of taxing employer-provided insurance on the 90–10 ratio may seem small compared to the effects of Medicare and Medicaid, it is important to bear in mind that the 90–10 ratio responds more to a fixed change in income among the poor than the rich.

Our discussion has highlighted some open research questions. First, assigning a value of health insurance is difficult. Most past work, including ours, has used a measure of average expenditures by firms and government. Some work has used individual expenditures (Burtless and Svaton 2010). It is arguably better to use individual expenditures, because expenditures are able to account for the heterogeneity of demands that characterize willingness to pay for health insurance. Recent work by Finklestein et al. (2015) suggests that these methods may overestimate the value of Medicaid to recipients. There is a similar debate in the literature on the trade-off between wages and employer-provided insurance and whether a dollar of insurance is worth a dollar of income. Despite these concerns over how to value health insurance, it seems fairly clear that our broad conclusions—that Medicare and Medicaid reduce inequality of well-being, and that incorporating both private and public insurance reduces inequality on net—are unlikely to be altered by better estimates of the value of insurance.

Second, inequality in income or access to resources is not the same thing as inequality in well-being. An analysis of inequality in well-being would include income, leisure and other activities not classified as work, and health, among other things. This point has been highlighted by the research of Meyer and Sullivan (2003, 2012), who focus on inequality in consumption. Consumption still does not include the value of time not working and health. There are a growing number of studies on the broader effects of public health insurance programs. Card, Dobkin, and Maestas (2009), for example, estimate that access to Medicare at age 65 is associated with a nearly one-percentage point decline in seven-day mortality among people admitted to an Emergency Department with “nondeferrable” medical conditions such as heart attacks. Finklestein et al. (2012) present evidence from Oregon that Medicaid lessens financial stress and improves mental health. Though this literature is small and not conclusive, these studies suggest that the effects of Medicare and Medicaid on inequality may be larger than that suggested simply by looking at their effects on income.

While government-subsidized health insurance significantly reduces income inequality and is an important source of well-being for the poor, the poor still are significantly disadvantaged in terms of health. Indeed, inequality in health between the top and bottom parts of the income distribution is large (National Academy of Sciences 2015). While there are many factors underlying the relationship between income and health, we close with a point made by Deaton (2002), among others, that policies that aim to improve individuals’ earnings capacity will have the dual effect of both reducing income inequality and inequalities in health.

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References

- Aaron, Henry J., and Gary Burtless. 2014. “Potential Effects of the Affordable Care Act on Income Inequality.” Research Paper, January 27, The Brookings Institution. <http://www.brookings.edu/research/papers/2014/01/potential-effects-affordable-care-act-income-inequality-aaron-burtless>.
- Aguiar, Mark, and Erik Hurst. 2007. “Life-Cycle Prices and Production.” *American Economic Review* 97(5): 1533–59.
- Baicker, Katherine, Sarah L. Taubman, Heidi L. Allen, Mira Bernstein, Jonathan H. Gruber, Joseph P. Newhouse, Eric C. Schneider, Bill J. Wright, Alan M. Zaslavsky, and Amy N. Finkelstein, for the Oregon Health Study Group. 2013. “The Oregon Experiment—Effects of Medicaid on Clinical

Outcomes." *New England Journal of Medicine* 368(18): 1713–22.

Blau, David M., and Donna B. Gilleskie. 2008. "The Role of Retiree Health Insurance in the Employment Behavior of Older Men." *International Economic Review* 49(2): 475–514.

Bureau of Labor Statistics. 2016. "Employer Costs for Employee Compensation—December 2015." BLS News Release, March 10. <http://www.bls.gov/news.release/pdf/ecec.pdf>.

Burkhauser, Richard V., Jeff Larrimore, and Kosali I. Simon. 2012. "A 'Second Opinion' on the Economic Health of the American Middle Class." *National Tax Journal* 65(1): 7–32.

Burkhauser, Richard V., Jeff Larrimore, and Kosali Simon. 2013. "Measuring the Impact of Valuing Health Insurance on Levels and Trends in Inequality and How the Affordable Care Act of 2010 Could Affect Them." *Contemporary Economic Policy* 31(4): 779–94.

Burkhauser, Richard V., and Kosali I. Simon. 2010. "Measuring the Impact of Health Insurance on Levels and Trends in Inequality." NBER Working Paper 15811.

Burtless, Gary, and Timothy M. Smeeding. 2001. "The Level, Trend, and Composition of Poverty." In *Understanding Poverty*, edited by Sheldon H. Danziger and Robert H. Haveman, 27–68. Cambridge, MA: Harvard University Press.

