DESCRIPTION OF THE TAX POLICY CENTER MICROSIMULATION MODEL'S REVAMPED HEALTH MODULE

ABSTRACT

This report describes the Tax Policy Center (TPC) Microsimulation Model's revamped health module. The TPC tax model uses the health module for simulating tax expenditures for health care, analyzing changes in the tax treatment of employer-provided health benefits, and evaluating health-related taxes and credits. The new health module improves upon the prior one in a number of ways. The new health module is the basis for the recent brief, "Reforming Tax Expenditures for Health Care."

OVERVIEW

This brief describes the Tax Policy Center (TPC) Microsimulation Model's revamped health module. The TPC tax model uses the health module for simulating tax expenditures for health care, changes in the tax treatment of employer-provided health benefits, and health-related taxes and credits, such as the Affordable Care Act's (ACA) premium tax credit and employer mandate penalty. Also, employer-provided health benefits are included in expanded cash income, the measure of pre-tax income used in TPC distribution tables.

The new health module is based on health insurance coverage and premiums imported into the tax model database from the Urban Institute Health Policy Center's Health Insurance Policy Simulation Model (HIPSM). We then impute additional employer-provided health benefits including contributions to Health Savings Accounts (HSAs), Health Reimbursement Arrangements (HRAs), medical flexible spending accounts (MFSAs), and dental and vision insurance premiums using the Kaiser Family Foundation's Employer Health Benefits Annual Survey. We calibrate these imputations, such that simulations align with tax expenditure, revenue, and distributional estimates from the Congressional Joint Committee on Taxation (JCT), the Congressional Budget Office (CBO), and the Department of Treasury's Office of Tax Analysis (OTA).

ENHANCED CAPABILITIES OF REVAMPED HEALTH MODULE

The new health module improves upon the prior one in the following ways.

Incorporates Recent Trends in Health Insurance Coverage

The prior health module was based on the 2012 Current Population Survey, while the new health module is based on recent simulations from HIPSM for calendar year 2020. Using more recent data allows us to better capture expanded health insurance coverage due to the ACA and erosion of coverage due to recent legislation that set the federal penalty for not complying with the individual mandate to zero.

Incorporates the Impact of More Policy Alternatives on Health Insurance Coverage

The TPC tax model uses the health module to incorporate the impact of changes in health insurance coverage on tax revenue (e.g. impact on taxable compensation or tax credits for health insurance.) The only alternative coverage scenario the prior health module could incorporate was repeal of the Affordable Care Act. The new health module is broader and can import any coverage scenario that HIPSM can model. In particular, it can import coverage scenarios for policies that change the tax treatment of employer-sponsored health insurance coverage, policies that change the generosity of the premium tax credit, and policies that expand public health insurance coverage.

Improves Capability to Simulate Health Savings Accounts

The prior health module had limited capability to simulate HSAs, which have been growing rapidly in recent years. Data limitations did not allow detailed imputations and targeting of the distribution of HSA contributions and the old module did not explicitly incorporate the effects of statutory contribution limits. The new module incorporates newly available public tax data on the distribution of HSA contributions. The new module explicitly incorporates contribution limits and includes imputations for desired contributions for tax units constrained by these limits, which allows TPC to model proposals that increase contribution limits.

Marginal Tax Benefit of Contributions to Health Benefits

The new health module adds the capability to simulate the marginal tax benefit of additional employer contributions to health benefits. The marginal tax benefit encourages employers to offer health insurance and to offer more generous health plans. The TPC tax model can now examine the level and distribution of these incentives.

IMPORTING HEALTH INSURANCE COVERAGE FROM HIPSM INTO TAX MODEL

We use a statistical matching algorithm to import health insurance coverage, premiums, and other health related variables from HIPSM into the tax model. Statistical matching is a method for importing information from a donor dataset to a host dataset, while preserving the joint distributions of the imported variables.[1] The method links similar observations by using information available in both databases. Observations are usually matched within partitions using some measure of "distance."

