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Subsidizing Medical Spending through the Tax Code: Take-Up, Targeting and the Cost of Claiming

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ABSTRACT

The U.S. tax code partially subsidizes out-of-pocket medical spending as itemized medical deductions (IMDs). In this paper, using detailed information in the Health and Retirement Study, I find that while a substantial share of medical spending among older Americans is deducted through the tax code, take-up is incomplete: 61.8 (50.5) percent of potential tax savings (deductions) are claimed, resulting in lost tax savings of $5.4 billion annually. Further, frictions in take-up result in diverting tax savings from higher-need populations. I investigate potential mechanisms and estimate a discrete choice model to simulate eligibility, take-up and the implied cost of claiming under different policy counterfactuals. The results indicate that subsidizing medical expenses through the tax code imposes significant economic burdens, reducing the net subsidy available to taxpayers.

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1 Introduction

Participants in the U.S. health care system incur out-of-pocket medical costs in the form of direct payments to providers, cost-sharing requirements and premiums. In aggregate, households spent $433 billion annually on out-of-pocket medical costs and $476 billion on premiums in 2021, amounting to over $2,700 per person in total (Martin et al., 2023).

Despite nearly universal coverage by Medicare for those over age 65, these expenses are even more consequential for the elderly. Medicare enrollees are not subject to out-of-pocket spending caps and there are several services (e.g., dental, hearing aids, long-term care) that Medicare does not cover. While several programs seek to reduce out-of-pocket spending among low-income Medicare beneficiaries, not all low-income Medicare beneficiaries qualify for support for these expenses, and not all who are eligible are enrolled (Caswell and Waidmann, 2017). As a result, half of Medicare beneficiaries spend at least 16 percent of their income on premiums, cost-sharing, and non-Medicare-covered services, and the share of income is higher among Black and Hispanic beneficiaries (17 and 23 percent, respectively) (Noel-Miller, 2023).

A significant share of this spending is deducted on individual tax returns, where taxpayers are eligible to include unreimbursed medical and dental expenses above an income floor in their itemized deductions. In aggregate, taxpayers deducted $75.9 billion in itemized medical deductions (IMDs) in tax year 2021, about two-thirds of which was deducted on tax returns where the primary taxpayer was 65 or over, as shown in Figure 1 (IRS Statistics of Income Division, 2022). Before the Tax Cuts and Jobs Act took effect in 2018, about one in five taxpayers 65 and over claimed the medical deduction and deducted on average approximately $11,000 dollars per return.[1]

The deductibility of medical expenses operates as a form of social insurance for out-of-pocket medical expenses delivered through the tax code, where eligibility and available benefits are determined by income, out-of-pocket spending on healthcare, and other financial characteristics. Tracking this spending and determining what can be deducted can be complex and may result in not all eligible spending being deducted, similar to other social insurance programs that involve administrative burdens (Herd and Moynihan, 2019), and many taxpayers may not be aware of this deduction. However, unlike an extensive literature that investigates the take-up of a variety of different social insurance programs (e.g., see Currie (2006) for a review), the extent to which people are eligible for and claim this

[1]The Tax Cuts and Jobs Act increased the standard deduction and therefore reduced the share of people itemizing their medical expenses. As a result, the share of taxpayers 65 and over claiming the IMD declined to approximately 8 percent. However, conditional on claiming the deduction, the average IMD claimed increased to more than $20,000 for this age group.

deduction has not been examined in the literature.

In this paper, I investigate the take-up and targeting of the IMD among older individuals using rich data on out-of-pocket medical spending and tax filings in the Health and Retirement Study (HRS). I estimate the share of medical expenses that are eligible to be deducted, the share of eligible expenses that are claimed, the share of older households who forego medical deductions, and the average forgone deductions and associated tax value. I then examine disparities in both eligibility and claiming across different demographic groups, and the implications of incomplete take-up on how benefits are targeted. Finally, I investigate potential mechanisms behind incomplete take-up and use plausibly exogenous variation in the effective subsidy rate to estimate a discrete choice model of take-up. I use this model to simulate eligibility, take-up and the implied cost of claiming under different policy counterfactuals.

My results indicate that approximately a quarter of aggregate out-of-pocket medical spending among older Americans is deducted through the tax code; however, take-up is incomplete: I estimate that 62 percent (51 percent) of eligible tax savings (deductions) are claimed. These forgone medical deductions result from incomplete take-up primarily on the extensive margin and amount to $64.5 billion per year in forgone medical deductions and an annual loss of approximately $5.4 billion in tax savings among households with members age 50 and over.

The take-up rate is not uniform across the population, and I find that incomplete take-up is highest among low SES groups and results in benefits targeted away from those in poorer health. Specifically, take-up rates are lower for those with lower levels of education, lower adjusted gross income (AGI), lower wealth, those who are not employed, and those with worse measures of health. However, there are no significant differences by race and ethnicity and gender. Those who claim the medical deduction tend to be healthier, spend less in out-of-pocket medical spending, and have higher income and wealth than those who are eligible but do not claim, implying that frictions in take-up result in positive selection into claiming. These findings suggest that barriers in claiming the benefits result in tax savings being diverted away from high-need populations.

I explore two main categories of mechanisms behind incomplete take-up motivated by the social insurance literature (Currie, 2006; Chetty and Finkelstein, 2013): lack of awareness and transaction costs.[2] I find evidence that take-up is higher with repeated eligibility, suggesting that households learn about the deduction over time and that lack of information about the medical deduction is a driver of incomplete take-up. Differences in state marginal tax rates

[2]These studies also describe stigma from benefit recipiency as a potential explanation. While possible, stigma is less likely to be a concern in this context since one's tax returns are generally not observed by others.

provide a source of plausibly exogenous variation in the effective subsidy rate that I use to estimate take-up elasticities with respect to the subsidy rate. I use a simulated instrument that isolates the variation in the effective subsidy rate from state-by-state policy variation. The results indicate that households are highly responsive to the effective subsidy rate, with a 1 percentage point larger subsidy resulting in 1.6 percentage points higher take-up, corresponding to an elasticity of approximately -3.1.

Finally, I estimate a discrete choice model of take-up using a control function approach and the simulated instrument described above. This model generates an estimated cost of claiming the medical deduction that rationalizes the level of observed take-up. I use the estimated model to simulate eligibility, take-up and the cost of claiming under alternative budget-neutral policy counterfactuals, including an above-the-line deduction that does not require itemization, a non-refundable credit, a refundable credit. The results indicate that as eligibility is extended, more households would claim the subsidy at a lower implied average cost, and that under a counterfactual where households are well-informed, take-up would dramatically increase.

These findings contribute to several different strands of literature. As mentioned previously, an extensive body of work has shown that take-up of social insurance is incomplete and varies across programs, ranging from as low as 8 percent in the State Children's Health Insurance Program (SCHIP) to 80 percent for the Earned Income Tax Credit (EITC) delivered through the tax code (Currie, 2006). This study adds to this literature by assessing the extent to which vulnerable groups claim benefits for which they are eligible, and potential mechanisms behind incomplete take-up. It also contributes to the literature evaluating the costs of tax compliance by estimating an implied cost of claiming the IMD from forgone tax savings (Pitt and Slemrod, 1989; Benzarti, 2020, 2021).

Higher administrative burdens for enrollment in social insurance programs can either improve program targeting or screen out high-need populations. Nichols and Zeckhauser (1982) describe a stylized model where non-financial hurdles in enrollment serve to target benefits to those with higher values of benefits. However, it is also possible that these hurdles screen out those with high values (Currie and Gahvari, 2008; Mullainathan and Shafir, 2013). Indeed, empirical evidence in the U.S. context is mixed. On the one hand, there is evidence that frictions in enrollment reduce take-up among high-need populations at the margin for Social Security disability benefits (Deshpande and Li, 2019), Supplemental Nutrition Assistance Program (SNAP) (Finkelstein and Notowidigdo, 2019; Homonoff and Somerville, 2021; Wu and Meyer, 2023), public and subsidized health insurance (Arbogast, Chorniy and Currie, 2022; Ericson et al., 2023), and the EITC (Bhargava and Manoli, 2015). On the other hand, enrollment "ordeals" or in-kind benefit provision have been shown to

select high-needs populations on average or in certain contexts (Rafkin, Solomon and Soltas, 2023; Lieber and Lockwood, 2019; Shepard and Wagner, 2022). This paper assesses how incomplete take-up impacts a previously-unexamined subsidy for out-of-pocket spending on average, and finds that conditional on eligibility, the frictions associated with claiming the itemized medical deduction appear to screen out those with lower income/wealth, higher health care spending, and worse health outcomes.

While there is a long tradition of examining the implications of traditional sources of health care financing (e.g., public vs. private sources of health insurance), a recent and growing literature examines other methods of paying for health care and their interactions with more formal institutions, e.g. bankruptcy (Mahoney, 2015); hospitals (Garthwaite, Gross and Notowidigdo, 2018); charity care (Finkelstein, Mahoney and Notowidigdo, 2018); medical debt (Kluender et al., 2021; Caswell and Goddeeris, 2020); care from family members (McGarry, 1998; Gruber and McGarry, 2023); and how the presence of these institutions can reduce the value of Medicaid (Finkelstein, Hendren and Luttmer, 2019; Finkelstein, Hendren and Shepard, 2019). However, the literature analyzing the itemized medical deduction, which results in approximately $10 billion in forgone tax revenues annually (U.S. Department of the Treasury, 2023), is limited and does not examine take-up and its targeting.[3]

The rest of this paper proceeds as follows. Section 2 describes the data and methods used in this paper. Section 3 presents the main results on eligibility and take-up, documents disparities in take-up across different demographic groups, and assesses selection into eligibility and claiming. Section 4 investigates potential mechanisms behind incomplete take-up and provides estimates of take-up elasticities with respect to the subsidy rate. Section 5 simulates take-up under policy counterfactuals and Section 6 concludes.

2 Data and Methods

The data source used for this study is the Health and Retirement Study (HRS), a biennial nationally-representative panel study that surveys $\approx$ 20,000 respondents age 50 and over and their spouses.[4] I supplement the public use data with state identifiers, obtained through

[3] An early literature examined the medical expense deduction prior to its current form, which has been in place since 1986 (Jensen, 1952, 1954; Steuerle and Hoffman, 1979; Wilensky, 1982; Feenberg and Skinner, 1994). Serocki and Murphy (2009) examine the deduction's progressivity using data from 1977, 1991, and 2001, and Lurie and Minicozzi (2010) show distributional features using 1999-2005 data. Kuroki (2022) reports the correlation between HI coverage and the percent change in medical deduction at the state level, and Smart and Stabile (2005) examine a similar provision in Canada and find evidence of large tax price elasticities in that context. Recent concurrent work investigates the distributional implications of the itemized medical deduction (Goda et al., 2025).

[4] The HRS is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan. The RAND HRS Longitudinal File (Bugliari et al., 2023*b*) and the RAND HRS Detailed Imputations File (Bugliari et al., 2023*a*) harmonizes the raw data from the HRS

restricted access.[5]

Until 2012, the HRS asked respondents detailed questions regarding their tax filing behavior. In particular, households were asked whether they filed tax returns, whether they itemized their deductions, if they claimed itemized deductions for medical expenses, and the amount claimed. I construct measures of take-up by developing a comprehensive measure of qualifying medical spending, combining that with a proxy for the household's adjusted gross income and other financial variables in order to determine each household's eligible medical deductions, and comparing eligible medical deductions with claimed medical deductions. All analysis is done at the household level, with data reported at the respondent level combined into households based on household identifiers.

2.1 Qualifying medical spending

The HRS includes detailed information on out-of-pocket medical spending for each respondent that is recorded separately for spending on hospitals, nursing homes, outpatient surgery, doctor visits, dental bills, prescription drugs, home health services, and other costs (physical therapy, transportation, social worker, etc.).[6] Between 1995 and 2000, the categories of out-of-pocket medical spending were aggregated into fewer categories, so the more coarse categories are used for the analysis.[7] Respondents are asked to provide the amounts spent in each category since the previous interview (or the last two years if the respondent was being interviewed for the first time or skipped the previous wave). The total amount reported is converted to a monthly amount using the number of months in the reference period for each respondent and annualized to construct an estimate of annual out-of-pocket spending.[8]

Taxpayers are also able to deduct premiums for health insurance and long-term care insurance that are otherwise undeducted (i.e., premium amounts paid for insurance using pre-tax dollars are ineligible).[9] Premium amounts for long-term care insurance premiums, private health care premiums (such as premiums for employer-provided health insurance, Medicare

across waves, and provides consistent variable names and a wide variety of imputations. I use the 2020 (V1) versions of each of these datasets. These files were developed at RAND with funding from the National Institute on Aging and the Social Security Administration.

[5]Instructions to obtain access to restricted data are available here: https://hrs.isr.umich.edu/data-products/restricted-data

[6]Total out-of-pocket spending is reported in the RAND HRS Longitudinal File, while the components are reported in the RAND HRS Detailed Imputations File.

[7]The HRS modified the elicitation of out-of-pocket medical spending beginning with the 1995 AHEAD survey (Wave 3), so the first two waves of the HRS are omitted for comparability reasons.

[8]I use the imputed values of each of these components as provided by the RAND HRS Longitudinal File and the RAND HRS Detailed Imputations File. Each component is topcoded at the 99.95th percentile in keeping with prior literature (Dobkin et al., 2018).

[9]Long-term care insurance premiums are subject to a cap that varies with age, as described by IRS Publication 502.

supplemental insurance policies, Medicare HMOs, and Medicare Part D prescription drug benefits) are recorded in the HRS for each respondent. I impute Medicare Part B premiums based on data on Medicare enrollment, household income, marital status and whether the respondent was dually enrolled in Medicaid. In order to exclude premiums that are likely to be paid on a pre-tax basis, the measure of qualifying medical spending omits health insurance premiums where the source of coverage is one's current employer and any premiums paid if the respondent/spouse are both self-employed or one is self-employed and the other is not working.

One limitation of the data on out-of-pocket medical spending in the HRS is that the date of service is not recorded for each expenditure, and therefore it is not possible to construct a measure of qualifying medical spending that exactly corresponds to a particular calendar year. An exception is that the start and end date of up to three nursing home stays are recorded for HRS respondents, which allows a more accurate allocation of out-of-pocket nursing home expenses for the previous calendar year. I investigate how the main results change with alternative allocation methods in Section 3.2. Qualifying medical spending for each component is shown in Figure A.2 by age group and by year, and is depicted in constant 2023 dollars.

2.2 Adjusted gross income, filing status, potential itemized deductions and standard deduction

In most cases, one person in each household is recorded as the financial respondent by the HRS. This person is used to determine the age and marital status of the primary taxpayer, and the spouse of the primary taxpayer is assumed to be the secondary household member, if present.[10] A household's filing status is assumed to be single if the primary taxpayer is single, and married filing jointly if the primary taxpayer is married.

The HRS provides comprehensive information on a wide variety of income sources that allow one to construct a proxy for adjusted gross income for each household h, denoted by AGI_h. Respondents and their spouses are asked about total income for the last calendar year, which includes earnings, pensions and annuities, Supplemental Security Income, Social Security disability and retirement income, unemployment and workers compensation, and other government transfers. I combine this measure of total income with IRA withdrawals for the respondent and spouse, household capital income and other household income.[11]

[10] In a small number of cases, more than one person or no one is designated as a financial respondent in a household. In these cases, the oldest household member is assumed to be the primary taxpayer.

[11] IRA withdrawals would not be included in taxable income if they were from Roth IRAs, and the HRS does not distinguish between withdrawals from Roth and Traditional IRAs. However, according to the RAND HRS documentation, it is likely that most of the withdrawals for these cohorts represent Traditional

A substantial share of Social Security income is not taxable, so I adjust the measure of income above to exclude non-taxable Social Security benefits. For those who file as individuals, up to 50 percent of Social Security benefits are subject to income tax for those with combined income between $25,000 and $34,000; if combined income is greater than $34,000, up to 85 percent of Social Security benefits are subject to income tax. For those who file a joint return, the thresholds are between $32,000 and $44,000, and above $44,000, respectively.

The standard deduction applicable to household h, denoted by SD_h, is determined by a combination of the tax filing year, the tax unit's filing status, and whether the primary taxpayer is a qualifying widow. I determine whether the primary taxpayer is a qualifying widow by a change in marital status from "married" to "widowed" since the previous wave. In addition, the additional standard deduction amounts for taxpayers who are 65 and older are applied based on the ages of the primary and secondary taxpayer.

For households that already itemize their deductions, the HRS reports each component separately, and itemized deductions are assumed to exceed the standard deduction. However, for households that do not report itemizing, it is necessary to determine whether their itemized deductions (including all eligible medical spending) would exceed their standard deduction. I develop a proxy for other potential itemized deductions for these households that include charitable donations and property taxes that are recorded in the survey, an estimate of the household's state tax liability from TAXSIM,[12] and a proxy for one's mortgage interest deduction constructed by multiplying the household's outstanding mortgage principal by the 30-year fixed average annual mortgage rate in the year of interview.[13]

2.3 Claimed, eligible and forgone medical deductions

Claimed medical deductions were recorded in the HRS for all households who itemize deductions through the 2012 survey wave for the calendar year prior to the interview.[14] Households were first asked, "Were deductions itemized for medical expenses?" (Y/N), and those who responded yes were asked, "How much did these amount to?"[15] I denote households who claim the itemized medical deduction by $1(\text{IMD}_h) = 1$, and the amount claimed as IMD_h. When aggregated using household weights supplied by the HRS, amounts reported by HRS

IRA withdrawals and are thus subject to income taxes.

[12]The estimate of the state tax liability is determined absent any medical deductions.

[13]This series was obtained from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/MORTGAGE30US.

[14]I assume the last calendar year corresponds to the calendar year before the calendar year in which the interview ends, per correspondence with HRS representatives.

[15]Respondents in the HRS who do not know the precise amounts are provided with a series of unfolding brackets that indicate a minimum and maximum range. Imputation procedures for these responses are provided in more detail in Appendix B.

respondents appear to match amounts recorded by the IRS for the corresponding age groups reasonably well, as shown in Table A.1. The share of households claiming the medical deduction and the average amount claimed by age group and year, conditional on claiming, is shown in Figure A.3.

