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Means-Testing Federal Health Entitlement Benefits

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August 31, 2017

Abstract

Recent federal legislation has linked the price paid for health insurance benefits to measures of current income. Under the Patient Protection and Affordable Care Act of 2010, individuals and families with income as high as 400 percent of the federal poverty level are eligible for subsidies that limit their health insurance premiums to under 10 percent of their income. Under the Medicare Modernization Act of 2003, higher-income beneficiaries face income-related premiums over three times the standard premium for Part B coverage. For workers at or near retirement age, means-testing based on current income provides an incentive for early retirement, dissaving, and income manipulation, raising concerns about the efficiency of such means-testing. Further, current income is subject to short-term fluctuations, making it a noisy predictor of ability to pay. Using the Health and Retirement Study and linked Social Security and earnings histories, this paper introduces a measure of lifetime income that compares favorably to current income as a basis for means-testing. It offers less short-term variation in premiums while improving incentives for pre-retirement work and saving.

JEL Codes: H51, I13
Keywords: Means-testing, Medicare, Affordable Care Act

Contact Information: andrew.samwick@dartmouth.edu, 6106 Rockefeller Hall, Dartmouth College, Hanover, NH 03755; (603) 646-2893. I thank Bob Moffitt, Ithai Lurie, and conference participants at the National Tax Association annual meetings for helpful comments. I am grateful to Janet Jackson Keller at the Survey Research Center at the University of Michigan for assistance with the Health and Retirement Study Restricted data. This research was supported by the U.S. Social Security Administration through grant #5 RRC08098400-04-00 to the National Bureau of Economic Research as part of the SSA Retirement Research Consortium. The findings and conclusions expressed are solely those of the author and do not represent the views of SSA, any agency of the Federal Government, or the NBER. Any errors are my own.

I. Introduction

Decades of rising health care costs and the persistent gaps in coverage, in the form of both persons lacking formal health insurance and uncovered services for those with insurance, have motivated legislation authorizing greater involvement of the federal government in health care markets over the last fifteen years. In 2003, the Medicare Modernization Act (MMA) expanded Medicare to include coverage for prescription drugs through a new Part D. In 2010, the Affordable Care Act (ACA) expanded Medicaid and established a system of health care exchanges and premium subsidies to help enable those without insurance through their employers to purchase it at group rates.[1]

The involvement of the federal government by itself does not necessarily reduce health care costs, and filling the gaps in coverage almost certainly requires greater expenditures. As the federal government has stepped up its role, policy makers have sought mechanisms, common to both the MMA and the ACA, to tie the costs paid by health insurance beneficiaries more formally to their income. The MMA for the first time established an income-related monthly adjustment amount (IRMAA) to the monthly premium for Medicare Part B, the Supplemental Medicare Insurance (SMI) program. The IRMAA went into effect in 2007. The ACA extended IRMAAs to the prescription drug coverage provided by Medicare Part D. For those not yet eligible for Medicare, the ACA also included a formal system of premium support for individuals and families with income between 100 and 400 percent of the federal poverty level who purchase their health insurance through exchanges. The premium support became

[1] The Affordable Care Act here refers to both The Patient Protection and Affordable Care Act and the Health Care Reconciliation Act of 2010.

operational in 2014 and now limits the amount that an individual or family would have to pay for an insurance premium to 9.69 percent of their income or less.

In both of these cases, policy makers have chosen to implement means-testing by linking individual premiums to measures of current income. There are several concerns about current income as a measure of ability to pay, all of which would overcome if ability to pay were measured instead by lifetime earnings. First, lifetime income can be a more *accurate* measure of each person's ability to pay than is income in a single year. Since income may be temporarily high or low in a given year, a better measure of ability to pay can be obtained by averaging several years of income. Second, lifetime income is based on past labor income rather than current asset income and is therefore less susceptible to *manipulation*. Third, the use of lifetime income avoids penalizing people who *save* during their working years. A tax on asset income during retirement is analogous to a tax on saving before retirement. Fourth, the imposition of higher premiums for higher current income penalizes those who continue to *work*, whether after they become eligible for Medicare in the case of the MMA or before they are eligible for Medicare in the case of the ACA.

This paper considers an alternative measure of ability to pay in the form of average lifetime earnings derived from Social Security and Medicare earnings histories as a means of determining eligibility for premium subsidies under ACA or income-related premiums under the MMA.[2] Just as Social Security benefits are based on a measure of Average Indexed Monthly Earnings (AIME), eligibility for premium subsidies or the IRMAAs for Medicare Part B and Part D premiums could be based on an analogous concept of lifetime earnings subject to Medicare tax, described below as Medicare Average Earnings (MAE).

[2] See Steuerle (1997) for an early discussion of using lifetime earnings as the basis for means-testing Medicare benefits.

The comparison of health insurance premiums based on MAE to the determination of Social Security benefits is instructive. Social Security provides a replacement rate on a measure of earnings that is not simply the last year of work before retirement or disability but an indexed average of the highest 35 years of earnings. This formula recognizes that a single year of income could be, for reasons beyond the individual's control, temporarily high or low, and for reasons under the individual's control, unusually high in that year for the purpose of obtaining higher benefits.[3] The use of a long average of earnings helps mitigate concerns about moral hazard that arise in all insurance arrangements. The Social Security benefit formula then converts this AIME to a primary insurance amount in a progressive fashion and to benefits in a way that adjusts for demographic factors like age and marital status. There is in principle no reason why the same could not be done for entitlement to health benefits based on MAE, particularly for potential beneficiaries nearing or in retirement, for whom the same moral hazard concerns are present. Further, in the case of Social Security benefits, relatively high years of current income subject the benefits to income taxation, generating a final benefit formula that is based on lifetime income but tempered by current income. This would also be possible for health benefits – a premium based on lifetime average income, with relief given in the event of very low current income.

The analysis in this paper compares the impact of means-testing on current income to means-testing on lifetime earnings using the Health and Retirement Study (HRS), a longitudinal panel study that has surveyed a representative sample of Americans over the age of 50 every two

[3] The problem of "pension spiking" is well known in employer-provided pensions based on final pay, particularly in the public sector. Lifsher and Petersen (2014) discuss the costs of this practice to CalPERS in California, and Sickinger (2012) describes similar challenges in Oregon. Incentives for employers and employees to collude on matters such as overtime in the final year of work would be much more severe if the financial consequences were borne by a national system rather than the future stakeholders in the company or locality.

years since 1992, which now contains information on more than 26,000 respondents. The detailed household data in the HRS provide self-reported measures of current income as well as numerous other demographic and socioeconomic variables. Most importantly, the household respondents can be linked to their Social Security earnings records, which provide the data necessary to compute alternative measures of lifetime income like MAE for comparison with current income. The analysis is descriptive, with more formal studies of the impact of means-testing on economic behavior left for future work.[4]

The remainder of the paper is organized as follows. Section II describes the income-related premium schedules for health insurance under the MMA and ACA, highlighting the implicit marginal tax rates on current income embodied in them. Section III discusses the conceptual differences along efficiency and equity dimensions of means-testing based on current rather than lifetime income. Section IV gives an overview of the HRS data and linked earnings records used in the analysis and outlines the calculation of MAE.

The analysis of means-testing in the MMA is in Section V. The main result is that in general, based on self-reported household income, there is considerable time-series variation in the level of the income-related premium for those who pay it. For some groups, there is little systematic difference in lifetime income across the households who pay very different income-related premiums. The income-related premium for Medicare Parts B and D can be expected to function very much like a tax on capital. Among households paying the same income-related premium, there is wide variation in lifetime earnings. Switching to a system of means-testing

[4] For the MMA, there is now enough time since implementation in 2007 to study the impact of the law, though, as noted below, the onset of the Great Recession as the law was taking effect will make identification difficult. For the ACA, implementation of the main provisions in 2014 will require more years to elapse before conclusions can be drawn. See French, von Gaudecker, and Jones (2015) for an early discussion of how the model of French and Jones (2011) can be adapted to this task.

based on MAE would expose few households to income-related premiums they cannot afford, since a high MAE implies high Social Security benefits and thus adequate current income.

The analysis of means-testing in the ACA is presented in Section VI, focusing on individuals age 50 – 62 who are nearing retirement but not eligible for Medicare. For those who are uninsured, about 75 percent have incomes low enough to qualify for a premium subsidy. As with the MMA, there is considerable time-series variation in the premium subsidy, due to fluctuations in reported annual income. This variation is largely eliminated by using MAE as the basis for means-testing. For example, for uninsured individuals working in consecutive surveys, median changes in MAE are only 4.4 percent, with 90 percent of changes less than 13 percentage points over the two years. Further, preliminary tabulations indicate that for workers who have employer-based health insurance as employees but not retirees and who have household income above 400 percent of the Federal Poverty Level while working, up to 60 percent – approximately 3.7 million workers per year – would qualify for a premium subsidy if they retired and reduced their earnings to zero.

II. Income-Related Premiums in the MMA and the ACA

The measure of current income used for means-testing in both the MMA and the ACA is based on a taxpayer's adjusted gross income, as defined on the federal income tax return. Current income is equal to the taxpayer's "modified adjusted gross income" (MAGI), which adds back to adjusted gross income the interest on non-taxable bonds, excluded foreign income, and the portion of Social Security benefits that is not subject to income taxation.[5] It is a comprehensive measure of annual income, in that income from all sources –whether earned

[5] See Kaiser Family Foundation (2011) for further discussion of the income measures used for determining eligibility.

through employment or self-employment, received from assets, or withdrawn from pension plans – is included.

Medicare Part B and Part D Premiums

Prior to the passage of the MMA in 2003, all beneficiaries enrolled in Medicare Part B were generally required to pay a monthly premium set to cover 25 percent of the average annual expenditures per beneficiary. The MMA kept that target for the lowest income beneficiaries but introduced four additional premium amounts that would cover, respectively, 35, 50, 65, or 80 percent of expenditures per beneficiary. The income-related premiums went into effect in 2007, and both the thresholds and premiums grew substantially through 2011 before premium amounts were lowered in 2012. The ACA introduced an income-related premium for Medicare Part D, covering prescription drugs, using the same income thresholds as the income-related premium for Part B. This new income-related premium went into effect in 2011.