In this case, an extract from HIPSM for 2020 is the donor dataset, and an extract from the tax model for the same year is the host dataset. HIPSM has 12.9 million individuals, which it groups into 6.1 million tax units and the TPC tax model has 255,794 independent tax units. The statistical matching algorithm we use improves upon the one developed in Mermin, et al. 2017.

Partitioning Datasets

To preserve crucial characteristics, we define several partitions for the match. The HIPSM dataset is far larger than the tax model database, so we can define a large number of partitions and still have an adequate number of donor file records in each partition. Partitions are defined by a combination of seven characteristics:

1. Presence of wage income;
2. Tax filing status (single, joint, head of household);
3. Presence of tax unit members age 65 and over (no members age 65+, one spouse age 65+, both spouses age 65+, dependents age 65+);
4. Categories for number of dependents;
5. Presence of employer-sponsored health insurance (ESI);[2]

6. Firm size of ESI policy holder (≤50 workers, 50-1000 workers, 1000+ workers); and
7. Modified adjusted gross income (MAGI)[3] as a percentage of the Federal Poverty Line (FPL) category (<138% of FPL, 138-400% of FPL, 400%+ of FPL).

To ensure a large pool of donor records in each partition, some partitions are collapsed by firm size, employer coverage, or number of dependents. For example, firm size is collapsed for partitions with employer coverage, MAGI below 138 percent of FPL, presence of wage income, filing jointly, and having one elderly member. Wage income, filing status, number of elderly unit members, and MAGI are never collapsed. We categorize HIPSM and tax model tax units into 282 partitions.

Ranking AGI and Selecting Donor Units

Within partitions, we match tax model units to HIPSM units with similar incomes. Because units within partitions can contain different numbers of people, we rank tax model and HIPSM units within partitions by MAGI per capita. We then match each tax model unit with the HIPSM unit with the closest per capita MAGI rank and import health variables from the HIPSM unit to the tax model unit. Imported variables include health insurance coverage, policy holder status, ESI offers, ESI premiums, and non-group premiums.

Assessing Match

To assess how well matching algorithm works, table 1 compares the distribution of health insurance coverage imported into the tax model and in HIPSM by income as a percentage of the federal poverty level (FPL). The distributions are generally similar, particularly for ESI coverage, which is the most important variable for analyzing tax expenditures for health. One notable difference is for low-income people with Medicaid, non-group, or uninsured status. Compared to HIPSM, the tax model has relatively fewer people with incomes below 50 percent of FPL and relatively more with income between 50 and 100 percent of FPL. This stems from differences in the income distributions of the two models, as can be seen in the "All" column.[4]

TABLE 1
Distribution of Health Insurance Coverage in HIPSM and Imported into Tax Model, 2020

Individuals under age 65

Income as Percent of FPL[1]	Medicaid				Employer-Sponsored Health Insurance				Non-Group Coverage			
	HIPSM		Tax Model		HIPSM		Tax Model		HIPSM		Tax Model	
	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct
<0	25,784	0.0	698,178	1.0	5,711	0.0	245,332	0.2	1,698	0.0	79,925	0.4
0 - 50	22,163,216	32.1	11,404,405	16.8	3,240,261	2.2	3,008,967	2.0	757,325	4.0	475,910	2.4
50 - 100	17,367,462	25.2	21,241,816	31.2	4,588,039	3.1	5,622,755	3.7	480,569	2.5	609,630	3.0
100 - 138	10,976,032	15.9	12,213,465	17.9	5,417,096	3.7	6,537,693	4.3	2,102,700	11.0	2,715,708	13.5
138-200	8,764,093	12.7	10,852,665	15.9	12,735,389	8.6	13,046,518	8.5	4,310,144	22.6	4,031,773	20.0
200 - 300	5,917,650	8.6	6,390,483	9.4	25,826,772	17.5	22,419,315	14.6	3,473,332	18.2	3,784,484	18.8
300 - 400	1,930,961	2.8	2,456,368	3.6	25,346,691	17.2	22,198,362	14.5	2,594,865	13.6	2,412,642	12.0
400+	1,813,055	2.6	2,818,829	4.1	70,219,335	47.6	80,430,343	52.4	5,351,035	28.1	6,067,196	30.1
All	68,958,253	100.0	68,076,208	100.0	147,379,293	100.0	153,509,284	100.0	19,071,668	100.0	20,177,267	100.0

