Subsidizing Medical Spending through the Tax Code: Take-Up and Targeting*

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Abstract

Spending for medical care represents a large expenditure risk as people age. The U.S. tax code provides a mechanism for partially subsidizing these costs to the extent that they exceed 7.5 percent of adjusted gross income as itemized medical deductions (IMDs). In aggregate, IMDs amount to ≈ $80 billion each year, with over two-thirds deducted by tax units headed by someone 65 or older. 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. Sixty-five percent of potential tax savings are claimed, which translates to $55 billion per year in forgone medical deductions and $4.4 billion annually in lost tax savings among households aged 50 and over. Furthermore, frictions in take-up result in benefits diverted away from higher-need populations. I utilize plausibly exogenous variation at the state level in the effective subsidy rate to estimate a discrete choice model of take-up and simulate eligibility, take-up and the implied cost of claiming under different policy counterfactuals. The results indicate that extending eligibility through an above-the-line deduction or credit would result in more households claiming the subsidy. However, subsidizing medical expenses through the tax code imposes significant economic burdens by requiring households to track and document medical spending, 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 $77 billion in itemized medical deductions (IMDs) in tax year 2020, 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-

[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.

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 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, observed deductions were 55 percent of eligible deductions. These forgone medical deductions amount to $55 billion in forgone medical deductions per year among households with members age 50 and over, and result in a loss of approximately $4.4 billion each year in tax savings. These forgone medical deductions result from incomplete take-up on both the extensive and intensive margin, with approximately 57 percent of those eligible claiming the deduction, and the average amount claimed conditional on claiming approximately 96 percent of the

potential medical deduction. The share of the potential total tax savings that are claimed is 66 percent, indicating that take-up is increasing in the tax value per dollar deducted.

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.[2] I also find evidence that take-up is higher with repeated eligibility, suggesting that households learn over subsequent years of being eligible. This finding is consistent with the idea that lack of information about the medical deduction is a driver of incomplete take-up.

Selection into claiming (conditional on eligibility) results in positive selection into claiming based on out-of-pocket spending, health status, income and wealth, implying that those who claim the medical deduction tend to be healthier and have higher income and wealth than those who are eligible but do not claim. These findings suggest that frictions in take-up result in benefits being diverted away from high-need populations.

Differences in state marginal tax rates 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 2 percentage points higher take-up, corresponding to an elasticity of approximately -4.4.

Finally, I estimate a discrete choice model of take-up using a control function approach and the simulated instrument described above. I use the model to estimate the implied cost of claiming under the baseline and find that the average cost of claiming the IMD is approximately $754 per eligible household, suggesting that subsidizing medical spending through the tax code imposes economic burdens on eligible households that reduce the net subsidy available.

I then simulate eligibility, take-up and the cost of claiming across alternative budget-

[2]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. These results are largely consistent if take-up is measured in terms of the reduction in potential tax liability from claiming medical deductions.

netural policy counterfactuals, including an above-the-line deduction that does not require itemization, a non-refundable credit, a refundable credit, and a counterfactual where households have a longer history of eligibility for the medical deduction. The results indicate that while the share of households that are eligible for a subsidy increases if itemization or a positive tax liability is not required, predicted take-up rates and the implied cost of claiming under different tax subsidy structures are relatively similar across counterfactuals. The results also suggest that under a counterfactual where households are well-informed through repeated exposure, 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). Reasons for incomplete take-up vary across programs and contexts, but different 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). Herd and Moynihan (2019) argue that bureaucracy and administrative burdens are major drivers of low take-up of public benefits. 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.

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. 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).

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]

[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.

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 restricted access.[5]

Until 2012, these data include detailed information regarding 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 based on household identifiers.

[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 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

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 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

[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.

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 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 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

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 (i.e., $1(\text{Itemize})_h = 1$), the HRS reports each component separately, and itemized deductions are assumed to exceed the standard deduction. However, for households that do not report itemizing (i.e., $1(\text{Itemize})_h = 0$), it is necessary to determine whether their itemized deductions (including eligible medical spending) would exceed their standard deduction. However, the HRS does not record potential itemized deductions, such as charitable donations or state and local taxes, for these households. A proxy for one's mortgage interest deduction is constructed by multiplying the household's outstanding mortgage principal by the 30-year fixed rate average annual mortgage rate in the year of interview.[12] The lack of other potential itemized deductions results in underestimating one's potential itemized deductions; however, mortgage interest represents a substantial share of itemized deductions, and underestimating potential itemized deductions will serve to underestimate the potential tax benefit of itemizing deductions

RAND HRS documentation, it is likely that most of the withdrawals for these cohorts represent Traditional IRA withdrawals and are thus subject to income taxes.

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

relative to claiming the standard deduction if all eligible medical spending were deducted.

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.[13] 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?"[14] 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 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 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 constructing the potential itemized deduction, which includes the proxy for mortgage interest described earlier and eligible medical

[13] 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.

[14] 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.

spending, and comparing this quantity to the standard deduction.

$$\begin{aligned}\text{Potential ID}_h = &\text{Eligible Med Spending}_h + \\ &\text{Mortgage Interest Rate} \times \text{Outstanding Mortgage Principal}_h\end{aligned} \tag{3}$$

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

I then determine each household h's forgone itemized medical deductions as follows. If a household already itemizes, 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, the forgone medical deduction is assumed to be the difference between the eligible medical spending and the standard deduction for which the household would be eligible if their potential itemized deduction determined above exceeds their standard deduction, i.e. $\widehat{1(\text{Itemize})}_h = 1$. Specifically:

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

It is important to note that this definition only penalizes the household for failing to itemize their medical expenses to the extent that their eligible medical spending exceeds their standard deduction, not the full amount of the 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 in the full take-up scenario. 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 measures of take-up across 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.[15]

3 Results

3.1 Baseline take-up

Figure 4 shows the share of households with forgone medical deductions over 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 (31 percent of all households) would not benefit from claiming the medical deduction, as their deductible spending and their imputed mortgage interest is 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 (15 percent). Among those who do not maximize their medical deductions, more than three quarters (11.4 percent) already itemize their deductions, indicating that the

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

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, 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 25.2 percent of households would benefit from doing so, providing an extensive margin take-up rate of 56.8 percent. On the intensive margin, among those who claim, the average medical deduction amount is $9,603 but $9,993 in the full take-up scenario, indicating an intensive margin take-up rate of 96.1 percent.[16] Combining the extensive and intensive margin take-up rates produces an overall take-up rate of 54.6 percent. In other words, just over half of all potential itemized medical deductions are claimed, resulting in $495 billion in forgone medical deductions over the nine survey waves, or $55 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 six sur-

[16]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.

vey waves, qualifying medical spending (including out-of-pocket spending and deductible premiums) total $2.527 billion, of which $594.1 (or 23.5 percent) is deducted. If all potential itemized medical deductions were deducted, it would amount to about 43 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 $1,212 on their taxes relative to $1,050 in the full take-up scenario, indicating that those who fail to maximize their tax savings have lower average tax savings. In aggregate, 65.6 percent of potential tax savings are claimed, suggesting that households with higher marginal tax rates are more likely to take advantage of the ability to itemize medical deductions. The aggregate tax savings are 12.6 percent of aggregate deductions, 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 $39.4 billion over the nine survey waves, or approximately $4.4 billion annually.

3.2 Robustness to alternative assumptions

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.[17] 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.

Figure 5 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.[18] 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 50.3 and 65.1 percent and the intensive margin take-up rate is bounded between 86.8 and 99.6 percent, providing bounds for the overall take-up rate of 43.7 and 64.9 percent and bounds on the tax value

[17] 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.

[18] 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.

take-up rate of 52.1 to 76.3 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.

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. Figures 6-8 display average (unconditional) claimed and eligible deductions, along with the implied take-up rate and its 95 percent confidence interval across different groups. Figure 6 focuses on differences across demographic characteristics, including age, gender, education, race/ethnicity, filing status, and labor force status. Figure 7 shows how take-up of the medical deduction varies by AGI and wealth quintiles, while Figure 8 shows variation by limitations in activities of daily living (ADLs), health status, cognitive score, and quintile of qualifying medical spending. In the case of age, gender, education, race/ethnicity, labor force status, and health status, the household is classified by the the financial respondent's characteristic. Filing status, AGI, wealth, and qualifying medical spending are determined on a household basis, and ADL limitations and cognitive score are averaged among the household members.

As shown in Figure 6, eligible medical deductions are higher for households where the financial respondent is older, more highly educated, male, white/non-Hispanic, and retired, and for households classified as married. However, claimed medical deductions do not always follow the same patterns, giving rise to take-up rates that vary across the population. In particular, while take-up rates are higher among households with more educated financial

respondents, they are lower for households with financial respondents not employed and those who are older. Take-up rates do not vary significantly across gender, race/ethnicity, and filing status.

Turning to Figure 7, Panel A shows that average eligible spending is highest among households in the middle AGI quintile, likely due to the higher AGI threshold that households must meet to deduct medical expenses in higher quintiles. However, the take-up rate is sharply increasing in AGI, with the highest AGI quintile claiming 78.8 percent of eligible spending and the lowest AGI quintile claiming 36.2 percent. Both eligible and claimed spending is increasing in wealth, as shown in Panel B, and take-up is significantly lower among the lowest wealth quintile, resulting in 34.2 percent of eligible deductions claimed compared to take-up rates around 63.5 percent for the other wealth quintiles.

Finally, Figure 8 shows how eligible and claimed deductions vary across ADL limitations, health status, cognitive score, and qualifying medical spending. Eligible deductions increase slightly across ADL limitations, and take-up rates are statistically lower for those with 2+ ADL limitations, as shown in Panel A. Panel B shows that eligible and claimed deductions are not significantly different across the health status of the financial respondent, but that take-up rates appear to be lower among those in fair/poor health. Panel C shows that while take-up rates are increasing with the composite cognitive score, take-up rates are also higher among those with no cognitive score recorded (because the primary and secondary household members are both under 65 and not being interviewed for the first time) and are slightly higher among those with proxy respondents. While the take-up rates for proxy respondents are not statistically different from those with cognitive scores, the point estimate of the take-up rate among this set of households is higher than those with lower cognitive scores, suggesting that designating a proxy interviewer may also be associated with delegating financial responsibilities, which could result in higher take-up of medical deductions.

In Panel D, eligible and claimed deductions are shown by quintile of qualifying medical spending. The figure shows that eligible deductions are concentrated in the top two quintiles

of the distribution. However, households in the top quintile have take-up rates that are sharply lower than those in lower quintiles. Specifically, the take-up rates for the bottom two quintiles are above 95 percent; however, the take-up rate among the top quintile is 44 percent.