The income-related premium schedules for 2017 for a single beneficiary are shown in Table 1. The rows of the table distinguish the different ranges of income for a single taxpayer. (The income ranges for married taxpayers filing jointly are simply double those presented here.) The Social Security Administration each year uses the income reported to the IRS in the prior year (i.e. pertaining to income received two years prior, or in this case, 2015) to determine a beneficiary's income-related premium amount.

As shown in the table, individuals with annual income of $85,000 or less will face no IRMAA and will thus pay the standard premium of $134.00 per month or $1,608 per year for Part B. They will pay only what their Part D plan specifies as a premium for drug coverage. Individuals with annual income between $85,000 and $107,000 will pay a combined IRMAA of $66.80 for their coverage. Dividing the annual increment of $801.60 by the interval size of

$22,000 yields an implicit marginal tax rate of 3.64 percent over the whole interval. (The implicit marginal tax rate is higher over any subset of the interval and dramatically higher on the first dollars over the threshold.) Analogous calculations are presented in the last column of the subsequent two rows. For individuals with income over $214,000, the combined IRMAAs are $4,449.60 on an annual basis, but the implicit marginal tax rate is zero thereafter since the premium no longer increases with higher income.

When introduced in the MMA, the income thresholds were to be indexed to inflation to prevent a growing share of the beneficiary population from having to pay the IRMAA. However, the ACA included a provision to freeze the thresholds in nominal terms until 2019.[6] Projections by Cubanski et al. (2014) suggest that the share of Medicare beneficiaries required to pay the income-related Part B premium will rise from 5.0 percent in 2013 to 9.6 percent in 2019 and that the share paying the Part D premium will rise from 4 percent in 2013 to 9 percent in 2019.[7]

Health Insurance Exchange Subsidies

The ACA established for the first time a formal system of premium support for individuals who purchase their health insurance through newly established state-level health insurance exchanges. The premium support functions as a limit on the amount that an individual or family would have to pay for an insurance premium as a percentage of their annual income,

[6] The freeze would be removed in 2020, at which time the thresholds will be indexed for inflation and revert to the levels they would have attained had the ACA freeze not been implemented.

[7] President Obama's Fiscal Year 2014 Budget included a proposal to increase the IRMAA for Medicare Parts B and D starting in 2017 by increasing the lowest income-related premium five percentage points, from 35 percent to 40 percent of program costs, and increasing other income brackets until capping the highest tier at 90 percent. The proposal would also keep the income thresholds frozen until 25 percent of beneficiaries under Parts B and D are subject to these premiums. The proposal was retained with some modifications in the President's budgets through Fiscal Year 2017. See Office of Management and Budget (2013, 2016) for revenue estimates of proposed changes. For further discussion and projections of how changes in income-related premium thresholds would affect the number of beneficiaries paying them (based on the President's FY2014 budget), see Cubanski et al. (2014).

implemented through premium tax credits.[8] The income levels that determine eligibility for the premium subsidies are based on multiples of the federal poverty level (FPL).[9] In 2016 (which are the basis for premium levels in 2017), the FPLs were $11,880 for an individual, $16,020 for a couple, and $24,300 for a family of 4.

Table 2 shows the relationship between income levels and health insurance premiums. The first column presents a range of income levels relative to the FPL, and the second column shows, for each income level, the percent of income at which the insurance premium is capped due to the premium tax credits. The third column in the table calculates the implicit marginal tax on income in moving through each interval. For example, a single individual with income at 150% of the FPL ($17,820) would pay an annual premium of 4.08 percent of his income or $727.06. If his income increased to 200 percent of the FPL ($23,760), his premium would increase to 6.43 percent of his income or $1,527.77. The increase in the premium is $800.71, which is 13.48% of the $5,940 increase in income. Critically, a couple (individual) with income up to $64,080 ($47,520) will pay no more than $6,209.35 ($4,604.69) for the premium. The implicit marginal tax rates in Table 2 range from 6.15 to 17.09 percent for households with incomes between 100 and 400 percent of the FPL.

For workers, these implicit marginal tax rates exist on top of the explicit marginal tax rates due to the payroll tax, federal and state income tax, and other programs that may provide

[8] The dollar amount of the premium tax credit is currently based on the cost of the "second lowest cost silver plan" offered through an exchange where the beneficiary resides. The household can use the credit to purchase any plan, however, and pay the difference in premiums. When the ACA was implemented, the intent was for the premium subsidy to apply to a plan that would cover approximately 70 percent of expected health costs. The Congressional Budget Office (2011) estimated that annual premium subsidies and related costs would exceed $100 billion within a few years of their initial implementation.

[9]The FPLs discussed here are the poverty guidelines used by the Department of Health and Human Services to determine program eligibility. These guidelines are a simplified version of the poverty thresholds used by the Census Bureau to measure the extent of poverty. See https://aspe.hhs.gov/poverty-guidelines for the full table of poverty guidelines by family size and background on their construction and updating.

marginal disincentives to earn income. They also understate the impact of ACA on implicit marginal tax rates due to the cost-sharing subsidies that apply to incomes between 100 and 250 of the FPL. By reducing out-of-pocket maximum costs, these cost-sharing subsidies enable low-income households to purchase more generous plans with the premium tax credits specified in Table 2. Rather than the 70 percent of expected costs that the silver plan is supposed to cover, cost-sharing subsidies increase the actuarial value of the plan to 94 percent for incomes up to 150 percent of the FPL, 87 percent for incomes between 150 and 200 percent of the FPL, and 73 percent for incomes between 200 and 250 percent of the FPL. The decreases in actuarial value as income rises will raise the implicit marginal tax rate by an amount that depends on the actual health expenditures incurred during the year.[10]

In addition to the premium subsidies for people with incomes between 100 – 400 percent of the FPL, the ACA required all states to expand Medicaid coverage for all adults 18 – 65 years of age with income below 133 percent of the FPL. However, the Supreme Court ruled in 2012 that the Medicaid expansion is not a requirement of states but a voluntary decision. At present, 32 states and the District of Columbia have expanded Medicaid to cover all adults with incomes up to at least this percentage of the FPL. Another, Wisconsin, covers anyone with income less than 100 percent of the FPL.[11] In the other 18 states, there are gaps in coverage – income ranges over which individuals or families have too much income to qualify for Medicaid but too little income to qualify for premium subsidies. For individuals in such a gap, the introduction of the premium subsidies provides an incentive to earn income of at least 100 percent of the FPL, to qualify for those subsidies and thus cheaper private insurance than what was available before the

[10] See Mulligan (2013) and Kaiser Family Foundation (2016) for further discussion.
[11] Maine covers parents, but not single adults, with incomes less than 105 percent of the FPL. See Kaiser Family Foundation (2017) for a list of states that have expanded Medicaid and the income limits they cover.

ACA. The same incentive to earn will exist for individuals in states that have expanded Medicaid coverage to the extent that paying 2 percent of income for a plan on the exchange is perceived to be better than receiving Medicaid for free.

III. Means-Testing on Lifetime Rather than Current Income

The implicit marginal tax rates shown in Tables 1 and 2 suggest that there may be disincentives to earning or realizing income when a household is or could be eligible for federal health entitlement benefits. It is also possible that current income – or income in any single year – is a noisy or manipulable measure of a household's ability to pay for health insurance. This section defines a measure of lifetime earnings, Medicare Average Earnings, and compares it conceptually to the measure of current income used for eligibility based on both efficiency and equity considerations.

Defining Medicare Average Earnings

Lifetime earnings are already used to calculate Social Security benefits. Social Security benefits are based on the Average Indexed Monthly Earnings (AIME), which is the average of an individual's highest 35 years of annual earnings subject to Social Security tax (divided by 12), with each year indexed for the growth in economy-wide covered wages until the year the worker reaches 60 years of age. The linking of health insurance or Medicare premiums to income could be based on an analogous concept of lifetime earnings subject to Medicare payroll tax, which could be termed the Medicare Average Earnings (MAE). The tax base for Medicare differs from that of Social Security. It includes employment not covered by Social Security, particularly some state and local government jobs. Since 1991, it has also included earnings above the Social Security maximum taxable earnings limit. The maximum taxable earnings subject to the

Medicare tax was eliminated in 1994, after equaling the Social Security maximum prior to 1991 and exceeding the Social Security maximum from 1991 to 1993. As a starting point, the MAE could be the AIME, with earnings defined as those subject to the Medicare tax rather than only those subject to the Social Security tax. The MAE could be pooled across spouses for couples, matching this feature of current, taxable income for married couples who file a joint return, and the option for both spouses to claim retirement benefits independently under Social Security.

Computing the MAE is administratively straightforward. It uses data already available in Social Security, rather than the tax return data that is the basis for means-testing based on current income. It requires essentially no more information than what is provided in the annual letters that the Social Security Administration has sent out to covered workers or what would be required in the event that a worker started to receive disability benefits from Social Security.

Accuracy of MAE versus Current Income

Ability to pay is inherently difficult to measure and must be inferred from an individual's income. Lifetime income can be a more accurate measure of each person's ability to pay than is income in a single year. Since income may be temporarily high or low in a given year, a better measure of ability to pay can be obtained by averaging several years of income. This is true regardless of how income is defined—whether from income tax filings or Social Security earnings records.

For example, in an analysis of data from the Survey of Income and Program Participation (SIPP), the Kaiser Family Foundation (2011) showed that "[o]ver one-quarter (28%) of adults with income between 139% to 400% of poverty based on current income—the range for which tax credits for Exchange coverage are provided—would fall into a higher or lower income category based on prior tax income." This result pertains only to changes in eligibility for the

exchange subsidies (as opposed to being on Medicaid or ineligible for the subsidies). There are additional variations in the amount of the subsidy indicated in Table 2 for individuals and families whose income fluctuates between 133% and 400% of the FPL.