Income as Percent of FPL[1]	Other Public Coverage				Uninsured				All			
	HIPSM		Tax Model		HIPSM		Tax Model		HIPSM		Tax Model	
	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct	Number of Individuals	Pct
<0	1,350	0.0	46,282	0.4	32,271	0.1	201,027	0.8	66,813	0.0	1,270,744	0.5
0 - 50	857,995	9.9	927,676	8.1	7,131,738	22.9	4,079,814	15.3	34,150,536	12.4	19,896,772	7.1
50 - 100	974,636	11.3	947,981	8.3	5,694,169	18.3	6,135,856	23.0	29,104,874	10.6	34,558,038	12.3
100 - 138	936,124	10.8	1,357,782	11.9	3,025,410	9.7	2,442,689	9.1	22,457,361	8.2	25,267,336	9.0
138-200	1,274,504	14.8	1,598,819	14.0	4,961,732	16.0	4,061,462	15.2	32,045,862	11.6	33,591,237	12.0
200 - 300	1,549,651	18.0	1,590,524	14.0	5,162,912	16.6	4,066,247	15.2	41,930,316	15.2	38,251,053	13.7
300 - 400	1,074,770	12.5	967,593	8.5	2,321,800	7.5	2,556,459	9.6	33,269,087	12.1	30,591,423	10.9
400+	1,962,484	22.7	3,956,264	34.7	2,762,784	8.9	3,161,599	11.8	82,108,694	29.8	96,434,231	34.5
All	8,631,514	100.0	11,392,921	100.0	31,092,815	100.0	26,705,154	100.0	275,133,543	100.0	279,860,834	100.0

Source: HIPSM-ACS and Urban-Brookings Tax Policy Center Microsimulation Model (version 0319-1h).
[1]Individuals are categorized by tax unit's modified adjusted gross income as percent of the federal poverty level.

IMPUTING OTHER EMPLOYER-PROVIDED HEALTH BENEFITS

Initial Imputation

We supplement health insurance coverage imported from HIPSM with imputations for other employer-provided health benefits based on regressions estimated from the Kaiser Family Foundation's Employer Health Benefits Annual Survey (EHBAS). Other benefits include contributions to HSAs, HRAs, MFSAs, dental insurance premiums, and vision insurance premiums and participation in section 125 plans.[5]

We use EHBAS micro-data files from 2015, 2017, and 2018 (Kaiser Family Foundation 2015, 2017, and 2018). While the EHBAS is an employer-level survey, it has information on wage, age, and family status of each employer's workers, which we use to better impute benefits for individual employees. We convert the employer-level file into a firm * wage category * age category * family/single level file and create an ESI policy holder-level file in the tax model database. We impute benefits separately for each wage category * age category * family/single coverage cell. For instance, observations in the EHBAS with low wage, young age, and single coverage are used to impute benefits for ESI policy holders in the tax model file who are low wage, young, and have single coverage.

We sequentially impute the presence of HSA contributions, HSA contribution amounts, the presence of HRA contributions, HRA contribution amounts, MFSA offers, dental insurance offers, vision insurance offers, and participation in section 125 plans. We estimate probits for the dichotomous indicators and OLS regressions for the amounts in the EHBAS. Then we use the estimated coefficients and random draws to impute values onto the policy holders in the individual level tax model file. Explanatory variables in the regressions include ESI premium, industry, and firm size.[6] We calibrate the imputations to match tabulations in the EHBAS file. Given MFSA offers, we impute take-up and contribution amounts based on participation rates and average contributions from the Mercer Employer Benefit Survey, as reported by the Congressional Research Service (CRS 2012). Given offers of dental and vision coverage, we use take-up rates from the 2018 National Compensation Survey and assume premiums based on federal employees' dental and vision plans (BLS 2018 and OPM 2020a and 2020b).