The appendix includes analogous figures that summarize the eligible and claimed tax savings associated with the medical deductions, and the take-up rate with respect to the tax savings, across different groups in Figures A.3-A.5. While many of the conclusions above are qualitatively consistent, some differences emerge when comparing the eligibility and claiming of tax savings vs. deductions. For example, take-up of tax savings is highest for households with proxy respondents.

Figure A.4 shows that in addition to take-up rates increasing by AGI quintile, potential tax savings are concentrated among those in the top half of the AGI distribution. This is both because households with high AGI are more likely to itemize their deductions, and because higher-AGI households face higher marginal tax rates, which means that each additional dollar of deduction reduces their tax liability by a larger amount. Figure 9 shows the share of total tax savings accrued across quintiles of AGI (Panel A) and total wealth (Panel B) for observed claiming and under the full take-up scenario. The figures illustrate that the tax savings associated with the itemized medical deduction are highly regressive, with over 50 percent of total tax savings flowing to households with AGI or wealth in the highest quintile. Because take-up rates are increasing in AGI and wealth, moving to the full take-up scenario increases the share of tax savings to all but the top quintile of AGI. Despite this, even under full take-up, 95 percent of tax savings accrue to the top 60 percent of the AGI distribution, and 85 percent accrue to the top 60 percent of the wealth distribution. These data indicate that lower take-up among lower income and wealth households is not the primary reason that the tax savings associated with the itemized medical deduction is skewed to higher income and wealth households.

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 Figure 10.[19] As shown in the figure, households with eligible deductions have higher levels of qualifying medical spending than households who are not eligible, with eligible households spending $8,907 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 $14,964 in qualifying medical spending each year on average, compared to $10,889 incurred by households who are eligible for and claim the medical deduction, a $4,075 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]

[19] The corresponding dollar amounts are provided in Table A.2.

[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

Demographic characteristics by eligibility and claiming (conditional on eligibility) are shown in Table 2. 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.

Table 3 displays average income and wealth by eligibility and claiming, respectively. As shown in Table 3, AGI does not differ significantly across eligibility, but is significantly higher ($30,240, or 118 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 45 percent higher financial wealth and and 37 percent higher overall wealth than those who are eligible and do not claim.

Finally, Table 4 shows how different measures of health vary across eligibility and claiming. Conditional on eligibility, those who itemize their medical deductions have, on average, 0.15 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 Figure 10, 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.

4 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

outpatient surgery.

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 force 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 11 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 11.4 (10.9) percentage points higher than the first time households are eligible, and households eligible six or more times have take-up rates that are 32 (25) percentage points higher than first-time eligible households. While deduction value take-up rates increase with subsequent times that eligibility is observed, the tax value take-up rates taper off once a household is observed eligible five or more times. 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. 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. 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, the instrument is averaged separately for low education (high school or less), medium education (some college) and high education (college or more) groups, and also across 5-year age bins.

The IV estimate of 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 12 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 13, 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.

Table 5 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; in the third column, the instrument varies by state, year and 5-year age bin, and in the fourth column the instrument varies by state, year, age and education. The control variables used in the regression are 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. 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 200 across columns, well 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 1.5-2 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 (found from dividing the coefficient by the average take-up rate among the sample of 0.57) ranges from -4.9 to -5.4, depending on which instrument is used. 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:

$$u_i(k) = \tau_i(k) - \theta_k X_i + \varepsilon_{ik} \tag{11}$$

$$\Delta u_i = \Delta\tau_i - \beta X_i + \nu_i \tag{12}$$

$$CLAIM_i = 1[\Delta u_i \geq 0] \iff \Delta\tau_i \geq \beta X_i \tag{13}$$

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:

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

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 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 (in dollars), 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 $\widehat{\beta}/\widehat{\sigma}$.[21]

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.

In order to generate outcomes under different policy counterfactuals, I first construct

[21] To assess model fit, I compare actual take-up behavior to take-up probabilities predicted from the model, both overall and by observable characteristics, in the appendix. As shown in Figure A.1, the model performs well in fitting observed take-up shares in the sample.

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.[22] 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 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 $\widehat{\beta}X_{ist}$.[23]

Figure 14 displays the results for the baseline scenario and each alternative policy. As shown in the figure, the alternative policy counterfactuals serve to increase the share of households eligible for the subsidy: while only 14 percent of households are eligible to receive tax savings under the baseline scenario, 20 percent would if the deduction did not require

[22] 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.

[23] Note the implied cost of claiming changes across policy counterfactuals only to the extent that the sample changes, as it is assumed to only depend on observable characteristics.

itemization, 30 percent would if the subsidy were a non-refundable credit, and 56 percent would if the credit were refundable. However, predicted take-up rates are slightly lower under these counterfactuals, likely because the characteristics among newly eligible households are associated with lower take-up rates in the baseline scenario.

The implied cost of claiming is estimated to be $754 on average among IMD-eligible households under the baseline scenario.[24] Under the policy counterfactuals, the costs remain relatively high, ranging from $571 to $905. The costs of claiming only differ across scenarios due to differences in observable characteristics among newly eligible households, and the fundamental drivers of claiming costs – namely the need to track and document medical spending and the potential risk of audit – remain under these alternative policies.

I also estimate counterfactual take-up rates for a scenario where households are assumed to be better-informed regarding the existence of the IMD with no change in eligibility. In this scenario, I assume households have been observed eligible six or more times. The results indicate that take-up rate would be 88 percent, dramatically higher than the baseline prediction.

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, which reduces their tax liability. This provision represents a large tax expenditure that primarily is used by tax

[24] 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 cost of claiming far exceeding the median cost of claiming, estimated at $100. 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). Finally, the costs of itemizing deductions in Benzarti (2021) are estimated from missing mass close to the standard deduction threshold, which may miss some taxpayers who choose not to itemize but are farther from the threshold.

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 15 percent of older households fail to claim or do not maximize their medical deductions, and these households forego deducting $4,990 on average each year. Overall, forgone medical deductions amount to approximately $55 billion each year and are associated with a loss of $4.4 billion in tax savings annually.

I document significant disparities in take-up rates across the population. Take-up is lowest among less educated and lower income/wealth households, and potential and claimed tax savings are concentrated among high income and wealth subgroups. I assess the targeting of the tax benefits associated with the itemized medical deductions by comparing characteristics of households who are eligible and claiming the itemized medical deduction to those who are eligible and not claiming. I find evidence of positive selection into claiming based on health characteristics, medical spending, income and wealth, meaning that among those eligible for medical deductions, those who claim deductions are healthier and have higher income and wealth, on average. These findings suggest that frictions in take-up result in benefits being diverted from high-need populations.

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 plays a role in explaining incomplete take-up and that eligible households are weighing the costs and benefits of claiming the IMD. 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	0.755	0.980	(0.979, 0.982)
Itemized Deductions	0.410	0.442	0.928	(0.925, 0.930)
Claimed Medical Deduction	0.143	0.252	0.568	(0.560, 0.575)
Average Medical Deduction Amt	\$9,603	\$9,993	0.961	(0.942, 0.980)
Average Tax Savings Amt	\$1,212	\$1,050	1.155	(1.124, 1.185)
Aggregate Medical Deductions (bn)	\$594.1	\$1,088.8	0.546	(0.534, 0.557)
Aggregate Tax Savings (bn)	\$75.0	\$114.4	0.656	(0.639, 0.672)
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 Eligiblity and Claiming: Demographics

	Full Sample			Eligible Sample		
	(1) Ineligible	(2) Eligible	(3) Difference	(4) Did Not Claim	(5) Claimed	(6) Difference
Age (years)	68.00	69.67	-1.67***	70.83	68.71	2.12***
	(11.40)	(10.60)	(0.08)	(10.45)	(10.63)	(0.13)
Education:						
High School or Less	0.62	0.49	0.13***	0.56	0.42	0.14***
	(0.49)	(0.50)	(0.00)	(0.50)	(0.49)	(0.01)
Some College	0.20	0.25	-0.05***	0.23	0.27	-0.04***
	(0.40)	(0.43)	(0.00)	(0.42)	(0.44)	(0.01)
College Plus	0.18	0.26	-0.08***	0.21	0.31	-0.10***
	(0.38)	(0.44)	(0.00)	(0.41)	(0.46)	(0.01)
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	0.79	-0.11***	0.80	0.79	0.00
	(0.47)	(0.40)	(0.00)	(0.40)	(0.41)	(0.00)
Black, NH	0.18	0.13	0.06***	0.12	0.13	-0.01***
	(0.39)	(0.33)	(0.00)	(0.33)	(0.34)	(0.00)
Other	0.02	0.02	0.01***	0.02	0.02	0.00
	(0.16)	(0.13)	(0.00)	(0.13)	(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	0.51	0.38	0.13***	0.42	0.35	0.07***
	(0.50)	(0.49)	(0.00)	(0.49)	(0.48)	(0.01)
Recently Widowed	0.05	0.04	0.01***	0.04	0.04	-0.01**
	(0.21)	(0.19)	(0.00)	(0.19)	(0.20)	(0.00)
Married	0.44	0.58	-0.14***	0.54	0.61	-0.07***
	(0.50)	(0.49)	(0.00)	(0.50)	(0.49)	(0.01)
Labor Force Status:						
Working FT/PT	0.30	0.23	0.07***	0.16	0.28	-0.12***
	(0.46)	(0.42)	(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	0.56	0.67	-0.12***	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)	(0.31)	(0.24)	(0.00)
N	83,910	28,553	112,463	12,888	15,665	28,553

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 Eligiblity and Claiming: Income and Wealth

	Full Sample			Eligible Sample		
	(1) Ineligible	(2) Eligible	(3) Difference	(4) Did Not Claim	(5) Claimed	(6) Difference
AGI	42.55	42.11	0.43	25.52	55.76	-30.24***
	(138.00)	(202.82)	(1.08)	(26.88)	(271.98)	(2.41)
Total Income	50.89	55.21	-4.32***	37.94	69.43	-31.49***
	(139.03)	(203.30)	(1.08)	(31.50)	(272.17)	(2.41)
Financial Wealth	199.63	338.98	-139.35***	271.17	394.78	-123.61***
	(858.92)	(1,030.45)	(6.20)	(678.07)	(1,245.12)	(12.23)
Total Wealth	303.84	505.56	-201.72***	419.32	576.52	-157.20***
	(985.59)	(1,173.25)	(7.10)	(862.30)	(1,373.38)	(13.92)
N	83,910	28,553	112,463	12,888	15,665	28,553

