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Health Care Consumption and the Relative Well-Being of the Aged

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1. Introduction

Economists have long debated whether material well-being is better measured using estimates of a household's income or consumption. Many conclude that an ideal consumption measure offers a better approximation of household members' long-term well-being (or permanent income) than measures based on current income flows. Unfortunately, ideal consumption data are not currently available, and the cost of collecting them makes it unlikely they will be available anytime soon. To estimate consumption analysts ordinarily rely on imperfect measures of current consumption expenditures, and expenditures do not fully reflect all consumption flows. For example, consumption expenditures on housing provide a poor measure of the consumption flows enjoyed by people who own their homes. Actual household spending on medical bills and health insurance premiums similarly provides an unreliable indicator of the health care consumption enjoyed, on average, by people who are covered by a group health plan. Some health consumption is financed with employer contributions to employee health plans, and almost half of health care consumption is financed with government-provided insurance, primarily medicare and medicaid. Home ownership and generously subsidized health insurance are particularly important in determining consumption flows of the aged.

In previous research with Barry Bosworth and Sarah Anders I examined the impact on the income distribution statistics of developing better measures of capital income flows. Our estimates included a measure of the flow of income that households derive from owner-occupied homes (Bosworth, Burtless, and Anders 2007). In this paper I develop and examine alternative measures of income that combine estimates of households' annual cash income and the health care consumption they obtain that is not financed out of current cash income. The Census Bureau has developed and published expanded income measures that include the insurance value of major kinds of government- and employer-provided health insurance (U.S. Bureau of the Census 1993). I extend the earlier Census analysis by examining the actual distribution of health care consumption and health care financing across U.S. households. In addition, I analyze the relationship between health spending and payment patterns, on the one hand, and age and position in the income distribution, on the other.

It is plain in the national income and product statistics that an increasing percentage of health care consumption is financed with money that is not counted in standard measures of household income. Using detailed information on household health care consumption, health insurance coverage, and out-of-pocket spending on medical care and health insurance in the Medical Expenditure Panel Survey (MEPS), it is possible to make good estimates of the portion of care that is financed out of a household's own income as well as the care that is financed by someone else. The portion of health care that is financed by someone else represents an addition to a household's claim over resources that is not measured by its cash income. How big are these claims? How are they distributed across young and old and among people at different positions in the income distribution? Because the aged Americans are major consumers of health care goods and services, and because they receive generously subsidized insurance under public programs, their cash incomes almost certainly provide a misleading picture of their claims on real resources.

The findings of the analysis can be summarized briefly. Using the Census Bureau's estimates of the insurance value of medicare, medicaid, and employer contributions to employee health plans, it appears that the disposable cash income statistics understate true income by about 11 percent. Because the Census Bureau estimates of insurance value are much more equal than disposable incomes, the Gini coefficient of income inequality would fall 8.5 percent if the Bureau's estimates of insurance value were added to disposable cash income. The incomes of the population under 65 would increase about 10 percent and the incomes of the aged would rise 29 percent, significantly improving the relative income position of the elderly. The health spending reports in the MEPS do not show such a large effect of subsidized health insurance on the relative income standing of the aged. The estimated difference between household spending on health and household consumption of health care that is observed in the MEPS sample is smaller than the Census Bureau's estimates of insurance value. If we subtract MEPS households' out-of-pocket spending on health care and insurance premiums from their total purchase of health care, the difference represents a claim on resources that is not financed out of household income. Based on interview data obtained in the 2003 MEPS panels, it appears that these claims represent a little more than 8

percent of household disposable income. Not surprisingly, there are wide disparities in these claims across households. If the claims were added to disposable cash incomes, the aged would see their measured incomes rise more than 20 percent, but the nonaged would see their incomes rise by only 7 percent. Including these claims in measured income would reduce inequality, but by a smaller percentage than including the Census Bureau's estimate of the insurance value of government and employer provided insurance.

The remainder of the paper is organized as follows. The next section presents statistics on aggregate consumption and health care purchases to show the importance of third-party payments for medical care in overall consumption and income. The following section analyzes experimental income estimates developed by the Census Bureau to include the value of government and employer provided insurance in consumer incomes. These estimates are tabulated to see the effects of including insurance value in the measure of household income. I then develop new estimates from the MEPS household survey of household spending on health care and insurance and total consumption of health care. The estimates are compared with the earlier Census Bureau estimates, and they are used to assess the impact of health care spending and insurance on the income distribution. The paper concludes with a brief description of implications of the study for measuring trends in the distribution of income.

2. Health Care Consumption and Personal Income

In 1960 medical spending accounted for less than 7 percent of total personal consumption. By 2006 this fraction had risen to almost 21 percent. Strikingly, however, relatively little of the increase in health spending was financed directly out of household budgets. Between 1960 and 2006 the proportion of health spending paid out of public budgets more than doubled, and the fraction financed through third-party payments from private health insurers rose almost 70 percent. The actual percentage of health care costs paid as out-of-pocket payments by households fell from 55 percent to less than 15 percent between 1960 and 2006 (Centers for Medicare and Medicaid Services, Office of the Actuary, 2008). In spite of the dramatic increase in Americans' health care consumption,

a smaller percentage of household expenditures is now devoted to medical care, including health insurance premiums, than was the case in 1960.¹

As a result of the dramatic rise in third-party payments for medical care, many people now consume more health services than they could afford if they had to pay for these services out of current income and savings. In 2003 almost 22 million adults age 25 and older received medical goods and services that cost more money than their annual cash incomes. Total health care spending for these adults averaged nearly \$16,400 per person. An overwhelming percentage of the spending was financed out of third-party payments rather than personal income. These adults and their immediate relatives paid for only about \$1,800, or 11 percent, of the cost of the care they received. The remainder of the spending, more than \$14,500 per person, was financed by private insurers, medicare, medicaid, and other third-party payers.² The personal incomes of these health care consumers thus give a substantial understatement of their actual or potential consumption of goods and services. Of course, these consumers face unusually high health costs in comparison to their incomes. Nonetheless, the rising cost and utilization of health care and the wide disparities in health consumption across the population mean that standard measures of personal income give a misleading picture of Americans' capacity to consume goods and services.

Statistics on personal income and consumption in the national income and product accounts (NIPA) give an indication of the rising importance health care consumption and third-party medical payments in the consumption of American families. In 2006 personal consumption of medical goods and services accounted for a little more than one-fifth of total U.S. personal consumption according to the NIPA.³ Of this total a little more than

¹In the 1960–61 Consumer Expenditure Survey, 6.7 percent of household expenditures was devoted to health care consumption; in the 2006 Survey, the share devoted to health care was just 5.7 percent (Jacobs and Shipp, 1990, p. 21; and <<ftp://ftp.bls.gov/pub/special.requests/ce/standard/y0006/multiyr.txt>> [accessed on May 15, 2008]).

² These estimates are derived from tabulations of the 2003 MEPS household file. [“MEPS spending reimbursement 2003.xls” : *High MedExp Low Inc*]

³ The National Health Expenditure Accounts, which are estimated and published by the Center for Medicaid and Medicare Services, show a slightly lower estimate of total spending on personal health care. However, the long-term trend in personal health consumption and the sources of financing for the consumption are very similar in the NIPA and national health expenditure statistics.

65 percent is financed from employer contributions to group health and workers' compensation plans or from government social benefit plans, including medicare, medicaid, and state child health programs. The remainder is paid directly by consumers, as medical out-of-pocket payments for care or as health insurance premiums. The share of personal health consumption that is paid with employer contributions or government insurance payments has risen steeply since 1960, when only 20 percent of health care consumption was financed out of these sources (Figure 1).

The standard money income statistics published by the Census Bureau do not include either employer contributions to employee health plans or government payments for personal health care in the definition of household income. The main Census Bureau income definition ("money income") focuses on cash income directly received by households, a measure that is closely related to the income that would be reported on tax returns. In contrast, the NIPA measure of (gross) personal income is much broader. It includes employer supplements to wages and salaries, such as contributions to employee health plans, as well as government payments for personal health consumption. Figure 2 shows employer and government payments for personal health care measured as a percent of total personal consumption and household money income.⁴ The estimates exclude the portion of personal health care that is financed out of households' money income, that is, with out-of-pocket payments for care and health insurance premiums. Personal consumption expenditures are reported directly in the NIPA statistics (in Table 1.1.5). Estimates of aggregate money income are more difficult to derive from the NIPA tables because the conceptual basis of the NIPA definition of personal income differs from that of the Census Bureau definition of money income. In a previous paper, we described methods for converting NIPA income statistics into a series that reflects the Census Bureau concept of money income (Bosworth, Burtless, and Anders 2007; see also Roemer 2000 and Ruser, Pilot, and Nelson 2004). The estimates of household or money income used in Figure 2 are based on those methods.

⁴ The estimate of government payments for personal health care is net of consumers' premium payments for coverage under the government insurance plans. Thus, premium payments for Part B of medicare are subtracted from medicare benefit outlays in order to calculate the net health consumption that is financed by the government payments.