Calibrating HSA Contributions

We use tabulations of the distribution of HSA contributions from the Department of Treasury's Office of Tax Analysis (OTA) to calibrate our HSA imputations (OTA 2017). The OTA tabulation is for 2014 and is the only publicly available tabulation of actual tax data on the distribution of employer and individual HSA contributions.[7] To derive calibration targets, we age the OTA table to 2020 using historical growth in the number of HSA contributors and amount of HSA contributions and projected growth implied by the Joint Committee of Taxation (JCT) tax expenditure estimates. To match targets for the number of tax units with employer HSA contributions, we adjust the predicted probabilities of having HSA contributions estimated above and re-assign presence of contributions. To match targets for contribution amounts, we scale contribution levels for each income group. Table 2 compares the original OTA tabulation of employer HSA contributions, the aged targets, and final imputed contributions in the tax model database.

TABLE 2

Distribution of Employer Contributions to Health Savings Accounts in 2014 and 2020[1]

AGI Category[2] (thousands of income-adjusted 2014 dollars)	Actual 2014			Target for 2020			Tax Model Imputations for 2020		
	Number of returns (thousands)	Amount (billions of dollars)	Average positive contribution (dollars)	Number of returns (thousands)	Amount (billions of dollars)	Average positive contribution (dollars)	Number of returns (thousands)	Amount (billions of dollars)	Average positive contribution (dollars)
<15	113	108	956	150	154	1,026	167	154	923
15-30	626	594	949	830	845	1,019	844	825	978
30-40	630	775	1,230	835	1,103	1,321	834	1,100	1,320
40-50	601	897	1,493	797	1,277	1,602	795	1,280	1,609
50-60	537	816	1,520	712	1,161	1,631	699	1,160	1,659
60-75	678	1,264	1,864	899	1,799	2,002	874	1,800	2,060
75-100	1,070	2,485	2,322	1,419	3,537	2,493	1,444	3,530	2,445
100-200	1,838	5,414	2,946	2,437	7,706	3,162	2,407	7,680	3,190
200-500	660	2,540	3,848	875	3,615	4,132	866	3,590	4,147
500-1,000	114	518	4,544	151	737	4,878	155	736	4,738
1,000-5,000	38	187	4,921	50	266	5,283	50	265	5,285
5,000+	3	16	5,333	4	23	5,726	4	23	5,985
Total	6,908	15,614	2,260	9,158	22,224	2,427	9,139	22,143	2,423

Source: US Department of the Treasury, Office of Tax Analysis, Tax Policy Center projections, and Tax Policy Center Microsimulation Model (version 0319-1h).
Notes: [1]Employer contributions are made through payroll deductions and are excluded from wages for income and payroll tax purposes. Employer contributions include employee contributions through cafeteria plans.
[2]Individuals are categorized by tax unit's adjusted gross income in income-adjusted 2014 dollars. For example, tax units in bottom income group have nominal AGI < $15,000 in 2014 and nominal AGI < ($15,000 * income growth between 2014 and 2020) in 2020.

The base tax model file has individual HSA contributions, but at levels well below the targets because the tax model's underlying data file is calibrated to match IRS tabulations for 2011, before the rapid proliferation of HSAs.[8] To impute a similar number of tax units with individual HSA contributions in the health module, as in the aged OTA table, we first estimate probit models of the probability of tax units having contributions and OLS regressions of contribution amounts among units with contributions in the base tax model file. We then use the coefficients from the probit models and scaling factors to assign additional units with contributions to each income group and use coefficients from the OLS regressions to impute contribution amounts for the newly assigned contributors. Finally, to match target contribution amounts we scale contribution levels for each income group. Table 3 compares the original OTA tabulation of individual HSA contributions with the aged targets and the final imputed contributions in the TPC tax model database.