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: Health

	Full Sample			Eligible Sample		
	(1) Ineligible	(2) Eligible	(3) Difference	(4) Did Not Claim	(5) Claimed	(6) Difference
ADLs	0.52	0.46	0.06***	0.54	0.39	0.15***
	(1.18)	(1.08)	(0.01)	(1.19)	(0.98)	(0.01)
Health Status:						
Excellent	0.11	0.10	0.01***	0.09	0.11	-0.01***
	(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)	(0.46)	(0.00)	(0.44)	(0.46)	(0.01)
Good	0.30	0.32	-0.02***	0.31	0.33	-0.01**
	(0.46)	(0.47)	(0.00)	(0.46)	(0.47)	(0.01)
Fair/Poor	0.33	0.28	0.04***	0.32	0.25	0.07***
	(0.47)	(0.45)	(0.00)	(0.47)	(0.43)	(0.01)
Cognitive Score:						
Proxy	0.08	0.07	0.01***	0.08	0.06	0.02***
	(0.27)	(0.25)	(0.00)	(0.26)	(0.23)	(0.00)
Not Asked	0.25	0.19	0.06***	0.16	0.22	-0.06***
	(0.43)	(0.39)	(0.00)	(0.37)	(0.41)	(0.00)
Avg Cognitive Score	21.29	22.46	-1.17***	21.96	22.90	-0.94***
	(5.29)	(4.51)	(0.04)	(4.73)	(4.26)	(0.06)
N	83,910	28,553	112,463	12,888	15,665	28,553

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

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

	(1)	(2)	(3)	(4)
Simulated Tax Price	0.748***	0.760***	0.712***	0.498***
	(16.84)	(17.05)	(17.03)	(15.30)
N	27,709	27,709	27,709	27,709

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

	(5)	(6)	(7)	(8)
Simulated Tax Price	-1.879***	-1.717***	-2.001***	-1.525***
	(-5.79)	(-5.38)	(-6.49)	(-6.34)
N	27,709	27,709	27,709	27,709

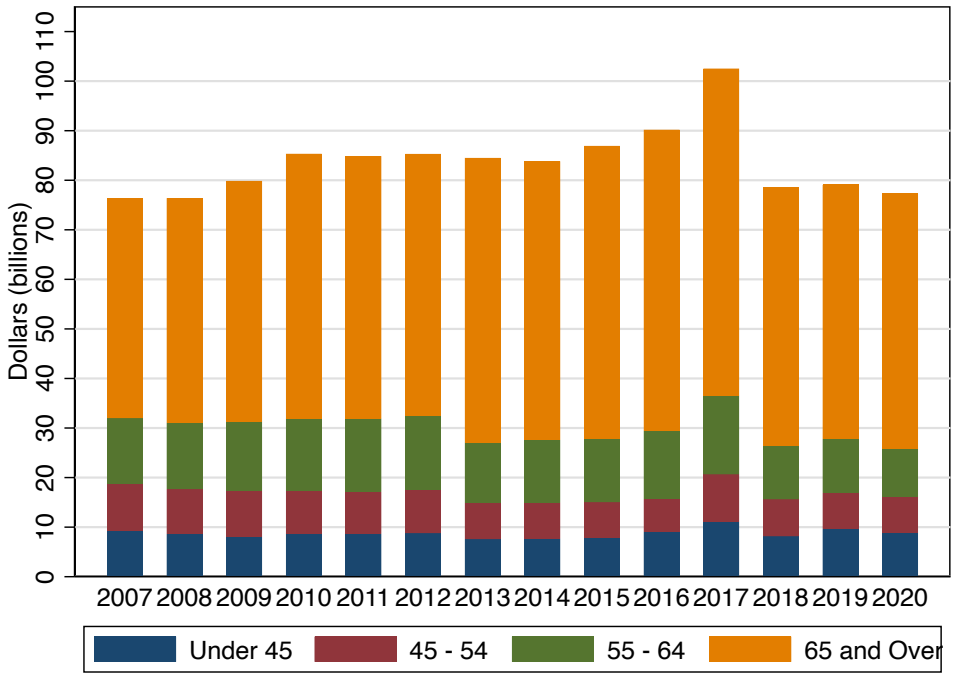
Panel C: Instrumental Variables (DV = *IMD Claiming*)

	(9)	(10)	(11)	(12)
Own Tax Price	-2.510***	-2.258***	-2.811***	-3.059***
	(-5.74)	(-5.36)	(-6.41)	(-6.19)
Implied Elasticity	-4.40	-3.96	-4.93	-5.36
N	27,709	27,709	27,709	27,709
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. Average take-up rate among eligible sample is 0.57. 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)), state, year and 5-year age bin (Column (3)), and state, year, age bin, and education (Column (4)). 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.

8 Figures

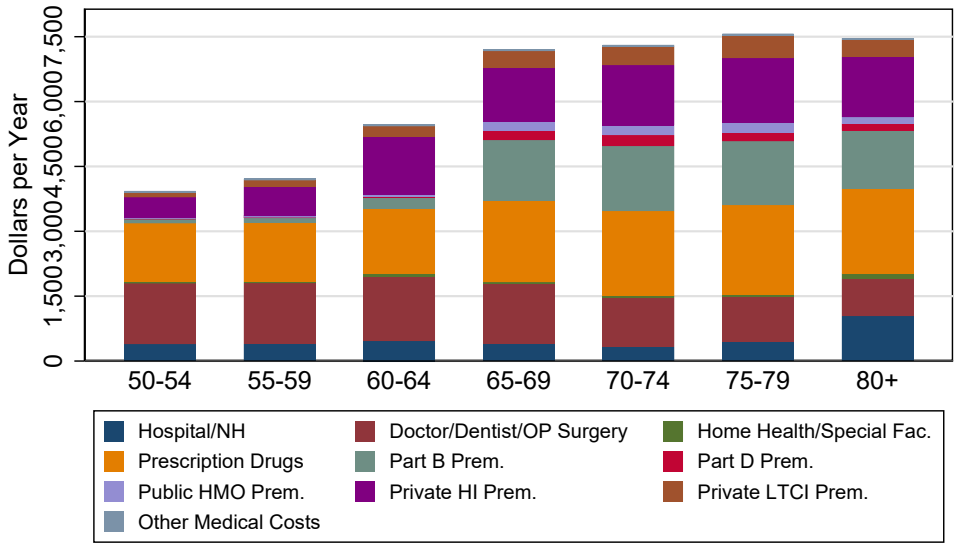
Figure 1: Aggregate Medical Deductions by Year and Age Group



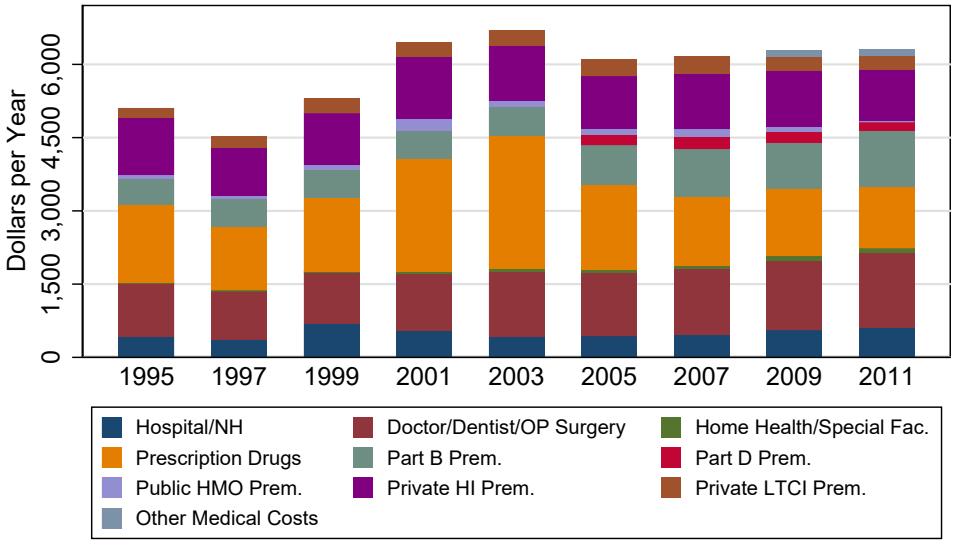
Source: Statistics of Income, Individual Income Tax Statistics, Publication 1304, Internal Revenue Service, Tables 1.5 and 2.6.