Both sets of estimates displayed in Figure 2 show a dramatic rise in the importance of third-party payments for personal health consumption. In 1960, only 1.3 percent of total personal consumption consisted of health care goods and services financed out of employer premium contributions and government insurance payments. In 2006, 13.5 percent of total personal consumption was financed in this way. Employer contributions for health insurance plans and government health insurance payments represent forms of personal income that are excluded from the definition of money income. In 1960, money income would have increased 1.2 percent if these payments for personal health consumption had been included in the definition of income. By 2005, money income would have increased 13.3 percent if these components of income had been included in the money income definition. Note that the long-term rise in health spending and the growing importance of third-party payments for health consumption mean that the standard money income statistics understate the long-term increase in both personal income and consumption as those concepts are defined in the NIPA statistics. The understatement is much larger for groups in the population that have enjoyed the fastest growth in third-party reimbursement of health care consumption. Since these groups include the aged, poor, and disabled as well as families enrolled in employer-sponsored health plans, it is apparent that the understatement affects nearly all of the population.

3. Effects of Employer Insurance Contributions and Government Health Benefits at the Household Level: Census Bureau Estimates

Recognizing the limitations of its standard definition of money income, the Census Bureau has attempted to measure household income under a number of more comprehensive definitions, including ones that account for most personal health benefits funded or directly provided by employers and the government (U.S. Bureau of the Census 1993; Cleveland 2005). In one income definition, for example, the Bureau included estimates of the value of employer contributions to employee health plans for workers who said they were covered by an employer plan. Predicted employer contributions were imputed to each worker in the March Current Population Survey (CPS) based on model estimates developed using data from a previous medical care expenditure survey. In the medical expenditure survey employers were asked about the

contributions they made to plans covering a sample of workers. In another income definition the Bureau included estimates of the “fungible insurance value” of medicare and medicaid for people in the CPS who said they were insured by medicare or medicaid for part or all of the previous year. The insurance value of medicare and medicaid were estimated by calculating the average medicare and medicaid outlay per enrollee, by risk class, separately in each of the 50 states. In its income estimates for 1992 the Bureau defined two risk classes for medicare (older than age 65 and disabled) and four risk classes for medicaid (older than 65, disabled, age 21-64 and not disabled, and age 0-20 and not disabled).

Because the Census Bureau developed alternative income definitions in part to estimate poverty rates under more comprehensive measures of family resources, the Bureau did not believe it could include 100 percent of the medicare and medicaid insurance valuation for respondents with low cash incomes. Consequently, it added only the “fungible” value of insurance, an amount that is zero in the case of families who do not have enough cash and near-cash resources to pay for minimum food and shelter costs. As cash and near-cash resources rise above this threshold an increasing percentage of the insurance value of medicare and medicaid is included in family income. The full insurance amount is included in income when a family’s cash and near-cash resources are greater than the difference between family resources and the minimum resource threshold (U.S. Bureau of the Census 1993, pp. B1-B3).

Even though the full insurance value of medicare and medicaid is not reflected in the Census Bureau’s fungible insurance value estimates, its imputations of medicare, medicaid, and employer health insurance contributions add about 10 percent to the gross money income reports obtained in the CPS file covering 2003 incomes. The CPS file shows that average money income per person in 2003 was \$23,300 while the average addition to income that resulted from health insurance was a little less than \$2,400. Of this amount, one-third consisted of the fungible value of medicare insurance, one-fifth was the value of medicaid insurance, and 46 percent consisted of estimated employer contributions to employee and retiree group health plans.

Of crucial importance is how these insurance benefits are distributed across age groups. The Census Bureau treats employer insurance contributions as an addition to

wage income, and it imputes the income to the employee or retiree who is covered under the employer plan. However, other family members also derive benefits from the employer's contributions, so part of the benefits from the employer contribution should also be attributed to family members covered by the plan. Households containing older adults tend to have fewer members, and this fact must also be taken into account when measuring the relative income positions of young and old Americans. One way to deal with differences in the number of household members is to estimate the change in income required to hold living standards constant when a household gets larger or smaller. In principle, such an adjustment allows us to calculate equivalent incomes for households of different sizes. A common adjustment, which I use here, is to assume that a household's income requirements increase in proportion to the square root of the number of household members. Under this assumption, a household containing four members is presumed to require twice as much income as a single-person household in order to maintain an equivalent standard of living. Formally, equivalent money income (EY) is equal to unadjusted household income (Y) divided by household size (S) raised to an exponential value (e), that is, $EY = Y/S^e$. My assumption implies that the value of e is $1/2$.⁵

The equivalence scale gives a method for comparing well-being among households which differ in size. To compare living standards among people of different ages, however, it is necessary to make an assumption about how household resources are divided among household members. In most of this paper I will assume that resources are equally divided, so that each member of a household has an identical equivalent income. This assumption seems defensible in the case of cash and near-cash income, where in principle all household members can share equally in economies of scale in consumption and in the material well-being that can be obtained from cash purchases. It is more debatable in the case of health care consumption, where the benefits of consumption are concentrated on the person who obtains the health care services. The Census Bureau's estimates of employer contributions for group health plans do not allow

⁵ The value $e = 1/2$ is a common value used in research on household income, because it represents the halfway point between two extreme assumptions about the economies of scale that individuals achieve when they live in larger households. In addition, it is not far from the family-size adjustment implied by the official U.S. poverty thresholds.

us to identify which household member derives benefits from the extra health consumption that the insurance contributions allow. In a family where more than one member is covered by the employer's plan it is unlikely benefits are concentrated solely on the wage earner whose employment gives rise to the family's insurance coverage. If the benefits are spread equally across family members, it seems plausible to treat health benefits as equally available to all family members.

This is the assumption used in Figure 3 to assess the value of health benefits estimated by the Census Bureau. The Bureau's estimates of the fungible insurance value of medicare and medicaid and employer contributions to employee health plans are treated as an addition to household income. They are assumed to be equally available to all household members, regardless of age, and they are translated into additions to equivalent household income. Figure 3 shows the distribution of the resulting income gains across the age distribution. The Bureau's estimates imply that the equivalent income additions resulting from the medicaid program are remarkably equal across the age distribution. Not surprisingly, the benefits of the medicare program are much more concentrated in the population age 65 and older, while the income gains attributable to employer subsidies for worker and retiree health plans are concentrated on the working-age population and its dependent children.

Figure 4 shows the implications of the Census Bureau estimates for the age distribution of relative equivalent personal income. For each income definition, the numbers in the chart show the average equivalent income in an age group measured relative to the population-average income under the same definition. The bold solid line shows the age distribution of the Bureau's standard income measure, that is, before-tax money income. These estimates suggest that older Americans have the lowest average equivalent incomes of any age group. The peak equivalent lifetime income is attained by Americans between 55 and 59, whose average money income is 36 percent higher than the average for Americans of all ages. Equivalent money income falls off sharply after age 60. People who are between 70 and 74 have average money income that is 19 percent below the population average, about the same income deficit as that of children between 0 and 4. Americans older than 74 have the lowest equivalent money incomes in

the population. (The lifetime income pattern is similar if we use relative median incomes rather than mean incomes to assess the positions of different age groups.)

The broken line in Figure 3 shows the distribution of equivalent disposable personal incomes. Disposable cash and near-cash income is equal to money income plus near-cash transfers (food stamps and public housing subsidies) minus estimated income and payroll taxes. Not surprisingly, the addition of near-cash transfers and the subtraction of tax payments equalizes the distribution of measured income across age groups. Equivalent incomes at the peak income ages are reduced, while relative incomes at the low-income ages are increased, most notably in the population past age 65. The third line in the chart shows average equivalent incomes when Census Bureau estimates of health benefits are added to households' disposable incomes. The effect of these additions is to reduce slightly the estimated relative incomes of young and working-age Americans and to boost significantly the relative incomes of the population most likely to be entitled to medicare, namely, the population 65 and older. Among the oldest old, those past age 85, equivalent average income rises from 63 percent of the population average under the Census Bureau's standard money income definition to 83 percent of average under the broadest income definition considered. Most of the apparent improvement in the relative income position of the very elderly is the result of adding the value of health benefits, mostly medicare, to their disposable cash and near-cash incomes.

The addition of the Census Bureau's estimate of health benefits to countable incomes reduces measured inequality in the population, because the additions are proportionately much larger for people at the bottom of the income distribution. Figure 5 shows this relationship when people in the CPS sample are sorted by their household-size-adjusted disposable cash and near-cash incomes (that is, their after-tax incomes excluding estimates of the value of health benefits). The broken line in the chart shows the change in size-adjusted personal income that would result if the Bureau's estimates of health benefits were added to the disposable incomes of people in each of the disposable income centiles. Except in the very lowest ranks of the income distribution, the pattern of income additions follows a U-shaped pattern. Americans in the middle of the disposable income distribution receive smaller increments to their incomes than Americans further down or further up the distribution. The large gains near the bottom

are explained by the importance of medicare and especially medicaid benefits to households with low disposable incomes. The large gains at the top are the result of more generous predicted employer health benefits for workers earning above-average wages. At the very bottom of the income distribution the small increments to income are the result of the Census Bureau's decision to include only the fungible value of health insurance in its more comprehensive income definition. In spite of this choice, the addition of health benefits to the income measure has a much bigger proportional effect on estimated incomes at the bottom than it does in the middle or at the top of the distribution (see the solid line in Figure 5). If the Census Bureau's estimates of health benefits were added to after-tax cash and near-cash income, the Gini coefficient of income inequality in 2003 would decline by almost 9 percent. A substantial part of this decline is due to the improved incomes of many older Americans, whose relative position in the distribution is substantially improved when their health benefits are included in the estimate of resources available to them.