TABLE 3

Distribution of Deductible Individual Contributions to Health Savings Accounts in 2014 and 2020[1]

Income Category[2] (thousands of income-adjusted 2014 dollars)	Actual 2014			Target for 2020			Tax Model Imputations for 2020		
	Number of returns (thousands)	Dollars (billions)	Average positive contribution	Number of returns (thousands)	Dollars (billions)	Average positive contribution	Number of returns (thousands)	Dollars (billions)	Average positive contribution
<15	31	95	3,065	43	128	2,967	42	128	3,062
15-30	91	171	1,879	126	230	1,819	130	230	1,771
30-40	82	139	1,695	114	187	1,641	123	187	1,519
40-50	98	190	1,939	136	255	1,877	122	255	2,084
50-60	94	214	2,277	131	288	2,204	141	288	2,036
60-75	146	393	2,692	203	528	2,606	199	528	2,656
75-100	186	460	2,473	258	618	2,395	255	618	2,427
100-200	372	1,227	3,298	517	1,649	3,194	531	1,650	3,107
200-500	228	1,052	4,614	317	1,414	4,467	328	1,410	4,294
500-1,000	62	338	5,452	86	454	5,278	85	454	5,329
1,000-5,000	25	143	5,720	35	192	5,538	34	192	5,568
5,000+	2	12	6,000	3	16	5,809	3	16	5,446
Total	1,417	4,434	3,129	1,967	5,961	3,030	1,994	5,956	2,987

Source: US Department of the Treasury, Office of Tax Analysis, Tax Policy Center projections, and Tax Policy Center Microsimulation Model (version 0319-1h).
Notes: [1]Individual contributions are made directly as opposed to through employers and are deductible on individual income tax returns.
[2]Individuals are categorized by tax unit's adjusted gross income in income-adjusted 2014 dollars. For example, tax units in bottom income group have nominal AGI < $15,000 in 2014 and nominal AGI < ($15,000 * income growth between 2014 and 2020) in 2020.

Imputed Desired HSA and MFSA Contributions for Tax Units Constrained by Contribution Limits

In order to analyze proposals that increase HSA and MFSA contribution limits we impute desired additional contributions for tax units constrained by the limits. Because there is no publicly available micro-data file on employer HSA and MFSA contributions, we cannot estimate censored regressions to impute the desired contributions. For tax units with constrained HSA contributions, we assume the additional desired contribution is a random fraction of the contribution limit with a mean that increases with income level. We scale desired contributions such that revenue estimates of doubling HSA contribution limits results in the same revenue loss as estimated by the Joint Committee on Taxation (JCT 2017). Since the initial imputation of MFSA contributions were simple averages, we add a random error term to imputed contributions and choose its variance such that the tax model's estimate of repealing MFSA contribution limits results in the same revenue loss as estimated by JCT (JCT 2017).

CALIBRATION OF HEALTH MODULE

We adjust the health imputations such that tax model estimates of several key items align with estimates from JCT and the Congressional Budget Office (CBO). We adjust employer-provided health benefits so that tax model estimates are consistent with JCT estimates of income tax expenditures for employer contributions to health insurance and CBO estimates of what the revenue gain would have been from the recently repealed excise tax on high cost health plans or "Cadillac" tax (JCT 2018 and CBO 2019).[9][10] We adjust non-group premiums so that tax model estimates of the premium tax credit match CBO projections (CBO 2019).

DISTRIBUTION OF EMPLOYER-PROVIDED HEALTH BENEFITS

Table 4 shows the final distribution of imputed employer-provided health benefits in the tax model in 2020 by income quintile. Nearly half of tax units have employer contributions for ESI and the average amount for those with contributions is nearly $11,000.[11] Over a third of tax units have employer contributions for other health benefits, including dental and vision insurance, HSAs, HRAs, and MFSAs. Average contributions for these benefits among those with contributions is over $1,800. Both the percent of tax units with contributions and the average contribution amounts increase with income.[12] However, contributions as a percentage of income, increase with income up to the middle-income quintile and then decline as income rises at higher income levels.