By contrast, the impact of a single year of earnings on the MAE when the individual has been employed for, say, 30 years is only to change the MAE by 1/30th of the difference between the latest year of earnings and the prior average. Using MAE provides both predictability and, in some dimensions, fairness because it amortizes any impact of fluctuations in income over the whole lifetime.

Ability to Manipulate MAE versus Current Income

Lifetime income is based on past labor income rather than current investment earnings and is therefore less susceptible to manipulation. For example, income during retirement is to a large extent pension benefits or capital income from investments in stocks and bonds. Under proposals that means-test based on current income, Medicare beneficiaries and premium subsidy recipients would have an incentive to switch their portfolios from taxable bonds to stocks, since the former pay interest that is taxed annually while the latter generate a portion of their return as capital gains that are taxed only when the stocks are sold. Within their stock portfolios, beneficiaries would have an incentive to switch from high-dividend to low-dividend stocks. As another example, using current income, beneficiaries would have an incentive to concentrate retirement-plan withdrawals or stock sales in a single year, rather than over multiple years, in order to avoid the higher cost-sharing or lower benefits due to higher income in some years. (The precise incentives depend on where the beneficiary's income falls relative to the kinks in the implicit tax schedules in Tables 1 and 2.) These manipulations, which would lower economic efficiency, can be avoided to a large extent by using Medicare Average Earnings instead of

current income, since MAE is fixed in retirement and evolves gradually prior to age 65 based on labor income.

Incentives for Saving under MAE versus Current Income

The use of lifetime income avoids penalizing people who save during their working years. The income that beneficiaries receive from pensions and investments during retirement is attributable in part to their decisions to save rather than spend their earnings before retirement. A tax on asset income during retirement is analogous to a tax on saving before retirement. Consider two individuals with identical lifetime earnings (and thus identical MAE's), but suppose that one individual contributed to a 401(k) plan while working while the other did not. Raising the first person's health insurance premiums because retirement income is available from assets or a pension provides a disincentive to save for retirement.

The desirability of using current rather than lifetime income as the basis for income-related premiums depends, for both equity and efficiency reasons, on the extent to which disparities in capital income are due to factors over which the individual has control. Venti and Wise (2001) investigate this issue in the context of whether it is choice or chance that determines wealth dispersion at retirement. Controlling for lifetime income, they show that little of the variation in wealth at retirement (which forms the basis for capital income in retirement) can be ascribed to "chance differences in individual circumstances largely outside the control of individuals that might limit the resources from which saving might plausibly be made." They also exclude differences in investment choices as an important determinant, leaving savings decisions as the key explanatory factor. Thus, relative to basing income-related premiums on a measure of lifetime income like MAE, the policy of using of current income for means-testing suggests a disincentive for saving.

Incentives for Continued Work under MAE versus Current Income

The imposition of higher premiums for higher current income penalizes those who continue to work, either after they become eligible for Medicare in the case of the MMA or before they are eligible for Medicare in the case of the ACA. In the case of the MMA, Medicare beneficiaries would already have a full career of work incorporated into the calculation of their MAE. Adding another year of earnings above the MAE would only increase the MAE by, say, 1/40th of the difference between the earnings and the MAE.[12] Thus, the use of MAE encourages beneficiaries to continue to work. In contrast, linking Medicare Part B and Part D premiums to current income means that beneficiaries who continue to work could face higher premiums. Given that Medicare beneficiaries have discretion over how much they work and earn, the disincentives inherent in means-testing on current income rather than MAE are likely to reduce the labor force activity of beneficiaries.

In the case of the ACA, the potential disincentives to work may be quite severe. As French and Jones (2011) have shown using HRS data, the potential change in health insurance coverage at retirement is a strong predictor of retirement behavior.[13] The greatest job exit rates for workers whose health insurance status will not change due to retirement is at age 62, but for those who would lose health insurance at age 62, the greatest labor force exit rates are at age 65, when they become eligible for Medicare. The ACA will change retirement behavior in part because it fills in a missing market for group health insurance, regardless of how it is funded.[14] These incentives are not present if the premiums are based on MAE, since the impact of retiring

[12] Algebraically, if E_t is the current year of earnings and M_{t-1} is the average through the first t-1 years, then $M_t = M_{t-1} + (E_t - M_{t-1})/t$.

[13] See, in particular, Figure 2 on page 710 of French and Jones (2011).

[14] As noted in Section II, this is less true in states that do not provide Medicaid coverage to all adults up to age 65 with income under 100 percent of the FPL.

lowers the MAE by only *1/t* times the reduction in current income relative to MAE, where *t* is the number of years worked.

Differences in Coverage in MAE versus Current Earnings

As in the case of Social Security benefits, MAE considers only income derived from labor market activities, whereas the measure of current income used in means-testing includes income from assets as well. In the discussion of efficiency considerations above, the exclusion of asset income was a plus for MAE, since the receipt of asset income is often due to choices on realizing or reporting or longer-term decisions on saving. However, the receipt of asset income could also represent windfall returns or inherited wealth, both of which may be unrelated to the recipient's economic decisions and thus good candidates for an implicit tax.

An Incentives-Insurance Tradeoff

Another downside to using MAE, with regard to equity, is that a person's income may unexpectedly fall and remain low, causing health insurance premiums to rise as a share of income. The strict link to current income provides more insurance against this contingency. The efficiency gains posited above for the MAE versus current earnings derive in large part from the MAE being either predetermined or minimally sensitive to changes in current income. Beneficiaries have less incentive to distort their decisions about continued work and saving to lessen their health insurance premiums. However, they are also exposed to greater risk of current income fluctuations than they would be if premiums fell when current income falls.

IV. Data

The data used to analyze means-testing of health entitlement benefits in this study are all derived from the respondents to the Health and Retirement Study linked to their Social Security

earnings records.[15] The HRS sample is broadly representative of the population over age 50, with the original HRS cohort (born 1931 – 1941) and the AHEAD cohort (born 1923 and earlier) from the initial surveys in 1992 and 1993 having been supplemented over time with cohorts representing the Children of the Depression (1924 – 1930), the War Babies (1942 – 1947), and the Early Baby Boomers (1948 – 1953) as the study continued with biennial surveys through 2010. The original cohort had 12,652 respondents in the 1992 survey. The panel used in this study from 1992 to 2014 contains up to 226,564 respondent-year observations.

The use of the HRS data linked to earnings records makes it possible to compute the MAE for this sample of households near or in retirement. Approximately three quarters of the respondent-year observations in the full panel can be linked to a Social Security earnings record (though the record may not be sufficiently complete to compute MAE in every survey year). The earnings record for each respondent has two parts. The first is a summary earnings file, which gives Social Security earnings adjusted for the taxable maximum for each year between 1951 and 2013. The second is a detailed earnings file, which gives information from the respondent's W-2 forms for each year between 1978 and 2012. The latter allows a computation of MAE that includes income above the Social Security Maximum Taxable Earnings when the latter was raised and then eliminated for the Medicare portion of the payroll tax. The last sample year for analyses that include earnings histories is therefore 2012, even though the HRS includes household data from a 2014 wave.

For each respondent-year, the MAE is calculated as the average of all earnings subject to the Medicare payroll from that year back to either 1951 or the year the respondent turned 22,

[15]The household data are from the RAND HRS Data, Version P, an easy to use longitudinal data set based on the HRS data. It was developed at RAND with funding from the National Institute on Aging and the Social Security Administration. See Rand Center for the Study of Aging (2016) for documentation.

whichever is later. As in the calculation of the AIME for Social Security benefits, each year of earnings is revalued to the year of the calculation using the growth in the national average wage index. In the analysis of the MMA, in which all respondents are over age 65, the MAE used is the one for the year the respondent turned age 65. In the analysis of the ACA, in which all respondents are under age 65, the MAE used is the MAE for the respondent-year in question.

V. Analysis of Means-Testing in the MMA

When the MMA was passed, the intent was that approximately 5 percent of beneficiaries be subject to the income-related Part B premium each year. Table 3 shows the percentages of Medicare beneficiaries in each premium category in the HRS, identified as in Table 1 by the expected share of Part B expenditures that the premium is set to cover. The first survey year included is 2002, when about half of the HRS original cohort would be age-eligible for Medicare. The measure of income used to determine the income-related premium is total household income, which is the closest counterpart to Modified AGI in the HRS. For income years prior to the first published income thresholds (based on 2005 income tax returns), the thresholds are determined by adjusting for price inflation between the income year and 2005 using the CPI-U series. The table shows that, in the years around the law's passage, about 5 percent of the population in the HRS would have paid income-related premiums, as intended by the law. However, because the income thresholds that distinguish the different premium categories have remained constant in nominal terms since 2010, the fraction of the population subject to the income-related premium has risen over time to about 8.5 percent.

Variation in Premium Categories over Time

Because each subsequent year's Part B premium is based on a new year's income tax return, there is no guarantee that a household will remain in the same premium category over time. Table 4 shows the transition matrix between premium categories in adjacent waves (i.e. two-year intervals) from 2006 – 2014, when income reported in the prior year had implications for the Part B premium. Because Table 3 showed that over 90 percent of respondents are in the first category in each year, it is not surprising that the probability of staying in that category two years later is about 97 percent. The other 3 percent have increases in premiums that range from 40 percent (i.e. 35/25 – 1) to over 200 percent (i.e. 80/25 – 1). For the premium categories in which an income-related premium is being charged, the probabilities of staying in the same category are much lower, ranging from 17.00 to 28.57 percent. The most likely outcome in all cases is that those paying an income-related premium will not be paying that income-related premium in two years, with even 43.01 of those in the highest premium category falling to the lowest category.

There are several factors that may be generating the variation in premium categories across adjacent waves shown in Table 4. The first is measurement error, in that the HRS is using a survey instrument to obtain annual income data rather than the administrative data found on the actual tax return. Measurement error will tend to increase the biennial variation relative to what beneficiaries actually experience. The second is major life events, such as full retirement, widowhood, or re-marriage, which change annual income and thus, in a system of means-testing based on current income, also change the respondent's premium category.