Figure 2: Components of Qualifying Medical Spending

Panel A: Age



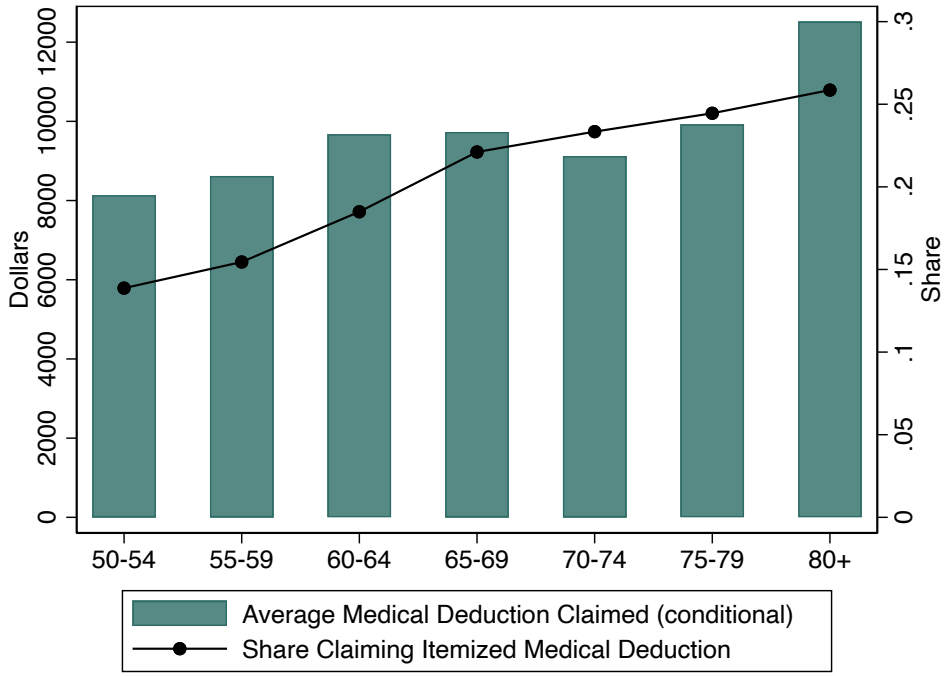
Panel B: Year



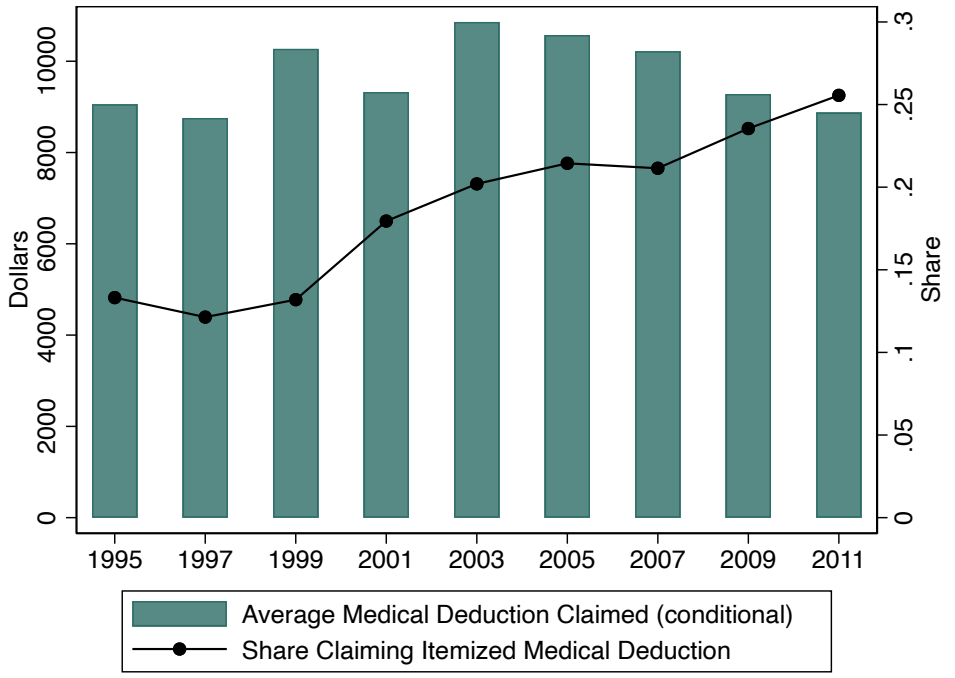
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Qualifying medical spending includes out-of-pocket medical spending and premium payments for health and long-term care insurance. Special facilities includes payments for adult care centers, social workers, outpatient 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 3: Share Claiming Itemized Medical Deductions and Average Amount Claimed

Panel A: Age

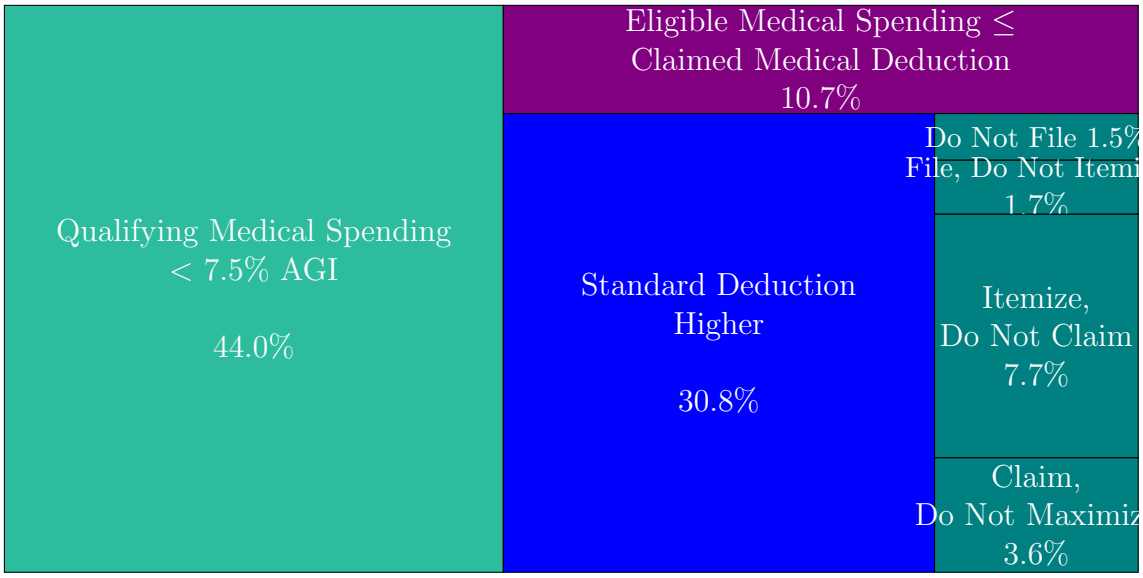


Panel B: Year



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.

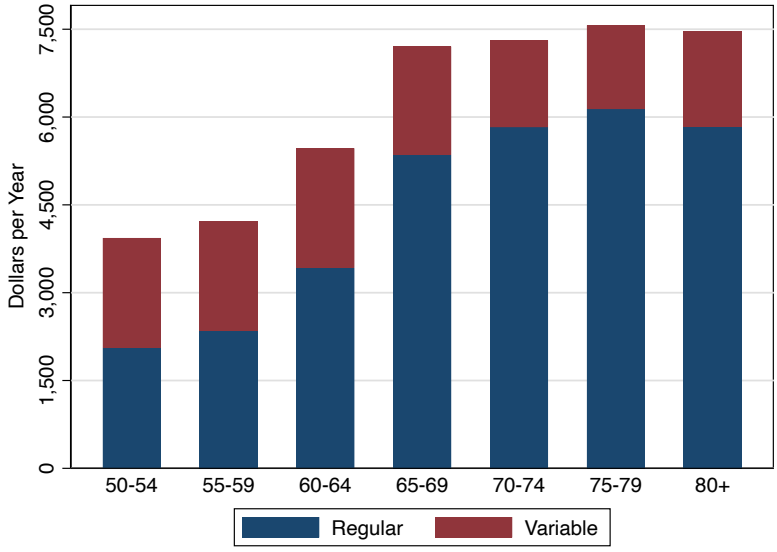
Figure 4: Share of Households with Forgone Medical Deductions



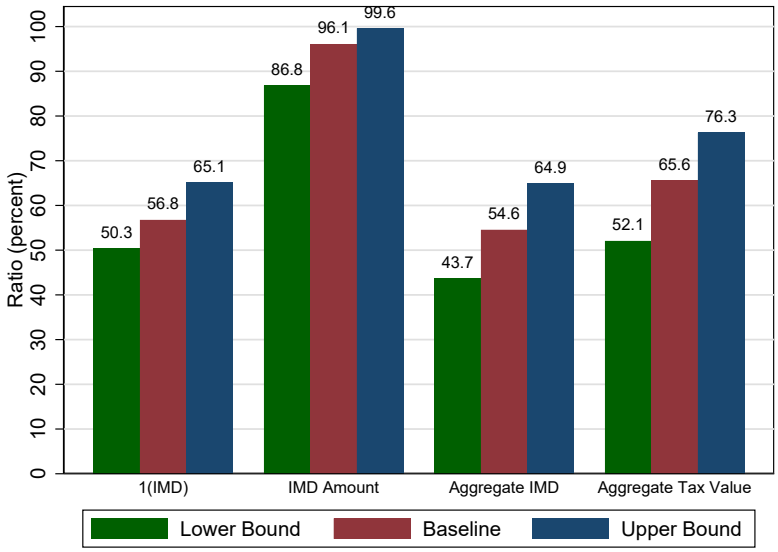
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Share with forgone medical deductions includes households who do not file or itemize with eligible medical spending above standard deduction, and households who itemize who do not claim the medical deduction or do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

Figure 5: Alternative Allocations of Qualifying Medical Spending

Panel A: Regular and Variable Qualifying Medical Spending

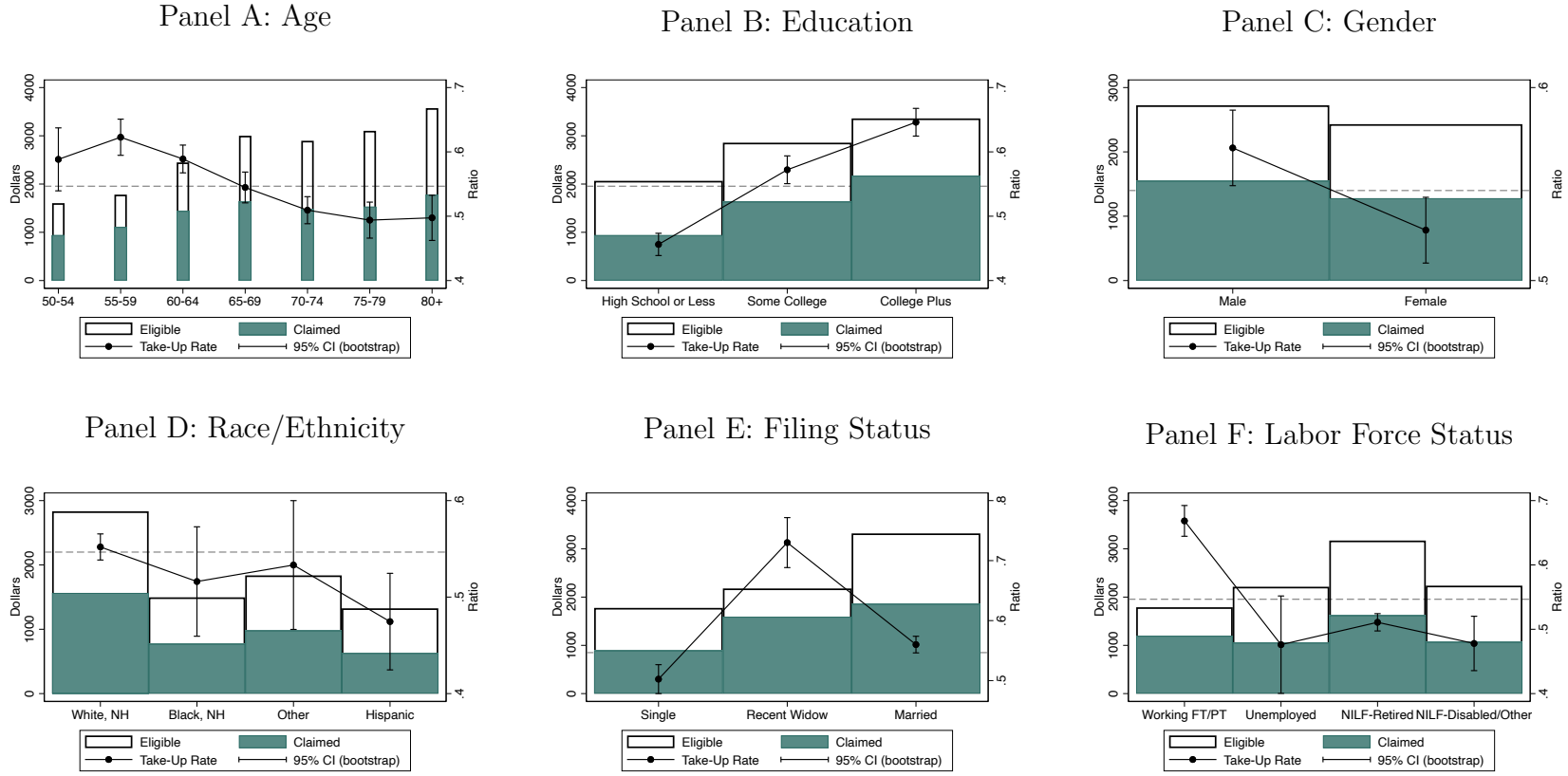


Panel B: Take-Up Rates Across Alternative Allocations



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.