I first identify households with qualifying medical spending that exceeds 7.5 percent of their AGI, the income threshold in place during the sample years, and the eligible medical spending above this threshold:

$$\text{Eligible Med Spending}_h = \max(\text{Qualifying Med Spending}_h - 0.075 \times \text{AGI}_h, 0) \tag{1}$$

$$1(\text{Eligible Med Spending})_h = \begin{cases} 1 & \text{if Qualifying Med Spending}_h \geq 0.075 \times \text{AGI}_h \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

Next, I determine whether non-itemizing households would benefit from itemizing their deductions rather than claiming the standard deduction if all eligible medical spending were included, denoted by $\widehat{\text{Itemize}}_h$. This involves combining the non-medical itemized deductions as described earlier with eligible medical spending, and comparing this quantity to the standard deduction.

$$\begin{aligned} \text{Potential ID}_h = &\text{Eligible Med Spending}_h + \text{Charitable Donations}_h + \\ &\text{Mortgage Interest Rate} \times \text{Outstanding Mortgage Principal}_h + \\ &\text{State Tax Liability}_h + \text{Property Taxes}_h \end{aligned} \tag{3}$$

$$1(\widehat{\text{Itemize}})_h = \begin{cases} 1 & \text{if Potential ID}_h > \text{SD}_h \\ 0 & \text{otherwise} \end{cases} \tag{4}$$

I then determine each household h's forgone itemized medical deductions as follows. If a household already itemizes (i.e., $1(\text{Itemize})_h = 1$), the forgone medical deductions are simply the difference between the eligible medical spending and the reported medical deduction, IMD_h. However, if a household does not itemize their deductions (i.e., $1(\text{Itemize})_h = 0$), the forgone medical deduction is assumed to be the difference between the potential itemized deduction and the standard deduction for which the household would be eligible if their potential itemized deduction determined above exceeds their standard deduction, i.e.

$1(\widehat{\text{Itemize}})_h = 1$, capped at the level of eligible medical spending. Specifically:

$$\text{Forgone IMD}_h = \begin{cases} \max(\text{Eligible Med Spending}_h - \text{IMD}_h, 0) & \text{if } 1(\text{Itemize})_h = 1 \\ \min(\max(\text{Potential ID}_h - \text{SD}_h, 0), \text{Eligible Med Spending}_h) & \text{if } 1(\widehat{\text{Itemize}})_h = 1 \\ 0 & \text{otherwise} \end{cases} \tag{5}$$

It is important to note that this definition takes into account the standard deduction the household would have gotten in the absence of itemizing their deductions, and ensures that foregone deductions are capped at the level of eligible medical spending.

Finally, I construct a "full take-up" scenario, where households with forgone medical deductions are assumed to file returns, itemize deductions, and claim all eligible medical spending as an itemized medical deduction. The amount claimed in the full take-up scenario is equal to the observed claimed amount plus any forgone amounts. Formally:

$$1(\text{File Return})_h^{\text{Full Take-Up}} \equiv \begin{cases} 1 & \text{if Forgone IMD}_h > 0 \\ 1(\text{File Return})_h & \text{otherwise} \end{cases} \tag{6}$$

$$1(\text{Itemize})_h^{\text{Full Take-Up}} \equiv \begin{cases} 1 & \text{if Forgone IMD}_h > 0 \\ 1(\text{Itemize})_h & \text{otherwise} \end{cases} \tag{7}$$

$$1(\text{IMD})_h^{\text{Full Take-Up}} \equiv \begin{cases} 1 & \text{if Forgone IMD}_h > 0 \\ 1(\text{IMD})_h & \text{otherwise} \end{cases} \tag{8}$$

$$\text{IMD}_h^{\text{Full Take-Up}} \equiv \text{IMD}_h + 1(\text{Forgone IMD})_h \times \text{Forgone IMD}_h \tag{9}$$

Comparing observed rates of tax filing, itemization, medical deduction claiming, average medical deductions conditional on claiming, and aggregate medical deductions claimed to those generated by the "full take-up" scenario provides overall measures of take-up as well as measures along both the extensive and intensive margin.

Different households receive varying levels of tax savings from each dollar of additional medical deductions due to differences in marginal tax rates that arise from a household's financial circumstances. For example, a household who pays very little in federal income taxes would benefit less from itemizing their medical deductions compared to a household with income that places them in a high tax bracket, and households in low tax states benefit less than households in high tax states. Thus, an alternative measure of take-up compares the observed aggregate tax savings to the aggregate tax savings in the full take-up scenario. This measure will differ from that constructed using aggregate deductions if take-up rates

vary across marginal tax rates. In particular, if households with higher marginal tax rates are more likely to itemize their eligible medical spending, the take-up rate based on aggregate tax savings will be higher than the take-up rate based on aggregate deductions.

To understand what share of the potential tax savings from medical deductions are claimed, I determine each household's federal and state income tax liability under three different scenarios using TAXSIM (Feenberg and Coutts, 1993). In the first scenario, households are assumed to claim no eligible medical spending. In the second scenario, households are assumed to itemize medical deductions as reported in the HRS. In the third scenario, households are assumed to itemize all eligible medical deductions based on the "full take-up" scenario described above. The observed tax value equals the difference between a household's federal and state tax liability in the first and second scenario, while the potential tax value is the difference between a household's federal and state tax liability in the first and third scenario.[16]

3 Results

3.1 Baseline take-up

Figure 2 shows the share of households with forgone medical deductions over nine waves of the HRS during the 1995-2012 period. As shown in the figure, 44 percent of households have qualifying medical spending below the AGI threshold and do not qualify for the medical deduction due to insufficient qualifying spending relative to AGI. Among the remaining households with qualifying medical spending above the AGI threshold, a significant percentage (27 percent of all households) would not benefit from claiming the medical deduction, as their deductible spending and their imputed itemized deductions are less than the standard deduction for which they are eligible. These households are not assumed to claim the medical deduction in the full take-up scenario.

The remaining households are divided among households who already claim at least as much as they are eligible for (11 percent) and households who do not maximize their medical deductions (18 percent). Among those who do not maximize their medical deductions, 62 percent (11.3 percent of all households) already itemize their deductions, indicating that the majority of incomplete take-up occurs among those who either itemize and do not claim the medical deduction or those who claim the medical deduction and fail to deduct all eligible medical spending.

Table 1 reports the share of households represented by the HRS who file tax returns,

[16] More details regarding the variables used for TAXSIM in the different scenarios are provided in Appendix C.

itemize deductions, and itemize their medical deductions; the average medical deduction and tax savings claimed (conditional on claiming); and aggregate itemized medical deductions and associated tax savings. The first column displays observed data over the 1995-2012 period, while the second column reports these values under an assumption of full take-up, where households are assumed to file, itemize and claim all eligible medical spending as described earlier. The third column shows the ratio of observed values to those in the full take-up scenario, and the fourth column reports the 95 percent confidence interval of the ratio, constructed using bootstrapped standard errors with 50 iterations. All dollar amounts are reported in constant 2023 dollars and weighted using household weights.

As shown in the table, a significant share of eligible households fail to claim the medical deduction, and conditional on claiming, the average amount claimed is lower than in the full take-up scenario. Specifically, on the extensive margin, we observe 14.3 percent of households claiming the medical deduction where 28.8 percent of households would benefit from doing so, providing an extensive margin take-up rate of 49.8 percent. On the intensive margin, among those who claim, the average medical deduction amount is $9,603 but $9,456 in the full take-up scenario, indicating an intensive margin take-up rate of 101.6 percent.[17] Combining the extensive and intensive margin take-up rates produces an overall take-up rate of 50.5 percent. In other words, just over half of all potential itemized medical deductions are claimed, resulting in $581 billion in forgone medical deductions over the nine survey waves, or $64.5 billion annually.

Both the aggregate amount claimed and the aggregate amount of forgone deductions are large compared to aggregate medical spending by these households. Over the nine survey waves, qualifying medical spending (including out-of-pocket spending and deductible premiums) total $2.56 billion, of which $594.1 (or 23.2 percent) is deducted. If all potential itemized medical deductions were deducted, it would amount to about 46 percent of aggregate qualifying medical spending by older Americans.

A somewhat higher share of potential tax savings from the itemized medical deduction is claimed. As shown in the fourth row of Table 1, on average, households with medical deductions save $1,289 on their taxes relative to $1,038 in the full take-up scenario, indicating that those who fail to maximize their tax savings have lower average tax savings. In aggregate, 61.8 percent of potential tax savings are claimed, suggesting that households with higher effective subsidies are more likely to take advantage of the ability to itemize medical deductions. The aggregate tax savings are 11 percent of aggregate deductions in

[17] A take-up rate of more than 100 percent on the intensive margin reflects the fact that the average medical deduction in the full take-up sample is lower than the average medical deduction in the sample that claims the deduction. The imputation procedure, discussed in more detail in Appendix B, is performed such that the intensive margin take-up rate is maximized, and should be thought of as an upper bound.

the full take-up scenario, which represents the average subsidy households receive on their itemized medical deductions from the federal and state tax systems. The aggregate loss in tax savings among older Americans due to incomplete take-up amounts to $49 billion over the nine survey waves, or approximately $5.4 billion annually.

3.2 Robustness to alternative assumptions

3.2.1 Measurement error in medical spending

One key challenge in the measurement of potential itemized medical deductions is that the reference period for out-of-pocket spending is the period since the last interview (or, for first-time interviewees, the prior two years), while the households report the itemized medical deduction they took in the calendar year prior to the HRS interview. As discussed earlier, in the baseline results I assume that qualifying medical spending is evenly distributed over the reference period and annualized, except for out-of-pocket spending on nursing homes, which is allocated based on admission dates.

This baseline assumption has potential for either positive or negative bias. If a higher level of out-of-pocket spending than assumed occurred within the calendar year of deduction, the assumed allocation will lead to *overestimates* of take-up; conversely, if more out-of-pocket spending occurred outside of the calendar year of deduction than assumed, the assumed allocation will *underestimate* take-up. The design of the deduction may create incentives for heaping medical expenses into one calendar year, since after the threshold is met, each additional dollar of qualifying medical spending reduces the household's taxable income by that dollar. Thus, the bias is likely to lean positive.

I perform a bounding exercise to quantify the potential bias from this timing mismatch. First, I divide qualifying medical spending into "regular" and "variable" expenses. Specifically, all premium payments and prescription drug spending are assumed to be regular and thus occurring evenly over the reference period. All other sources of medical spending, including doctor visits, dental services, hospital stays, outpatient surgery, home health care, special facilities and other medical spending, are assumed to be variable.[18] I then estimate the range of take-up rates under two extreme assumptions: 1) *all* variable medical spending occurs in the calendar year of the tax deduction, and 2) *no* variable medical spending occurs in the calendar year of the tax deduction. The take-up rates that arise from these extreme assumptions provide a way to put bounds on the potential bias that stems from the timing mismatch between how respondents in the HRS report claimed medical deductions and out-of-pocket spending.

[18]Between 2002 and 2012, nursing home spending is considered neither regular nor variable, as it is allocated based on admission dates. From 1995-2000, nursing home spending is included in variable spending.

Figure 3 displays the results. Panel A displays the share of qualifying medical spending that falls into each of the regular and variable groups, and indicates that premium payments and prescription drug spending comprise a large share of deductible spending, which grows with age.[19] It is not surprising then to see that take-up rates under the two extreme assumptions do not differ substantially from those reported under the baseline assumption. Specifically, the extensive margin take-up rate is bounded between 43.7 and 58.6 percent and the intensive margin take-up rate is bounded between 91.7 and 104.6 percent, providing bounds for the overall take-up rate of 40.1 and 61.3 percent and bounds on the tax value take-up rate of 49.0 and 73.4 percent.

These results suggest that under extreme assumptions, the take-up rate could be approximately 10 percentage points higher or lower than under the baseline estimates, providing bounds on the degree to which take-up rates could vary due to this source of measurement error. To the extent that households strategically concentrate their medical spending in years where they expect to exceed the minimum threshold, take-up rates are likely to be lower than the baseline estimates.

Another source of measurement error in medical spending is that for some respondents, medical spending in the HRS is imputed from bracketed responses. Households who are able to recall medical spending amounts more precisely may be more likely to be tracking their costs, and would be expected to claim medical deductions for which they are eligible at higher rates. Table A.2 shows take-up rates for the 75 percent respondents who do not have imputed medical spending in the survey. As shown in the table, take-up rates are higher for this subsample – 53.1 (63.7) percent of eligible deductions (tax savings) are claimed – but not substantially different than for the whole sample, and still far below 100 percent.

3.2.2 Measurement error in income

Recent research has shown that survey data can underreport the income of the elderly (Bee and Mitchell, 2017; Dushi and Trenkamp, 2021; Bee et al., 2024). If income is underreported, forgone medical deductions could be overstated. I examine the sensitivity to income underreporting by recalculating take-up rates under an assumption that all reported income in the HRS is underreported uniformly by 10 percent. The results are reported in Table A.3. As shown in the table, allowing for income underreporting increases the take-up rate to 51.5 percent. If incomes are underreported more substantially, the take-up rate would likely be larger; however, the overall results are not extremely sensitive to reasonable estimates of the rate of underreporting.

[19]For the purposes of this figure, nursing home spending is included in regular spending as it is not influenced by assumptions placed on variable spending.

3.3 Disparities in take-up

The HRS includes rich information regarding demographic, health and financial characteristics, allowing for a detailed look at how take-up of the medical deduction varies across different subpopulations. Figure 4 displays average (unconditional) eligible and claimed deductions (Panel A) and eligible and claimed tax deductions (Panel B) across different levels of education, along with the implied take-up rate and its 95 percent confidence interval.

Three important findings emerge from this figure. First, the take-up rate for both deductions and tax savings is increasing in education. Specifically, households where the financial respondent's highest level of education is high school or less claim 42.0 (54.0) percent of eligible deductions (tax savings), while households where the financial respondent's highest level of education is college or more claim 60.2 and 67.6 percent of eligible deductions and tax savings, respectively. Second, the potential deductions and tax savings increase with education. Thus, equalizing take-up rates will still result in higher levels of deductions and tax savings among high-education households. Finally, the education gradient in potential tax savings is steeper than that for potential deductions, reflecting the fact that the tax savings are proportionally higher for higher-education households who are more likely to itemize their deductions and face higher marginal tax rates. In the appendix, Figures A.4-A.12 display how take-up rates and eligible and claimed deductions vary across age, gender, race/ethnicity, filing status, labor market status, AGI and wealth quintiles, limitations in activities of daily living (ADLs), health status and cognitive score. While these results are descriptive, they show that take-up rates are lower for those with lower AGI and wealth, those who are not employed, and those with worse measures of health. However, there are no significant differences by race and ethnicity and gender.

3.4 Selection into eligibility and claiming

By providing an opportunity to deduct medical expenses that exceed 7.5 percent of a household's AGI, the medical deduction's design appears to target those who incur high medical spending relative to income. However, incomplete take-up may work towards or against that goal. For example, it is possible that the hassle costs of claiming the deduction or lack of awareness results in households with either smaller or larger needs claiming the deduction. In this section, I compare households who are eligible and not eligible to claim the itemized medical deduction, which illustrates the targeting of the medical deduction under full take-up. Among those who are eligible, I compare those who claimed the medical deduction and those who did not, which helps assess how frictions associated with claiming the itemized medical deduction impacts targeting.

I first examine selection based on qualifying medical expenses in Table 2. As shown

in the table, households with eligible deductions have higher levels of qualifying medical spending than households who are not eligible, with eligible households spending $8,918 per year more than ineligible households, and incurring higher spending in each category. This difference reflects the fact that itemized medical deductions are targeted towards those with higher levels of medical spending. However, conditional on eligibility, those who do not itemize medical deductions have higher levels of qualifying medical spending than those who do. Specifically, eligible households who do not claim the medical deduction incur $13,835 in qualifying medical spending each year on average, compared to $10,825 incurred by households who are eligible for and claim the medical deduction, a $3,010 difference that is statistically significant at the 1 percent level. These results indicate that incomplete take-up results in households with lower average medical spending receiving tax savings than would be the case if all eligible households claimed the medical deduction, undoing some of the targeting that is intended by the design of the deduction.[20]

Tables 3 and 4 display demographic characteristics and average income and wealth by eligibility and claiming, respectively. Incomplete take-up results in a pool of beneficiaries who are younger, more highly educated, more likely to be married, and more likely to be working relative to those who do not claim the medical deduction but who are eligible to do so. AGI does not differ significantly across eligibility, but is significantly higher ($29,860, or 117 percent) among those who claim relative to those who do not claim, conditional on eligibility. While eligibility is positively correlated with wealth, selection on wealth into claiming results in higher-wealth households claiming the deduction, on average, conditional on eligibility. These differences are large and statistically significant: on average, those who claim have 48 percent higher financial wealth and 37 percent higher overall wealth than those who are eligible and do not claim.

Finally, Table 5 shows how different measures of health vary across eligibility and claiming. Conditional on eligibility, those who itemize their medical deductions have, on average, 0.14 fewer ADL limitations, are 22 percent less likely to have a financial respondent in fair/poor health status, and have higher average cognitive scores. Together with the results presented in Table 2, these findings suggest that relative to those who are eligible for and claim the medical deduction, those who are eligible and do not claim it are in worse health, on average. In other words, frictions in take-up of the medical deduction result in a healthier profile of beneficiaries than if take-up were complete.

[20]In addition to the difference being statistically significant overall, it is also statistically higher for each component of spending, aside from other medical costs and spending on doctor visits, dental visits, and outpatient surgery.

4 Potential Mechanisms

The literature on social insurance posits several reasons why individuals may not claim benefits for which they are eligible. These explanations include informational barriers or lack of awareness, transaction costs associated with claiming benefits, and stigma from benefit recipiency (Currie, 2006; Chetty and Finkelstein, 2013). In this context, it is unlikely that stigma is at play given the nature of tax filings. However, both lack of information or high transaction costs could explain incomplete take-up of itemized medical deductions.

4.1 Lack of information

Many households may be unaware that medical expenses can be deducted on tax returns, and/or may not have been tracking their expenses to determine their eligibility. Given the timing of tax filing relative to when expenses are incurred, it would be natural for a household with eligible expenses to only begin claiming the itemized medical deduction in the tax year after their first year of eligibility.