The third is the nature of the income received by those on Medicare, who are disproportionately retired and thus receive income from assets that were accumulated during the life-cycle saving phase of their working lives. Households have considerable discretion over the

timing of their receipt of income from assets. They can choose the amount that they withdraw out of defined contribution pension plans and individual retirement plans and Keogh plans. They can choose whether to invest in interest-paying bonds or dividend-paying stocks. They can decide when to realize capital gains and offset gains with losses to minimize their taxable income.

Table 5 provides a first look at the importance of income from assets – or capital income – by premium category over the sample waves from 2002 – 2014. For each year and category, the share of capital income in total household income is reported. Capital income includes income from interest, dividends, capital gains, pensions, annuities, retirement accounts, trusts, rents, self-employment, and businesses. The key result is that in all years, capital income makes up 30 – 40 percent of total income for the lowest premium category. Capital income is higher for the higher income categories than for this lowest category, with the shares ranging from 37 to 70 percent for all groups paying the income-related premiums.

Given the importance of capital income in the aggregate, we can expect that as more Medicare beneficiaries begin to experience these income-related premiums and the disincentives they provide, it is possible that they use the flexible timing of capital income to avoid the higher premiums in some years. MAE, as defined above, is not subject to these concerns. MAE is determined when a beneficiary becomes eligible for Medicare and does not need to be changed in subsequent years. It can be changed when household composition changes by adding or subtracting the MAE for an entering or departing household member.

Using MAE as an Alternative for Means-Testing

Switching to a system of means-testing based on MAE may raise concerns about equity if the distribution of MAE differs substantially from that of current income. Figure 1 shows

summary statistics of the MAE distribution by Medicare Part B premium category using data from 2006 – 2012. Separate graphs are shown for unmarried women (Panel A), unmarried men (Panel B), and married couples (Panel C). For each premium category group, there is a horizontal line at the mean, a solid red bar indicating one standard deviation above and below the mean, and a hollow box indicating the 10th and 90th percentiles of the MAE distribution.[16]

The graphs show several interesting results. First, for all groups, the mean value of MAE for the premium category groups paying income-related premiums are higher than the mean value of MAE for the premiuam category group that does not pay the income-related premiums. In regression analyses (not shown) that include controls for each sample year as well as a linear trend in year of birth, the null hypothesis that the means across the five premium categories are equal is rejected in all three graphs. However, the null that the null hypothesis that the means across the four highest premium categories are equal is not rejected in any of the three graphs.

Second, the differences in the means between groups paying and not paying the income-related premiums are also evident and even larger at higher percentiles in the distributions of MAE by premium category group, as the standard deviation of benefits is generally larger in the premium category groups paying the income-related premiums. However, these differences are not apparent at lower percentiles of the MAE distributions. This may be due, in part, to not having the full earnings history for prior spouses of these currently unmarried respondents.The correspondence between current earnings and MAE is better among married couples.[17] Even for

[16] Note that we should not expect to see zero variation within groups – even the measure of current income (on which the categories are based) varies by 25 – 50 percent within the middle three categories (and is uncapped in the top category).

[17] Note that the 10th percentiles of the distributions for unmarried women are all extremely low, indicating that a sizable fraction of women in these cohorts have spent very little time in the workforce. Although the full marital history is not available in the earnings records linked to the HRS, this information is available to the Social Security Administration and could be used to construct a family-based MAE (as is done for currently married couples). Some of the marital history is available in the linked earnings histories when the marriage was observed during the HRS

married couples, the figure shows that there are many households – at least 10 percent for each premium category group – paying the income-related premiums that have lower MAE than the mean MAE amoung those not paying the income-related premiums.

Switching to MAE as a basis for income-related premiums would entail, in a general sense, subjecting the highest MAE values in the first premium category to an income-related premium and relieving the lowest MAE values in the top four premium categories from paying the income-related premium. Since Table 3 shows that the fraction of the population paying the income-related premiums is approaching 10 percent, consider the experiment of subjecting the top 10 percent of the MAE distributions to the maximum income-related premium in each year. In 2017, this is 12*294.60 = $3535.20 per person (plus another 12*76.20 = $914.40 for Part D). In 2012, the latest year in the sample for which earnings histories are available, the maximum income-related premium is $2769.60 per person. For each such household now subject to income-related premiums, compare the income-related premium to measures of current household income and assets.

For both married and unmarried households, about a third of the top decile of current income (essentially those now paying income-related premiums) is also in the top decile of MAE (and, necessarily, vice-versa). The remaining two thirds come from those not now paying income-related premiums. For the whole top MAE decile, the 1st percentile of the ratio of current income to the income-related premium is 4.28, indicating minimal risk that hosueholds newly subject to the income-related premium do not have the funds to pay it. The reason is straightforward – to have very high MAE in this experiment is to have had high lifetime earnings

panel, but the analyses don't yet incorporate that information. Because labor force participation and earnings were higher for men in these cohorts, the 10th percentile of the MAE distribution is less anomalous for unmarried men.

and thus high Social Security benefits (or public pension benefits if not covered by Social Security), which are included in current income.

VI. Analysis of Means-Testing in the ACA

An important method of achieving nearly universal health insurance coverage through the Affordable Care Act was to provide premium subsidies to individuals and families with incomes below 400 percent of the federal poverty level (FPL) as defined by the Department of Health and Human Services each year. Table 6 uses the HRS to track the percentage of the population between 50 and 62 who would have been eligible for premium subsidies (or expanded Medicaid coverage for those with very low income) from 2002 – 2014.[18] The columns refer to different sample groups, depending on whether the respondent is working or not and separating out those who are uninsured from the full sample.

Across all respondents, about 41 percent were in households below 400 percent of their FPL from 2002 – 2008, before a noticeable jump in 2010 and later that reflects the impact of the Great Recession. Over those pre-recession years, about 31 percent of working respondents, and about 63 percent of non-working respondents, were below this threshold. Focusing next on just those who are currently without insurance from any source, about 75 percent are below 400

[18] As noted above (see Footnote 9), there are two possible definitions of the FPL – the poverty thresholds as defined by the Census Bureau that determine the official poverty statistics and the poverty guidelines as defined by the Department of Health and Human Services (HHS) that determine eligibility for many government programs. The HRS includes measures of poverty (since 2002) that are based on the Census Bureau's poverty thresholds, and these measures are used in the remaining tables. Applying the HHS definition using reported number of persons in the household yields a cross-sectional correlation between the FPLs of 0.969. Some of the variation is due to geographic and demographic factors that affect the Census Bureau's definition, but other variation may be due to less precision in the author's determination of household size relative to the HRS investigators. On average, the HHS definition yields FPLs that are about 4 percent higher. Since this will result in greater numbers of respondents classified as eligible for subsidies (about 3 – 5 percentage points in most of the entries in Table 6), the Census Bureau definitions are used to provide more conservative estimates. See https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty for a more complete explanation of the differences between the two FPLs.

percent of the FPL, with about two thirds of working respondents and over 80 percent of non-working respondents having income below the threshold. After the Great Recession, all percentages are 5 – 7 percentage points higher. These high percentages suggest that, at least among those 50 – 62 without insurance, more than three out of four will have enhanced opportunities to obtain coverage in any given year.

Effects of Income Volatility

Since the determination of the premium subsidy is made on an annual basis using current income, the premium subsidy may change over time as annual income changes. Table 7 presents two transition matrices using the FPL multiple categories for uninsured respondents who do not change their work status across consecutive waves of the HRS. Changes in premium categories are thus not due to changes in working status but only to changes in income conditional on working status.

The top panel shows the results for respondents who are not working for pay in both the current and next survey year. At the extremes, 78.36 percent of those in the lowest FPL category remain in that category, and 41.63 percent of those who do not qualify for premium subsidies in the current survey year do not qualify for them in the next survey year. Moving into higher FPL categories lowers the fraction receiving the maximum premium subsidy in the next survey from 70 to 20 percent for those not currently receiving a premium subsidy. Upward income changes are not as likely, but 16 – 22 percent of those with 250 – 400 percent of the FPL in the current survey year would lose their premium subsidy in the next survey year, even without starting to work for pay.

The bottom panel shows the results for respondents who are working for pay in both the current and next survey year. With continued employment, the likelihoods of falling into the

lowest FPL categories are lower than for those not working but still about 20 percent or more for those with income less than 250 percent of the FPL. Upward mobility out of the premium subsidy ranges is somewhat higher than for the respondents who were not working. For those in the intermediate categories, the distribution of premium subsidy categories in the next survey year is roughly half at or above the current category and roughly half below the current category.

Current income changes will change premium subsidies according to the schedule shown in Table 2. The implicit marginal tax rates shown in the last column of that Table indicate that, via this schedule, the premium changes are analogous to marginal tax rates of about 15 percent. In part, this is insurance against income shocks, but administratively, it will generate changes in premium amounts with high frequency even for those who do not change working status, given the transition matrices shown in Table 7. Basing premium subsidies on a measure of lifetime income like MAE would generate less variation in premium subsidies. Moving across any one of the FPL categories in Table 7 (beyond 150 percent) is equivalent to an income change of between 20 and 33 percent. Table 7 shows that moves across multiple categories were not uncommon – for low-income respondents, there is considerable variation in current income over a two-year period.