4. The Distribution of Net Health Benefits in the MEPS

The introduction of the MEPS in 1996 greatly improved analysts' ability to measure the precise impact of health benefits on the distribution of personal consumption. Like the March CPS, the MEPS provides information on cash income and its components for a nationally representative sample of the noninstitutionalized population. In addition the MEPS obtains unusually comprehensive information on health care utilization, spending on health care and insurance, and sources of payment for personal health care goods and services for people enrolled in the household survey. The survey has three basic components, a survey of representative households, a survey of the medical providers who supply services to people in the household survey, and a nationally representative survey of public and private employers to collect information on the types and cost of employee health insurance offered.⁶ For purposes of estimating the distribution of health care consumption and payments in the noninstitutionalized population, the first two surveys are the most important components of the project. They provide detailed information on episodes of medical care, their cost, and the sources of

⁶ For a more detailed description of the MEPS program and its component surveys, see the introductory material in Bernard and Banthin (2007).

payment for the care received by people in the household sample. Because the reports of the household respondent are cross-checked against the responses of providers, the MEPS provides much more accurate information about the cost and sources of payment for medical services than would be possible in a household survey by itself.

The MEPS household survey collects information from a given sample (or panel) in five separate surveys that cover overlapping time periods over two calendar years. The analysis reported here is based on income, medical care, and health spending reports of the seventh and eighth MEPS panels covering calendar year 2003. Most of the analysis focuses on the incomes and health spending of the sample members who were present in the interviewed families at the end of December 2003. This sample restriction is intended to make the sample comparable to that in the March 2004 CPS sample, which also reflects a sample of people at selected addresses at a particular point in time. Since MEPS households are included in the sample for a period of two years, it is possible that some household members who were present before or after December 2003 will be absent from the household in that month. The incomes and health care spending of absent family members are usually excluded from the analysis.

Although the MEPS household survey provides extensive information on the types of providers who supply medical care to people in the sample, the focus of the present analysis is on the total cost of care received, the portion of costs that are directly paid by the person receiving care or by other family members, and the cost of health insurance premiums. The MEPS household survey files permit us measure the total cost of care received by individual household members and to observe the portion of this cost that is paid by the household and by individual third-party payers – medicare, medicaid, private insurance, workers' compensation, and so on. Although total health expenditures and medical out-of-pocket payments are separately observed for every household member, it is more difficult to allocate premium payments across individual members, except when the insured family unit consists of a single person. Many employers provide less generous premium subsidies to an employee's dependents than they do to the employee. My calculations assume, however, that the household's out-of-pocket premium payments represent an equal expense for every household member.

The MEPS household survey data can be used to measure well-being, including health consumption, in a way that focuses on each person's or household's claim on resources. Rather than attempting to measure the insurance value of the third-party payments received by sample members, we can directly observe the total health consumption they receive and subtract from this the money payments they make in order to obtain the consumption. The difference between a person's total health expenditures (including the part reimbursed by insurers) and the out-of-pocket payments the consumer makes for health care and insurance premiums represents a claim on resources in addition to the claim reflected by the person's money income. This net claim on health care resources can be summed across all household members and added to total household income. It can also be estimated at the individual level and treated as an income component that differs from one household member to another.

Many social scientists are uneasy with an income definition that treats actual health care consumption in excess of out-of-pocket medical payments as an addition to income. People who consume more-than-average health care services ordinarily do so because they are sick or injured. Those who consume the most costly services are the sickest and the most seriously impaired. It is hard to argue that a person who receives third-party payments covering \$100,000 of medical care is \$100,000 better off than a person enrolled in the same insurance plan who is so healthy he never sees a doctor or the inside of a hospital. While this observation is correct, it does not follow that estimates of resource utilization must be used to make interpersonal comparisons of well-being. They can be used instead to make estimates of the command over resources that is implied by coverage under different health insurance plan, supplied either by an employer or the government.⁷

⁷ Many social scientists are more comfortable approximating material well-being by the insurance value of third-party reimbursement, as the Census Bureau attempts to do in its experimental measures of income. However, the Census Bureau has developed measures of resource utilization rather than insurance valuation. The medicare program offers the same insurance protection in Florida as it does in Wyoming, and hence the welfare value of the protection should be approximately the same for people in the two states who face the same health risks. The Census Bureau's 1992 insurance valuations of medicare imply, however, that a person who is 65 or older would have valued medicare at \$4,178 in Florida but only \$1,768 in Wyoming. The reason for this difference is that on average aged medicare beneficiaries in Florida received more than twice as much reimbursement as beneficiaries in Wyoming (U.S. Bureau of the Census 1993, p. B-3). If the Census estimates of medicare insurance value are used

Before showing estimates of the distribution of health consumption and health outlays in the MEPS, it is useful to compare the income and health spending reports in the MEPS and CPS files. The MEPS file contains respondents' reports of money income (and its major components) and food stamp benefits. It lacks reports or imputations of housing subsidies and income and payroll tax payments, so it is not currently possible to calculate disposable cash and near-cash income in the MEPS file. The reported distributions of household-size-adjusted money income in the MEPS and CPS files are remarkably similar (see Figure 6). MEPS respondents reported slightly higher money incomes in the bottom 70 percent of the income distribution while CPS respondents reported higher incomes in the top 30 percent of the distribution. Big discrepancies between the two surveys are noticeable only at the very top of the income distribution, mainly because of differences in top-coding procedures in the two surveys. In the bottom 97 income centiles, the average size-adjusted money income in the two surveys differs by less than 0.2 percent.

There is less similarity in the two surveys in their estimates of the value of third-party payments for health care. Figure 7 shows the additions to size-adjusted money income that are due to insurance benefits, by age group, in the two surveys. The CPS estimates are displayed in the top line in the chart. The Census Bureau's estimates of the insurance value of medicare and medicaid and employer contributions for health benefits show a sharp increase in the value of these benefits starting at age 65. The increase occurs mainly because most Americans become eligible for medicare benefits at that age. In contrast, the estimates of the net income gain from health insurance derived from the MEPS show smaller income gains across the entire age distribution and a more gradual increase in the household-size-adjusted value of these income gains between ages 45 and 85. One explanation for the difference is that the MEPS estimates subtract households' insurance premium payments in calculating the net income gain that medicare-insured people derive from their medicare coverage. The Census Bureau's estimates apparently do not make such an adjustment. In addition, the net income gain that MEPS respondents obtain from medicaid coverage is smaller than implied by the imputation of medicaid

as measures of well-being, they imply that Florida beneficiaries are better off than Wyoming beneficiaries. An alternative interpretation is that they are sicker or face higher prices than

insurance benefits made by the Census Bureau. This is surprising because the Bureau's estimate of the value of medicaid includes only the fungible value of the insurance, which is less than the expected cost of providing medicaid reimbursement when families have very low cash and near-cash incomes. The MEPS probably understates medicaid reimbursement of health care consumption in the noninstitutionalized population (see Sing *et al.* 2006). The value of private insurance plans to survey respondents seems similar in the two surveys.⁸

A striking difference between the two sets of estimates in Figure 7 is the sharp rise in net health benefits that begins at age 65 in the Census Bureau estimates but not in the estimates based on MEPS spending patterns. One explanation has already been noted. The Census Bureau estimates do not subtract medicare insurance premiums before assessing the insurance value of medicare. Another explanation is that the Census Bureau does not make a distinction between the insurance value of medicare to a person who is 65 and someone who is 80. The experiences of all people 65 and older are averaged together in determining the insurance value of medicare to the aged. The MEPS estimates, which are based on actual spending patterns, show that health expenditures per person climb with age past 65, so the value of medicare insurance is greater for people who are 80 compared with people who are 65.

The estimates displayed in Figure 7 suggest that the MEPS estimates of health care expenses reimbursed by third-party payers have a smaller effect on the income distribution than the Census Bureau's estimates of insurance value. On average, the MEPS estimates of net additions to consumer income originating in the health insurance system add only about 7 percent of household-size-adjusted money income in the MEPS.

Wyoming beneficiaries.

⁸ It also seems likely that a measurement issue helps explain part of the difference between "insurance value" and actual health care expenditures as measured in the MEPS. The Census Bureau obtains estimates of the insurance value of medicare and medicaid by dividing state-level reimbursement for medical care by the number of state residents insured under the program. (In the case of medicaid, the estimate reflects reimbursements solely for the noninstitutionalized population.) In contrast, the MEPS covers only episodes of medical care received when household members are included in the sample. A person who exits the sample because of death or institutionalization may not provide any record of the medical care or medical spending that occurred in the weeks or months immediately before exit (see Sing *et al.* 2006). Since people may incur substantial health care costs in the weeks before death or institutionalization, this may produce an understatement of average health expenditures in the MEPS.