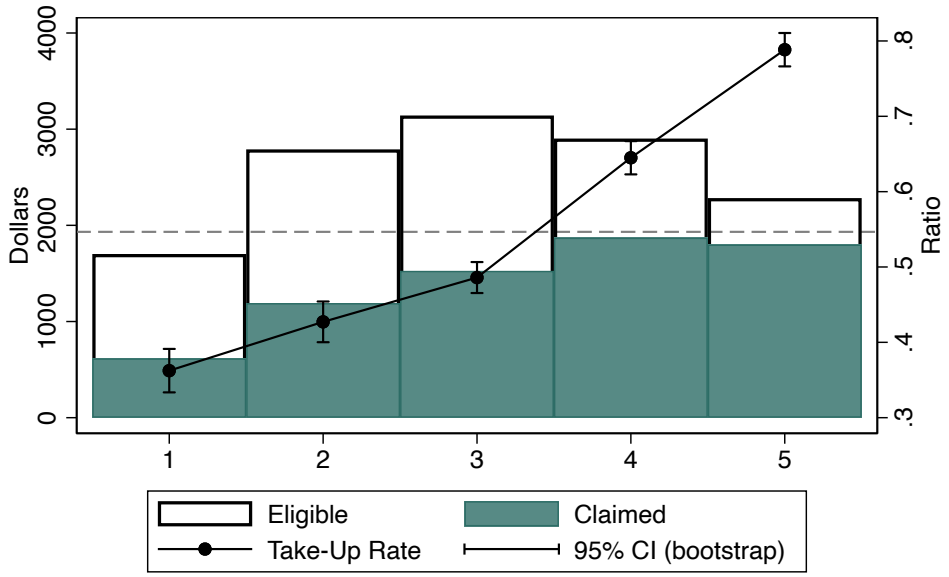
Figure 6: Average Eligible and Claimed Deductions by Demographic Characteristics



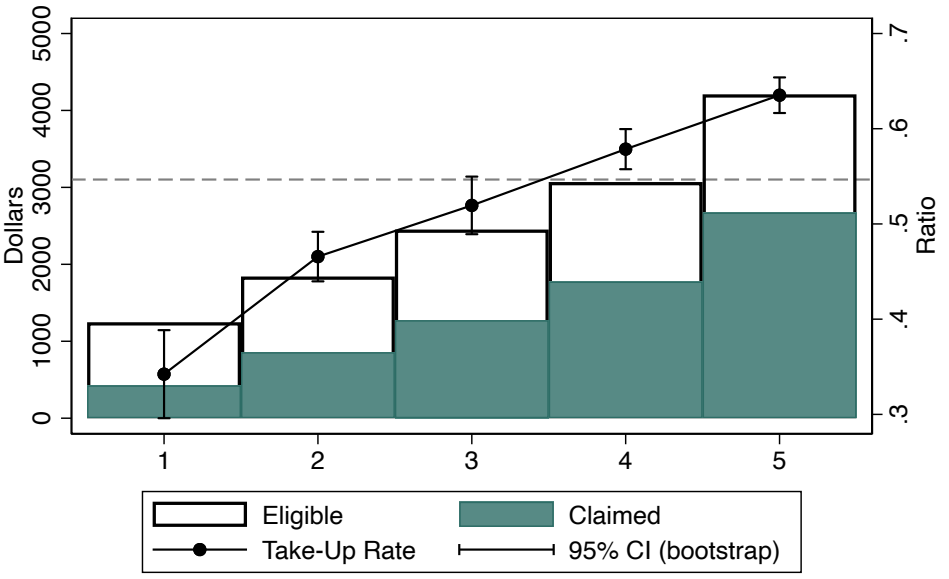
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed medical deductions across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Age, education, gender, race/ethnicity and labor force status of the financial respondent is used to categorize households. See text for more details.

Figure 7: Average Eligible and Claimed Deductions by Income and Wealth

Panel A: AGI Quintile



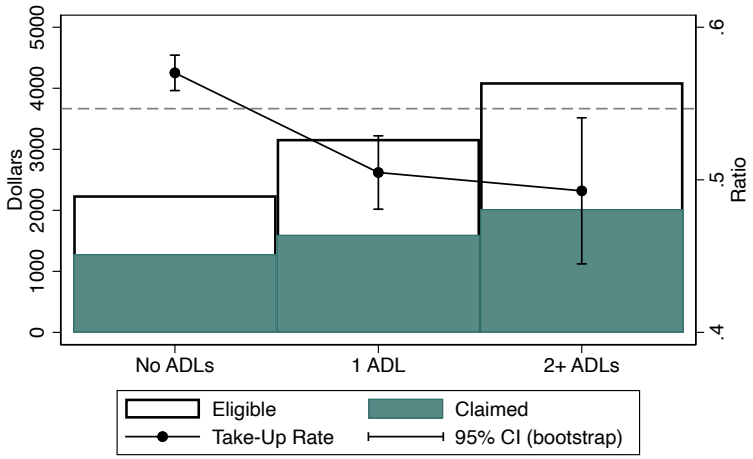
Panel B: Total Wealth Quintile



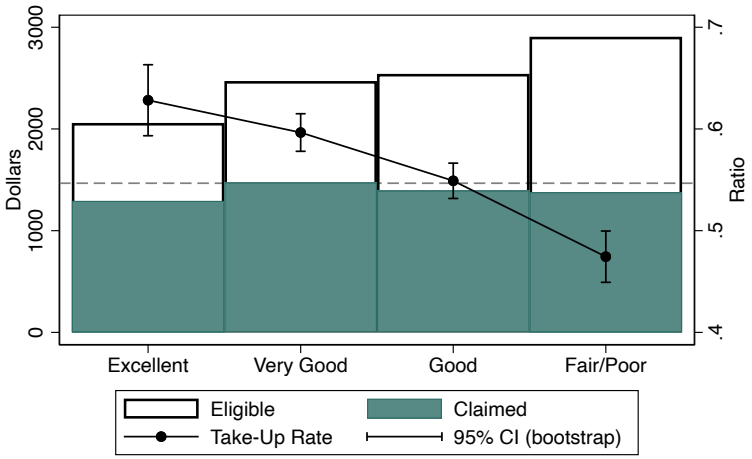
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed medical deductions across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. 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. 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 8: Average Eligible and Claimed Deductions by Health

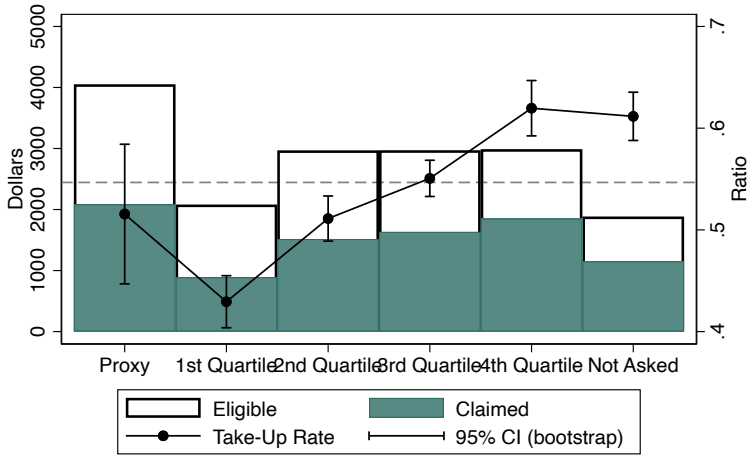
Panel A: ADLs



Panel B: Health Status



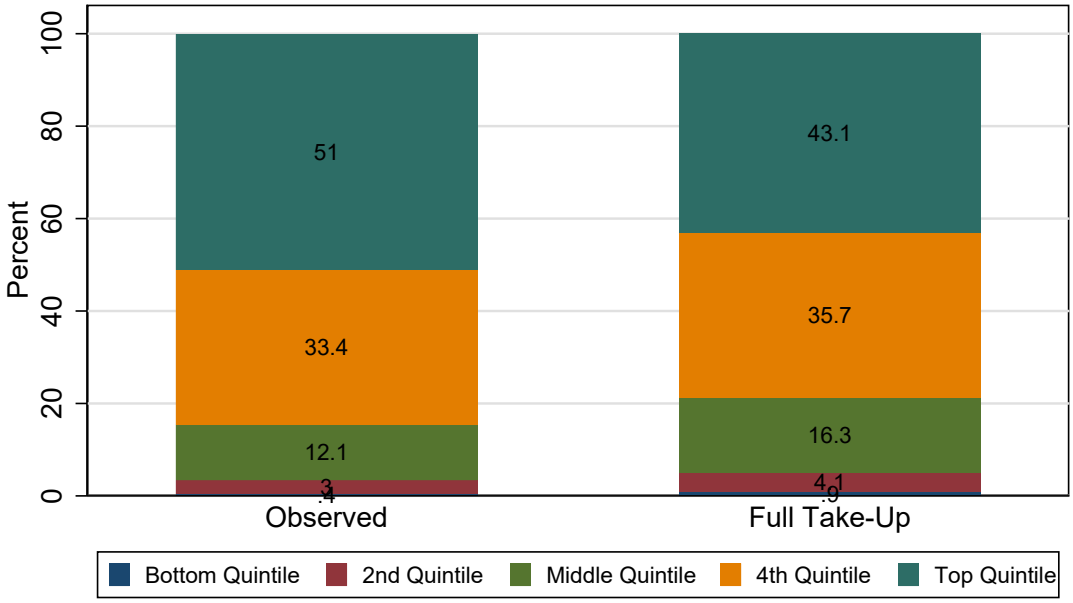
Panel C: Cognitive Score



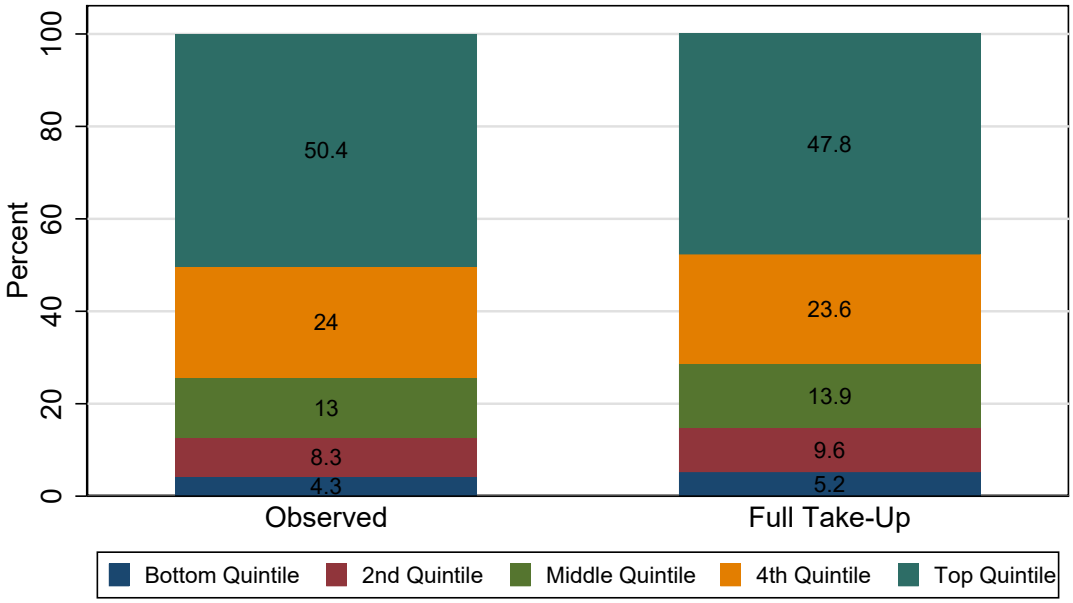
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed medical deductions across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. ADLs represents average number of ADL limitations among household members. Health status represents self-reported health status of financial respondent. 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 9: Distribution of Observed and Potential Tax Savings