Table 8 summarizes the distribution of changes in MAE between consecutive survey years for the same groups shown in Table 7. Each cell contains a mean or percentile of the distribution of changes in ln(MAE). They are analogous to the two-year percentage change in MAE in nominal terms. For those not working in either survey year, the median such change is 2.2 percent, with little variation in this median by FPL categories. The 10^{th} and 90^{th} percentiles are about -3.8 percent and 5.1 percent, respectively, indicating a very narrow distribution of

changes.[19] For those working in both survey years, median changes are somewhat higher at 4.4 percent, and changes at the 90th percentile are around 13 percent for the full sample. The distribution of changes in income is narrow in general because each incremental year of earnings can only change the average by a factor of *1/t*, where *t* is the number of years since age 21. For this sample, that is a minimum of 30. Thus, premium subsidies based on MAE can be expected to change less from year to year than those based on current income.[20]

Retirement Incentives

The comparisons in Tables 7 and 8 specifically hold working status constant across the two survey waves when measuring variation in premium categories and income. Because the income thresholds for premium categories do not depend on working status, a change in working status that lowers income will also increase the premium subsidy. Beyond the effects on the intensive margin for earning income, the implicit marginal tax rates shown in Table 2 may encourage reductions in income along the extensive margin by providing an incentive to retire early. This incentive is present for all workers who currently pay for their health insurance in some way – anyone can retire, lowering income, and thus qualify for subsidies if total income is below 400 percent of the FPL (or a larger subsidy to the extent that total income slips further below this threshold). However, the incentive will be particularly acute for those who currently receive health insurance from a source that will not continue to provide insurance if they retire.

Table 9 shows the distribution of workers age 50 – 62 in the HRS from 2002 – 2014 across FPL categories and the source of their health insurance. Overall, 12 percent of these workers have no health insurance, and 25 percent have health insurance through a source other

[19] The exception is in the lowest premium category, in which large percentage changes can occur from small dollar changes in MAE.

[20] Table 8 uses the changes in a couple's combined MAE when a spouse is present. Results based on only the changes in the respondent's MAE over the two years are similar to those presented.

than their own or a past employer. The remaining workers have health insurance through a current or past employer. About 25 percent of the sample has health insurance that will still be available if they retire, while the other 38 percent does not. It is this last group that is particularly exposed to the new incentive to retire early, since early retirement will now no longer lessen access to group health insurance.[21] More than a quarter of the workers face this problem of "job lock" in all FPL categories above 150 percent. The public policy concern is not the removal of job lock, which can have positive impacts on welfare, but doing so with subsidies from the federal government that do not condition on working status.[22]

While it is still too early to measure the extent to which job lock is attenuated by the ACA in the HRS, given the implementation of the key provisions of the law in 2014, a first look at the potential scope of the change is shown in Table 10, which compares the distribution of workers with current but not retiree health insurance from their employers while working to a hypothetical distribution in which their individual earnings have been set to zero. All of the workers whose current income places them below 400 percent of FPL will qualify for a premium subsidy upon retirement, since their income will go down. The diagonal elements of the matrix show that fewer than 12 percent of workers in each of the FPL categories with incomes below 400 percent of the poverty level would remain in the same FPL category, suggesting that most will get a larger subsidy (if they still qualify). For workers currently above the 400 percent of FPL level, about 40 percent will remain ineligible for a subsidy even if their household income falls by the full amount of their current earnings. For the other 60 percent of this group, their retirement will make them newly eligible for premium subsidies, unless they receive pension,

[21] Nyce et al. (2011) use employee-level data from a sample of large firms to show that employees under the age of 65 have substantially higher turnover rates at firms that offer subsidized retiree health coverage than at firms that do not. Turnover rates are also higher among employees who face higher subsidy rates.
[22] See Garthwaite, Gross, and Notosidigdo (2014) for a recent analysis of job lock.

capital or other income (e.g. a part-time job) that lifts them back above the 400 percent level. Using sample weights, this group aggregates to 3.7 million workers per year on average across the seven survey years from 2002 – 2014.

In February 2014, the Congressional Budget Office (2014) released an updated budget outlook with revised estimates and explanations of the impact of the ACA on labor markets. The summary prediction is that the ACA would reduce employment by the equivalent of 2 million full-time workers by 2017, rising to 2.5 million by 2024. In Appendix C of the report, the specific incentives to retire created by subsidies based on current income are not formally acknowledged.[23]

Using MAE as an Alternative for Means-Testing

As in the case of Medicare Part B and D premiums, switching to a system of means-testing based on MAE may raise concerns about equity if the distribution of MAE differs substantially from that of current income for those approaching retirement. Analogous to Figure 1, Figure 2 shows summary statistics of the MAE distribution by ACA premium subsidy category for those without health insurance using data from 2002 – 2012. Separate graphs are shown for unmarried women (Panel A), unmarried men (Panel B), and married couples (Panel C). For each premium subsidy category, there is a horizontal line at the mean, a solid red bar indicating one standard deviation above and below the mean, and a hollow box indicating the 10^{th} and 90^{th} percentiles of the MAE distribution.

[23] The relevant passages are in two places. On page 120, the report notes the possibility of a worker of any age switching from full-time to part-time work but dismisses the concern as an inducement to reduce hours. The possibility of early retirement is not discussed. On page 123, in a subsection specifically on retirement, the impact of the ACA on induced retirement is discussed in the context of the removal of preexisting condition exclusions and the lower variability in premiums due to older ages in exchange-purchased insurance. The additional inducement to retire because lower income in retirement generates a higher subsidy is not discussed.

In general, the means and higher percentiles of the MAE distributions are increasing with current income, as proxied by the permium subsidy categories. For unmarried women and married couples, the mean MAE for the top (unsubsidized) category is noticeably higher than for the groups receiving premium subsidies. However, the main result in the figure is that there is substantial overlap of the MAE distributions across all of the premium subsidy categories, particularly in the lower tail of each distribution. This suggests that switching from means-testing based on current income to means-testing based on MAE could reshuffle many people from receiving a subsidy to not receiving one.

This concern is mitigated by the finding, reported in Table 6, that about three quarters of uninsured respondents have current incomes below 400 percent of the FPL and thus qualify for a premium subsidy. An alternative system based on MAE would be able to offer premium subsidies to three quarters of the distribution. Table 11 provides a comparison to one such hypothetical system. That system is constructed as follows. First, the percent of the distribution receiving premium subsidies based on current income is identified (79^{th} percentile). At that percentile of the MAE distribution for the same households, the ratio of the MAE to the FPL turns out to be 380 percent. All MAE values are scaled up by about 5 percent (400/380) and this distribution is allocated to the premium subsidy categories used for current income.

Table 11 shows that 57.65 percent of those receiving the largest subsidies will continue to receive them and 44.76 percent of those not receiving subsidies will continue not to receive them. Of most concern are the off-diagonal elements in the last column, showing the percentage of each premium subsidy category who will lose their subsidies. This percentage is under 10 for the two lowest income groups and under 20 for the next three groups. In fact, the opposite movement – of those not receiving the largest subsidy into that group – in the first column are

somewhat larger, indicating that the current system is classifying a fair number of low lifetime-earners based on recently higher current income.

VII. Conclusions

Policy makers must balance equity and efficiency considerations when designing social insurance programs. Both the Medicare Modernization Act of 2003 and the Affordable Care Act of 2010 introduced means-testing of federal health entitlement benefits based on measures of current income. Current income has several disadvantages as a basis for entitlements: it provides incentives to reduce saving and work to lower income; it provides incentives to manipulate income or change its composition; and it is a noisy measure of ability to pay. Against these disadvantages is the possibility of providing insurance against adverse shocks to current income. This paper provides a first analysis of the extent to which the provisions of these laws have introduced these disadvantages relative to means-testing based on Medicare Average Earnings, a measure of lifetime income based on Social Security earnings records.

Although the income-related premiums at present cover less than 10 percent of the Medicare beneficiary population, the use of current income for means-testing introduces considerable short-term variation in the level of the premium *for those who pay it*. At any point in time, large cross-sectional differences in the dollar value of premiums among those who pay them are not robustly related to lifetime earnings. The income-related premium as currently implemented is thus very much a tax on saving and capital income. Further, within the group of beneficiaries paying each income-related premium amount, there is wide variation in lifetime earnings.

The ACA also introduces substantial variation in premium amounts relative to income due to short-term variations in current income. This is true even for those who don't change whether they are working for pay or not over the two-year period between waves of the Health and Retirement Study. By comparison, the distribution of annual changes to MAE among workers nearing retirement age is narrowly distributed, since the impact of any one year of earnings is averaged out by decades of prior indexed earnings. The income thresholds for premium subsidies under the ACA also do not condition on whether the individual is working or not, providing an incentive for early retirement. While this applies to all workers nearing retirement age, it is particularly acute for workers who have employee health insurance but not retiree health insurance from their employers. Tabulations of data from the years prior to the enactment of the ACA suggest that as many as 3.7 million workers in this situation who do not qualify for a premium subsidy while working would qualify for one if they retired.

This study has illuminated the need to measure and evaluate the extent to which means-testing on current income introduces economic inefficiencies and inequities. There are two principal directions for future research. First, the suggestive results presented here should be corroborated with administrative data from tax records on current income. Measurement error in survey-based responses to income questions across waves of the HRS could overstate the true variation in income used to determine income-related premiums or premium subsidies. Second, with 10 years now since the implementation of income-related premiums for the MMA and 3 years since the implementation of premium subsidies for the ACA, future studies can estimate the behavioral responses to these implicit taxes to inform continued policy discussions. To the extent that the use of current income is shifting behavior in unproductive ways, means-testing based on lifetime earnings can be considered as a potential alternative.

References

Congressional Budget Office. *The Budget and Economic Outlook: 2014 to 2024.* (February 4, 2014). Available at http://www.cbo.gov/publication/45010.

Congressional Budget Office. "CBO Estimate of the Effects of the Insurance Coverage Provisions Contained in P.L. 111-148 and 111-152," (March 18, 2011). Available at https://www.cbo.gov/publication/42507.

Cubanski, Juliette, Tricia Neuman, Gretchen Jacobson, and Karen E. Smith. "Raising Medicare Premiums for Higher-Income Beneficiaries: Assessing the Implications," Kaiser Family Foundation, Issue Brief No. 8276-02 (January 13, 2014). Available at http://kff.org/medicare/issue-brief/income-relating-medicare-part-b-and-part/

French, Eric and John Bailey Jones. "The Effects of Health Insurance and Self-Insurance on Retirement Behavior," *Econometrica*, Vol. 79, No. 3 (May 2011), 693-732.