TABLE 4

Distribution of Imputed Employer Contributions for Health Benefits, 2020[1]

| Expanded cash income (ECI) percentile[3][4] | ESI | | | | Other Health Benefits[2] | | | |
| | With Contributions | | Average contribution | Contributions as percent of ECI | With Contributions | | Average contribution | Contributions as percent of ECI |
	Pct of Tax Units	Average contribution			Pct of Tax Units	Average contribution		
Lowest Quintile	14.8	5,803	856	5.9	9.6	1,092	105	0.7
Second Quintile	37.5	7,204	2,703	7.0	25.1	1,296	325	0.8
Middle Quintile	62.4	9,595	5,984	8.4	44.7	1,592	711	1.0
Fourth Quintile	76.0	12,701	9,649	7.6	56.9	1,931	1,099	0.9
Top Quintile	82.7	15,048	12,452	3.2	65.2	2,532	1,651	0.4
All	49.3	10,989	5,419	5.2	35.9	1,842	661	0.6

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0319-1h) with health module based on health insurance coverage from Health Insurance Policy Simulation Model.
Notes: [1]Employer contributions include pre-tax employee contributions through cafeteria plans.
[2]Other Health Benefits include dental and vision insurance, health savings accounts, health reimbursement arrangements, and medical flexible spending accounts.
[3]Includes both filing and non-filing units but excludes those that are dependents of other tax units. Tax units with negative adjusted gross income are excluded from their respective income class but are included in the totals. For a description of expanded cash income, see http://www.taxpolicycenter.org/TaxModel/income.cfm
[4]The income percentile classes used in this table are based on the income distribution for the entire population and contain an equal number of people, not tax units. The breaks are (in 2019 dollars): 20% $25,800; 40% $51,500; 60% $92,700; 80% $167,600; 90% $246,000; 95% $349,300; 99% $831,200; 99.9% $3,722,500.

MARGINAL TAX BENEFIT OF ADDITIONAL CONTRIBUTIONS TO EMPLOYER-PROVIDED HEALTH BENEFITS

Employer contributions for health benefits are exempt from federal income and payroll taxes. In addition to reducing government revenues, this health benefit exclusion reduces the after-tax price of health benefits. It encourages employers to offer health insurance and to offer more generous health plans. In addition to simulating how policy changes after the revenue loss from tax expenditures for employer-provided health benefits, the health module can be used to simulate the marginal tax benefit of additional contributions for health benefits. We calculate the marginal tax benefit for a worker by shifting $1,000 of compensation into health benefits. Because taxable wages decline so does income tax and payroll tax liability, decreasing the after-tax cost of the additional $1,000 of health benefits. Table 5 shows the distribution of marginal tax benefits of employer contributions to health benefits. Overall the effective marginal subsidy rate on health benefits is 29 percent, meaning that each additional dollar of health benefits purchased costs the taxpayer 71 cents. Since the subsidy depends on marginal tax rates it increases with income. For tax units with ESI in the top income quintile, the effective subsidy rate for an additional dollar of ESI premiums is 33 percent while the subsidy rate is just 14 percent for tax units in the bottom quintile.

TABLE 5

Baseline Effective Marginal Tax Benefit of Employer Contributions to Health Benefits

By Expanded Cash Income Percentile, 2020[1]

Expanded Cash Income Percentiles[2,3]	Marginal Tax Benefit[4]
Lowest Quintile	13.8
Second Quintile	22.2
Third Quintile	28.5
Fourth Quintile	29.3
Top Quintile	33.4
All	29.1
Addendum	
80-90	32.6
90-95	32.8
95-99	34.8
Top 1 Percent	40.9
Top 0.1 Percent	40.2

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0319-1h) with health module based on coverage from Health Insurance Policy Simulation Model.