The longitudinal nature of the HRS allows me to identify households who are eligible repeatedly over the nine waves of the survey used. Twenty-five percent of household-wave combinations are eligible to claim itemized medical deductions at least once, and twelve percent are eligible to claim non-zero tax savings from the itemized medical deduction. I investigate informational barriers by examining whether take-up rates increase with the number of times a household is observed eligible to claim the medical deduction or associated tax savings in the HRS.

To address potential differences between households eligible for the first time and those eligible in subsequent wages, I construct cells by survey wave, eligibility count, 5-year age group, education, gender, race/ethnicity, filing status, labor market status, health status, number of ADLs, quartile of cognitive score, wealth quintile, and AGI quintile, and their interactions, among those eligible to claim the medical deduction (or tax value) at least once. I then calculate the take-up rate within each cell and regress these take-up rates on a vector of indicator variables defined by the variables above, and bootstrap the standard errors with 100 repetitions.

Figure 5 reports the coefficients of the eligibility count variable and their 95 percent confidence intervals for the medical deduction and tax value equations as described above. As shown in the figure, after controlling for observable differences across eligibility count, each subsequent time a household is eligible results in higher take-up rates: a household eligible for the medical deduction (tax value) for the second time has a take-up rate that is 9.9 (10.2) percentage points higher than the first time households are eligible, and households

eligible six or more times have take-up rates that are 31.7 (27.2) percentage points higher than first-time eligible households. These results are consistent with the idea that lack of awareness is an important factor in explaining incomplete take-up.

4.2 Elasticity with respect to subsidy rate

Other explanations of low take-up posit that transaction costs are high relative to the expected benefits of take-up. In this case, we would expect to observe lower levels of take-up when the expected tax savings are relatively low, all else equal. To estimate the elasticity of take-up with respect to the after-tax price of out-of-pocket medical spending, we wish to estimate the equation:

$$CLAIM_{ist} = \delta TAXPRICE_{ist} + \beta X_i + \omega_t + \nu_{ist} \tag{10}$$

where $CLAIM_{ist}$ indicates whether individual i living in state s claims the IMD in year t, and $TAXPRICE_{ist}$ is the after-tax price of \$1 of out-of-pocket medical spending in terms of forgone consumption for individual i in state s and time t. The vector X_i includes observable characteristics that may influence take-up that are orthogonal to $TAXPRICE_{ist}$, and ω_t represent time fixed effects. The sample includes those who are eligible to claim the IMD in a full take-up scenario.

The variable $TAXPRICE_{ist}$ represents the reduction in tax liability from the IMD as a share of out-of-pocket medical spending for each household. Specifically, the numerator is the difference in the federal + state income tax liability assuming the household does not itemize any eligible medical deductions and that assuming the household itemizes all eligible medical deductions, and the denominator is all out-of-pocket medical spending.

The concern in the OLS estimate of δ in Equation 10 is that the control variables may not completely account for factors that could affect both marginal tax rates and take-up. The resulting bias could go in either direction: there may be a negative correlation between $TAXPRICE$ and unobservable individual components of IMD claiming if claiming is positively correlated with income in a way that is not properly accounted for by X. A positive correlation could arise if individuals who claim the IMD are also taking other actions to reduce their marginal tax rate.

Therefore, I also develop a set of simulated instruments in the spirit of Currie and Gruber (1996) that isolates the variation in $TAXPRICE$ coming from tax policy differences across state and over time. Specifically, I simulate the after-tax price in each state and for each year for a fixed set of 1,000 households who are eligible to claim the IMD and generate a simulated instrument that is equal to the average after-tax price among these eligible households in each state and year. To allow the average subsidy to change differentially for individuals in

different socioeconomic groups, in some specifications, the instrument is averaged separately for low education (high school or less), medium education (some college) and high education (college or more) groups, and/or across 5-year age bins.

The IV estimate of Equation (10) is unbiased under the assumption that the simulated instrument has no direct bearing on an individual's IMD claiming decision except through its impact on the own household's $TAXPRICE$. The IV estimates of δ are therefore identified by variation in the after-tax price arising from these policy changes and not contaminated by potential unobserved factors correlated with the individual's marginal tax rate and IMD claiming decisions. This methodology follows several other studies in the health insurance literature that use an IV strategy to address potential correlation between tax rates and insurance purchase to identify the price elasticity of health insurance (e.g. Royalty (2000), Finkelstein (2002), Gruber and Lettau (2004), Goda (2011)).

Figure 6 shows the variation in the instrument by state in 2012. The after-tax price is higher (and the effective subsidy is lower) in states with low or no income taxes, and lower (indicating a larger subsidy for medical spending) in higher-tax states. Figure 7, Panel A, shows a binned scatterplot of the simulated after-tax price on the x-axis and the household's own after-tax price on the y-axis. The figure shows that the two are highly correlated, providing a strong first-stage relationship. Panel B displays the reduced form relationship between IMD claiming on the y-axis and the simulated after-tax price on the x-axis. The downward sloping relationship indicates that a higher after-tax price of out-of-pocket medical spending results in a smaller share of eligible households claiming the IMD.[21]

Table 6 displays the results of first stage, reduced form and IV regressions. Each column uses a different version of the simulated instrument: the simulated instrument in the first column varies only with state and year; in the second column, the instrument varies by state, year and education; and in the third column, the instrument varies by state, year and 5-year age bin. The control variables used in the regression are the number of times a household is observed to have been eligible for the IMD, the household's filing status, the education, health status, race/ethnicity, gender, labor market status, and 5-year age bin of the financial respondent, indicators for the average number of ADLs among the financial respondent and spouse, and the number of children. The elasticities implied by the IV results are reported in the bottom of each column.

The first stage results (Panel A) show a strong relationship between the simulated after-tax price and a household's own tax price after taking into account the control variables mentioned above, with F-statistics of the instrument exceeding 700 across columns, well

[21] These figures summarize the relationships using the instrument that varies by state, year and age group. Figures summarizing the alternative instruments are provided in the appendix (see Figure A.13).

above thresholds of strong instrumental variables established in the literature. Panel B displays the reduced form results of regressing a binary indicator of IMD claiming on each simulated instrument and the control variables and shows evidence that when the simulated after-tax price of medical spending for the household is low, they are more likely to claim the IMD. Specifically, the estimates indicate that a 1 percentage point reduction in the after-tax price of medical spending results in 1.6-1.7 percentage points higher IMD claiming among eligible households. Combining these results, Panel C regresses IMD claiming on the household's own tax price and the control variables, instrumenting each household's own tax price with their simulated tax price. The results indicate that the implied elasticity is approximately -3.1 and does not vary significantly across specification. The implied elasticity is quite large, suggesting that households are responsive to their expected tax savings when deciding whether to claim the IMD.

5 Policy Counterfactuals

In order to develop estimates of how take-up and the costs of claiming differ under different policy counterfactuals, I develop a simple model of household behavior, where households eligible for the IMD claim it if their potential tax savings exceeds their costs of claiming. Specifically:

$$\begin{aligned} u_i(k) &= \tau_i(k) - \theta_k X_i + \varepsilon_{ik} && (11) \\ \Delta u_i &= \Delta\tau_i - \beta X_i + \nu_i && (12) \\ CLAIM_i &= 1[\Delta u_i \geq 0] \iff \Delta\tau_i \geq \beta X_i && (13) \end{aligned}$$

where $u_i(k)$ represents the utility for claiming the IMD ($k = 1$) and not claiming ($k = 0$), $\tau_i(k)|_{k=1}$ and $\tau_i(k)|_{k=0} = 0$ represents the tax liability saved from claiming and not claiming the IMD, respectively (so $\Delta\tau_i = \tau_i(1) - 0 = \tau_i(1)$), expressed as a percent of medical spending. The product $\beta X_i = \theta_1 X_i - \theta_0 X_i$ represents the cost of claiming (as a percent of medical spending), and ε_{ik} are both i.i.d. Type 1 Extreme Value utility shocks that are independent across individuals and choices with dispersion parameter σ.

Under the distributional assumption on ε_{ik}, the probability of individual i claiming the IMD is given by the logit formula:

$$\Pr(CLAIM_i = 1|X_i) = \frac{\exp[(\Delta\tau_i - \beta X_i)/\sigma]}{1 + \exp[(\Delta\tau_i - \beta X_i)/\sigma]} \quad (14)$$

I estimate the parameters (β, σ) in Equation 14 using a control function approach (Terza, Basu and Rathouz, 2008; Wooldridge, 2015), using an extension of the simulated instrument

described above to address endogeneity in the household's actual tax savings, in the spirit of (Soltas, 2022). Here, the simulated instrument represents the subsidy as a share of medical expenses from claiming the IMD for a fixed set of households in the same age group across different state and year combinations. The control function approach addresses estimation of a logistic model with an endogenous regressor, and involves including the first stage residuals (found after estimating the linear first stage equation) as a regressor in the second stage, and bootstrapping standard errors. Specifically, the first stage equation is:

$$\Delta\tau_{ist} = \gamma\widetilde{\Delta\tau_{ist}} + \xi X_{ist} + \omega_t + \epsilon_{ist} \tag{15}$$

where $\Delta\tau_{ist}$ and $\widetilde{\Delta\tau_{ist}}$ represent the actual and simulated tax savings as a share of medical spending, respectively, X_{ist} represents the same vector of controls used previously, and ϵ_{ist} is the error term. The predicted residuals from the first stage equation, denoted by $\widetilde{\epsilon_{ist}}$, are used as an additional regressor in the logit equation above. The logit estimation is performed with no constant; therefore, the estimated coefficient on $\Delta\tau_{ist}$ represents $1/\widehat{\sigma}$ and the coefficients on X_{ist} represent $\widehat{\beta}/\widehat{\sigma}$.

The implied cost of claiming as a share of medical spending is the value that would make a household indifferent between claiming and not claiming the IMD with characteristics X_{ist}, and is given by $\widehat{\beta}X_{ist}$. To convert these values to dollars, I multiply $\widehat{\beta}X_{ist}$ by each household's medical spending predicted from the same observable characteristics used as controls.

Table 7 provides an assessment of model fit as well as estimates of the cost of claiming that rationalizes the level of take-up observed in the data. The first two columns display observed take-up rates as well as those predicted from the model, both overall and by observable characteristics. As shown in the table, the estimation procedure produces predicted take-up rates that match observed levels of take-up in the sample very closely.[22]

The remaining columns in 7 show the average potential tax savings from claiming the IMD among eligible households, the estimated cost of claiming, and the difference between the two, among eligible households and by selected characteristics. The average tax savings across eligible households is \$1,304, but is higher when either qualifying medical spending is higher (for instance, among older households) or when itemization rates/marginal tax rates are higher (for instance, among higher education or White non-Hispanic households). The estimated cost of claiming that rationalizes the observed take-up rates in the data is \$1,052 on average.[23] However, for some groups – like low education or Hispanic households – the

[22]These results are based on the simulated instrument that varies with state, year and age group; however, results based on the alternative instruments are both qualitatively and quantitatively similar.

[23]Benzarti (2021) estimates the cost of itemizing deductions as ranging from \$175 for single taxpayers in a lower tax bracket to \$591 for married taxpayers filing jointly in a higher tax bracket. There are several reasons why these estimates may differ. First, medical spending is highly positively skewed, with an average

average cost of claiming is higher than the average tax savings.

In order to generate outcomes under different policy counterfactuals, I first construct measures of $\Delta\tau_{ist}^{p}$ under three alternative budget-neutral tax subsidies for out-of-pocket medical spending. The first alternative ($p = 1$) assumes that out-of-pocket medical spending above 13 percent of AGI is deductible regardless of whether the household itemizes their deductions, often referred to as an "above-the-line" deduction. The second alternative ($p = 2$) assumes that taxpayers receive a non-refundable credit equal to 12.5 percent of out-of-pocket medical spending above 7.5 percent of AGI. The third alternative ($p = 3$) assumes that taxpayers receive a refundable credit equal to 6.5 percent of out-of-pocket medical spending above 7.5 percent of AGI. The difference between the refundable and non-refundable credit is that the non-refundable credit only reduces tax liability to the extent that households owe taxes. Therefore, fewer households qualify for a non-refundable credit and the budget-neutral credit rate is higher.[24] In each case, $\Delta\tau_{ist}^{p}$ represents the subsidy that each household i would receive if they maximized their tax savings with their level of out-of-pocket medical spending, income, and other financial characteristics, expressed as a percent of their total out-of-pocket medical spending.

For the baseline and each alternative policy, I use parameters from the model estimated above to simulate the share of the population eligible for the subsidy, the predicted take-up rate among those eligible, and the average implied cost of claiming. The share eligible for policy p is given by the share of households with a positive tax savings from the policy, i.e. $1(\Delta\tau_{ist}^{p} > 0)$. Among eligible households, I use $\Delta\tau_{ist}^{p}$ and the parameters $\widehat{\beta}, \widehat{\sigma}$ to predict the probabilities of take-up, and calculate the implied cost of claiming as $\widehat{\beta}X_{ist}$.

Table 8 displays the results. As shown in the table, the alternative policy counterfactuals serve to increase the share of households eligible for the subsidy: while only 17 percent of households are eligible to receive tax savings under the baseline scenario, 22 percent would if the deduction did not require itemization, 30 percent would if the subsidy were a non-refundable credit, and 56 percent would be eligible if the credit were refundable. As the eligibility for the subsidy expands, the composition of the eligible group also changes. For example, under the baseline, high education households are overrepresented among eligible households (27 percent eligibility versus 17 percent overall), while with a refundable credit, low education households are overrepresented (63 percent eligibility versus 56 percent

cost of claiming far exceeding the median cost of claiming, estimated at $301. Second, the cost of itemizing deductions includes both households with and without IMDs, and while 31 percent of tax returns itemized deductions in 2012, only 22 percent of tax returns that itemized deductions claimed the IMD (IRS Statistics of Income Division, 2012).

[24] Budget neutrality is determined by choosing policy parameters such that the aggregate tax savings from the medical spending subsidy under each alternative is roughly equal and does not incorporate any behavioral change that may occur as a result.

overall).

Predicted take-up rates are slightly lower under the counterfactual policies, because the characteristics among newly eligible households are associated with lower take-up rates in the baseline scenario.[25] Despite the fact that predicted take-up rates are lower, the product of the share eligible and predicted take-up rates increases under the counterfactual scenarios; thus, the model predicts that more households in total would claim the subsidy under the alternative policies.

Under the policy counterfactuals, the implied costs of claiming remain relatively high, ranging from $895 to $1,294. Note the implied cost of claiming is assumed to only depend on observable characteristics and the level of medical spending, so changes across policy counterfactuals only to the extent that the eligible sample changes. While a potential limitation of the model, if the fundamental drivers of claiming costs are the need to track and document medical spending and the potential risk of audit, the assumption that the costs of claiming depend only on observable characteristics and the level of medical spending may be reasonable.

6 Conclusion

One of the biggest risks to financial security as people age is spending on health care, which can arise from cost-sharing requirements, premium payments and payments for services not covered by insurance. The U.S. tax code provides a way for households with high medical spending relative to income to deduct these amounts on their tax return that reduces their tax liability. This provision represents a large tax expenditure that primarily is used by tax units headed by individuals 50 and over. However, little is known about who is eligible for this subsidy, who claims it, and the determinants of take-up.

In this paper, I provide new evidence on the share of medical spending that is eligible and claimed as itemized medical deductions by analyzing data from the Health and Retirement Study, which provides comprehensive information on medical spending and financial characteristics, including whether a household claimed the IMD. I find that older households deduct a quarter of overall medical spending that they incur, but this amount is approximately half of eligible spending. Approximately 18 percent of older households fail to claim or do not maximize their medical deductions, and these households forgo deducting $4,714 on average each year. Overall, forgone medical deductions amount to approximately $65 billion annually and are associated with an annual loss of $5.4 billion in tax savings.

While some theorize that making public resources harder to obtain will result in those who

[25] For instance, more older households are eligible for the refundable credit than under the baseline, and older households have lower predicted take-up rates as shown in Table 7.

are the neediest receiving benefits, the findings in this study point in the other direction. Take-up is lowest among less educated and lower income/wealth households and those in worse health. Restricting attention to only those eligible for the medical deduction, the data show that those who claim the IMD are healthier on several dimensions and have higher income and wealth. These results indicate that the frictions that cause people to not claim the IMD give rise to a healthier and financially-stronger profile of beneficiaries of the tax deduction than we would expect if all eligible deductions were claimed.

Evidence indicates that households are more likely to claim the IMD as they are eligible multiple times, and that they are responsive to the potential tax savings they would receive, suggesting both that lack of awareness and transaction costs play a role in explaining incomplete take-up. I estimate a simple discrete choice model that exploits policy-induced variation in the tax savings for which households are eligible to predict eligibility, IMD claiming, and the implied cost of claiming under a range of policy counterfactuals. The model suggests that alternative budget-neutral tax policies to subsidize medical spending that are more broad-based would result in more households eligible for and claiming the subsidy. However, the economic burden of subsidizing medical expenses through the tax code is high in the baseline and counterfactual scenarios, reflecting the fact that tracking and documenting out-of-pocket medical spending impose real economic costs that can reduce the net subsidy available to taxpayers.

These findings have important implications for policy. While a full welfare analysis requires also understanding the insurance value that the subsidy provides and how it distorts other economic behaviors, this study can inform how subsidizing out-of-pocket medical spending through the tax code targets households with different observable characteristics vis à vis other mechanisms for subsidizing medical care and provides considerations for other government benefits provided through the tax code.

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7 Tables

Table 1: Take-Up Rates for Itemized Medical Deductions and Associated Tax Savings

	(1) Observed	(2) Full Take-Up	(3) Ratio	(4) 95% CI (Bootstrap)
Filed Tax Return	0.740	0.767	0.964	(0.963, 0.966)
Itemized Deductions	0.410	0.477	0.859	(0.855, 0.862)
Claimed Medical Deduction	0.143	0.288	0.498	(0.491, 0.504)
Average Medical Deduction Amt	\$9,603	\$9,456	1.016	(0.995, 1.036)
Average Tax Savings Amt	\$1,289	\$1,038	1.242	(1.210, 1.274)
Aggregate Medical Deductions (bn)	\$594.1	\$1,175.3	0.505	(0.495, 0.516)
Aggregate Tax Savings (bn)	\$79.7	\$129.0	0.618	(0.603, 0.634)
Observations	113,799	113,799		

Notes: Health and Retirement Study, Waves 3-11, 1995-2012. Column (1) represents observed rates of tax filing, itemizing, and claiming itemized medical deductions. Column (2) represents full take-up scenario where all households with forgone medical deductions are assumed to file, itemize, and claim all potential itemized medical deductions. Confidence intervals are based on 50 bootstrap standard error repetitions. All dollar values are reported in 2023 dollars and are weighted using household weights.