Burtless, Gary, and Pavel Svaton. 2010. "Health Care, Health Insurance, and the Distribution of American Incomes." *Forum for Health Economics & Policy* 13(1): 1–41.

Call, Kathleen T., Michael E. Davern, Jacob A. Klerman, and Victoria Lynch. 2013. "Comparing Errors in Medicaid Reporting across Surveys: Evidence to Date." *Health Services Research* 48(2, Part 1): 652–64.

Card, David, Carlos Dobkin, and Nicole Maestas. 2009. "Does Medicare Save Lives?" *Quarterly Journal of Economics* 124(2): 597–636.

Centers for Medicare and Medicaid Services. 2014a. "U.S. Personal Health Care Spending by Age and Gender. 2014 Highlights." US Department of Health and Human Services. Available at: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html>. Click on "Highlights."

Centers for Medicare and Medicaid Services. 2014b. "2014 CMS Statistics." US Department of Health and Human Services. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Statistics-Reference-Booklet/Downloads/CMS_Stats_2014_final.pdf.

Centers for Medicare and Medicaid Services.

2015. "March 31, 2015 Effectuated Enrollment Snapshot." Fact Sheet, June 2. <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2015-Fact-sheets-items/2015-06-02.html>.

Chung, Wankyo. 2003. "Fringe Benefits and Inequality in the Labor Market." *Economic Inquiry* 41(3): 517–29.

Congressional Budget Office. 2011. "Trends in the Distribution of Household Income Between 1979 and 2007." Report, October.

Cooper, David, and Elise Gould. 2013. "Financial Security of Elderly Americans at Risk." *Economic Policy Institute*, Briefing Paper #362.

Currie Janet, and Brigitte C. Madrian. 1999. "Health, Health Insurance and the Labor Market." In *Handbook of Labor Economics* vol. 3C, pp. 3309–3416. Elsevier.

Cutler, David M., Angus Deaton, and Adriana Lleras-Muney. 2006. "The Determinants of Mortality." *Journal of Economic Perspectives* 20(3): 97–120.

Cutler, David, and Jonathan Gruber. 1996. "Does Public Health Insurance Crowd-out Private Insurance?" *Quarterly Journal of Economics* 111(2): 391–430.

Deaton, Angus. 2002. "Policy Implications of the Gradient of Health and Wealth." *Health Affairs* 21(2): 13–30.

Deaton, Angus, and Christina Paxson. 2004. "Mortality, Income, and Income Inequality over Time in Britain and the United States." Chap. 6 in *Perspectives on the Economics of Aging*, edited by David Wise. National Bureau of Economic Research Conference Report. University of Chicago Press.

Dobkin, Carlos, Amy Finkelstein, Raymond Kluender, and Matthew J. Notowidigdo. 2016. "The Economic Consequences of Hospital Admissions." <http://economics.mit.edu/files/10958>.

Fisher, Elliott, S., David E. Wennberg, Thérèse A. Stukel, Daniel J. Gottlieb, F. L. Lucas, and Étoile L. Pinder. 2003. "The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care." *Annals of Internal Medicine* 138(4): 288–98.

Feenberg, Daniel Richard, and Elizabeth Couts. 1993. "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management* 12(1): 189–94.

Finkelstein, Amy, Nathaniel Hendren, and Erzo F. P. Luttmer. 2015. "The Value of Medicaid: Interpreting Results from the Oregon Health Insurance Experiment." NBER Working Paper 21308.

Finkelstein, Amy, Sarah Taubman, Bill Wright, Mira Bernstein, Jonathan Gruber, Joseph P. Newhouse, Heidi Allen, and Katherine Baicker. 2012. "The Oregon Health Insurance

Experiment: Evidence from the First Year.” *Quarterly Journal of Economics* 127(3): 1057–1106.

French, Eric, and John Bailey Jones. 2011. “The Effects of Health Insurance and Self-Insurance on Retirement Behavior.” *Econometrica* 79(3): 693–732.

Garrett, Bowen, and Robert Kaestner. 2014. “The Best Evidence Suggests the Effects of the ACA on Employment Will Be Small.” Brief, April. Urban Institute.

Garthwaite, Craig, Tal Gross, and Matthew Notodowidigdo. 2014. “Public Health Insurance, Labor Supply, and Employment Lock.” *Quarterly Journal of Economics* 129(2): 653–96.

General Accounting Office. 1997. “Private Health Insurance: Continued Erosion of Coverage Linked to Cost Pressures.” GAO/HEHS-97-122.

Haveman, Robert, Rebecca Blank, Robert Moffitt, Timothy Smeeding, and Geoffrey Wallace. 2015. “The War on Poverty: Measurement, Trends, and Policy.” *Journal of Policy Analysis and Management* 34(3): 593–638.