Notes: (1) Employer-provided health benefits include ESI, dental and vision insurance, health savings accounts, health reimbursement arrangements, and medical flexible spending accounts.

(2) Includes both filing and non-filing units but excludes those that are dependents of other tax units. Tax units with negative adjusted gross income are excluded from their respective income class but are included in the totals. For a description of expanded cash income, see http://www.taxpolicycenter.org/TaxModel/income.cfm.

(3) The income percentile classes used in this table are based on the income distribution for the entire population and contain an equal number of people, not tax units. The breaks are (in 2019 dollars): 20% $25,800; 40% $51,500; 60% $92,700; 80% $167,600; 90% $246,000; 95% $349,300; 99% $831,200; 99.9% $3,722,500.

(4) Marginal tax benefit equals the reduction in income and payroll taxes from shifting $1,000 in compensation from wages and employer payroll taxes into additional employer provided health benefits divided by 1,000 and expressed as a percentage. Tabulation is weighted by initial amount of employer provided health benefits.

DEMONSTRATION OF HOW THE REVAMPED HEALTH MODULE CAN BE USED

To demonstrate how this new module can be used, TPC released the brief, "Reforming Tax Expenditures for Health Care," which examines tax expenditures for health care under current law and analyzes three potential reforms.

[1] See Ingram et al. (2000), Kum and Masterson (2008), Rohaly, Carasso, and Saleem (2005), and Smith et al. (2002) for further descriptions of statistical matching.

[2] Imputed ESI coverage in the tax model is from a statistical match with the Current Population Survey.

[3] MAGI equals AGI plus tax-exempt interest and nontaxable Social Security benefits.

[4] Differences in the underlying data sources result in differences in the income distributions in the two models. HIPSM is based on a household survey, the American Community Survey, while the tax model is primarily based on administrative data, the public use file (PUF) produced by the Statistics of Income Division of the Internal Revenue Service. Individuals may report their incomes differently when responding to household surveys than when filing their tax returns. Survey respondents may have difficulty recalling sources of income, round dollar amounts, misunderstand questions, or alter responses due to perceived judgement from the interviewer or privacy concerns. And tax filers may misreport income or family structure in order to minimize tax liability (Johnson and Moore 2008). Additionally, both models use tax filing units as the unit of observation but HIPSM, like all survey-based models, must use assumptions to approximate which individuals file tax returns together, while the tax model uses data on actual tax units. For example, a survey-based model must decide whether a nuclear family living with other relatives is one larger tax unit or multiple smaller units. Also, survey-based models cannot generally incorporate non-custodial parents claiming dependents living in other households.

[5] Workers participating in section 125 plans can make contributions for health insurance premiums and other benefits on a pre-tax basis.

[6] Explanatory variables also include employer-provided benefits from previous equations. For instance, MFSA offers are estimated after HSA and HRA contributions and explanatory variables include ESI premium, industry, firm size, presence of HSA, HSA contribution amount, presence of HRA, and HRA contribution amount.

[7] Employer contributions are made through payroll deductions and are excluded from wages for income and payroll tax purposes. Employer contributions include employee contributions through cafeteria plans. Individual contributions are made directly and potentially are deductible on individual income tax returns.

[8] The model's primary data source is the 2006 public-use file (PUF) produced by the Statistics of Income (SOI) Division of the Internal Revenue Service (IRS) aged to match SOI tabulations for tax year 2011. For more information, see "Brief Description of the Tax Model," Urban-Brookings Tax Policy Center, last updated August 23, 2018, https://www.taxpolicycenter.org/resources/brief-description-tax-model.

[9] We do not further adjust contributions to HSA and MFSA which are separately calibrated to match other targets.

[10] The "Cadillac tax" was scheduled to start in 2022 and was repealed at the end of 2019.

[11] Employer contributions include pre-tax employee contributions through cafeteria plans.

[12] Most of the increase in average contributions among contributors across income groups is due to the income classifier including the value of employer-provided health benefits and because units in the higher income groups are more likely to be married and have family coverage.

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