Table 2: Selection into Eligibility and Claiming: Qualifying Medical Spending

	Full Sample			Eligible Sample		
	Ineligible	Eligible	Difference	Did Not Claim	Claimed	Difference
Hospital & Nursing Home	143	1,554	-1,411***	2,093	971	1,122***
	(730)	(12,536)	(44)	(14,653)	(9,697)	(138)
Doctor, Dentist, Out-Patient Surgery	761	2,101	-1,340***	2,066	2,138	-72**
	(1,323)	(3,141)	(13)	(3,172)	(3,106)	(35)
Home Health/Special Facilities	17	122	-105***	155	86	69***
	(224)	(1,087)	(4)	(1,306)	(782)	(12)
Prescription Drugs	978	3,680	-2,702***	4,286	3,023	1,262***
	(1,573)	(7,658)	(28)	(8,509)	(6,548)	(84)
Premiums	1,558	4,868	-3,310***	5,172	4,537	635***
	(2,309)	(6,690)	(27)	(6,909)	(6,427)	(74)
Other Medical Costs	16	67	-50***	64	70	-6
	(190)	(613)	(2)	(617)	(608)	(7)
Deductible Spending	3,474	12,392	-8,918***	13,835	10,825	3,010***
	(3,588)	(16,521)	(61)	(18,126)	(14,418)	(181)
N	81,923	33,020	114,943	17,186	15,834	33,020

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Eligible households include those who claim the medical deduction and those with forgone medical deductions. All values are reported at the household level and weighted using household weights. See text for more details.

Table 3: Selection into Eligibility and Claiming: Demographics

	Full Sample			Eligible Sample		
	(1) Ineligible	(2) Eligible	(3) Difference	(4) Did Not Claim	(5) Claimed	(6) Difference
Age (years)	68.12	69.84	-1.71***	70.79	68.80	1.99***
	(11.43)	(10.54)	(0.07)	(10.37)	(10.61)	(0.12)
Education:						
High School or Less	0.63	0.49	0.14***	0.55	0.42	0.13***
	(0.48)	(0.50)	(0.00)	(0.50)	(0.49)	(0.01)
Some College	0.20	0.25	-0.05***	0.24	0.27	-0.03***
	(0.40)	(0.43)	(0.00)	(0.42)	(0.44)	(0.00)
College Plus	0.18	0.26	-0.08***	0.21	0.31	-0.10***
	(0.38)	(0.44)	(0.00)	(0.41)	(0.46)	(0.00)
Gender:						
Male	0.41	0.45	-0.04***	0.43	0.47	-0.04***
	(0.49)	(0.50)	(0.00)	(0.49)	(0.50)	(0.01)
Female	0.59	0.55	0.04***	0.57	0.53	0.04***
	(0.49)	(0.50)	(0.00)	(0.49)	(0.50)	(0.01)
Race/Ethnicity:						
White, NH	0.68	0.80	-0.12***	0.80	0.79	0.01
	(0.47)	(0.40)	(0.00)	(0.40)	(0.40)	(0.00)
Black, NH	0.19	0.12	0.06***	0.12	0.13	-0.01***
	(0.39)	(0.33)	(0.00)	(0.32)	(0.34)	(0.00)
Other	0.02	0.02	0.01***	0.02	0.02	0.00
	(0.16)	(0.14)	(0.00)	(0.14)	(0.13)	(0.00)
Hispanic	0.11	0.06	0.05***	0.06	0.06	0.01**
	(0.31)	(0.24)	(0.00)	(0.24)	(0.23)	(0.00)
Filing Status:						
Single	0.50	0.39	0.11***	0.43	0.34	0.09***
	(0.50)	(0.49)	(0.00)	(0.49)	(0.47)	(0.01)
Recently Widowed	0.06	0.04	0.02***	0.04	0.05	-0.01***
	(0.24)	(0.20)	(0.00)	(0.19)	(0.21)	(0.00)
Married	0.44	0.57	-0.14***	0.54	0.61	-0.08***
	(0.50)	(0.49)	(0.00)	(0.50)	(0.49)	(0.01)
Labor Force Status:						
Working FT/PT	0.30	0.22	0.08***	0.16	0.28	-0.12***
	(0.46)	(0.41)	(0.00)	(0.37)	(0.45)	(0.00)
Unemployed	0.02	0.02	-0.00	0.02	0.02	-0.00
	(0.13)	(0.13)	(0.00)	(0.13)	(0.13)	(0.00)
NILF-Retired	0.55	0.68	-0.13***	0.72	0.64	0.08***
	(0.50)	(0.47)	(0.00)	(0.45)	(0.48)	(0.01)
NILF-Disabled/Other	0.13	0.08	0.05***	0.10	0.06	0.04***
	(0.33)	(0.27)	(0.00)	(0.30)	(0.24)	(0.00)
N	81,923	33,020	114,943	17,186	15,834	33,020

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Eligible households include those who claim the medical deduction and those with forgone medical deductions. All values are reported at the household level and weighted using household weights. See text for more details.

Table 4: Selection into Eligiblity and Claiming: Income and Wealth

	Full Sample			Eligible Sample		
	Ineligible	Eligible	Difference	Did Not Claim	Claimed	Difference
AGI	42.74	39.88	2.86***	25.56	55.42	-29.86***
	(139.66)	(188.93)	(1.01)	(26.74)	(270.56)	(2.07)
Total Income	50.85	52.84	-1.99*	37.88	69.07	-31.19***
	(140.72)	(189.47)	(1.02)	(31.16)	(270.76)	(2.08)
Financial Wealth	195.04	328.39	-133.35***	267.34	394.65	-127.31***
	(863.38)	(983.57)	(5.86)	(645.48)	(1,247.73)	(10.81)
Total Wealth	295.58	493.46	-197.88***	417.59	575.82	-158.23***
	(990.06)	(1,121.07)	(6.71)	(811.86)	(1,375.70)	(12.32)
N	81,923	33,020	114,943	17,186	15,834	33,020

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Eligible households include those who claim the medical deduction and those with forgone medical deductions. All values are reported in thousands of 2023 dollars at the household level and weighted using household weights. See text for more details.

Table 5: Selection into Eligiblity and Claiming: Health

	Full Sample			Eligible Sample		
	Ineligible	Eligible	Difference	Did Not Claim	Claimed	Difference
ADLs	0.52	0.47	0.06***	0.53	0.40	0.14***
	(1.19)	(1.08)	(0.01)	(1.16)	(0.99)	(0.01)
Health Status:						
Excellent	0.11	0.10	0.01***	0.09	0.11	-0.02***
	(0.31)	(0.30)	(0.00)	(0.29)	(0.31)	(0.00)
Very Good	0.26	0.29	-0.03***	0.27	0.31	-0.04***
	(0.44)	(0.45)	(0.00)	(0.45)	(0.46)	(0.01)
Good	0.30	0.32	-0.02***	0.32	0.33	-0.01**
	(0.46)	(0.47)	(0.00)	(0.47)	(0.47)	(0.01)
Fair/Poor	0.33	0.29	0.04***	0.32	0.25	0.07***
	(0.47)	(0.45)	(0.00)	(0.47)	(0.43)	(0.00)
Cognitive Score:						
Proxy	0.08	0.06	0.01***	0.07	0.06	0.01***
	(0.27)	(0.24)	(0.00)	(0.25)	(0.23)	(0.00)
Not Asked	0.25	0.19	0.06***	0.17	0.21	-0.05***
	(0.43)	(0.39)	(0.00)	(0.37)	(0.41)	(0.00)
Avg Cognitive Score	21.19	22.46	-1.27***	22.10	22.88	-0.78***
	(5.34)	(4.50)	(0.04)	(4.66)	(4.27)	(0.06)
N	81,923	33,020	114,943	17,186	15,834	33,020

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Eligible households include those who claim the medical deduction and those with forgone medical deductions. All values are reported at the household level and weighted using household weights. See text for more details.

Table 6: Elasticity of Take-Up With Respect to After-Tax Price

Panel A: First Stage (DV = *Own Tax Price*)

	(1)	(2)	(3)
Simulated Tax Price	1.068***	1.074***	1.045***
	(28.15)	(28.30)	(28.59)
N	31,755	31,755	31,755

Panel B: Reduced Form (DV = *IMD Claiming*)

	(5)	(6)	(7)
Simulated Tax Price	-1.671***	-1.686***	-1.608***
	(-5.26)	(-5.35)	(-5.26)
N	31,755	31,755	31,755

Panel C: Instrumental Variables (DV = *IMD Claiming*)

	(9)	(10)	(11)
Own Tax Price	-1.564***	-1.569***	-1.539***
	(-5.32)	(-5.41)	(-5.32)
Implied Elasticity	-3.12	-3.13	-3.07
N	31,755	31,755	31,755
Year	✓	✓	✓
State	✓	✓	✓
Education		✓	
Age			✓

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Sample includes households eligible to claim IMD. Own Tax Price represents household's after-tax price of $1 of out-of-pocket-medical spending. Simulated Tax Price represents after-tax price of $1 of out-of-pocket medical spending among a fixed sample of households in each state and year (Column (1)), state, year and education (Column (2)), and state, year and 5-year age bin (Column (3)). Control variables include the number of times a household is observed to be eligible for the IMD, the household's filing status, the education, health status, race/ethnicity, gender, labor force status, and 5-year age bin of the financial respondent, indicators for the average number of ADLs among the financial respondent and spouse, and the number of children. See text for more details.

Table 7: Model Fit, Tax Savings and Implied Cost of Claiming by Selected Characteristics

	Take-Up				
	Predicted	Actual	Tax Savings	Cost of Claiming	Difference
Overall	0.590	0.593	1,304	1,052	252
Education					
Less than High School	0.527	0.538	1,221	1,586	-365
High School Grad	0.593	0.595	1,220	1,018	202
College Plus	0.648	0.645	1,444	577	868
Race/Ethnicity					
White	0.587	0.588	1,342	1,072	270
Black	0.652	0.665	910	608	302
Hispanic	0.601	0.635	954	1,065	-111
Other	0.564	0.561	1,321	1,370	-49
Gender					
Male	0.603	0.600	1,350	960	390
Female	0.578	0.587	1,258	1,144	114
Age Group					
50-54	0.654	0.660	1,136	756	380
55-59	0.638	0.639	1,141	821	320
60-64	0.588	0.595	1,300	1,123	178
65-69	0.550	0.567	1,375	1,208	167
70-74	0.555	0.554	1,360	1,113	247
75-79	0.556	0.536	1,401	1,163	238
80+	0.566	0.566	1,531	1,278	253

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Sample includes households eligible for positive tax savings. See text for more details.

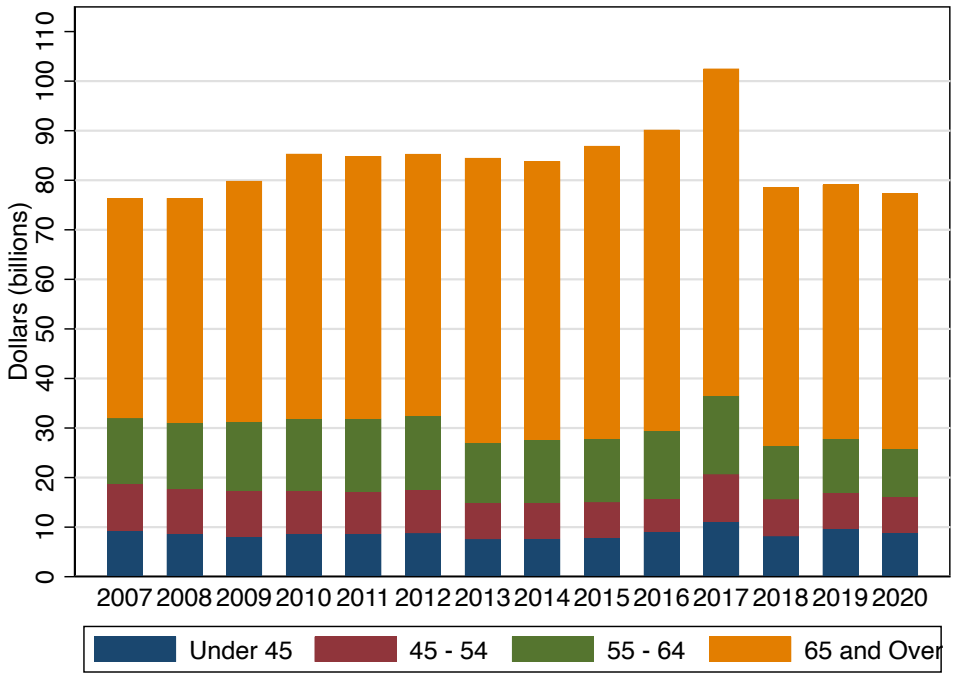
Table 8: Simulated Eligibility and Cost of Claiming across Policy Counterfactuals

	Baseline	Above Line Deduction	Non-Refund Credit	Refundable Credit
Share Eligible	16.8	22.1	29.9	55.5
Predicted Take-Up	59.0	54.0	56.9	50.0
Cost of Claiming (Average)	1,052	1,294	895	1,288
Share Eligible by Group				
Education				
Less than High School	10.1	18.9	24.3	63.2
High School Grad	19.6	25.7	34.6	58.9
College Plus	27.0	27.8	39.0	51.1
Race/Ethnicity				
White	18.4	25.9	34.0	63.0
Black	9.1	13.5	19.2	53.4
Hispanic	6.7	11.5	16.2	50.4
Other	14.1	15.5	22.7	48.3
Gender				
Male	18.0	24.6	33.1	56.8
Female	13.8	20.4	27.0	62.0
Age Group				
50-54	13.4	13.5	21.2	31.9
55-59	14.2	15.3	23.0	35.3
60-64	17.3	21.6	28.8	46.3
65-69	17.9	27.5	36.6	68.1
70-74	17.4	28.3	36.4	75.7
75-79	16.4	26.9	34.0	78.7
80+	12.5	21.5	26.7	78.8
ADLs				
No ADLs	16.4	22.4	30.8	56.4
1 ADL	15.6	25.0	30.7	70.6
2+ ADLs	10.6	17.6	20.8	68.8
Health Status				
Excellent	16.9	18.9	28.0	43.9
Very Good	18.9	24.2	33.6	55.7
Good	16.3	24.1	31.9	62.1
Fair/Poor	11.5	19.6	24.1	66.6

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Share eligible reflects sample of households eligible for positive tax savings. See text for more details.

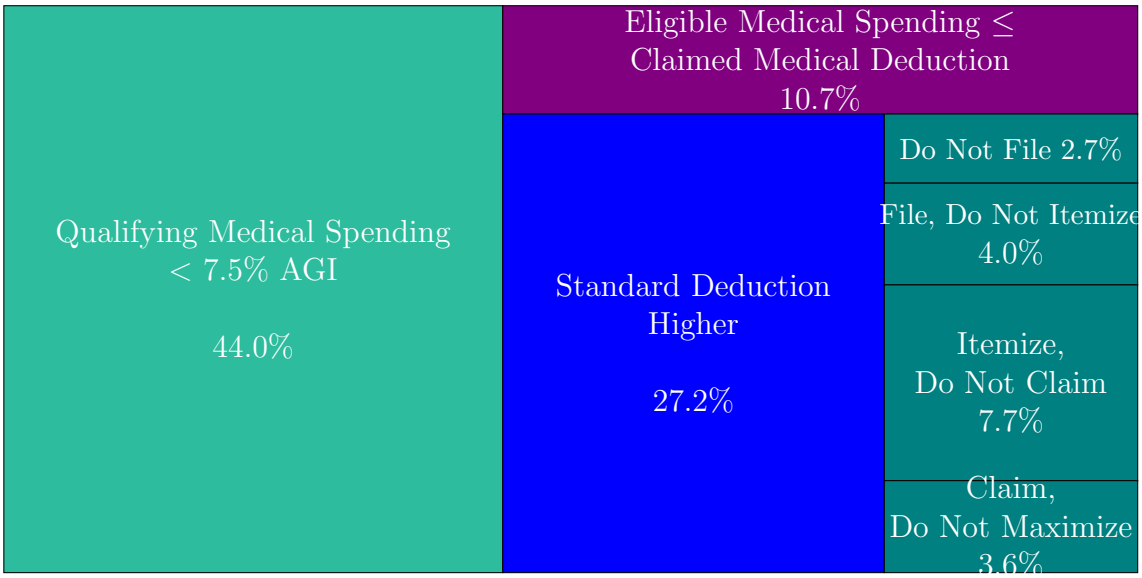
8 Figures

Figure 1: Aggregate Medical Deductions by Year and Age Group



Source: Statistics of Income, Individual Income Tax Statistics, Publication 1304, Internal Revenue Service, Tables 1.5 and 2.6.