French, Eric, Hans-Martin von Gaudecker, and John Jones. "The Effect of the Affordable Care Act on the Labor Supply, Savings, and Social Security of Older Americans," Paper Presented at the 17th Annual Retirement Research Consortium Conference, Washington, DC (August 6, 2015). Available at http://www.nber.org/programs/ag/rrc/rrc2015/papers/2.3%20-%20French,%20von%20Gaudecker,%20Bailey%20Jones.pdf

Garthwaite, Craig, Tal Gross, and Matthew J. Notowidigdo. "Public Health Insurance, Labor Supply, and Employment Lock," *Quarterly Journal of Economics*, Vol. 129, No. 2 (2014), 653-696.

Kaiser Family Foundation. "Determining Income for Adults Applying for Medicaid and Exchange Coverage Subsidies: How Income Measured With a Prior Tax Return Compares to Current Income at Enrollment," Issue Brief No. 8168 (March 1, 2011). Available at http://kff.org/health-costs/issue-brief/determining-income-for-adults-applying-for-medicaid/

Kaiser Family Foundation. "Explaining Health Care Reform: Questions about Health Insurance Subsidies," Issue Brief (November 1, 2016). Available at http://kff.org/health-reform/issue-brief/explaining-health-care-reform-questions-about-health/.

Kaiser Family Foundation. "Medicaid Income Eligibility Limits for Adults as a Percentage of the Federal Poverty Level," http://www.kff.org/health-reform/state-indicator/medicaid-income-eligibility-limits-for-adults-as-a-percent-of-the-federal-poverty-level/ Accessed July 16, 2017.

Lifsher, Marc and Melody Petersen. "Pension Spiking Could Cost CalPers Nearly $800 Million," *Los Angeles Times* (September 9, 2014). Available at http://www.latimes.com/business/la-fi-pension-spiking-report-20140910-story.html

Mulligan, Casey B. "Average Marginal Labor Income Tax Rates under the Affordable Care Act," National Bureau of Economic Research, Working Paper No. 19365 (August 2013). Available at http://www.nber.org/papers/w19365.

Nyce, Steven, Sylvester Schieber, John B. Shoven, Sita Slavov, and David A. Wise. "Does Retiree Health Insurance Encourage Early Retirement?" National Bureau of Economic Research, Working Paper No. 17703 (December 2011). Available at http://www.nber.org/papers/w17703.

Office of Management and Budget. *Fiscal Year 2014 Budget of the United States*. Washington, DC: United States Government Printing Office (April 10, 2013). Available at http://www.whitehouse.gov/sites/default/files/omb/budget/fy2014/assets/budget.pdf.

Office of Management and Budget. *Fiscal Year 2017 Budget of the United States*. Washington, DC: United States Government Printing Office (February 9, 2016). Available at https://www.whitehouse.gov/sites/default/files/omb/budget/fy2017/assets/budget.pdf.

RAND Center for the Study of Aging. *HRS Data, Version P*. Produced with funding from the National Institute on Aging and the Social Security Administration. Santa Monica, CA (August 2016).

Sickinger, Ted. "Oregon PERS: Pension Pay Gets Padded by Benefit Boosters, from Public Safety Workers to Docs," *The Oregonian/OregonLive* (December 31, 2012). Available at http://www.oregonlive.com/business/index.ssf/2012/07/oregon_pers_pension_pay_gets_p.html.

Steuerle, C. Eugene. "Taxing the Elderly on Their Medicare Benefits," *Tax Notes*, (July 21, 1997). Available at http://www.urban.org/publications/1000109.html.

Venti, Steven F. and David A. Wise. "Choice, Chance, and Wealth Dispersion at Retirement," in Seiritsu Ogura, Toshiaki Tachibanaki, and David A. Wise (eds.) *Aging Issues in the United States and Japan*. Chicago: University of Chicago Press (2001): 25 – 64.

Table 1: Medicare Part B and D Income-Related Monthly Adjustment Amounts in 2017

Income Range (Annual, Single)	Share of Expenditures Covered	Medicare Part B IRMAA (Over the Base Premium)	Medicare Part D IRMAA (Over the Base Premium)	Implicit Tax Rate (Over the Income Range)
$85,000 or less	25%	0.00	0.00	
$85,001 - $107,000	35%	53.50	13.30	3.64%
$107,001 - $160,000	50%	133.90	34.20	2.29%
$160,001 - $214,000	65%	214.30	55.20	2.25%
Over $214,000	80%	294.60	76.20	

Source: Social Security Administration Publication No. 05-10536, available at https://www.ssa.gov/pubs/EN-05-10536.pdf.

Notes: Individuals with annual income of $85,000 or less will face no IRMAA and will thus pay the base premium of $134.00 per month for Part B. They will pay only what their Part D plan specifies as a premium for drug coverage. The amounts in the table refer to the additional premium amounts for those with annual incomes higher than $85,000. For those filing jointly, the income ranges are multiplied by a factor of 2, while the per-beneficiary premiums (and thus the implicit tax rate) remain the same. For those who are married filing separately, the base premium and the first income threshold are the same. However, the $214.30/$55.20 Medicare Part B/D IRMAAs apply between $85,000 and $129,000 and the $294.60/76.20 Medicare Part B/D IRMAAs apply above $129,000.

Table 2: Health Insurance Premiums as a Share of Income under ACA Premium Subsidies in 2017

Multiple of the Federal Poverty Level	Premium as a Share of Income	Implicit Tax Rate (Over the FPL Interval)
100 – 133%	2.04 – 3.06%	6.15%
133 – 150%	3.06 – 4.08%	12.06%
150 – 200%	4.08 – 6.43%	13.48%
200 – 250%	6.43 – 8.21%	15.33%
250 – 300%	8.21– 9.69%	17.09%
300 – 400%	9.69%	9.69%

Source: Internal Revenue Service Instructions for Form 8962 for 2017, available at https://www.irs.gov/pub/irs-pdf/i8962.pdf., and Kaiser Family Foundation (2016).

Notes: The implicit marginal tax rate over a range from X% to Y% of the FPL, where the premium as a share of income varies from a% to b% of income, is (b*Y – a*X)/(Y – X). For adults in states that do not offer Medicaid coverage up to 100% of the FPL, the introduction of the premium subsidies at 100% of the FPL provides an incentive to earn income at that level, i.e. a negative implicit tax rate.

Table 3: Distribution of Medicare Part B Premium Categories by Year

	Expected Share of Medicare Part B Expenditures Covered by Premium				
Survey Year	25%	35%	50%	65%	80%
2002	95.30	1.63	1.65	0.50	0.92
2004	95.15	1.51	1.58	0.72	1.04
2006	94.91	1.52	1.75	0.86	0.97
2008	93.41	2.14	2.24	0.94	1.26
2010	93.60	2.08	2.09	1.29	0.95
2012	93.28	2.28	1.95	1.18	1.31
2014	91.54	2.37	2.95	1.59	1.54

Source: Author's tabulations from the Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are receiving health insurance through Medicare in the survey year. Observations are weighted by respondent weights. A total of 87,545 respondent-year observations are tabulated.

Notes: Each entry in the table is a percentage, with rows summing to 100%. The survey year refers to the year in which data are collected. Income generally pertains to the year prior to the survey year. Since premiums are based on income reported two years ago, the premium schedule applied is typically the one for the year after the survey year. The column headings, 25% - 80%, refer to the share of per capita expenditures that the premium is expected to cover. They correspond to the rows of Table 1. For income years prior to 2005 (i.e. premium years prior to 2007), income has been indexed via the CPI-U to 2005 dollars and then compared to the thresholds for income received in 2005.

Table 4: Transition Matrix Between Medicare Part B Premium Categories, 2006 – 2014

Premium Category in Current Year	Premium Category in the Next Survey Wave (2 year interval)				
	25%	35%	50%	65%	80%
25%	96.62	1.27	1.11	0.52	0.48
35%	61.98	17.00	12.82	4.40	3.80
50%	51.75	11.29	23.64	8.00	5.32
65%	41.18	7.15	14.31	20.49	16.87
80%	43.01	5.36	10.16	12.90	28.57

Source: Author's tabulations from the Health and Retirement Study, 2006 – 2014. The sample includes all respondents who are receiving health insurance through Medicare in the survey year. Observations are weighted using respondent weights. A total of 43,746 pairs of respondent-years are tabulated.

Notes: Each entry in the table is a percentage, with rows summing to 100%. The survey year refers to the year in which data are collected. Income generally pertains to the year prior to the survey year. Since premiums are based on income reported two years ago, the premium schedule applied is typically the one for the year after the survey year. The row and column headings, 25% - 80%, refer to the share of per capita expenditures that the premium is expected to cover. They correspond to the rows of Table 1. Data for the transitions observed over each of the four two-year intervals have been pooled.

Table 5: Percent of Income Due to Capital by Medicare Part B Premium Categories and Year

	Expected Share of Medicare Part B Expenditures Covered by Premium					
Survey Year	25%	35%	50%	65%	80%	Total
2002	39.52	56.08	56.49	69.42	59.05	40.40
2004	37.36	52.72	58.87	54.08	66.34	38.36
2006	36.80	49.98	58.00	63.60	49.73	37.73
2008	37.53	48.81	52.07	57.18	66.46	38.65
2010	32.33	50.79	43.37	56.43	45.61	33.38
2012	33.55	46.35	47.18	51.44	62.12	34.70
2014	33.62	46.25	48.23	37.33	54.49	34.73

Source: Author's tabulations from the Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are receiving health insurance through Medicare in the survey year. Observations are weighted by respondent weights. A total of 87,545 respondent-year observations are tabulated.

Notes: Each entry in the table is a percentage. The survey year refers to the year in which data are collected. Income generally pertains to the year prior to the survey year. Since premiums are based on income reported two years ago, the premium schedule applied is typically the one for the year after the survey year. The column headings, 25% - 80%, refer to the share of per capita expenditures that the premium is expected to cover. They correspond to the rows of Table 1. For income years prior to 2005 (i.e. premium years prior to 2007), income has been indexed via the CPI-U to 2005 dollars and then compared to the thresholds for income earned in 2005.