The Census Bureau's estimates of insurance value and employer premium contributions add about 10 percent of household-size-adjusted income in the March CPS. Both estimates are smaller than the estimated effects of third-party reimbursements seen in the NIPA, which imply that third-party payments for medical care (net of household premium payments) should add about 13 percent to money income in 2003 (see Figure 2). Part of the difference is undoubtedly due to the samples enrolled in the MEPS and CPS surveys. Both surveys sample people in the noninstitutionalized population. The medical expenditures of the institutionalized population, who are not enrolled in the surveys, are higher than those of the noninstitutionalized, and a much larger percentage of their medical spending is financed out of government budgets rather than money income.

Figure 8 shows the additions to household-size-adjusted money income that would be observed if Census Bureau estimates of insurance value or MEPS estimates of net health insurance benefits were added to money income, and it shows the relationship between these additions and the distribution of household-size-adjusted money income. The top line shows the Census Bureau estimates in the March CPS file, and the lower line shows estimates based on medical spending, third-party health reimbursements, and household premium payments in the MEPS. As already noted, the additions to income are generally lower in the MEPS than in the CPS file. However, the pattern of income additions appears somewhat more redistributive in the MEPS compared with the CPS. The MEPS estimates suggest that additions to income are typically larger in the bottom ranks of the income distribution than they are in the top half of the distribution. In contrast, the CPS estimates, which are based on the Census Bureau's insurance value approach, imply that the largest absolute increases in income would occur at the top of the distribution.

Figure 9 sheds light on the MEPS results. The top panel shows the relationship between out-of-pocket medical spending and insurance premium payments, on the one hand, and household money income, on the other. Both out-of-pocket spending and health insurance premiums rise with income. The more important effect is the increase in health insurance premium payments as household income rises. Households in the top ranks of the income distribution pay much more for their insurance coverage than

households with low incomes. The average premium payment for a person in the top income decile is more than 3½ times as much as the premium for a person in the bottom one-tenth of the income distribution. Of course, the premium payments represent a larger percentage of the incomes of low-income households. The lower panel of Figure 9 shows how total health care expenditures are related to size-adjusted household income. For the noninstitutionalized population as a whole, total health care spending is essentially independent of income rank. People in the bottom one-fifth of the income distribution have the same average health spending as people in the top one-fifth of the distribution. The solid line in the lower panel of Figure 9 shows the net income gain that people in each tenth of the income distribution would obtain if health expenditures minus out-of-pocket spending minus health insurance premiums were added to their money incomes. Households in the bottom one-fifth of the money income distribution receive the biggest absolute income gains. The main reasons, as can be seen in the top panel of the chart, are that these households spend less out-of-pocket for the health services they receive and they pay lower health insurance premiums.

If the income gains just mentioned are added to household money incomes in the MEPS file they reduce the Gini coefficient of inequality by 4 percent. The impacts on inequality among Americans 65 and older and Americans under 25 are a little larger and the effect on Americans between 25 and 64 is more modest. These effects on the overall income distribution are smaller than the estimated impact of including the Census Bureau's estimates of medicare and medicaid insurance value and employer health insurance contributions in money income. The MEPS inequality effect is smaller for two reasons. The MEPS estimates of net change in income are on average smaller, both absolutely and in proportion to money income, than the Census Bureau estimates. At the same time, the estimated additions to income in the MEPS are much more unequal across households. Households with high medical expenditures but low premium payments and out-of-pocket spending amounts receive a large increase in their estimated incomes, whereas households who pay high premiums but receive little medical care see their measured incomes fall. In contrast, the Census Bureau methodology produces less variation in the amount of medical insurance income that is added to household incomes.

The insurance value of plans vary by less than insurance reimbursement payments to individual households.

The inclusion of net health income gains in the MEPS has a noticeable impact on the distribution of income across age groups (see Figure 10). The effect on the relative incomes of Americans who are younger than 65 is comparatively modest, but the impact on older people, not surprisingly, is substantial. The addition of net health income boosts older Americans' size-adjusted household incomes by almost one-fifth. In contrast, it lifts the incomes of people under age 65 by only 5½ percent. Using the MEPS estimates of gross money income the population past age 65 has an average (size-adjusted) income of about 81 percent of the overall population average. If health expenditures minus out-of-pocket spending minus payments for health insurance premiums are included in the definition of income, the average income of the aged is 91 percent of the overall population average. This impact on the relative income position of the elderly is considerably smaller than the effect implied by the Census Bureau's insurance value estimates in the March CPS (see Figure 4).

5. Impact of Health Benefits on Disposable Income

Since the MEPS file does not contain estimates of public housing subsidies or household payments for income and payroll taxes, it is not possible to calculate the disposable incomes of MEPS respondents. One possibility is to develop housing subsidy imputation and tax calculation programs to predict the missing variables in the MEPS file. Another approach, which I follow here, is to use reports of total health spending, payments from third-party payers, and health insurance premiums in the MEPS file to predict these same variables for families or households in the CPS file. Since the CPS file already contains estimates of housing subsidies and tax payments, it is then straightforward to examine the effects of actual health care spending and third-party reimbursement on the net incomes of CPS households.

Health spending, payments from third-party payers, and health insurance premiums are imputed onto CPS households using the responses of similar but randomly selected households in the MEPS. The imputation was done using a statistical matching procedure similar to hot decking. Hot decking is ordinarily used to impute missing data in the event of survey non-response. This type of problem arises when a respondent fails

to give a valid answer to a survey question. In a standard hot decking imputation, respondents in the sample are stratified into cells defined by several categorical variables. Within each cell, a donor (that is, an observation in the survey file who has a valid response) is randomly selected to represent each identified nonresponder in the file. In most cases, the procedure is carried out with the proviso that no donor can be selected more than a specified number of times. Once a donor and nonresponder are matched, the valid responses of the donor are copied over to the nonresponder. In the event that a donor is not available in the exact cell in which the nonresponder is a member, the procedure advances to succeeding higher level cells until a donor is found. In our case, donors are randomly selected from appropriately defined cells in the MEPS file to supply health spending and insurance reimbursement information for households in the CPS file.

In performing the imputations, families in the MEPS and CPS were sorted by critical characteristics (or key variables) to ensure that actual health spending and reimbursement amounts from a MEPS family were matched to a similar family on the CPS. Families in both surveys were first divided into five types of family (single person, married couples with and without children, and single adult heads with and without children), two broad age groups (families with and without a member at least 65 years old), two employment classes (employed or not employed), five size-adjusted income classes, two health classes (families with and without a member who was in fair or poor health), and a number of insurance classes defined by the combination of health insurance plans in which family members were enrolled. Within the cells defined by these key variables, donor families from the MEPS file were randomly selected and matched to families from the CPS file. The statistical match was quite successful in duplicating in the CPS file the pattern of medical expenditures and insurance reimbursement observed in the MEPS file. The household-size-adjusted imputations of total medical expenditures in the CPS file have an average value that is within 0.5 percent of the actual amounts in the MEPS, and the implied average estimate of total health spending minus out-of-pocket payments minus health insurance premiums is within 1 percent of the corresponding amount in the MEPS file.

Because the MEPS imputations are on a file that contains the Census Bureau estimates of medicare and medicaid insurance value and employer contributions to

employee health plans, it is possible to directly compare the MEPS imputations to the Census Bureau estimates. Figure 11 shows such a comparison for relationship between health spending amounts and Census Bureau estimates of insurance value and employer contributions at successive points in the distributions of size-adjusted disposable income (that is, after-tax cash and near-cash income). The Census Bureau estimates are displayed as a bold dark line in the chart. The top line shows estimated total health care expenditures at successive points in the income distribution. The pattern is very similar the one shown in the bottom panel of Figure 9, which is derived from actual spending patterns observed in the MEPS. As in the MEPS file, the health spending imputations in the CPS file show almost no relationship between a person's size-adjusted income and total health expenditures. The next lower line shows health expenditures net of the out-of-pocket payments that families make in order to obtain care. Since out-of-pocket spending rises modestly with income, this line has a slight negative slope. The bottom line in Figure 11 shows health spending minus both out-of-pocket payments and family spending on health insurance premiums. This line shows a more pronounced downward slope, reflecting the fact that higher income families tend to spend larger amounts on insurance premiums. The lower line also reflects the net amount that should be added to household disposable incomes to capture the consumption households enjoy that is not purchased out of the household's after-tax cash and near-cash income.⁹ Since this line lies below the Census Bureau estimates of insurance value, there is smaller addition to disposable income than implied by the Bureau's estimates, with the biggest difference between the two sets of estimates at the top on the disposable income distribution.

Though the implicit subsidies in the health care system look more favorable to the low income population when the MEPS imputations are used, the effect on inequality of including the health subsidies in income is bigger when the Census Bureau estimates are used. The Gini coefficient of income inequality falls 8.5 percent when the Census Bureau estimates of insurance value are added to disposable cash and near cash income, while the Gini coefficient falls only 3.3 percent when the MEPS imputations of health

⁹ The consumption is purchased with government funds or employer contributions to employee health plans. Most labor economists believe that workers indirectly pay for the employer contributions through lower wages.

spending minus out-of-pocket payment minus premium payments are added to disposable income.