Panel A: AGI Quintile

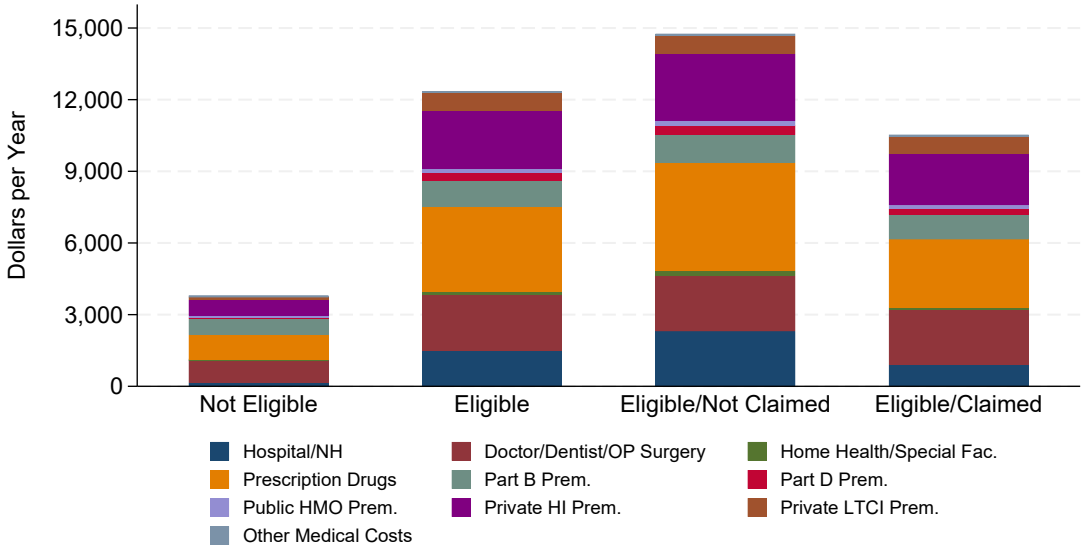


Panel B: Total Wealth Quintile



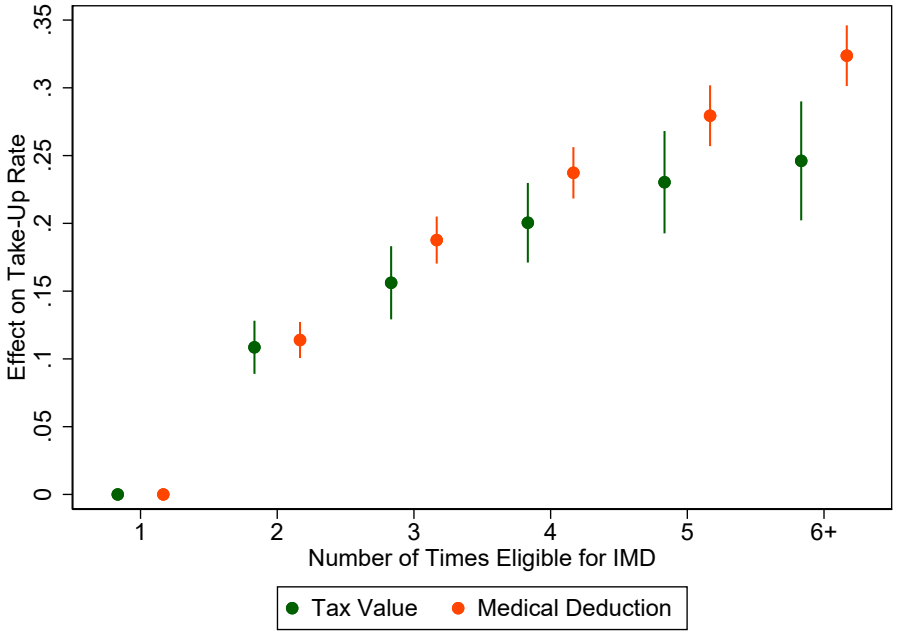
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays the share of tax savings accrued to different AGI and wealth quintiles with observed claiming and claiming under a full take-up scenario. See text for more details.

Figure 10: Selection into Eligibility and Claiming: Qualifying Medical Spending



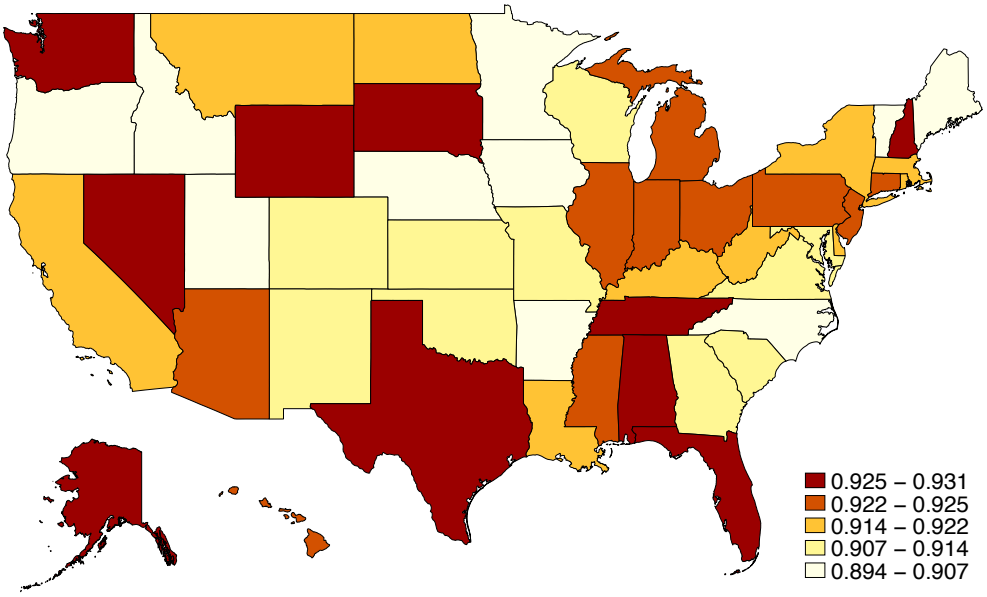
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Eligible households include those who claim the medical deduction and those with forgone medical deductions. All values are reported at the household level and weighted using household weights. See text for more details.

Figure 11: 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.

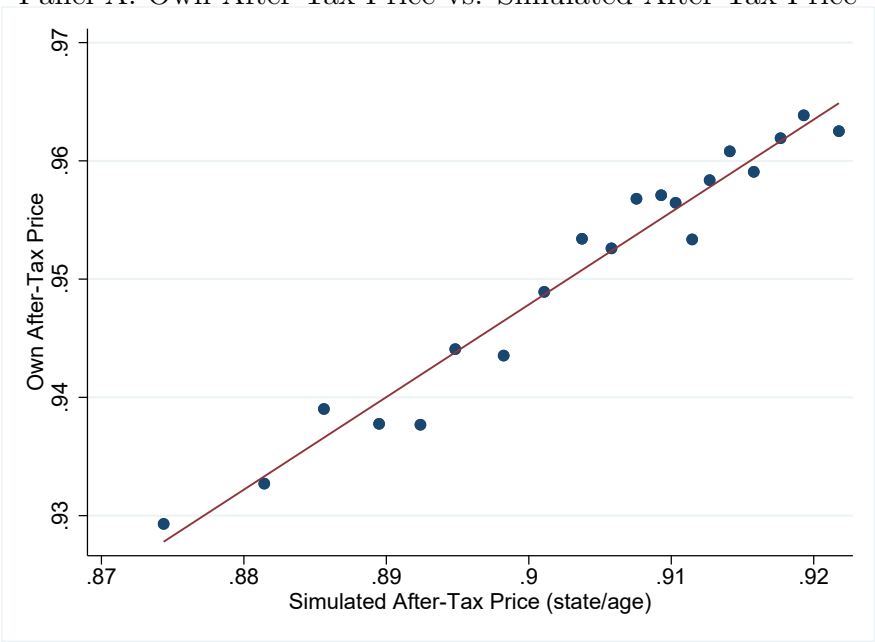
Figure 12: Simulated After-Tax Price of $1 of Out-of-Pocket Medical Spending, 2012



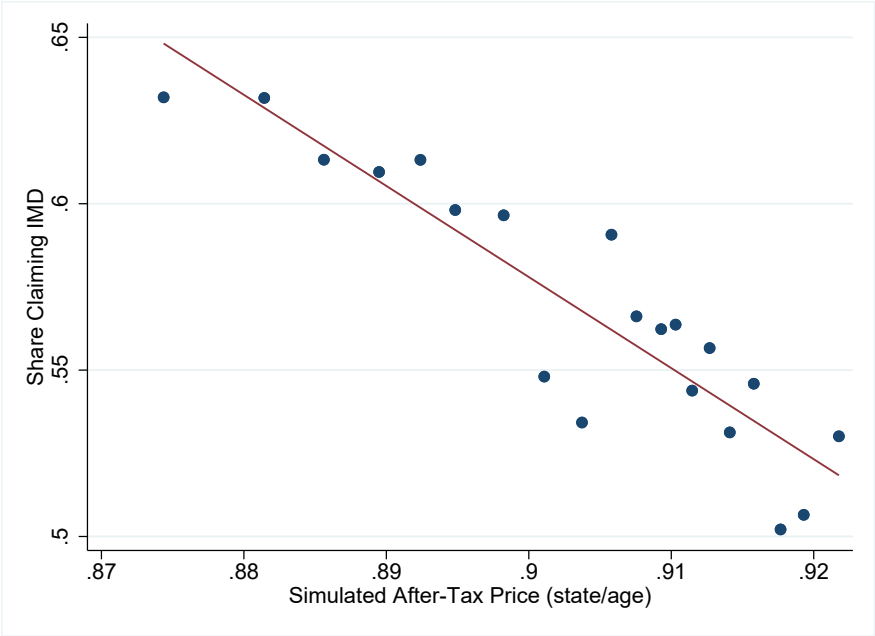
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Simulated after-tax price represents the average after-tax price of $1 of out-of-pocket medical spending among a fixed set of eligible households in each state in 2012. See text for more details.