Kaestner, Robert, Bowen Garrett, Anuj Gangopadhyaya, and Caitlyn Fleming. 2016. “Effects of Medicaid Expansions on Health Insurance Coverage and Labor Supply.” NBER Working Paper 21836.

Kaiser Family Foundation. (Continually updated.) “Medicaid Spending Per Full-Benefit Enrollee,” <http://kff.org/medicaid/state-indicator/medicaid-spending-per-full-benefit-enrollee/>.

Kaiser Family Foundation, and Health Research Educational Trust. 2013. *Employer Health Benefits: 2013 Annual Survey*.

Kuhn, Peter, and Fernando Lozano. 2008. “The Expanding Workweek? Understanding Trends in Long Work Hours among U.S. Men, 1979–2006.” *Journal of Labor Economics* 26(2): 311–43.

Madrian, Brigitte C. 2005. “The U.S. Health Care System and Labor Markets.” In *Wanting It All: The Challenge of Reforming the U.S. Health Care System*, 137–63. Research Conference Series no. 50, Federal Reserve Bank of Boston.

Mazumder, Bhaskar, and Miller, Sarah. Forthcoming. “The Effects of Massachusetts Health Reform on Household Financial Distress.” *American Economic Journal: Economic Policy*.

McClellan, Mark, and Jonathan Skinner. 2006. “The Incidence of Medicare.” *Journal of Public Economics* 90(1–2): 257–76.

Meyer, Bruce D., and James X. Sullivan. 2003. “Measuring the Well-Being of the Poor Using Income and Consumption.” *Journal of Human Resources* 38(Supplement): 1180–1220.

Meyer, Bruce, and James X. Sullivan. 2012. “Consumption and Income Poverty in the United States.” In *The Oxford Handbook of the Economics of*

Poverty, edited by Philip N. Jefferson, pp. 49–74. Oxford University Press.

Meyer, Bruce D., Wallace K. C. Mok, and James X. Sullivan. 2015. “Household Surveys in Crisis.” *Journal of Economic Perspectives* 29(4): 199–226.

Miller, George, Charles Roehrig, Paul Hughes-Cromwick, and Craig Lake. 2008. “Quantifying National Spending on Wellness and Prevention.” *Advances in Health Economics and Health Services Research*, Vol. 19: *Beyond Health Insurance: Public Policy to Improve Health*, edited by Loren Helmchen, Robert Kaestner, and Anthony Lo Sasso, 1–24. JAI Press.

Mishel, Lawrence. 2013. “Vast Majority of Wage Earners Are Working Harder, And for Not Much More: Trends in U.S. Work Hours and Wages over 1979–2007.” *Economic Policy Institute*, Issue Brief #348, January 30. <http://www.epi.org/files/2013/ib348-trends-us-work-hours-wages-1979-2007.pdf>.

Murphy, Kevin M., and Robert H. Topel. 2006. “The Value of Health and Longevity.” *Journal of Political Economy* 114(5): 871–904.

Murphy, Kevin M., and Robert H. Topel. 2016. “Human Capital Investment, Inequality and Economic Growth.” NBER Working Paper 21841.

National Academies of Sciences, Engineering, and Medicine, Committee on the Long-Run Macroeconomic Effects of the Aging U.S. Population—Phase II. 2015. *The Growing Gap in Life Expectancy by Income: Implications for Federal Programs and Policy Responses*. Washington, DC: National Academies Press.

Newhouse, Joseph P., and the Insurance Experiment Group. 1993. *Free for All? Lessons from the Rand Health Insurance Experiment*. Cambridge: Harvard University Press.

Pierce, Brooks. 2001. “Compensation Inequality.” *Quarterly Journal of Economics* 116(4): 1493–1525.

Rosen, Sherwin. 1986. “The Theory of Equalizing Differences.” *Handbook of Labor Economics*, vol. 1, edited by Orley C. Ashenfelter, and Richard Layard, 641–92. Elsevier.

US Census Bureau. No date. *Historical Income Tables: Income Inequality*. <https://www.census.gov/hhes/www/income/data/historical/inequality/>.

US Census Bureau. No date. “Calculating Fungible Values: Medicare, Medicaid.” <https://www.census.gov/cps/data/fungible.html>.

US Office of Management and Budget. 2015. *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2016*. Available at https://www.whitehouse.gov/omb/budget/Analytical_Perspectives.

Young, Katherine, Robin Rudowitz, Saman Rouhani, and Rachel Garfield. 2015. *Medicaid Per Enrollee Spending: Variation Across States*. Kaiser Family Foundation.

