

Taxjusticenow.org: Tax Simulator Description*

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Abstract

This document describes the taxjusticenow.org tax simulator. The goal of taxjusticenow.org is to help citizens understand and participate in the tax debate. The simulator allows users to visualize how much each income group pays in taxes when we include all taxes (income taxes, corporate taxes, payroll taxes, consumption taxes, etc.) at all levels of government (federal, state, and local). The simulator allows users to change existing taxes—such as increasing individual income tax rates—or create new taxes—such as progressive wealth tax or a value added tax—and see how this would affect tax revenue, tax progressivity, and inequality. This document describes the data, assumptions, and underlying computations. It also lays out how we have modeled the presidential candidates tax plans. This document will be frequently updated as the tax simulator is further developed and as candidates clarify, refine and expand their tax plans.

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1 Introduction

The goal of taxjusticenow.org is to help citizens understand and participate in the tax debate. We see it as an essential companion to our book *The Triumph of Injustice*, published on October 15, 2019. On taxjusticenow.org, you can visualize how much each income group pays in taxes when we include all taxes (income taxes, corporate taxes, payroll taxes, consumption taxes, etc.) at all levels of government (federal, state, and local).

The starting point of Taxjusticenow.org is the US tax system of 2018, the year following President Trump's tax reform. When taking into account all taxes (individual income taxes, corporate taxes, payroll taxes, consumption taxes, etc.) at all levels of governments (federal, state, and local), all groups of the population pay around 28% of their income in taxes, except the top 400 richest Americans who pay 23%. The very low tax rate at the top arises because of the collapse of the corporate tax after the 2017 Tax Cuts and Jobs Act (TCJA) combined with the fact that the super rich do not need to realize much income on their individual income tax returns relative to their true economic incomes (for example Warren Buffett famously reported an income of \$11.6m in 2015 which is minuscule relative to his wealth of \$65b that year).

When treating mandatory private health insurance premiums as taxes, the US tax system is in fact highly regressive, with tax rates of about 40% for the middle income groups, falling to 23% for billionaires. Private insurance premiums are best analyzed as a large privatized poll tax on covered workers: a tax because they're mandatory (employers with 50+ workers have to offer insurance) while most other groups get highly subsidized insurance (medicaid, medicare, ACA exchanges); privatized because they're managed by employers; and a poll tax because they are essentially a fixed amount per covered worker (the secretary pays the same amount as the executive). The red line series in Figure 1 depicts the total tax rate include taxes at all levels of government and the private health insurance contributions by income percentiles.

The interactive tax policy simulations offered on taxjusticenow.org allow to answer questions such as: Would increasing the top marginal income tax rate to 70% suffice to make billionaires contribute more to the public coffers—all taxes included—than working-class Americans? How much would each income group win from the abolition of private health insurance premiums? What if the United States created a new wealth tax? By how much could the deficit reduced?

We also model the tax plans of the main presidential candidates (and will update them as

new or refined proposals come in). You can also create your favorite tax plan and become an active participant in the debate. You can modify candidates tax plans and engage your favorite campaign. Importantly, we only model the taxes proposed by the candidates and not the outlays each campaign is proposing. When the option to display private health insurance as an extra tax is on, the simulator computes the tax surplus net of the 7% of national income needed to replace fully private health insurance at it currently exists with public funding. In words, you can keep your employer provided insurance and the premia currently paid by employee and employer (on average \$13,000 per covered worker) are transformed into extra wages. But any new outlay, such as providing insurance to the currently uninsured, more generous coverage (or in reverse containing costs) is not factored in our computations.

Our tool is very basic compared to the sophisticated tax simulators developed by government agencies and think-tanks.¹ But you do not need to be an expert to use it; its a tool for the people and captures the essence of the tax debate: how much each group pays and how can we make our tax system fairer? Our simulator is transparent and open-source: our code, data, and programs are available in the technical appendix section. The excel version of the tax simulator posted at <https://eml.berkeley.edu/~saez/taxsimulator.xlsx> allows readers the understand all the details of the computations.

The tool assumes that tax evasion/avoidance stays at its current level when taxes are changed (for new taxes like the wealth tax, you can set the evasion rate). How the evasion/avoidance rate changes with tax rates depends on tax design and enforcement. Higher tax rates should be paired with closing loopholes and stronger enforcement to achieve their substantive goals. Taxes can also affect pre-tax incomes and the wealth distribution. Taxjusticenow.org allows to explore the effect of wealth taxation on billionaires and we will expand on this and incorporate more sophisticated behavioral responses to taxes in coming months.