Table 6: Percentage At or Below 400% of the Federal Poverty Level, 2002 – 2014

	Full Sample			Uninsured Respondents		
Survey Year	All	Working	Not Working	All	Working	Not Working
2002	41.53	31.34	61.52	76.78	72.78	81.95
2004	40.21	31.12	63.54	74.66	69.40	85.09
2006	40.85	30.71	65.23	72.98	65.38	85.42
2008	41.77	31.86	63.96	73.49	68.39	82.17
2010	46.13	35.04	70.25	80.02	75.38	84.01
2012	45.63	35.22	70.61	78.07	72.27	87.59
2014	46.56	36.01	71.24	79.57	74.15	89.80

Source: Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 41,822 respondent-years are tabulated.

Notes: Respondents must report that they are "working for pay" to be classified as working. The Federal Poverty Levels are based on Census definitions and HRS determinations.

Table 7: FPL Transitions for Those Without Coverage Who Do Not Change Work Status, 2002 – 2014

Multiple of FPL in Survey Year	Multiple of Federal Poverty Level in Next Survey Year						
	Under 133%	133 – 150%	150 – 200%	200 – 250%	250 – 300%	300 – 400%	Over 400%
	Respondents who are not working in consecutive survey years						
Under 133%	78.36	4.04	5.84	4.32	3.58	1.29	2.56
133 – 150%	72.29	8.68	1.38	6.07	2.16	6.48	2.94
150 – 200%	48.95	3.40	21.38	10.45	6.32	5.77	3.74
200 – 250%	45.47	4.53	12.03	17.33	6.08	10.48	4.08
250 – 300%	36.19	1.53	14.18	14.05	6.42	11.34	16.30
300 – 400%	25.16	21.49	0.80	14.92	9.48	6.58	21.57
Over 400%	19.20	3.24	9.08	7.87	4.83	14.16	41.63
	Respondents who are working in consecutive survey years						
Under 133%	54.50	4.55	13.86	10.60	5.23	4.24	7.03
133 – 150%	34.70	8.87	28.19	18.08	4.22	2.65	3.29
150 – 200%	20.25	11.22	24.99	16.44	9.41	9.61	8.09
200 – 250%	26.72	6.03	17.52	18.55	10.06	9.02	12.10
250 – 300%	8.96	0.36	17.08	20.05	18.03	15.25	20.26
300 – 400%	11.31	1.31	7.56	12.77	15.06	28.23	23.77
Over 400%	14.85	2.04	4.93	7.04	6.78	12.48	51.88

Source: Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 938 and 1,718 pairs of respondent-years are tabulated in the top and bottom panels, respectively.

Notes: Respondents must report that they are "working for pay" to be classified as working. The Federal Poverty Levels are based on Census definitions and HRS determinations.

Table 8: Change in Medicare Average Earnings (MAE) by FPL Multiple Categories, 2002 - 2012

Multiple of FPL	Mean	10th Percentile	Median	90th Percentile
	Uninsured Respondents who are not working in consecutive survey years			
Under 133%	0.025	-0.045	0.005	0.042
133 – 150%	0.008	-0.035	0.010	0.034
150 – 200%	0.015	-0.021	0.006	0.051
200 – 250%	0.041	-0.017	0.033	0.152
250 – 300%	0.026	-0.010	0.029	0.081
300 – 400%	0.026	-0.045	0.038	0.063
Over 400%	0.014	-0.021	0.004	0.094
All	0.022	-0.038	0.009	0.051
	Uninsured Respondents who are working in consecutive survey years			
Under 133%	0.098	-0.012	0.039	0.159
133 – 150%	0.033	-0.015	0.031	0.075
150 – 200%	0.077	-0.005	0.063	0.186
200 – 250%	0.052	-0.016	0.047	0.149
250 – 300%	0.062	0.001	0.043	0.106
300 – 400%	0.072	0.017	0.048	0.097
Over 400%	0.047	-0.017	0.044	0.105
All	0.067	-0.012	0.044	0.128

Source: Health and Retirement Study, 2002 – 2012. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 319 and 556 pairs of respondent-years are tabulated in the top and bottom panels, respectively.

Notes: Respondents must report that they are "working for pay" to be classified as working. The Federal Poverty Levels are based on Census definitions and HRS determinations. MAE refers to Medicare Average Earnings, as defined in the text. The cells of the table are changes in the natural logarithm of MAE between the survey years. They are analogous to 2-year percent changes in nominal dollars.

Table 9: Health Insurance Status by Federal Poverty Level Multiples for Workers, 2002 – 2014

Multiple of Federal Poverty Level in Survey Year	Percentage of the Sample in this FPL Multiple Group	Health Insurance Status			
		Uninsured	Insured, Not by current or past Employer	Insured by Employer, Covered in Retirement	Insured by Employer, Not Covered in Retirement
Under 133%	6.45	45.05	24.88	11.59	18.49
133 – 150%	1.22	39.75	21.24	15.06	23.96
150 – 200%	4.40	32.14	22.78	17.40	27.68
200 – 250%	5.07	25.82	18.32	22.34	33.52
250 – 300%	5.59	20.45	19.15	24.69	35.71
300 – 400%	11.14	12.42	22.69	24.39	40.50
Over 400%	66.13	5.23	27.33	26.59	40.85
All	100.00	12.10	25.47	24.51	37.92

Source: Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 26,837 respondent-years are tabulated.

Notes: The Federal Poverty Levels are based on Census definitions and HRS determinations.

Table 10: Impact of Full Retirement on FPL Multiple for Workers with Employer Coverage but No Retiree Coverage, 2002 – 2014

Multiple of FPL in Survey Year	Multiple of Federal Poverty Level with Earnings Set to Zero						
	Under 133%	133 – 150%	150 – 200%	200 – 250%	250 – 300%	300 – 400%	Over 400%
Under 133%	100.00						
133 – 150%	90.25	9.75					
150 – 200%	87.04	1.39	11.57				
200 – 250%	86.76	3.43	4.21	5.60			
250 – 300%	80.67	5.01	5.48	2.11	6.73		
300 – 400%	64.06	5.73	12.35	6.09	4.50	7.27	
Over 400%	29.85	1.97	6.39	6.24	5.94	10.20	39.40

Source: Health and Retirement Study, 2002 – 2014. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 9,404 respondent-years are tabulated.

Notes: The Federal Poverty Levels are based on Census definitions and HRS determinations.

Table 11: Comparison of ACA Premium Subsidies Based on Current Income and MAE for Respondents without Health Insurance, 2002 – 2012

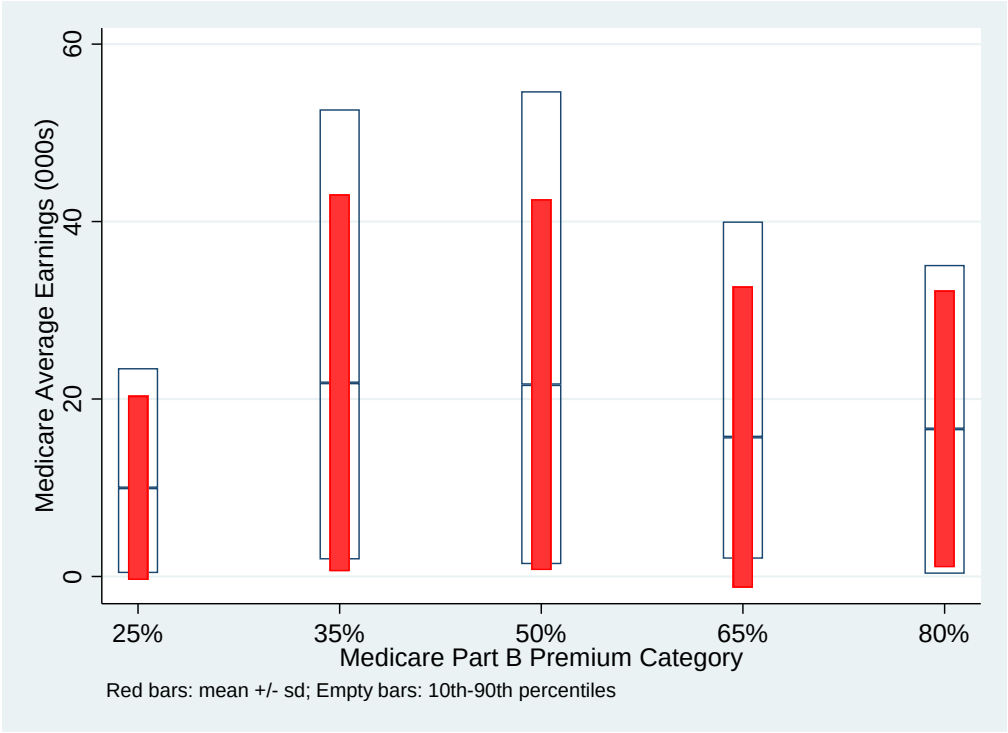
Multiple of FPL Based on Current Income	Corresponding Category Based on MAE						
	Under 133%	133 – 150%	150 – 200%	200 – 250%	250 – 300%	300 – 400%	Over 400%
Under 133%	57.65	4.48	8.31	8.37	5.78	5.87	9.55
133 – 150%	34.79	3.83	12.68	15.64	8.05	16.97	8.04
150 – 200%	39.42	5.40	10.43	11.82	8.58	10.75	13.60
200 – 250%	24.25	3.65	14.01	16.89	7.49	16.09	17.62
250 – 300%	20.13	2.71	14.71	15.91	11.11	21.36	14.08
300 – 400%	14.65	1.91	9.99	11.34	9.14	25.87	27.10
Over 400%	12.49	1.66	4.00	8.69	10.25	18.14	44.76

Source: Health and Retirement Study, 2002 – 2012. The sample includes all respondents who are age 50 – 62 in the survey year. Observations are weighted using respondent weights. A total of 2,393 respondent years.

Notes: The Federal Poverty Levels are based on Census definitions and HRS determinations.