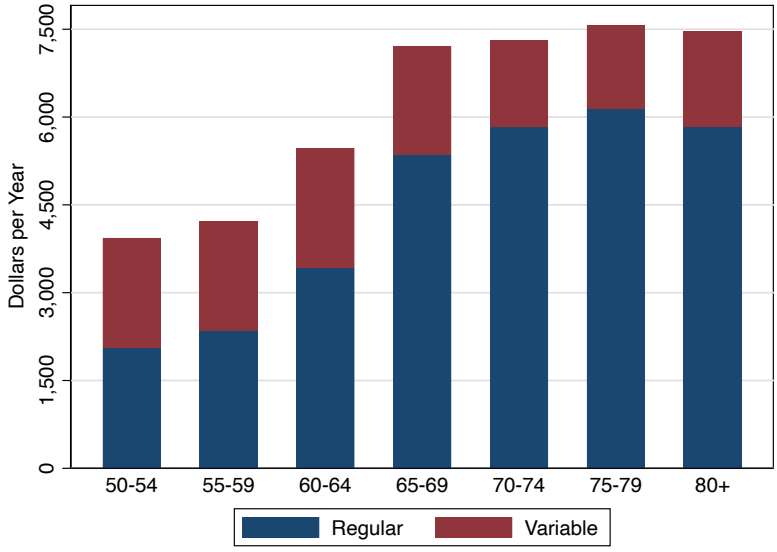
Figure 2: Distribution of Households by Presence of Forgone Medical Deductions



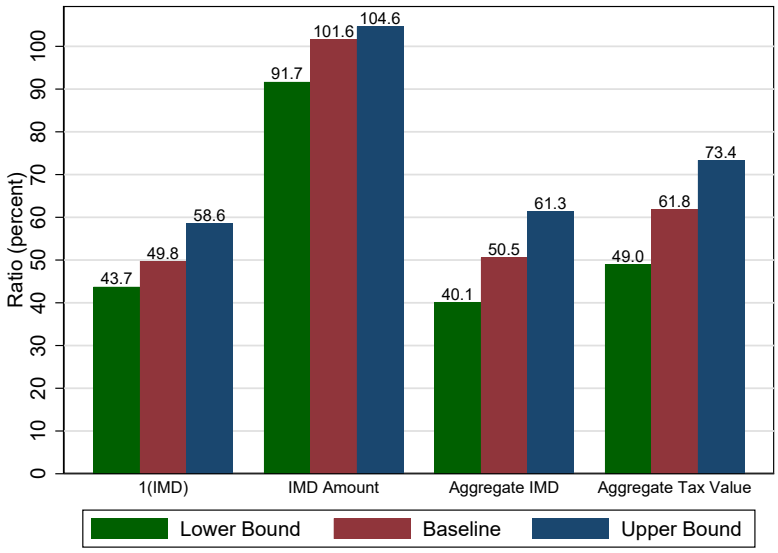
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Share with forgone medical deductions includes households who do not file or itemize with eligible medical spending above standard deduction, and households who itemize who do not claim the medical deduction or do not maximize the amount claimed. All values are reported at the household level and weighted using household weights. See text for more details.

Figure 3: Alternative Allocations of Qualifying Medical Spending

Panel A: Regular and Variable Qualifying Medical Spending



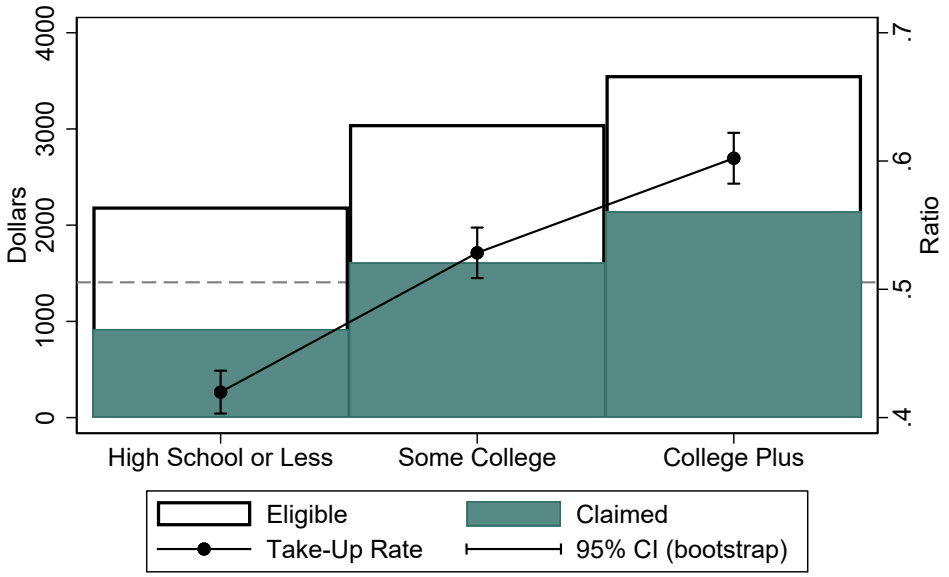
Panel B: Take-Up Rates Across Alternative Allocations



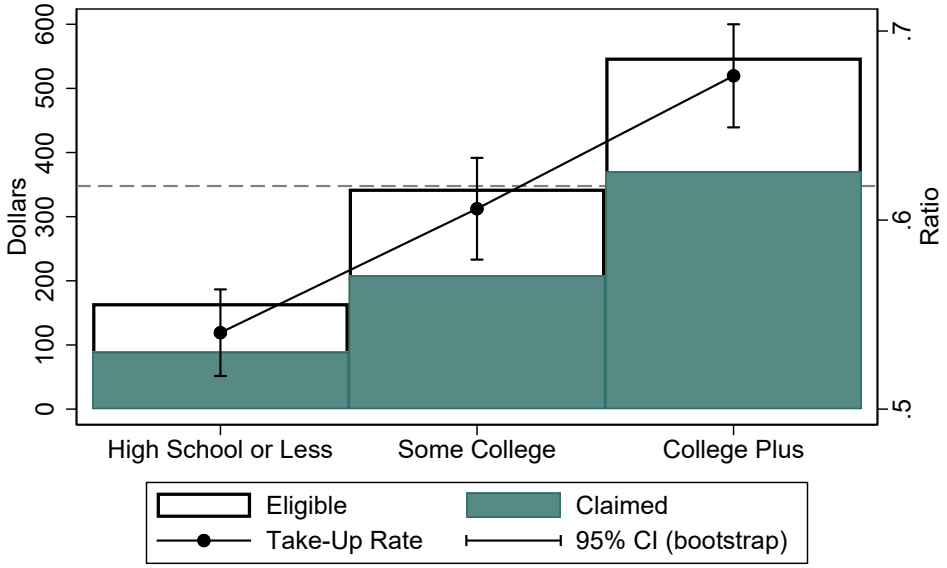
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1996–2012. Panel A reports regular and variable medical spending by age group. Regular spending includes out-of-pocket medical spending for prescription drugs and premium payments for health and long-term care insurance. Variable spending includes doctor visits, dental services, hospital stays, outpatient surgery, home health care, special facilities, and other medical spending. All dollar amounts are annualized and reported in 2023 dollars at the household level using household weights. Panel B reports baseline take-up rates and upper and lower bounds, where the lower bound estimates assumes all variable spending occurred within the tax year of the itemized medical deduction and the upper bound estimates assumes all variable spending occurred outside of the tax year of the itemized medical deduction. *1(IMD)* represents extensive margin take-up rates and *IMD Amount* represents intensive margin take-up rates.

Figure 4: Average Eligible and Claimed Deductions by Education

Panel A: Eligible and Claimed Deductions

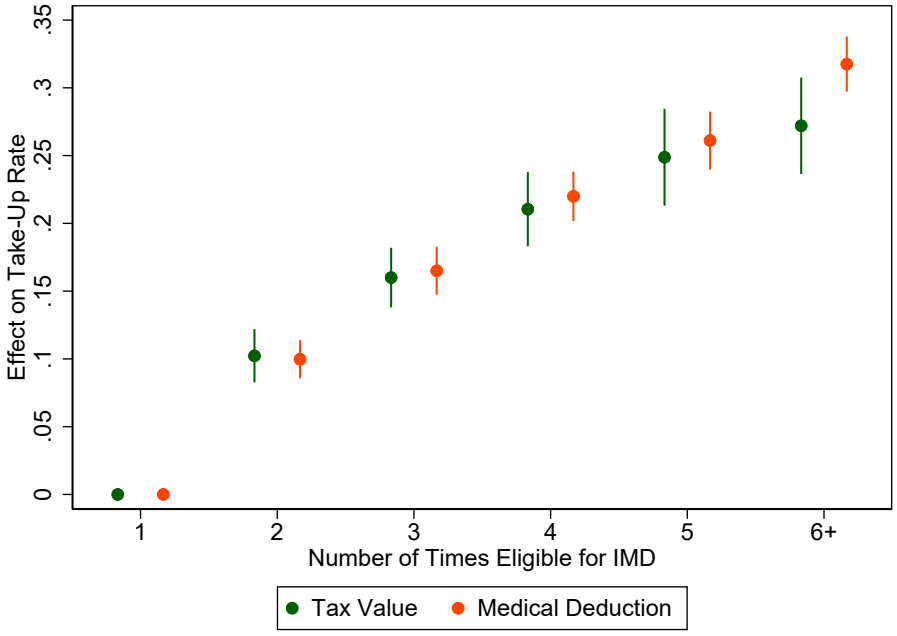


Panel B: Eligible and Claimed Tax Savings



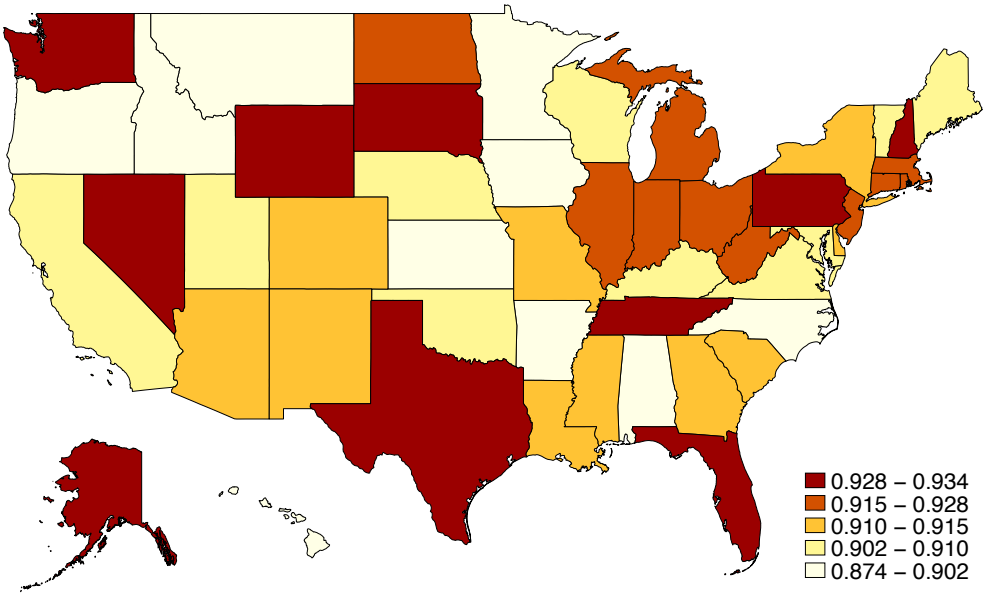
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions across education and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. See text for more details.

Figure 5: Take-Up Rates by Repeated Eligibility



Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Coefficients estimated from a regression of take-up rates on observed eligibility count after controlling for observable characteristics, relative to first time eligible. See text for more details.

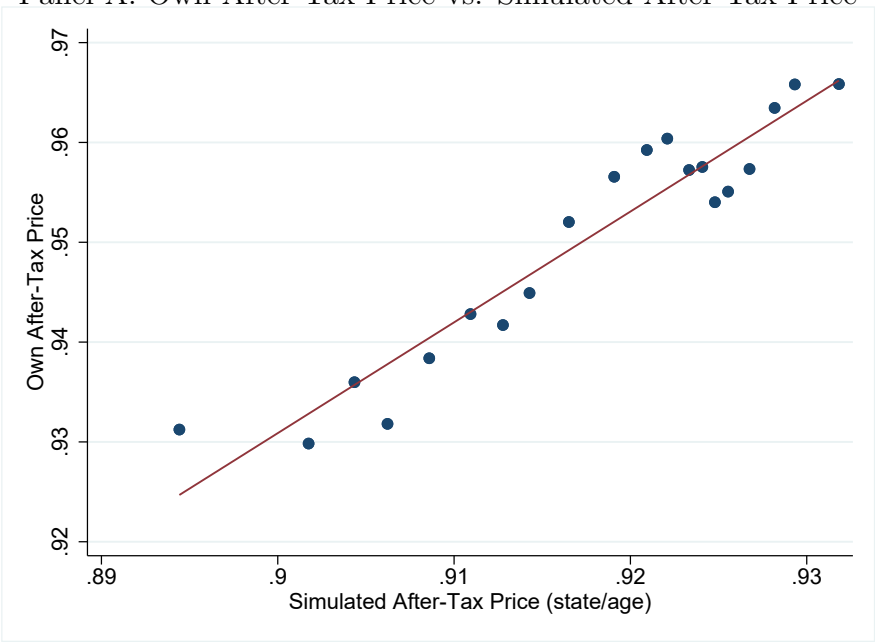
Figure 6: Simulated After-Tax Price of $1 of Out-of-Pocket Medical Spending, 2012



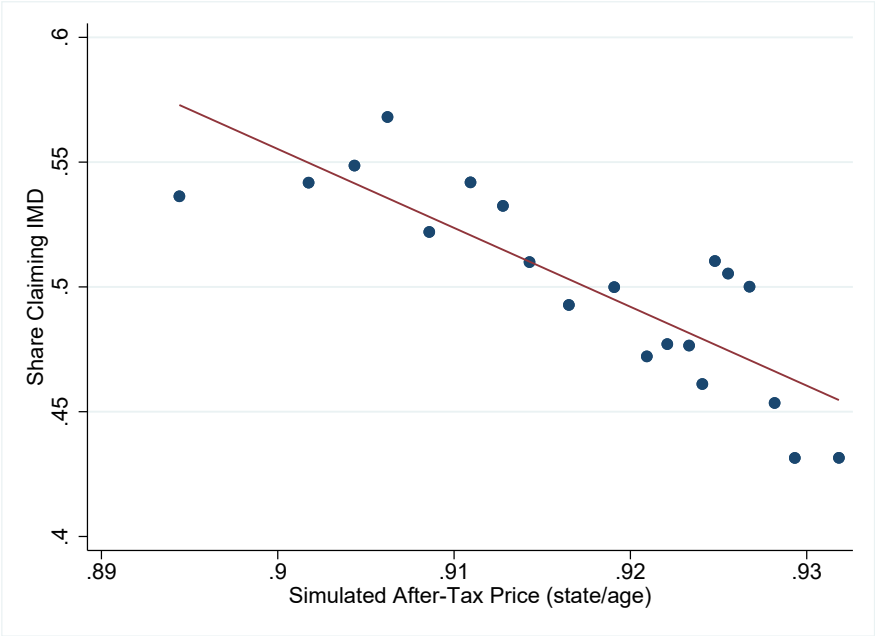
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Simulated after-tax price represents the average after-tax price of $1 of out-of-pocket medical spending among a fixed set of eligible households in each state in 2012. See text for more details.

Figure 7: First Stage and Reduced Form Relationship with Simulated After-Tax Price

Panel A: Own After-Tax Price vs. Simulated After-Tax Price



Panel B: Share Claiming IMD vs. Simulated After-Tax Price



Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. A household's simulated after-tax price represents the average after-tax price of $1 of out-of-pocket medical spending among a fixed set of eligible households with the same state and 5-year age bin. Binscatters represent relationship after residualizing on year. See text for more details.

Appendix A: Additional Tables and Figures

Table A.1: Aggregate Medical Deduction Amounts, Number of Claims, and Tax Filers, Ages 55+

	Agg. Deductions ($billions)		Medical Deductions (millions)		Tax Filers (millions)	
Year	IRS	HRS	IRS	HRS	IRS	HRS
1995	41.959	20.866	3.473	2.308	33.764	17.046
1997	43.269	29.199	3.412	3.264	34.965	24.918
1999	50.357	37.603	3.819	3.642	36.294	25.734
2001	63.033	51.196	4.915	5.481	37.202	29.705
2003	72.185	70.209	5.633	6.348	37.250	28.779
2005	81.787	75.476	6.437	6.951	38.378	30.723
2007	84.612	76.426	6.378	7.394	38.433	34.590
2009	88.748	80.695	6.655	8.447	40.713	33.994
2011	91.584	90.534	7.084	9.940	43.335	37.559

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995-2012; Internal Revenue Service, Publication 1304, Tables 1.1 and 2.1. Aggregate deductions represents total medical deductions aggregated over all tax units with a primary taxpayer age 55 or older. Medical deductions represents number of tax units claiming medical deductions. Tax filers represents number of tax units filing tax returns. HRS dollar values are weighted using household weights. IRS values prior to 2007 represent estimated share of aggregate totals for ages 55+ based on average shares for 55+ in 2007, 2009 and 2011.

Table A.2: Take-Up Rates for Itemized Medical Deductions and Associated Tax Savings: Subsample without Imputed Medical Spending

	(1) Observed	(2) Full Take-Up	(3) Ratio	(4) 95% CI (Bootstrap)
Filed Tax Return	0.737	0.758	0.972	(0.971, 0.974)
Itemized Deductions	0.410	0.464	0.884	(0.880, 0.888)
Claimed Medical Deduction	0.137	0.262	0.522	(0.513, 0.531)
Average Medical Deduction Amt	$8,812	$8,675	1.016	(0.989, 1.043)
Average Tax Savings Amt	$1,230	$1,008	1.220	(1.195, 1.245)
Aggregate Medical Deductions (bn)	$396.6	$747.5	0.531	(0.515, 0.546)
Aggregate Tax Savings (bn)	$55.3	$86.8	0.637	(0.623, 0.652)
Observations	85,608	85,608		

Notes: Health and Retirement Study, Waves 3-11, 1995-2012. Sample limited to respondents without imputed medical spending. Column (1) represents observed rates of tax filing, itemizing, and claiming itemized medical deductions. Column (2) represents full take-up scenario where all households with forgone medical deductions are assumed to file, itemize, and claim all potential itemized medical deductions. Confidence intervals are based on 50 bootstrap standard error repetitions. All dollar values are reported in 2023 dollars and are weighted using household weights.