Figure 13: First Stage and Reduced Form Relationship with Simulated After-Tax Price

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

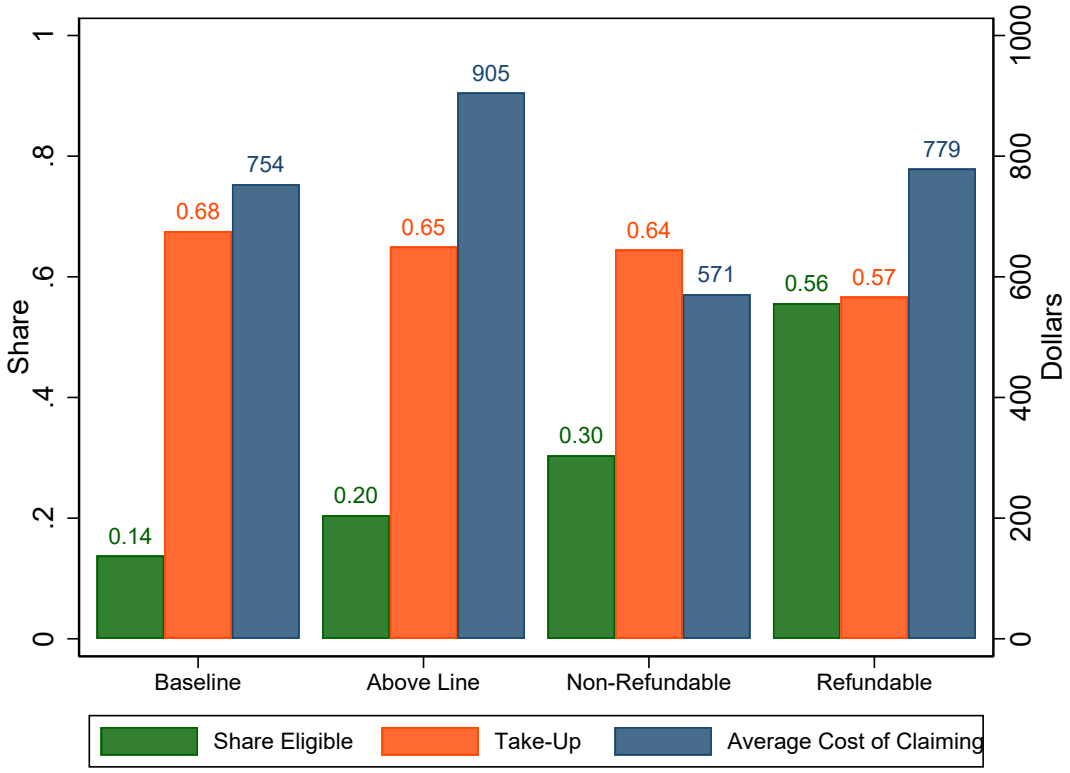


Panel B: Share Claiming IMD vs. Simulated After-Tax Price



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, 5-year age bin, and education level. Binscatters represent relationship after residualizing on year. See text for more details.

Figure 14: Estimated Eligibility, Take-Up and Cost of Claiming:
Baseline and Policy Counterfactuals



Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. 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: Selection into Eligibility and Claiming: Qualifying Medical Spending

	Full Sample			Eligible Sample		
	(1)	(2)	(3)	(4)	(5)	(6)
	Ineligible	Eligible	Difference	Did Not Claim	Claimed	Difference
Hospital & Nursing Home	164	1,694	-1,530***	2,575	970	1,604***
	(823)	(13,415)	(47)	(16,887)	(9,604)	(159)
Doctor, Dentist, Out-Patient Surgery	821	2,142	-1,321***	2,131	2,151	-20
	(1,437)	(3,261)	(14)	(3,395)	(3,147)	(39)
Home Health/Special Facilities	20	132	-112***	188	87	101***
	(253)	(1,166)	(4)	(1,506)	(781)	(14)
Prescription Drugs	1,064	3,772	-2,708***	4,667	3,036	1,631***
	(1,727)	(8,260)	(30)	(9,653)	(6,819)	(98)
Premiums	1,734	4,918	-3,184***	5,335	4,575	760***
	(2,561)	(7,231)	(29)	(7,831)	(6,678)	(86)
Other Medical Costs	18	69	-51***	68	70	-1
	(211)	(627)	(2)	(658)	(599)	(7)
Deductible Spending	3,822	12,728	-8,907***	14,964	10,889	4,075***
	(3,991)	(17,766)	(66)	(20,752)	(14,614)	(210)
N	83,910	28,553	112,463	12,888	15,665	28,553

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.

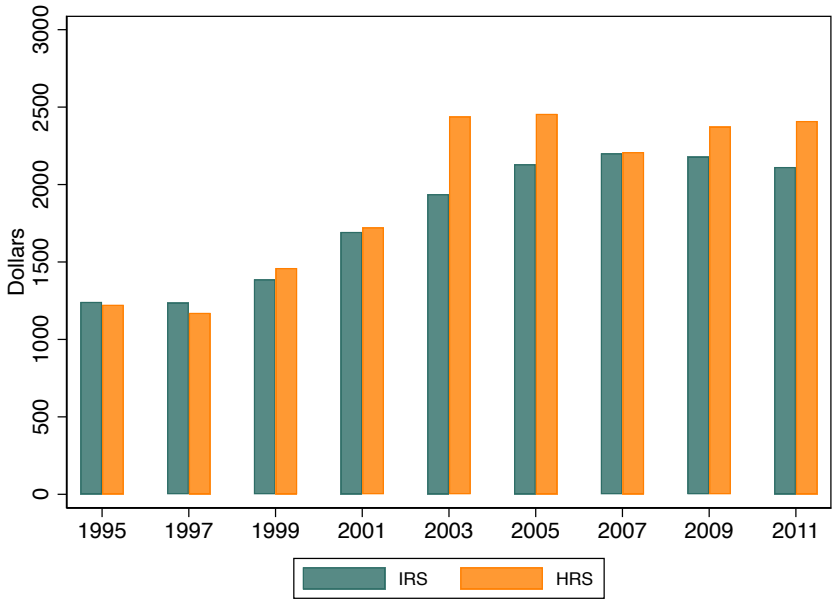
Figure A.1: Actual Take-Up and Predicted Take-Up from Household Model

	Predicted Take-Up	Actual Take-Up
Education		
Less than High School	0.490	0.497
High School Grad	0.593	0.594
College Plus	0.649	0.661
Race/Ethnicity		
White	0.563	0.570
Black	0.579	0.589
Hispanic	0.536	0.548
Other	0.566	0.569
Gender		
Male	0.586	0.593
Female	0.543	0.550
Age Group		
< 50	0.562	0.682
50-54	0.663	0.657
55-59	0.634	0.642
60-64	0.583	0.592
65-69	0.535	0.537
70-74	0.531	0.535
75-79	0.522	0.531
80+	0.504	0.511

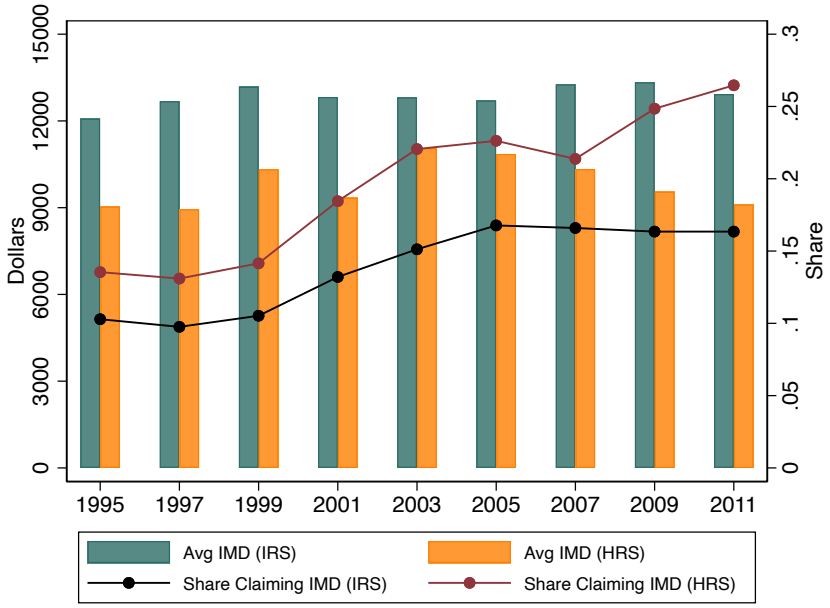
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. See text for more details.