Figure 1: Medicare Average Earnings by Premium Category Group, 2006 – 2012

A. Unmarried Women



B. Unmarried Men

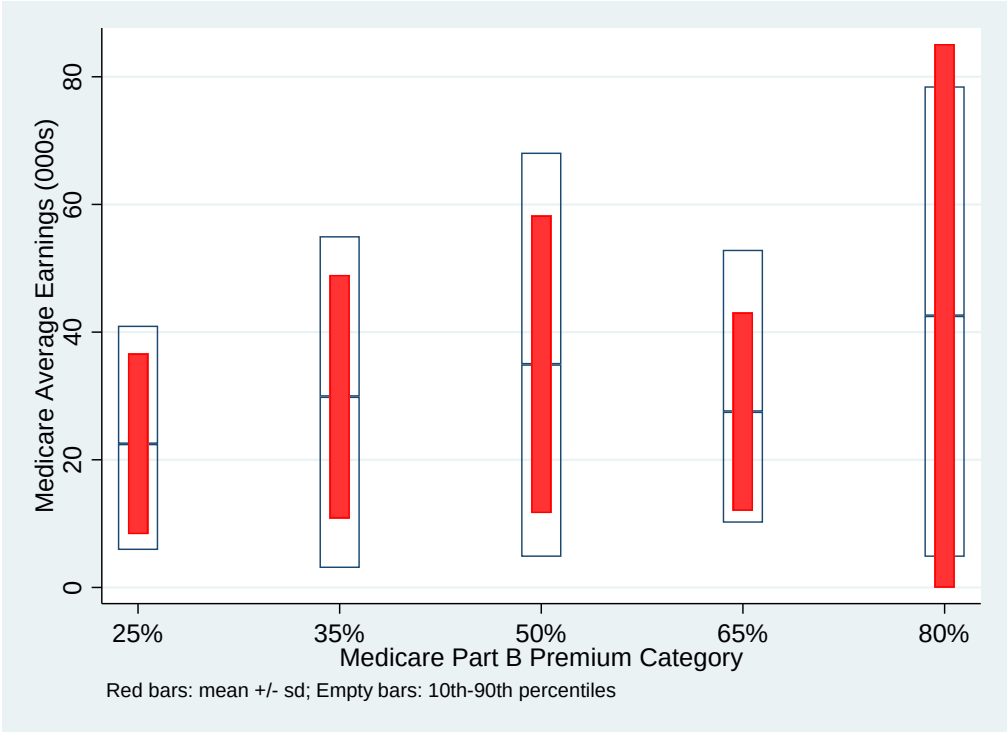


Figure 1, Continued

C. Married Couples

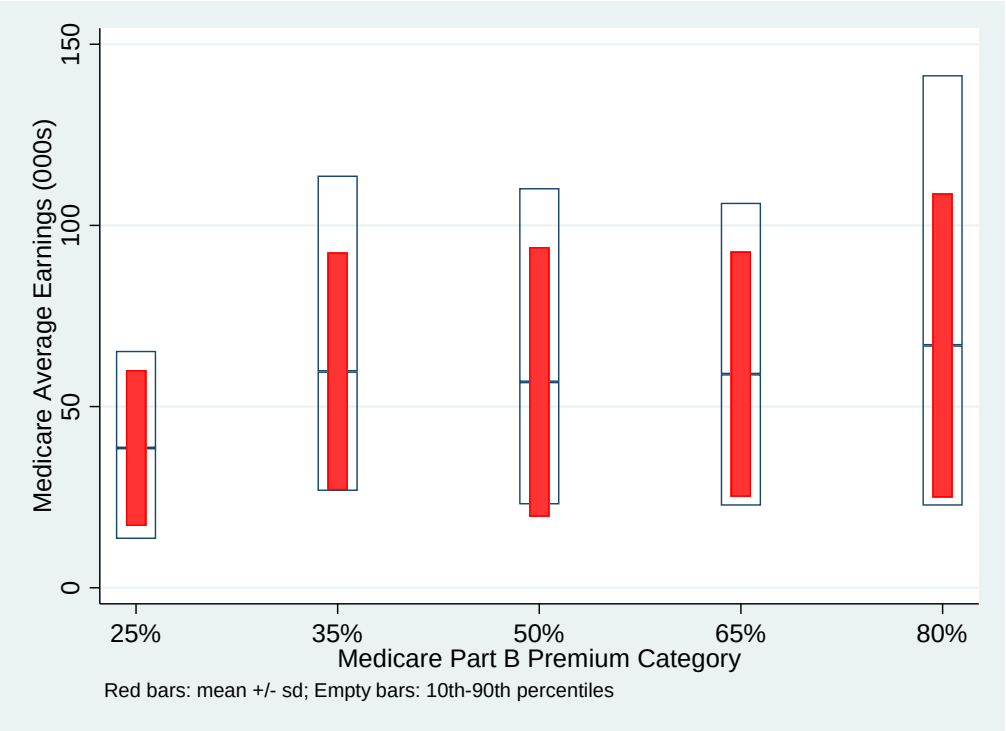
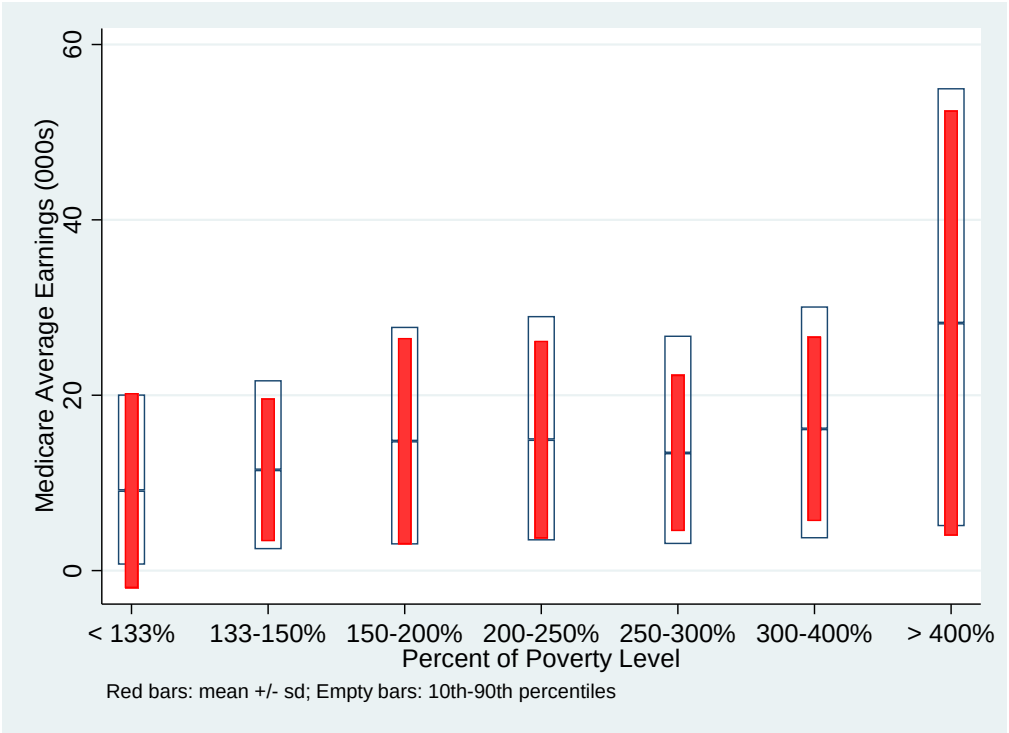


Figure 2: Medicare Average Earnings by Percent of the Poverty Level
for Those Without Health Insurance, 2002 – 2012

A. Unmarried Women



B. Unmarried Men

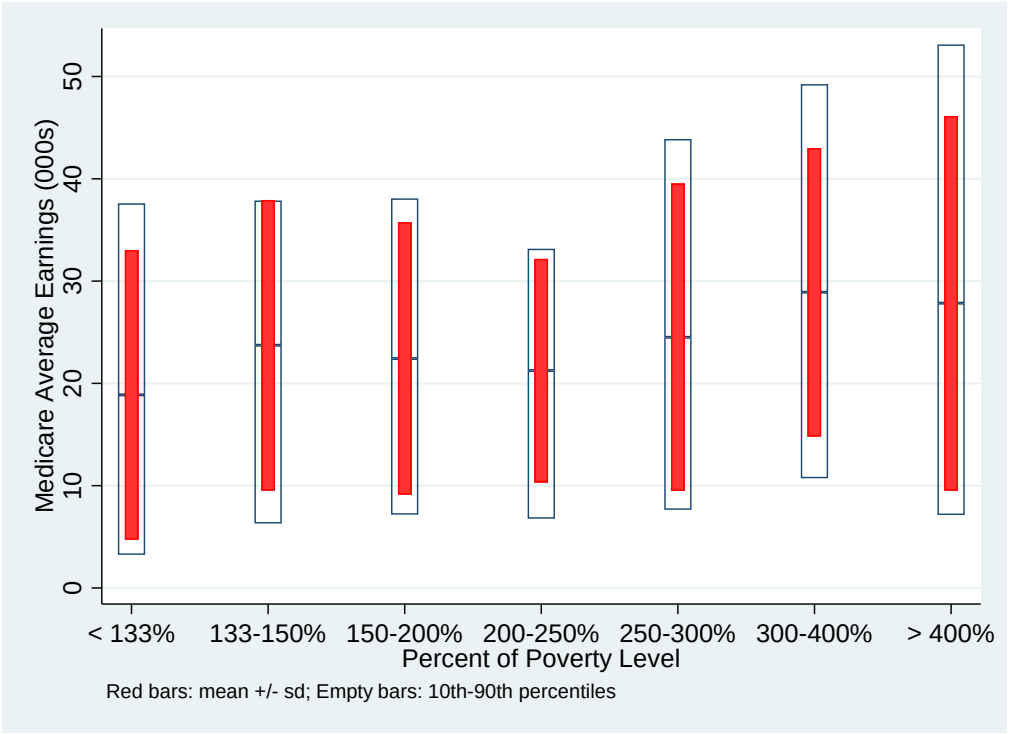


Figure 2, Continued

C. Married Couples