Figure 12 compares the age profile of income under the three income definitions just described. The income definition that yields the largest relative income difference among age groups is disposable cash and near-cash income. The income differences across age groups are reduced under both of the other definitions, which include some estimate of the health consumption that families enjoy in addition to the consumption they can purchase out of after-tax income. Most of the change in relative income favors people who are 65 and older. The additions to measured income have a somewhat more favorable impact on the relative incomes of the aged when they are based on the Census Bureau's estimate of the insurance value of medicare and medicaid and employer contributions to group health plans. Under either definition, however, the real resources available to the nation's aged population appear substantially greater than when they are measured with household disposable income).

6. Conclusion

Cash income offers an incomplete measure of the resources available to households out of which they can finance consumption. The great majority of American families is covered by an insurance plan that pays for some or all of the health care they receive. Only a comparatively small percentage of families pays for the full cost of this insurance out of their cash incomes. As health care has claimed an increasing share of consumption, the percentage of care that is financed out of household incomes has fallen. Since health care consumption is more important for some groups in the population than others, the growth in spending and changes in the payment system for medical care have undermined the value of standard income measures for assessing relative income changes across age groups and across the income distribution.

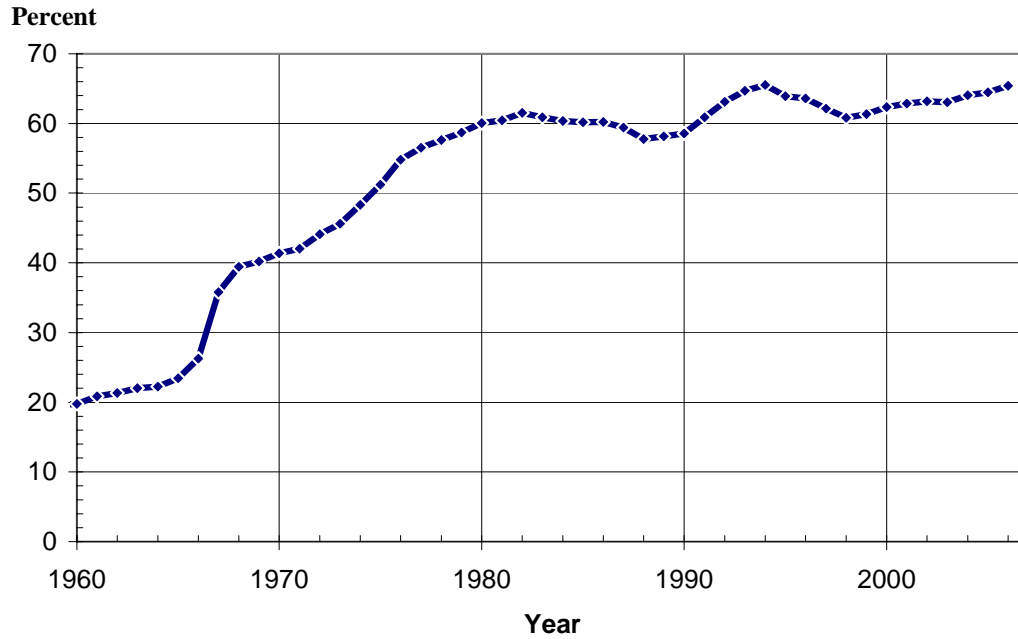
This paper has examined the distribution of health consumption and financing in a single recent year. It compares the implications of two sets of estimates of effects of the current health care system on the distribution of income across persons and across age groups. Both sets of estimates imply that disposable cash income significantly understates the resources available to finance household purchases. Both also show that a more complete measure of resources would show less inequality than the income

measures that are currently used. It would be useful to extend the analysis to cover a longer time span of years. Health care consumption has continued to grow, and the third party payment system has continued to evolve. It seems likely that health care spending and the health insurance system have had growing effects on the income distribution over time.

7. References

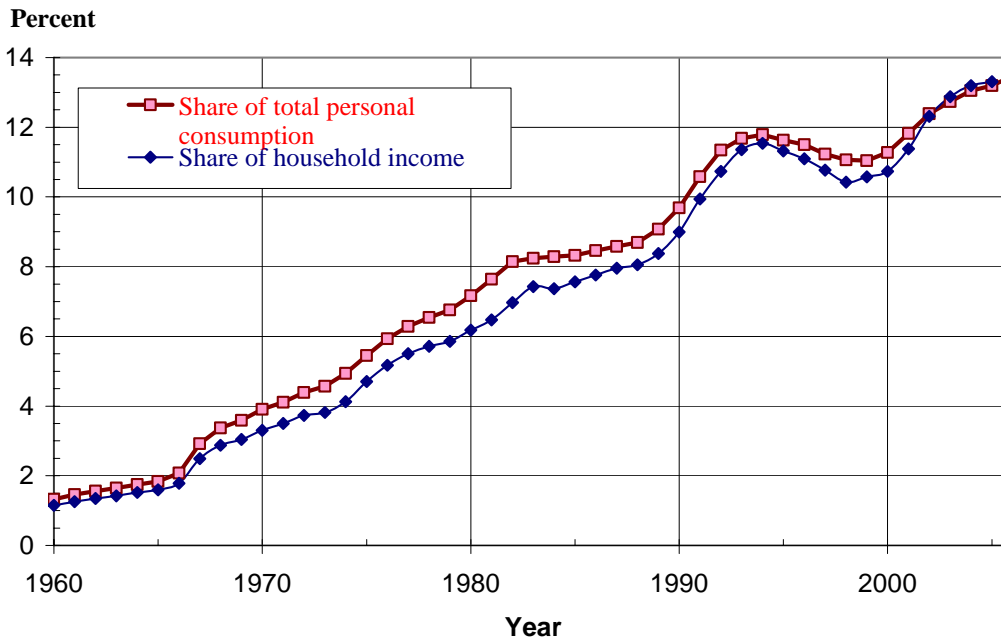
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Figure 1. Percent of Personal Health Consumption Financed with Employer Contributions and Government Transfers, 1960-2006



Source: Author's tabulations of U.S. Department of Commerce, Bureau of Economic Affairs, National Income and Product Account statistics.

Figure 2. Employer and Government Payments for Health Insurance as a Percent of Personal Consumption and Household Income, 1960-2006 ^{1/}

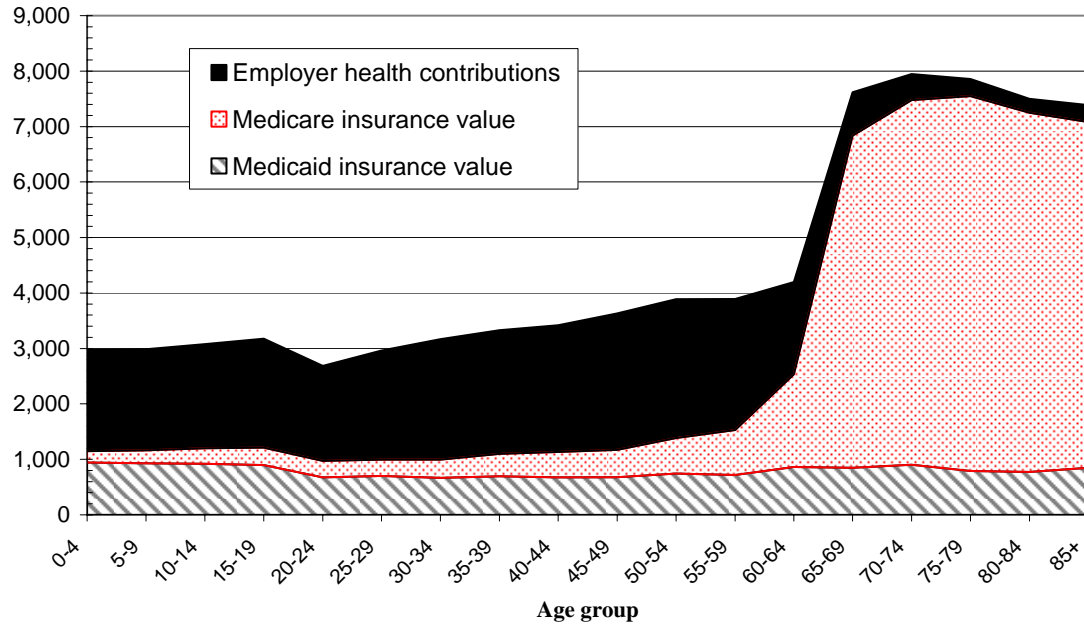


^{1/} "Household income" is measured using the Census Bureau's definition of "money income."

Source: Author's tabulations of U.S. Department of Commerce, Bureau of Economic Affairs, National Income and Product Account statistics.