Figure A.2: Comparison of Itemized Medical Deductions in HRS to IRS, 55+

Panel A: Average IMD (Unconditional)

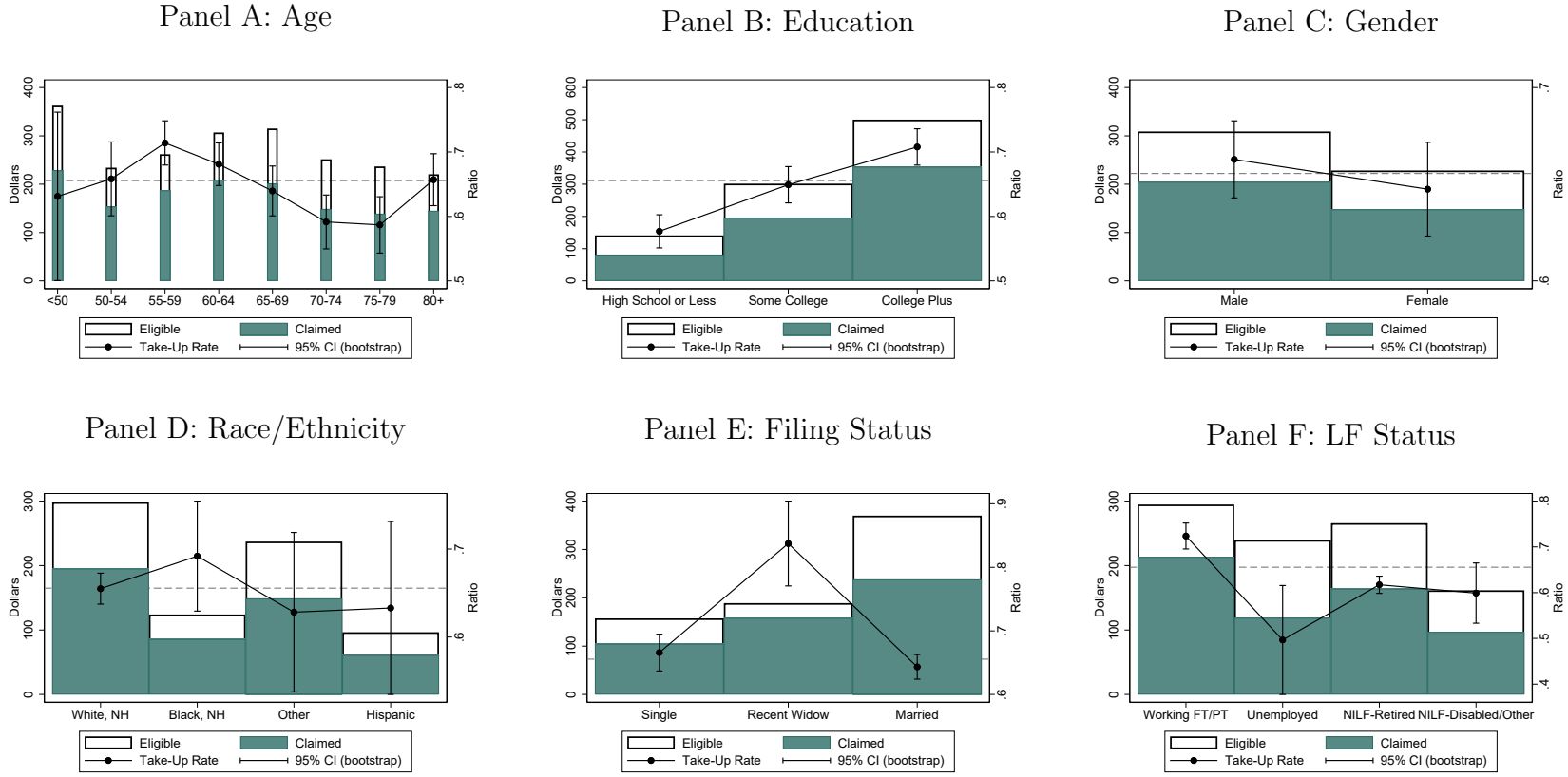


Panel B: Average IMD (Conditional) and Share Claiming



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.

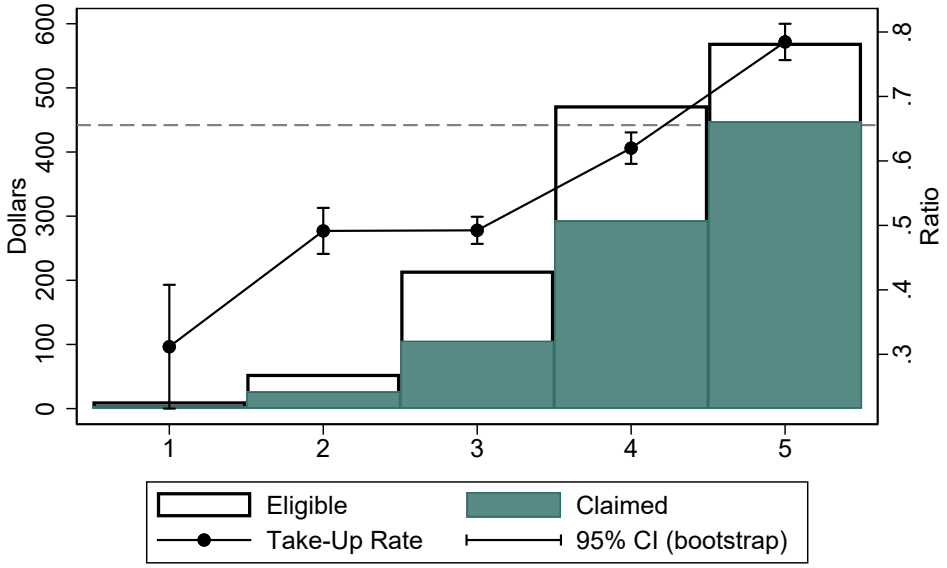
Figure A.3: Average Eligible and Claimed Tax Savings by Demographic Characteristics



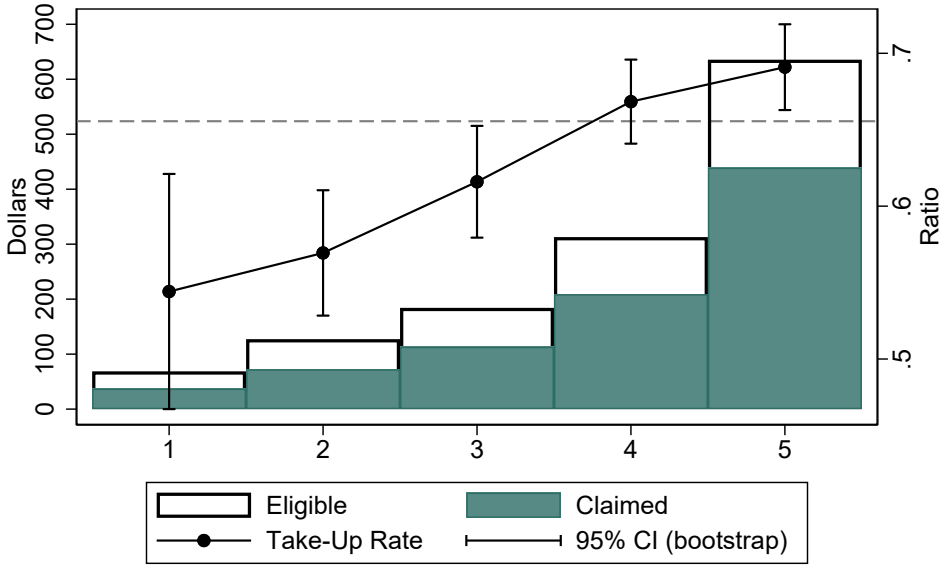
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed medical deductions across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. Age, education, gender, race/ethnicity and labor force status of the financial respondent is used to categorize households. See text for more details.

Figure A.4: Average Eligible and Claimed Tax Savings by Income and Wealth

Panel A: AGI Quintile



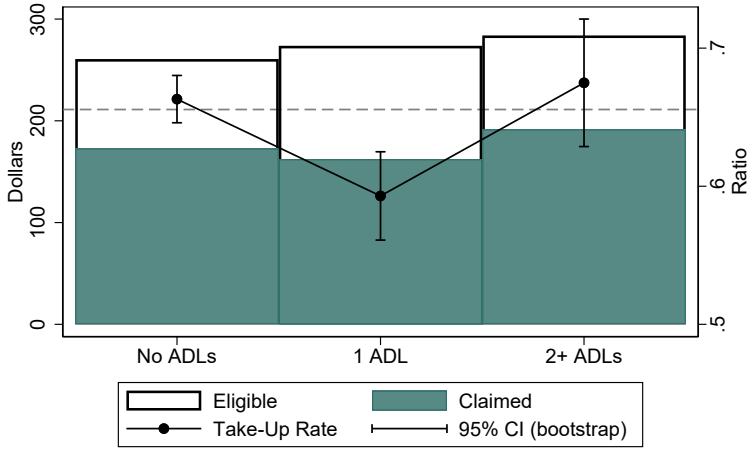
Panel B: Total Wealth Quintile



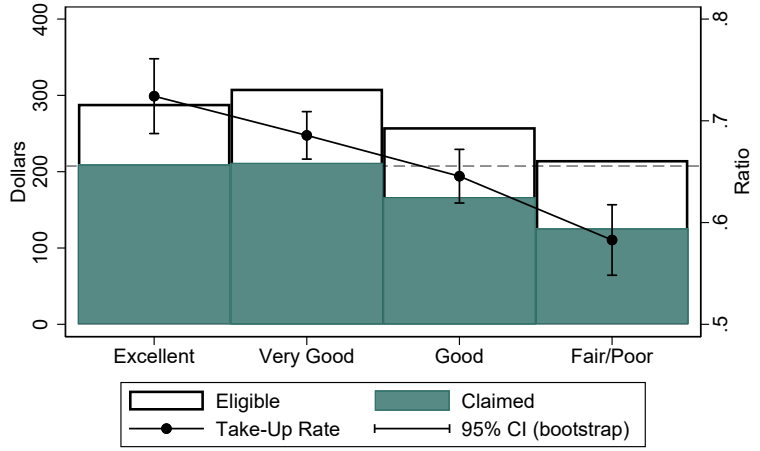
Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed tax savings across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. AGI 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. 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.5: Average Eligible and Claimed Tax Savings by Health

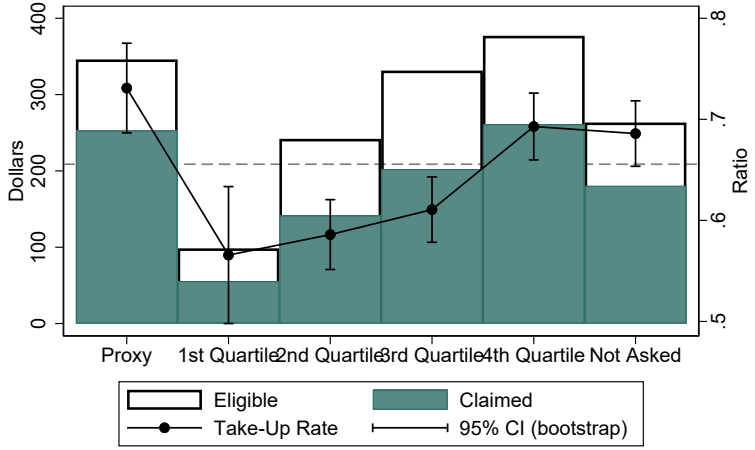
Panel A: ADLs



Panel B: Health Status



Panel C: Cognitive Score



Notes: Author's calculations using Health and Retirement Study, Waves 3–11, 1995–2012. Each panel displays average eligible and claimed tax savings across characteristics as labeled, and the associated take-up rate and 95 percent confidence interval constructed using bootstrapped standard errors. ADLs represents average number of ADL limitations among household members. Health status represents self-reported health status of financial respondent. 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.

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.[25]

[25]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.