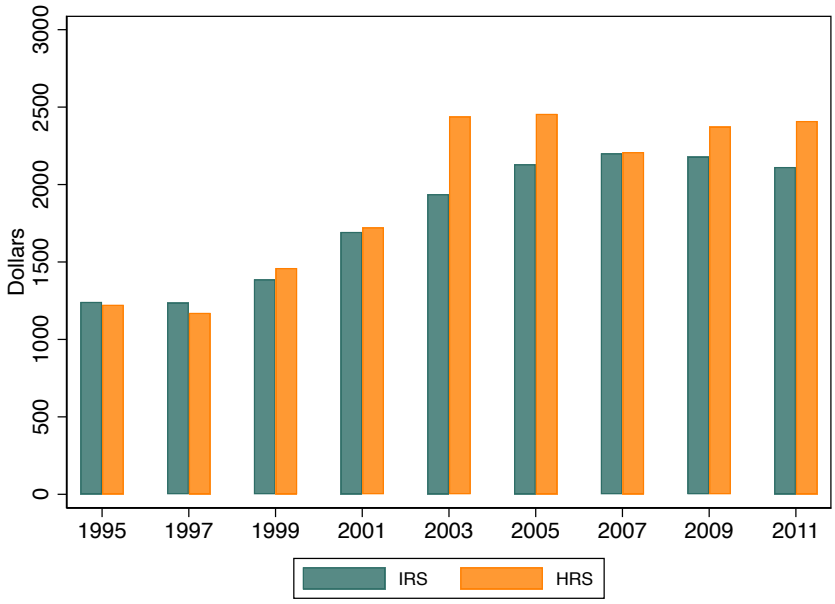
Table A.3: Take-Up Rates for Itemized Medical Deductions and Associated Tax Savings: Sensitivity to Income Under-Reporting

	(1) Observed	(2) Full Take-Up	(3) Ratio	(4) 95% CI (Bootstrap)
Filed Tax Return	0.740	0.766	0.966	(0.964, 0.967)
Itemized Deductions	0.410	0.474	0.864	(0.861, 0.868)
Claimed Medical Deduction	0.143	0.279	0.512	(0.505, 0.518)
Average Medical Deduction Amt	$9,595	$9,529	1.007	(0.986, 1.027)
Average Tax Savings Amt	$1,284	$1,034	1.242	(1.210, 1.273)
Aggregate Medical Deductions (bn)	$591.5	$1,148.3	0.515	(0.504, 0.526)
Aggregate Tax Savings (bn)	$79.2	$124.6	0.635	(0.620, 0.651)
Observations	113,799	113,799		

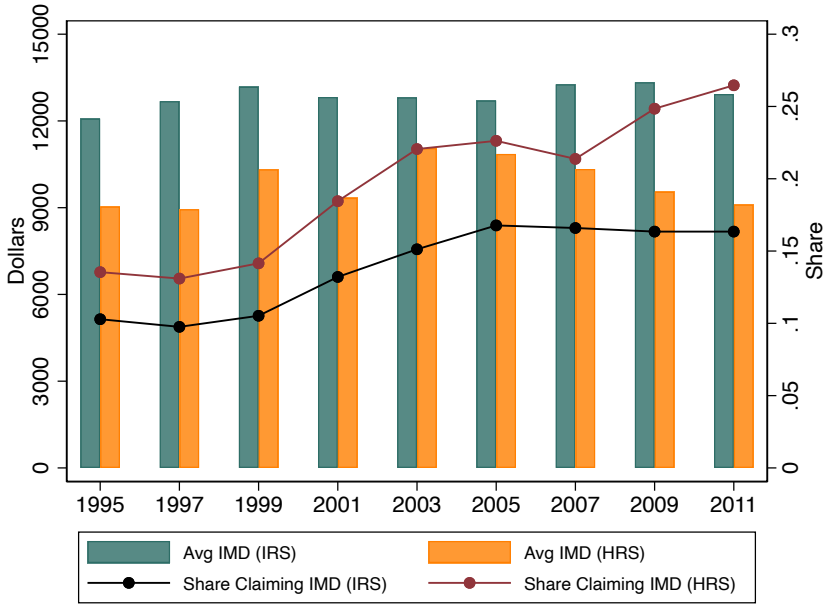
Notes: Health and Retirement Study, Waves 3-11, 1995-2012. Total household income is grossed up by 10 percent from reported amounts. Column (1) represents observed rates of tax filing, itemizing, and claiming itemized medical deductions. Column (2) represents full take-up scenario where all households with forgone medical deductions are assumed to file, itemize, and claim all potential itemized medical deductions. Confidence intervals are based on 50 bootstrap standard error repetitions. All dollar values are reported in 2023 dollars and are weighted using household weights.

Figure A.1: Comparison of Itemized Medical Deductions in HRS to IRS, 55+

Panel A: Average IMD (Unconditional)



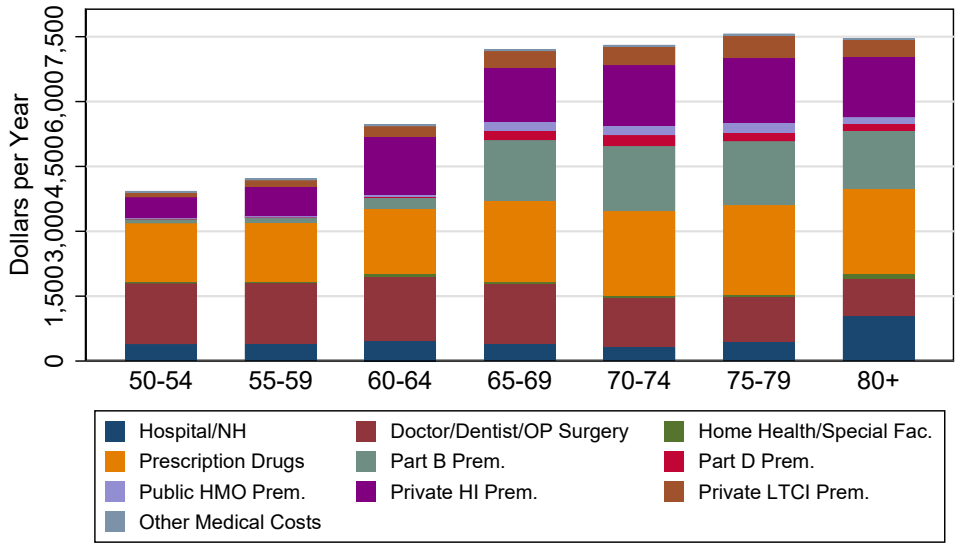
Panel B: Average IMD (Conditional) and Share Claiming



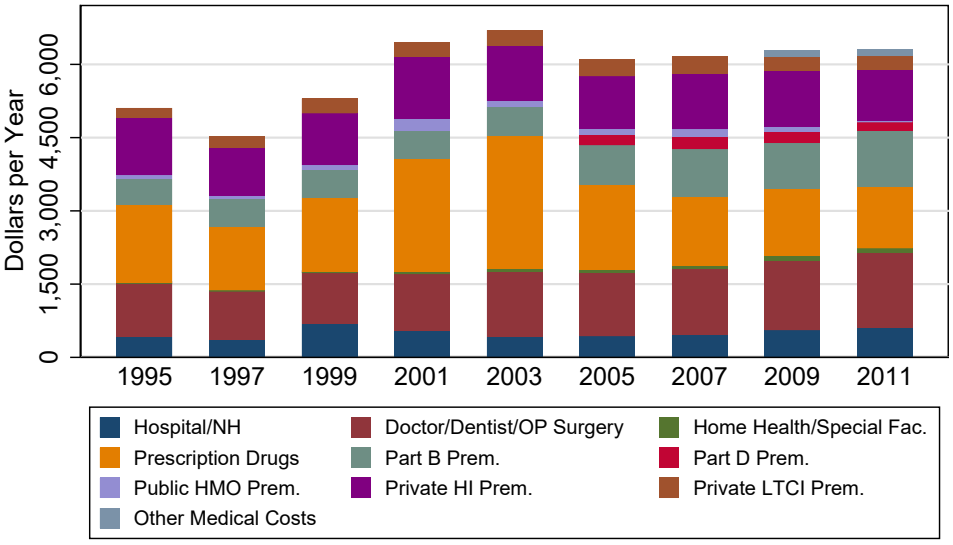
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995-2012; Internal Revenue Service, Publication 1304, Tables 1.1 and 2.1. Unconditional average IMD represents total itemized medical deductions divided by total number of tax units. Conditional average IMD represents total itemized medical deductions divided by total number of tax units claiming medical deductions. Share claiming IMD represents total number of tax units claiming medical deductions divided by total number of tax units. HRS dollar values are weighted using household weights. IRS totals prior to 2007 represent estimated share of aggregate totals for ages 55+ based on average shares for 55+ in 2007, 2009 and 2011.

Figure A.2: Components of Qualifying Medical Spending

Panel A: Age



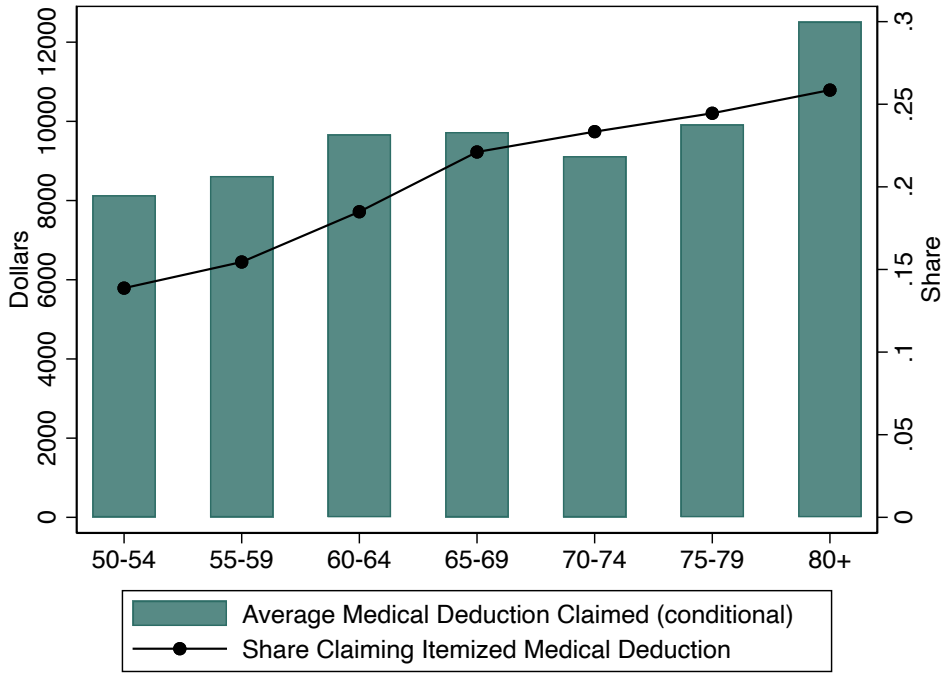
Panel B: Year



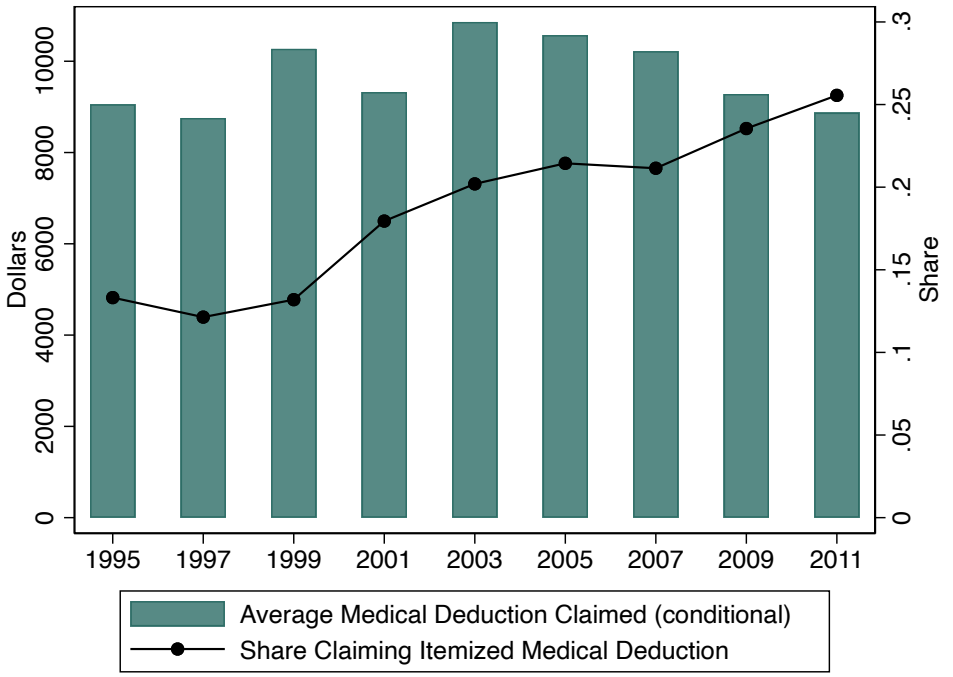
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Qualifying medical spending includes out-of-pocket medical spending and premium payments for health and long-term care insurance. Special facilities includes payments for adult care centers, social workers, outpatient rehab programs, transportation, or meals. Other medical costs include special food, medical equipment, health professional visits, etc. All dollar amounts are annualized and reported in 2023 dollars at the household level using household weights.

Figure A.3: Share Claiming Itemized Medical Deductions and Average Amount Claimed

Panel A: Age



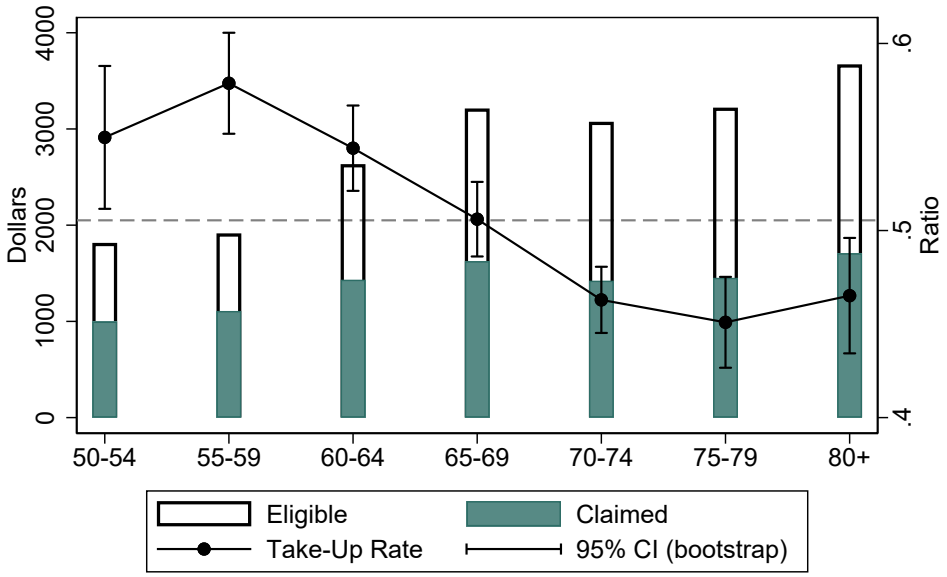
Panel B: Year



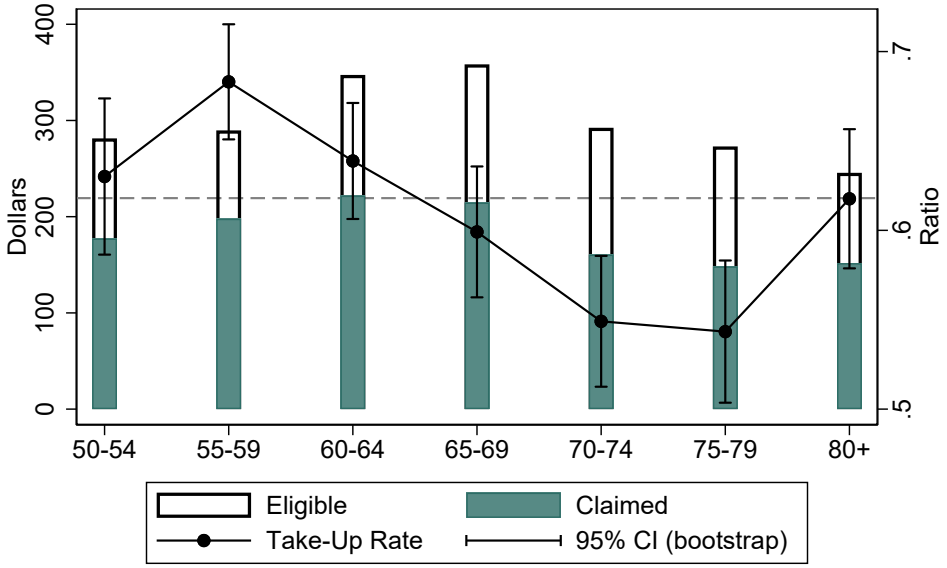
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. All dollar values are reported in 2023 dollars at the household level and weighted using household weights. See text for more details.

Figure A.4: Average Eligible and Claimed Deductions by Age

Panel A: Eligible and Claimed Deductions



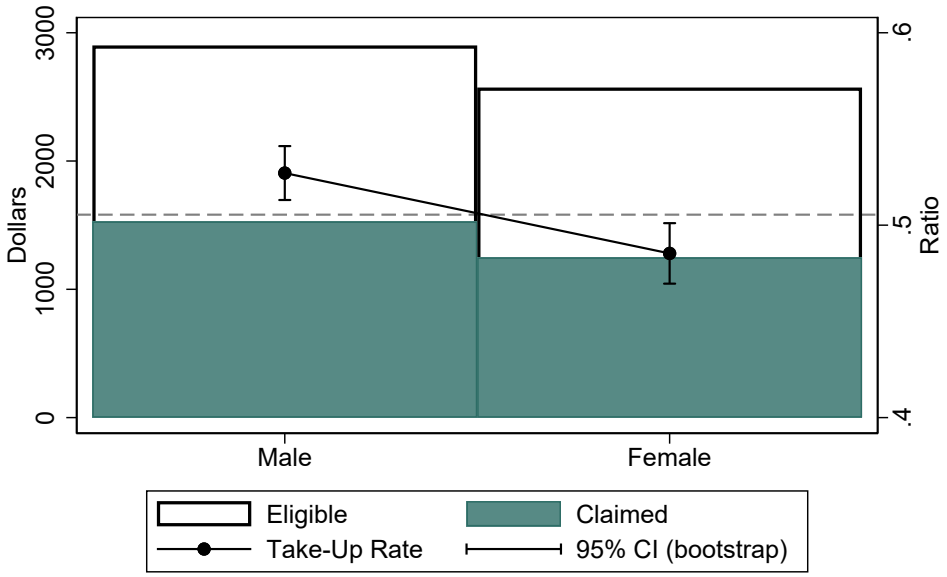
Panel B: Eligible and Claimed Tax Savings



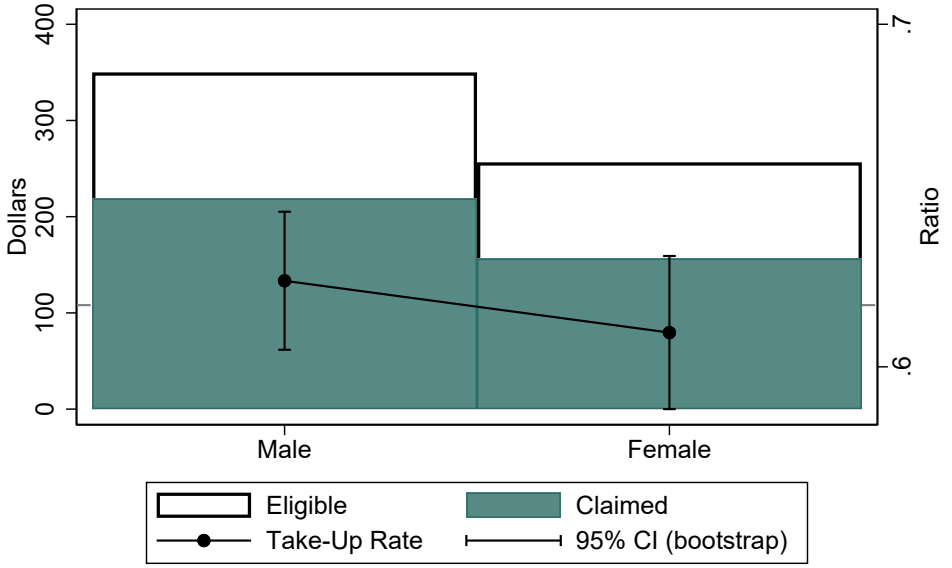
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by age and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. See text for more details.