Figure 3. Contributions of Health Insurance Benefits to Personal Income in the CPS, by Age, 2003

**Household-size-adjusted additions
to income from insurance (2003 \$)**

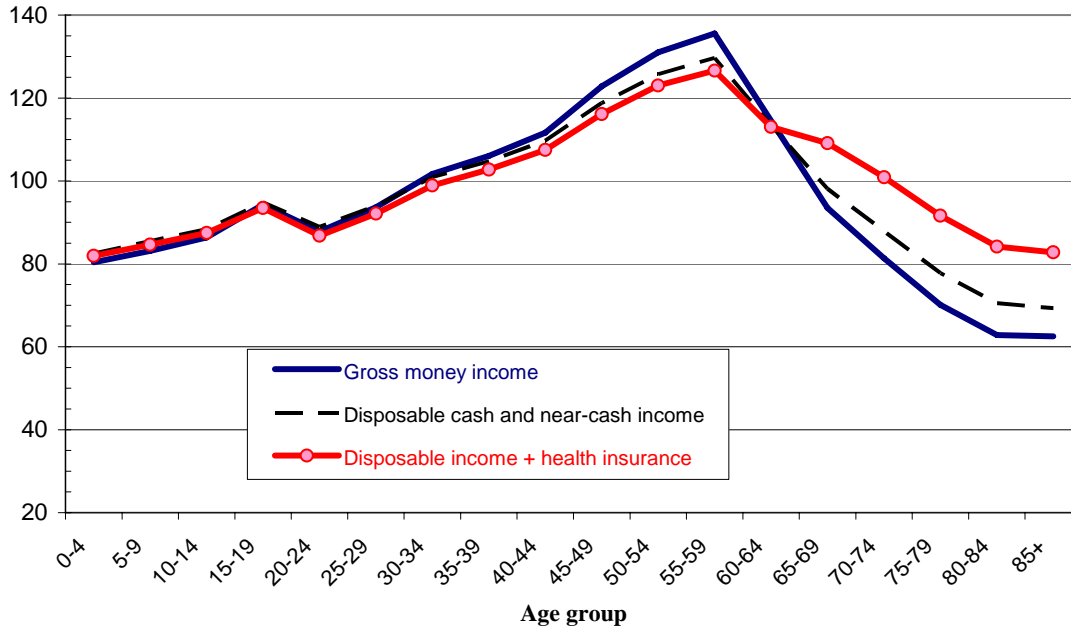


Note: Average insurance amounts in each age group are based on Census Bureau estimates and adjusted to reflect differences in household size. See text.

Source: Author's tabulations of March 2004 CPS file.

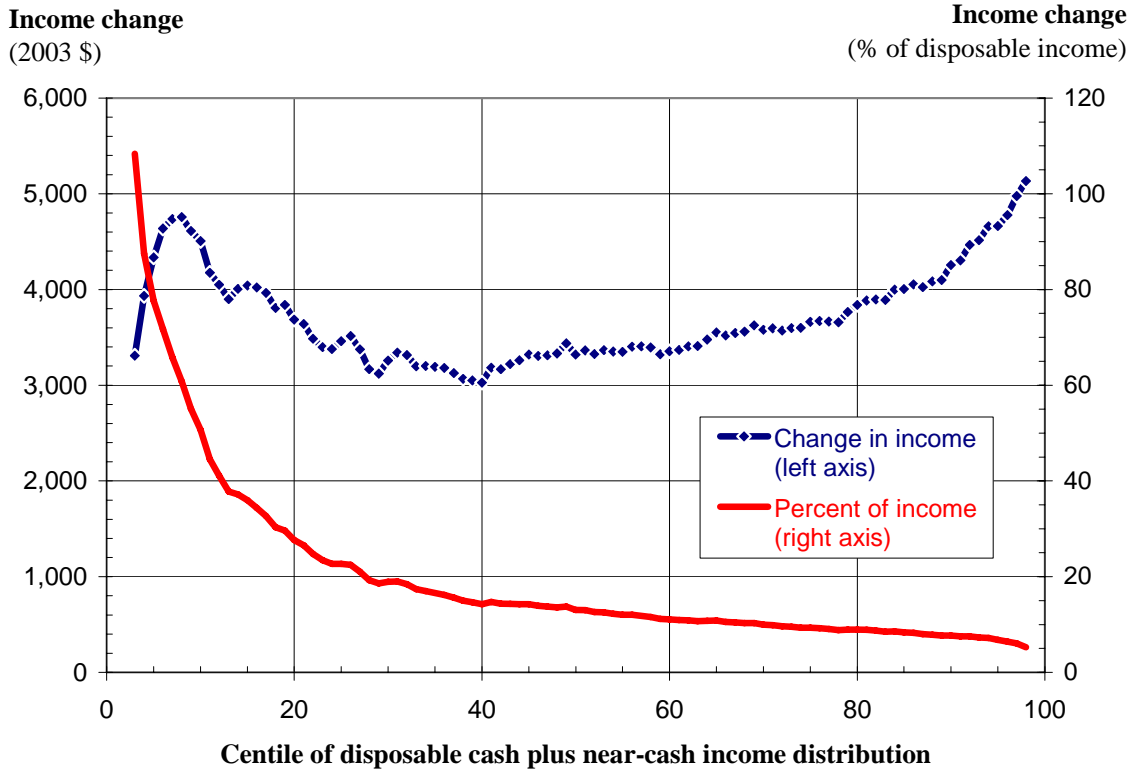
Figure 4. Relative Income by Age Group in the CPS under Alternative Income Definitions, 2003

Average income = 100



Note: Average income in each age group is household-size-adjusted income. See text.
 Source: Author's tabulations of March 2004 CPS file.

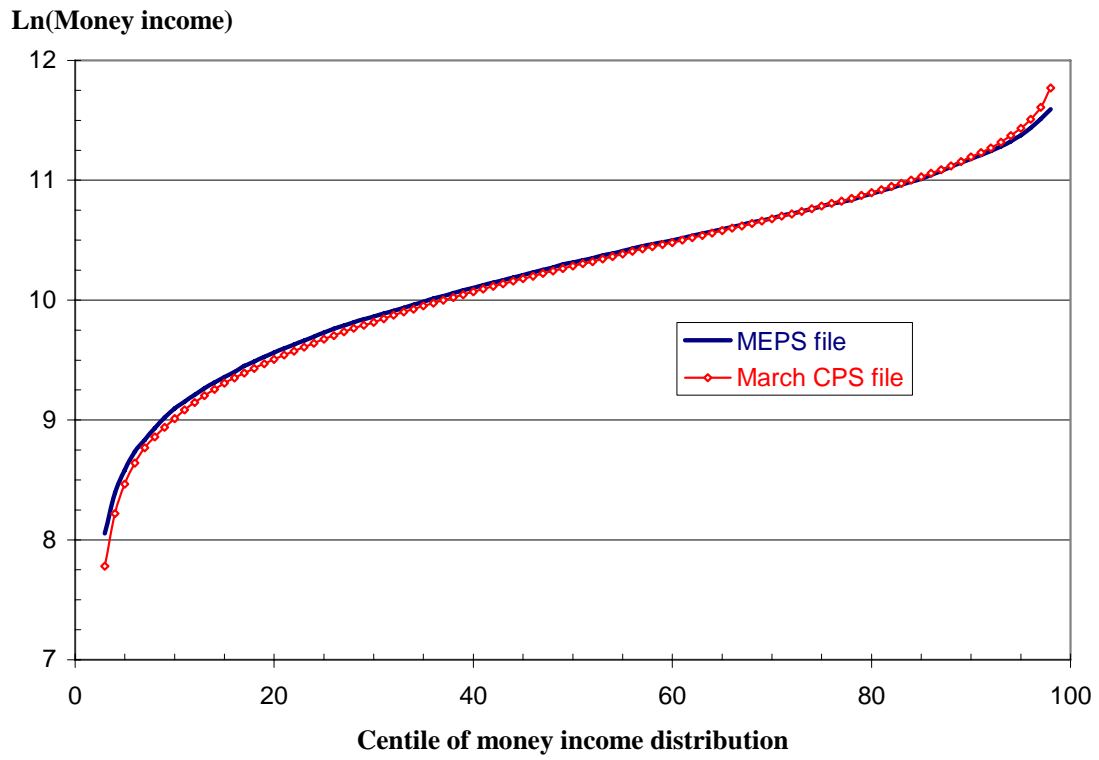
Figure 5. Contributions of Health Insurance Benefits to Personal Income in the CPS by Centile of Disposable Income Distribution, 2003



Note: Health insurance benefits are Census Bureau estimates of the fungible insurance value of medicare and medicaid plus the value of employer contributions to employee health insurance plans. Persons in population are sorted from lowest to highest by their household-size-adjusted disposable cash plus near-cash incomes.

Source: Author's tabulations of March 2004 CPS file.

Figure 6. Distribution of Money Income in the MEPS and March CPS Files, 2003

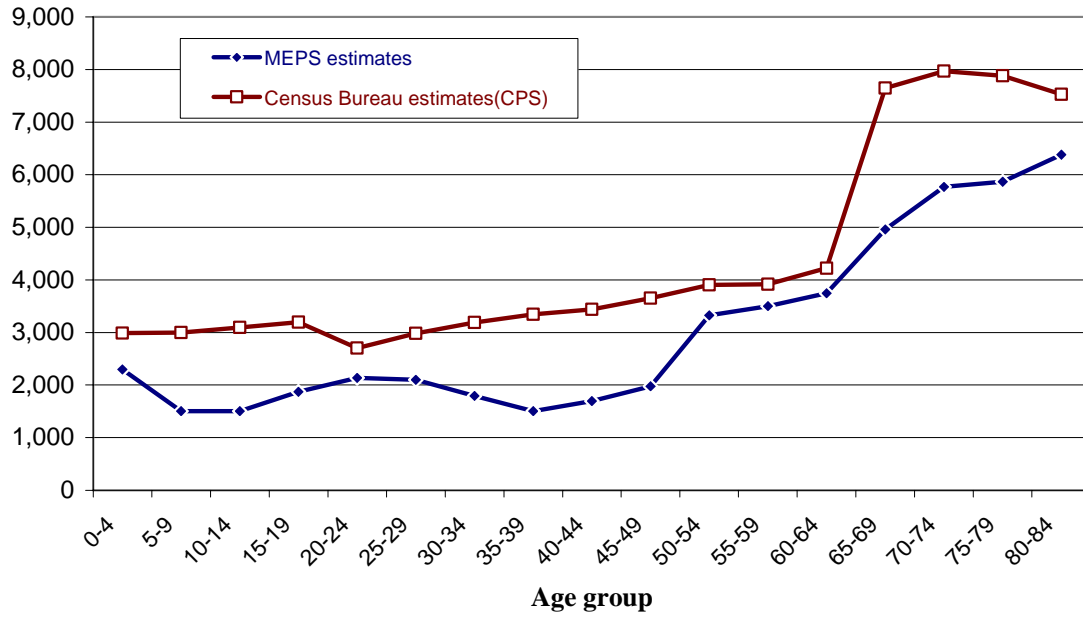


Note: Persons are sorted by household-size-adjusted

Source: Author's tabulations of March 2004 CPS file and 2003 MEPS household file.

Figure 7. Contributions of Health Insurance Benefits to Personal Income in the MEPS and March CPS Files by Age, 2003

Household-size-adjusted additions
to income from insurance (2003 \$)

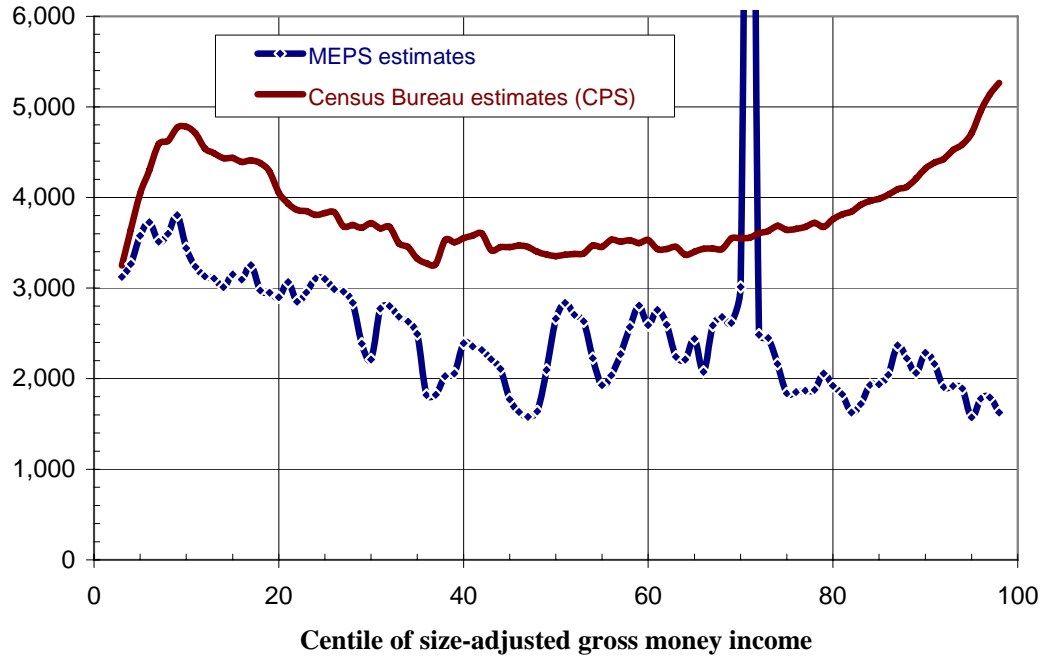


Note: Average insurance amounts in each age group are based on either Census Bureau estimates or author's tabulations of the MEPS file as explained in text.

Source: Author's tabulations of March 2004 CPS file and 2003 MEPS household file.

Figure 8. Contributions of Health Insurance Benefits to Personal Income in the MEPS and March CPS Files, by Money Income Centile, 2003

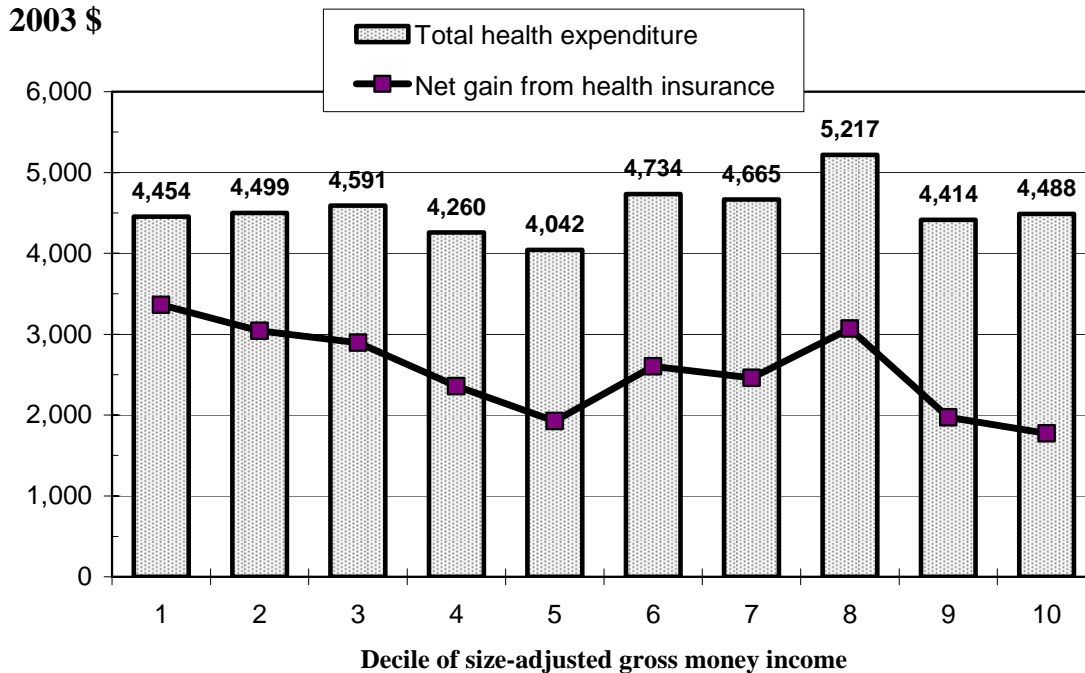
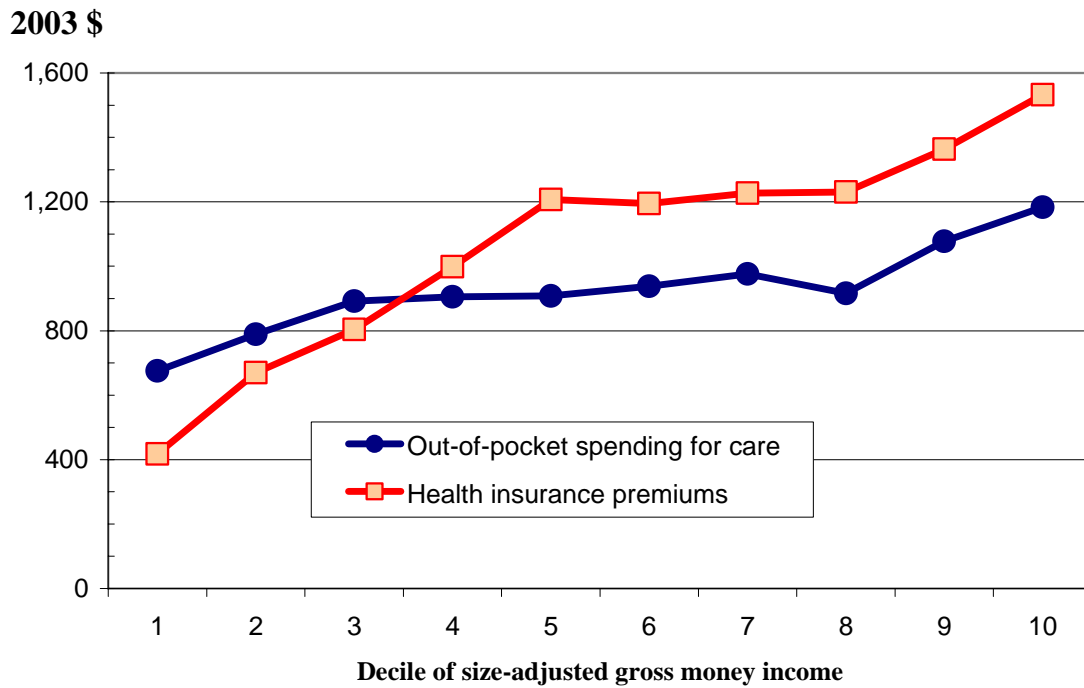
Household-size-adjusted additions
to income from insurance (2003 \$)



Note: Average insurance amounts in each income centile are based on either Census Bureau estimates or author's tabulations of the MEPS file as explained in text.