Figure A.5: Average Eligible and Claimed Deductions by Gender

Panel A: Eligible and Claimed Deductions



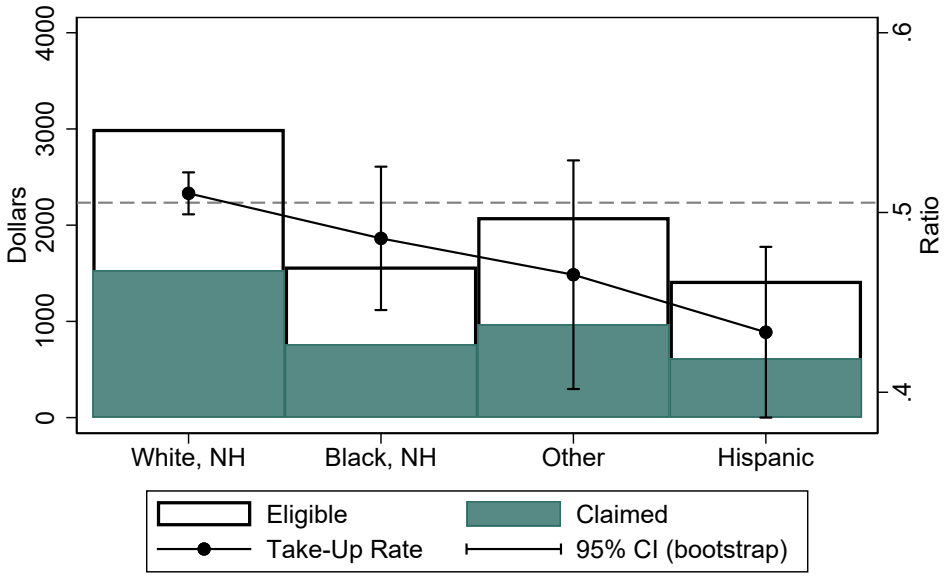
Panel B: Eligible and Claimed Tax Savings



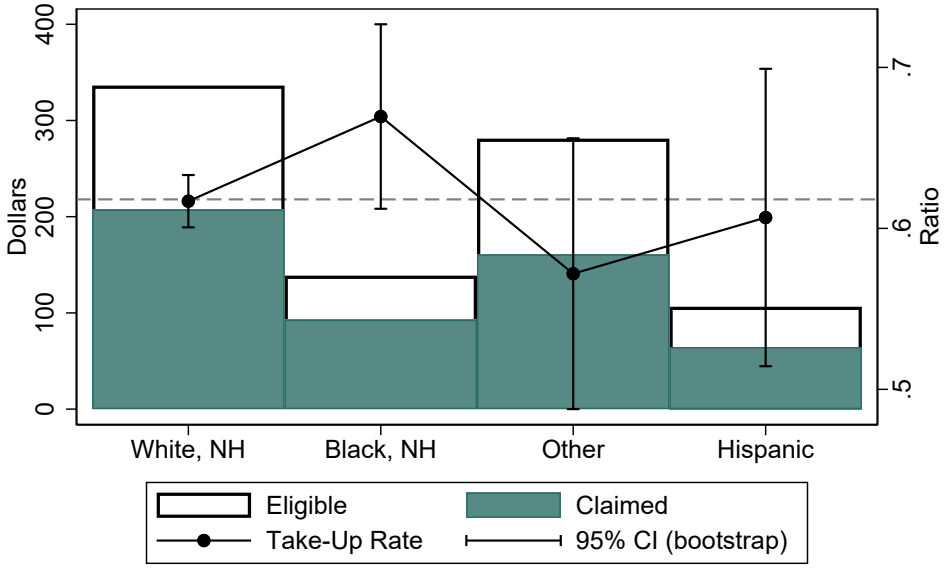
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by gender and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. See text for more details.

Figure A.6: Average Eligible and Claimed Deductions by Race/Ethnicity

Panel A: Eligible and Claimed Deductions



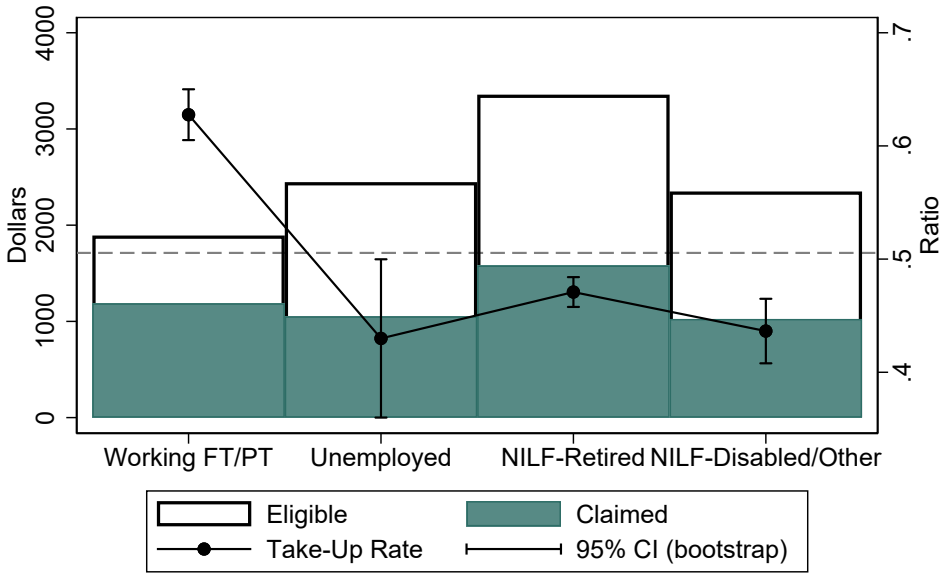
Panel B: Eligible and Claimed Tax Savings



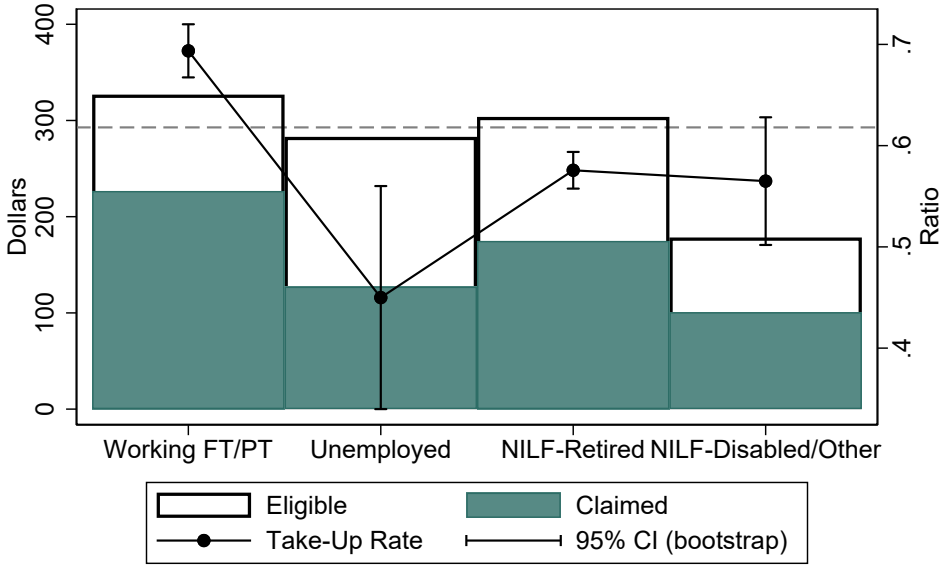
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by race/ethnicity and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. See text for more details.

Figure A.7: Average Eligible and Claimed Deductions by Labor Market Status

Panel A: Eligible and Claimed Deductions



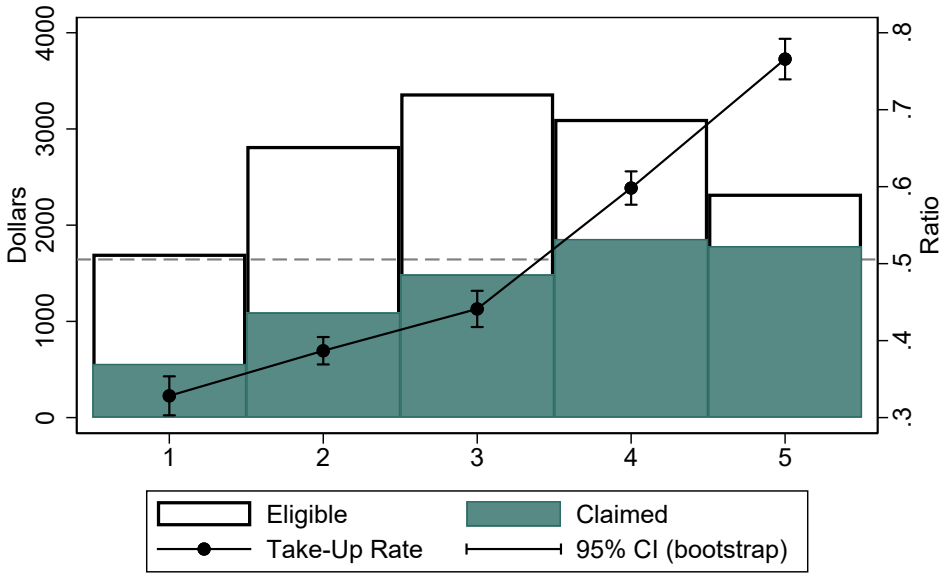
Panel B: Eligible and Claimed Tax Savings



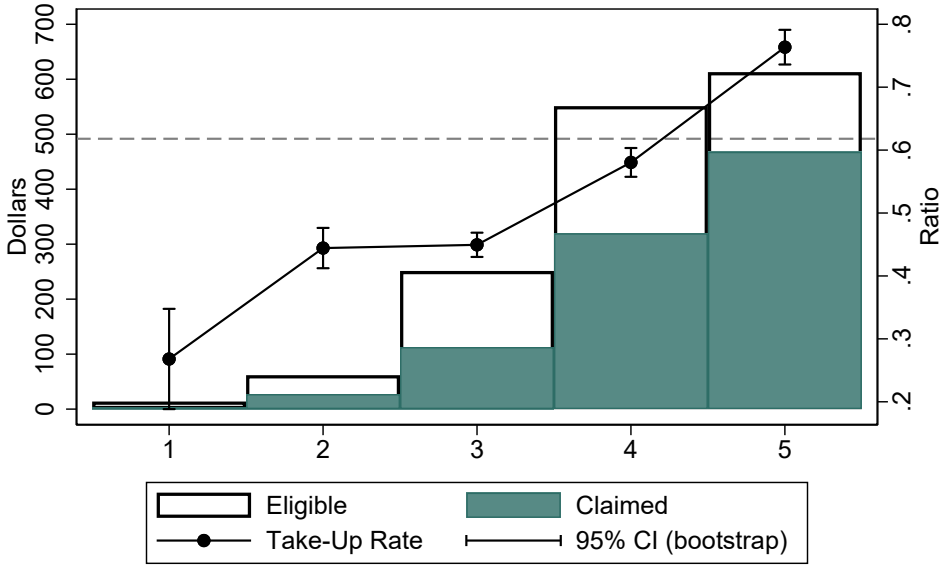
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by labor market status and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. See text for more details.

Figure A.8: Average Eligible and Claimed Deductions by AGI Quintile

Panel A: Eligible and Claimed Deductions



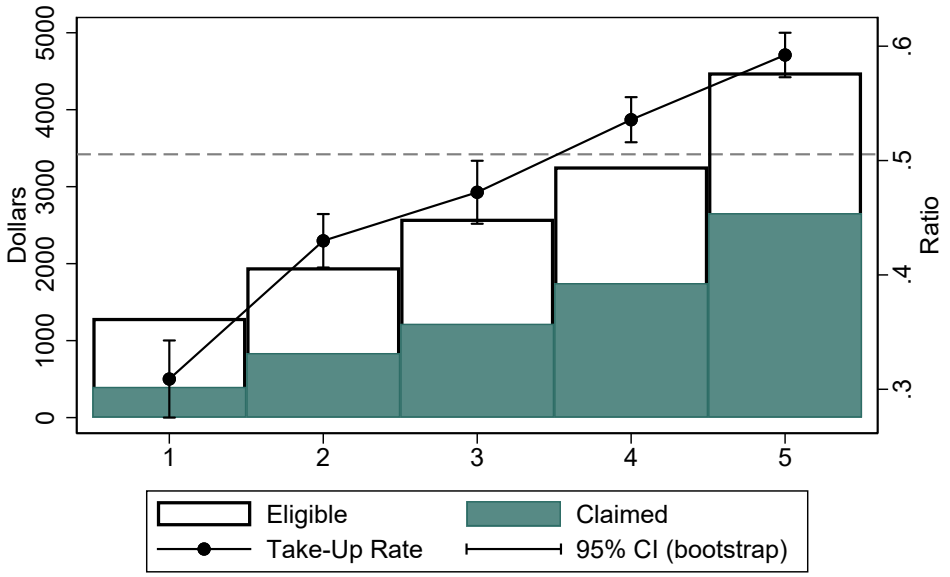
Panel B: Eligible and Claimed Tax Savings



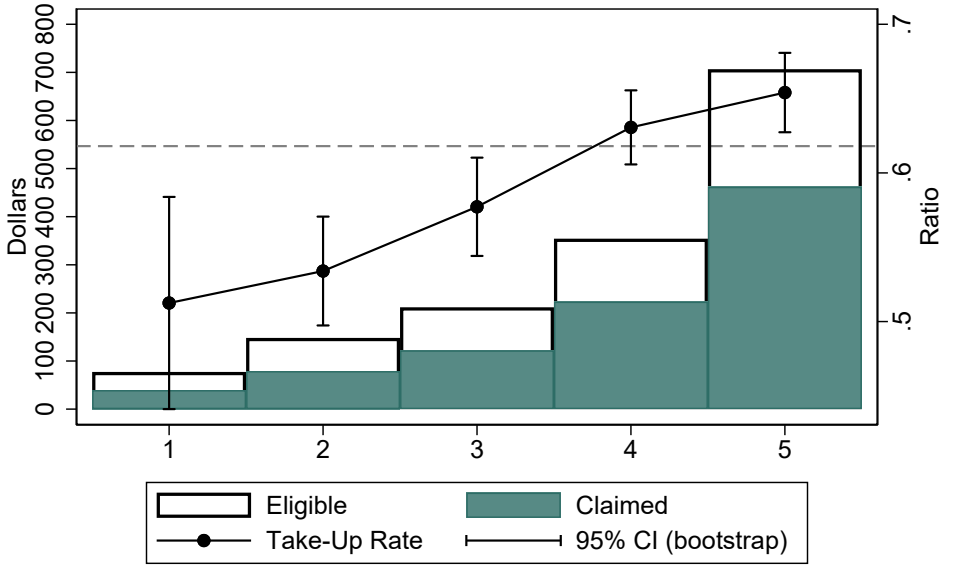
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by AGI quintile and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. AGI includes earnings, pensions and annuities, Supplemental Security Income, taxable Social Security disability and retirement income, unemployment and workers compensation, IRA withdrawals and other government transfers for the financial respondent and his/her spouse. See text for more details.

Figure A.9: Average Eligible and Claimed Deductions by Total Wealth Quintile

Panel A: Eligible and Claimed Deductions



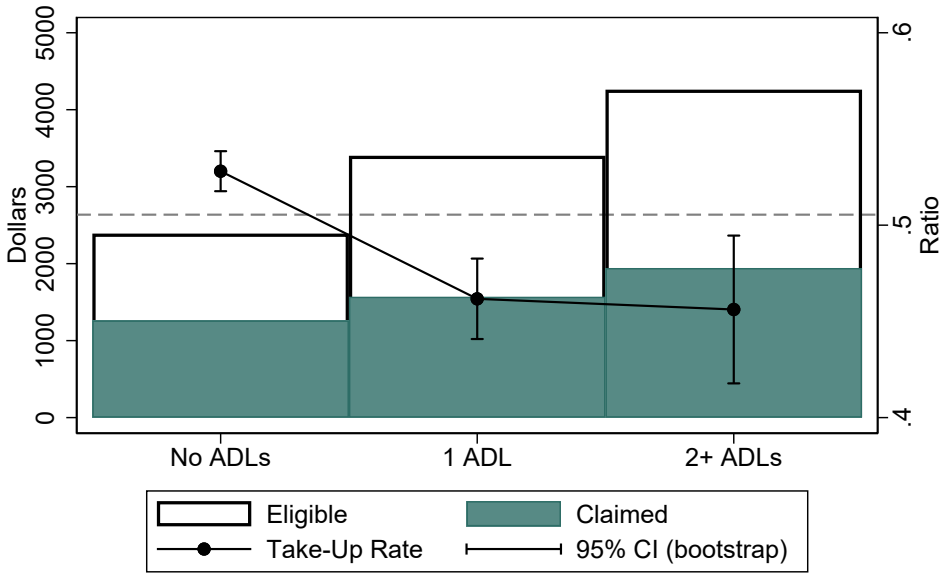
Panel B: Eligible and Claimed Tax Savings



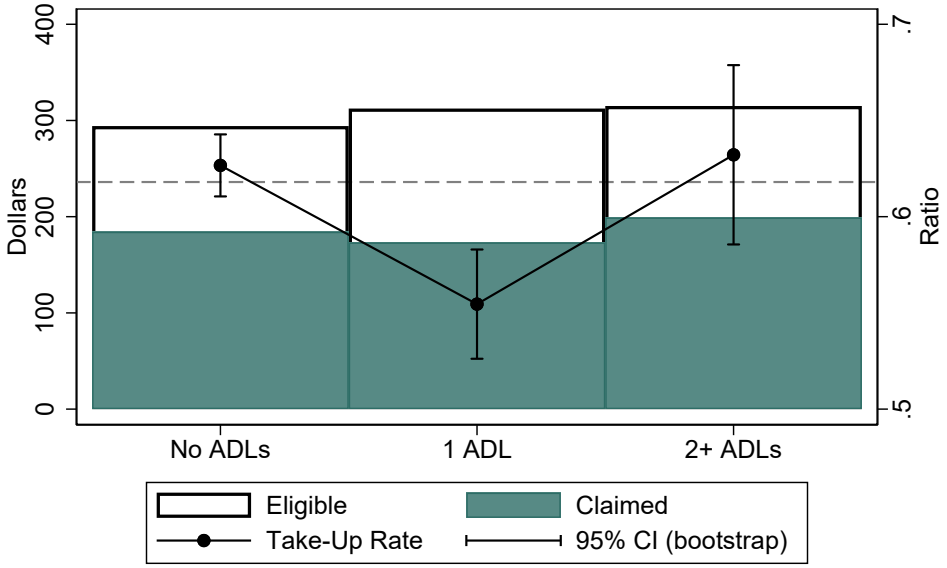
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by total wealth quintile and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. Total wealth includes net value of residence(s), real estate, vehicles, businesses, IRAs, investments, checking and savings accounts, bonds and other savings net of debt. See text for more details.

Figure A.10: Average Eligible and Claimed Deductions by ADL Limitations

Panel A: Eligible and Claimed Deductions



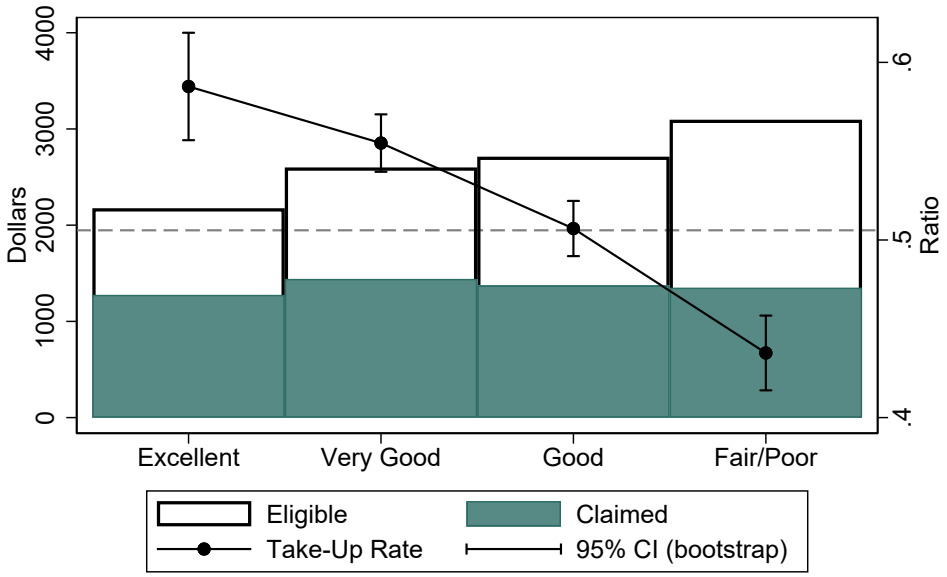
Panel B: Eligible and Claimed Tax Savings



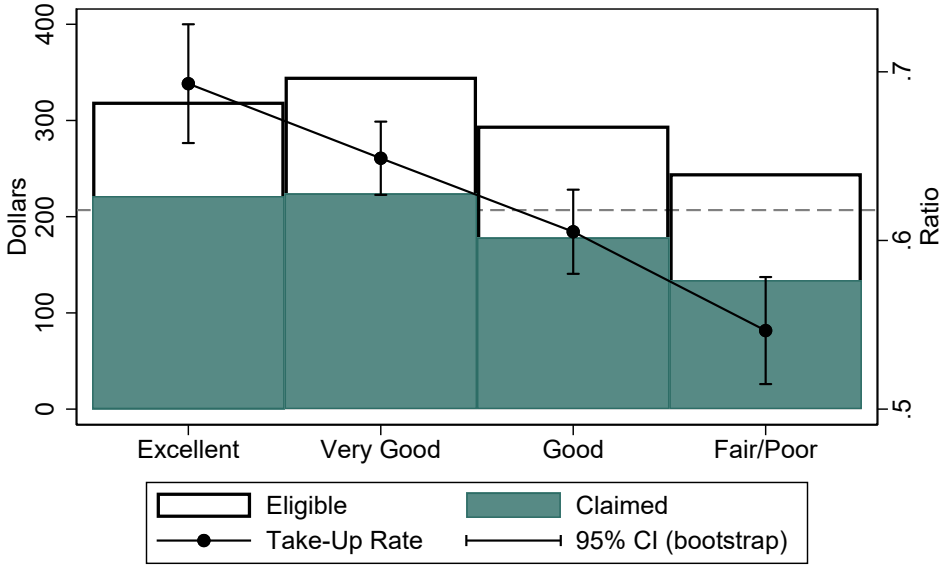
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by labor market status and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. ADLs represents average number of ADL limitations among household members. See text for more details.

Figure A.11: Average Eligible and Claimed Deductions by Health Status

Panel A: Eligible and Claimed Deductions



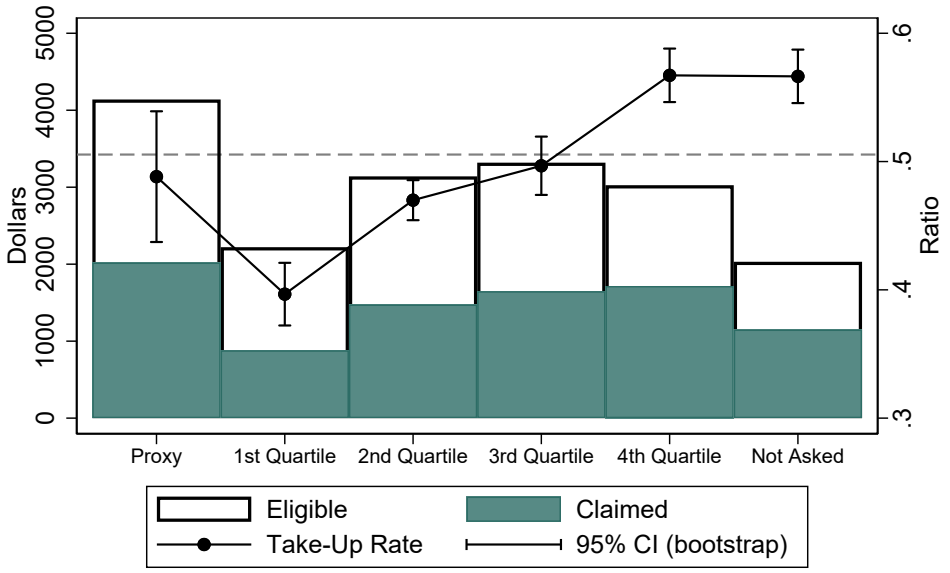
Panel B: Eligible and Claimed Tax Savings



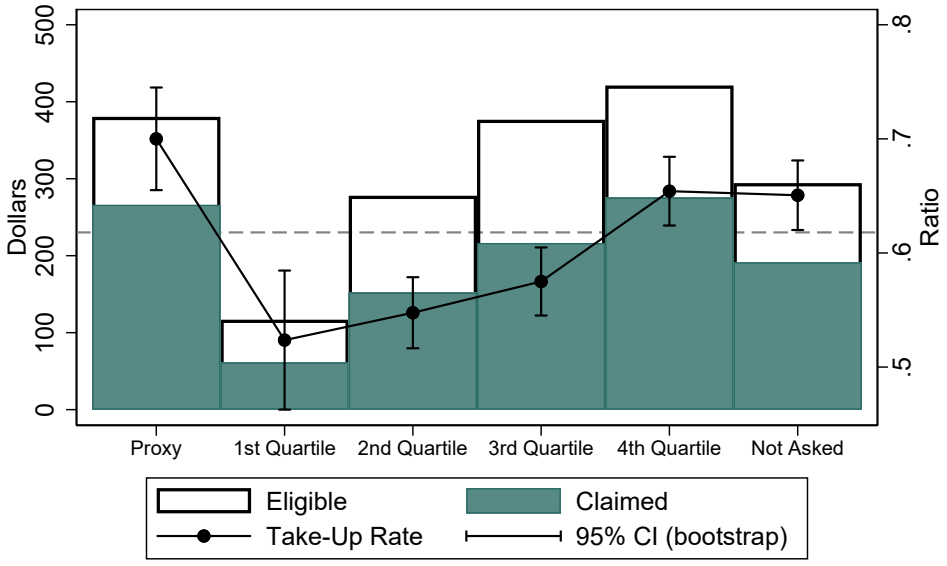
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by labor market status and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. Health status represents self-reported health status of financial respondent. See text for more details.

Figure A.12: Average Eligible and Claimed Deductions by Cognitive Score

Panel A: Eligible and Claimed Deductions



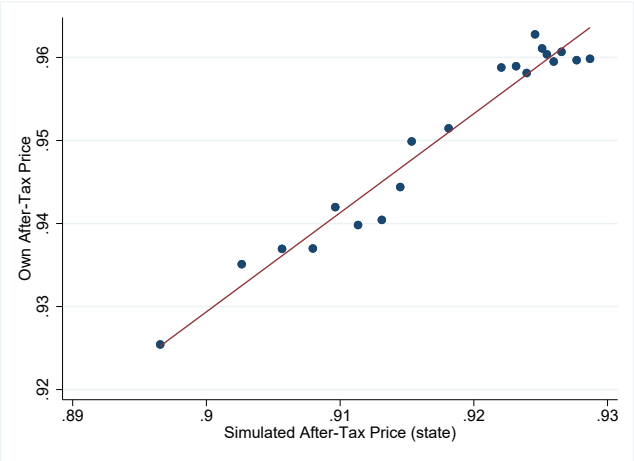
Panel B: Eligible and Claimed Tax Savings



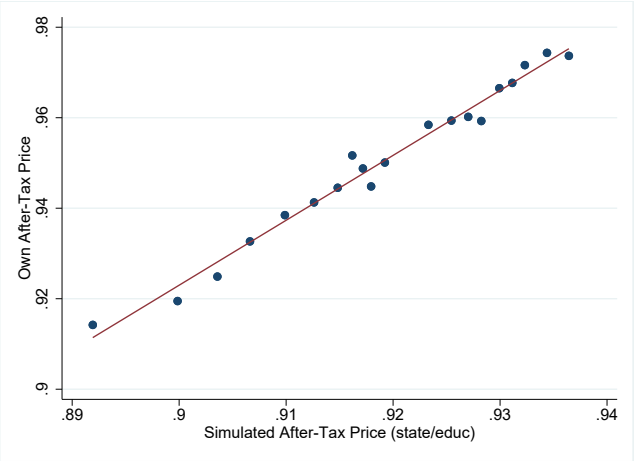
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Panel A displays average eligible and claimed medical deductions by labor market status and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Panel B displays analogous statistics for average eligible and claimed tax savings. Cognitive score represents average composite cognitive score among household members, and includes indicators for proxy respondent and those who are not asked the cognitive battery because they are under age 65. See text for more details.

Figure A.13: First Stage and Reduced Form Relationship with Simulated After-Tax Price: Alternative Instruments

Panel A: Own After-Tax Price vs. Simulated After-Tax Price

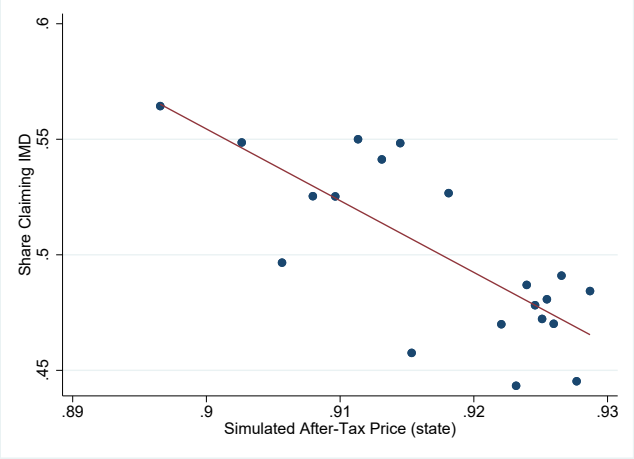


State X Year

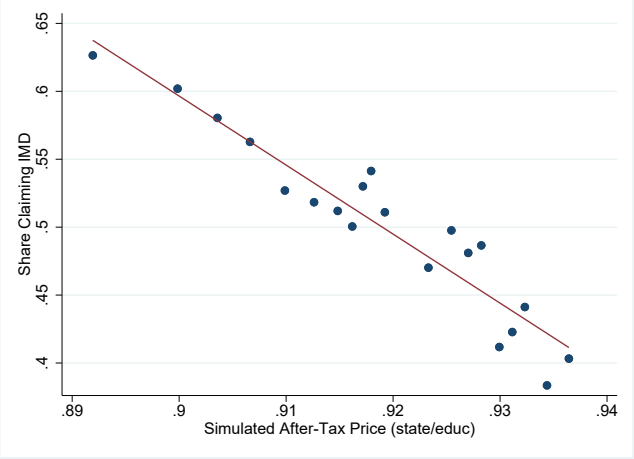


State X Year X Educ

Panel B: Share Claiming IMD vs. Simulated After-Tax Price



State X Year



State X Year X Educ

Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. A household's simulated after-tax price represents the average after-tax price of $1 of out-of-pocket medical spending among a fixed set of eligible households with the same state (left figures) or same state and education (right figures). Binscatters represent relationship after residualizing on year. See text for more details.

Appendix B: Imputation Methods

Most of the data for the analysis is drawn from the RAND HRS longitudinal files, which reflects detailed imputations for income sources and out-of-pocket medical spending that are documented in Bugliari et al. (2023*b*) and Bugliari et al. (2023*a*). However, the itemized medical deduction that each household claims is not included in the RAND longitudinal files and thus requires imputation from the user.

Approximately half of those who report claiming the itemized medical deduction report the amount that they claim. Among those who do not report an amount, the HRS uses an "unfolding bracket" procedure that elicits a minimum and maximum value that improves survey measurements in situations where respondents are unable or unwilling to provide precise responses to financial questions. The brackets are chosen to maximize the explanatory power of the ranges (Heeringa and Suzman, 1995). Due to these unfolding brackets, each respondent who reports itemizing their medical deductions but does not report an amount claimed has a minimum ($\underline{\text{IMD}}_h$) and maximum ($\overline{\text{IMD}}_h$) range that their deduction is between.

In order to provide conservative estimates of take-up on the intensive margin, I use Eligible Med Spending$_h$ as described in Section 2 and $\underline{\text{IMD}}_h$ and $\overline{\text{IMD}}_h$ to impute itemized medical deductions for respondents who report itemizing their medical expenses but who do not report an amount as follows:

1. For households with $\underline{\text{IMD}}_h \leq$ Eligible Med Spending$_h \leq \overline{\text{IMD}}_h$, I impute IMD$_h$ = Eligible Med Spending$_h$.

2. For households with Eligible Med Spending$_h \geq \overline{\text{IMD}}_h$, I impute IMD$_h = \overline{\text{IMD}}_h$.

3. For households with Eligible Med Spending$_h \leq \underline{\text{IMD}}_h$, I impute IMD$_h = \underline{\text{IMD}}_h$.

This imputation procedure minimizes the difference between eligible medical spending and the itemized medical deduction assumed to be reported, resulting in intensive margin take-up rates that are near 100 percent, and likely to be upward biased.

Appendix C: TAXSIM Inputs

TAXSIM is a program maintained by the National Bureau of Economic Research (NBER) that calculates liabilities under U.S. Federal and State income tax laws using individual data. This paper uses TAXSIM35 to impute the tax savings associated with different levels of the itemized medical deduction as described in the text. The table below provides a mapping of the financial variables in the HRS used as inputs to TAXSIM35.

TAXSIM input	Description	HRS Variable(s) used
pwages	Wage income (primary)	Respondent earnings
swages	Wage income (secondary)	Spouse earnings
psemp	Self-employment income (primary)	Respondent self-employment earnings
ssemp	Self-employment income (secondary)	Spouse self-employment earnings
dividends	Dividend income	Household dividend income
intrec	Taxable interest received	Checking/savings interest
stcg	Short term capital gain/loss	Imputed as zero
ltcg	Long term capital gain/loss	Imputed as zero
otherprop	Interest and other property income	Business and rental income
nonprop	Other non-property income	Other income (alimony, lump sums), bond and CD income
pensions	Taxable pension income	Respondent and spouse pension income, annuity income, IRA withdrawals
gssi	Gross social security benefits	Respondent and spouse Social Security retirement and disability income
pui	Unemployment compensation (primary)	Respondent UI income
sui	Unemployment compensation (secondary)	Spouse UI income
transfers	Non-taxable transfer income	Respondent and spouse other gov't transfers
rentpaid	Rent paid	Rent paid
proptax	Property tax paid	Property tax paid
otheritem	Other itemized deductions	Preference share of medical expenses
childcare	Child care expenses	Imputed as zero
mortgage	Mortgage interest paid	Outstanding mortgage amount $\times$ rate charitable donations, non-preference share of medical expenses

The assumed eligible medical expenses are split between the preference share (in *otheritem*) and the non-preference share (in *mortgage*) because part of the medical deduction is a preference for purposes of calculating the alternative minimum tax. The preference share is at

most 2.5 percent of adjusted gross income, while the non-preference share is the difference between the eligible medical expenses and the preference share.[26]

[26]The division of itemized medical expenses across these two TAXSIM inputs is described in a note at https://taxsim.nber.org/taxsim-calc9/medical_deduction.html.