Source: Author's tabulations of March 2004 CPS file and 2003 MEPS household file.

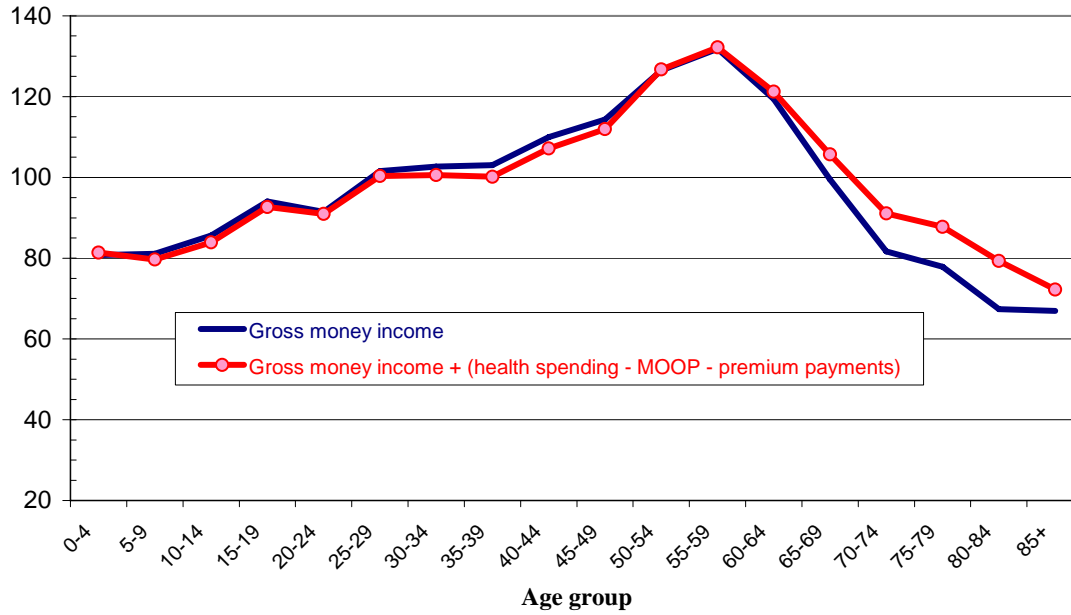
Figure 9. Out-of-Pocket Spending, Insurance Premiums, and Total Health Expenditures in the MEPS, by Money Income Decile, 2003



Source: Author's tabulations of 2003 MEPS household file.

Figure 10. Relative Income by Age Group in MEPS Sample under Alternative Income Definitions, 2003

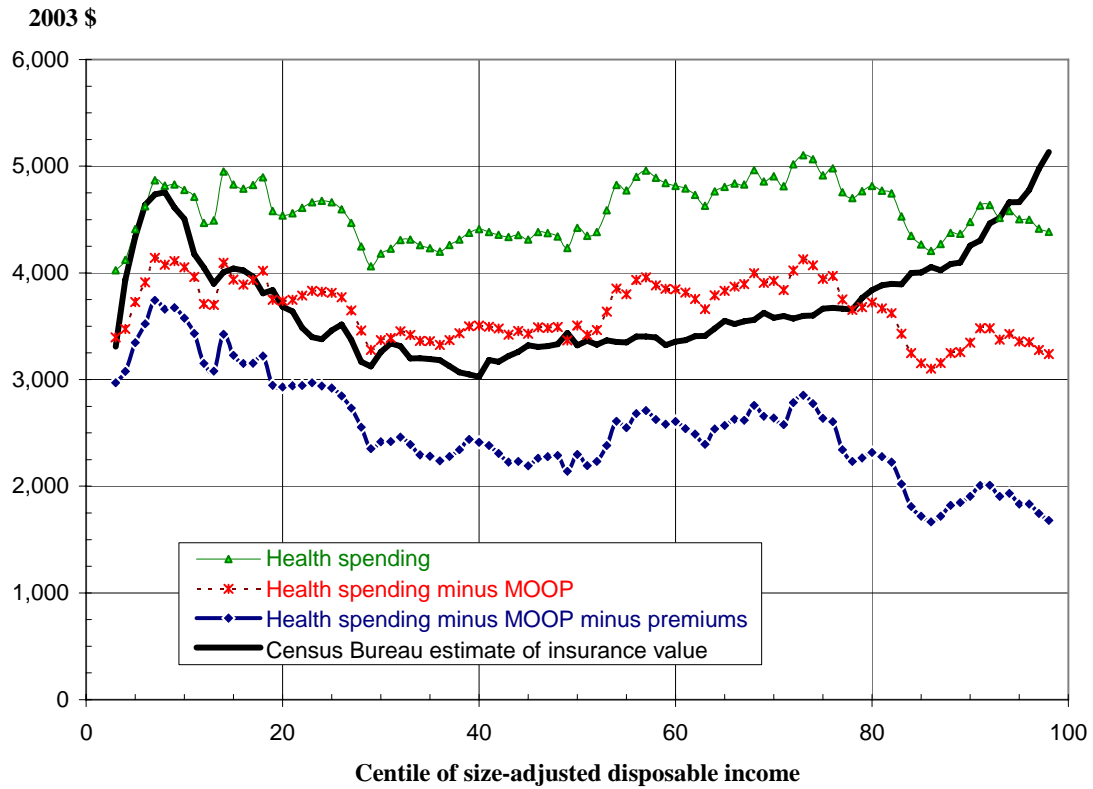
Average income = 100



Note: Average income in each age group is household-size-adjusted income. See text.

Source: Author's tabulations of 2003 MEPS file.

Figure 11. Alternative Estimates of the Contribution of Health Spending and Insurance Benefits to Personal Income in the CPS by Centile of Disposable Income Distribution, 2003

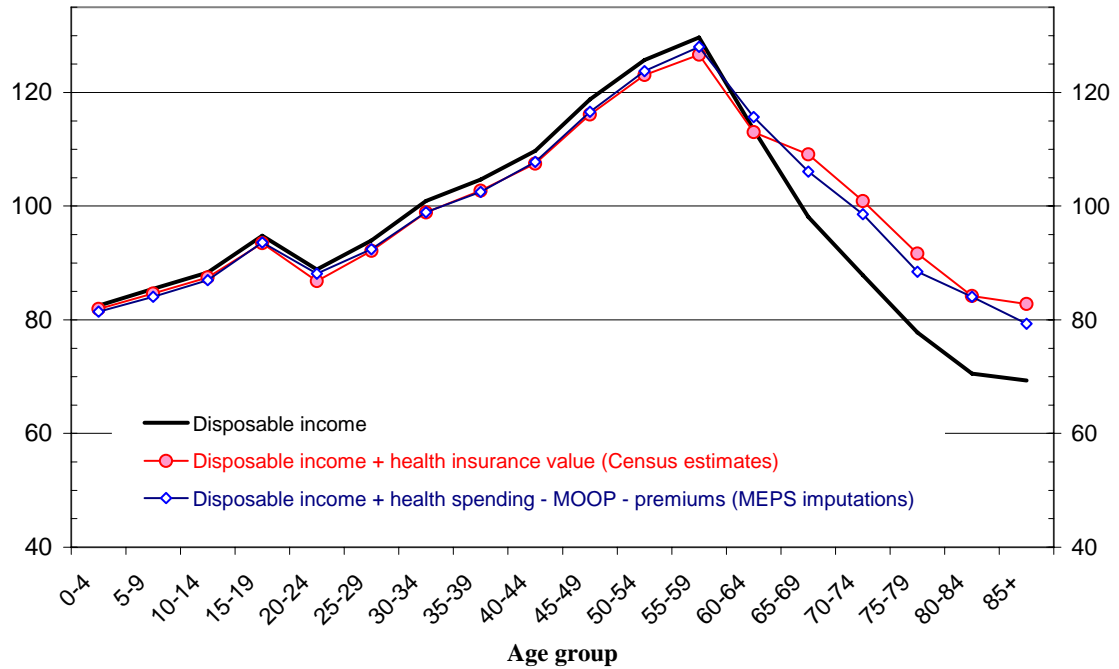


Note: Health spending estimates are statistical imputations from MEPS to households in the CPS file as described in text. "MOOP" is medical out-of-pocket spending on services by the household. "Insurance value" estimates are Census Bureau imputations of the fungible insurance value of medicare and medicaid plus the value of employer contributions to employee health insurance plans.

Source: Author's tabulations of March 2004 CPS file with statistical imputations from the 2003 MEPS file.

Figure 12. Relative Income by Age Group in the CPS under Alternative Income Definitions, 2003

Average income = 100



Note: Health spending estimates are statistical imputations from MEPS to households in the CPS file as described in text. "MOOP" is medical out-of-pocket spending on services by the household. "Insurance value" estimates are Census Bureau imputations of the fungible insurance value of medicare and medicaid plus the value of employer contributions to employee health insurance plans.

Source: Author's tabulations of March 2004 CPS file with statistical imputations from the 2003 MEPS file.