This tool will evolve, expand, and improve in the coming months and years. We welcome readers reactions and suggestions. We encourage other tax experts to build upon the tool and adapt it to their own use.

¹The US agencies congressional budget office (US CBO 2019), the US Treasury (US Treasury 2019), the Joint Committee on Taxation (US JCT 2019), and the Tax Policy Center at Urban institute (Tax Policy Center, 2019) distribute all federal income taxes but not state and local taxes. The Institute on Taxation and Economic Policy is the only think-tank distributing taxes at all levels of government as we do here (ITEP 2019).

2 Data Assumptions

The construction of the tax simulator can be followed and explored step by step in the excel version posted at <https://eml.berkeley.edu/~saez/taxsimulator.xlsx>.

The starting point is the distributional national accounts data created by Piketty, Saez, and Zucman (2018) and updated to year 2018 for the book project Saez and Zucman (2019). The technical appendix available at <https://eml.berkeley.edu/~saez/SZ2019Appendix.pdf> provides complete details.

The underlying micro-data describes the income, wealth, and taxes paid for a representative sample of Americans in 2018. The data for 2018 is built by aging the most recently available data file (2016) so as to match national accounts for 2018 and the preliminary income tax statistics for 2018 that have been used to update the Piketty and Saez (2003) top income share series based on reported income on individual tax returns <https://eml.berkeley.edu/~saez/TabFig2018pre1.xls> The individual income tax for 2018 has been computed using the NBER taxsim calculator. All the taxes, such as the corporate tax, match the totals reported in the national accounts.

In the micro-data, we create variables corresponding to each of the tax levers in the simulator. For example, for the wealth tax, we compute for each record the amount of wealth that falls above each threshold. For the individual income tax, we compute for each record the amount of taxable income that falls above each threshold. For new taxes such as the national income tax, we compute the theoretical base that would apply.

Assigning existing taxes. Importantly, in this work (and in our update of Piketty, Saez, and Zucman, 2018) we adopt what we view as a more meaningful way to describe the current tax system but that differs from current practice since Musgrave et al. (1951), Pechman and Okner (1974). In our new methodology presented in detail in Saez and Zucman (2019b), taxes on labor are assigned to the corresponding workers regardless of whether they are nominally paid by workers or employers (same for fringe benefits such as employer sponsored health insurance), taxes on capital are assigned to the ultimate individual owners (in particular corporate taxes are assigned to the corresponding shareholders), taxes on consumption are assigned to the corresponding consumers. As we argue in Saez and Zucman (2019b), this is the only way to meaningfully talk about pre-tax and after-tax income as they currently exist and consistent with

current economic aggregates. It also allows to keep track of pre-tax prices, wages, and returns to capital (relevant for producers) and after-tax prices, wages, and returns to capital (relevant to individual consumers, workers, and owners) as in our economic models. For example, an employer cares about the total labor cost of hiring an extra employer whether this cost takes the form of cash wages, payroll taxes, or health insurance. An employee cares about the net amount it receives after deducting all taxes and contributions. In our view, the usual tax incidence method which tries to predict what pre-tax income would be absent taxes should be limited to the analysis of potential tax reforms (and not of the current system).

Our method allows us to speak much more concretely and we hope meaningfully about taxation. For example, if Amazon did not pay corporate taxes in 2018, then it means that its founder and CEO Jeff Bezos did not pay corporate taxes on his Amazon stock holdings. If Walmart in contrast paid substantial corporate taxes, then the Walton family heirs correspondingly pay these taxes. If Walmart manages to reduce its corporate tax burden using more aggressive tax planning, then the Walmart shareholders benefit.²

Sales and excise taxes are assigned by income group based on the estimates created by ITEP (2018). ITEP is the only organization (to our knowledge) that distributes taxes at all levels of government (federal, state, and local) as we do here. All the federal agencies and other DC think-tanks focus (almost) exclusively on federal taxes, which gives an incomplete view of the tax burden distribution in America. In our view, including all taxes is central for policy analysis, tracking the evolution overtime of tax progressivity, and comparisons with other countries.

Collapsing by percentiles. Once all the variables needed have been created, we collapse the data by income percentiles (and with finer groups within the top 1%) using the pre-tax income definition to rank individuals and using the individual adult (aged 20 and above) unit (with equal splitting of income within married couples). Pre-tax income is defined as all income before taxes and government transfers but after the operation of the public and private retirement systems (so that contributions to pension funds and social security taxes are deducted from income

²In contrast, in traditional distributional analysis, the corporate tax is like a thin blanket that falls on all capital and labor regardless of which companies pay or do not pay the corporate tax. This corresponds to a stylized view of the world that probably has little bearing to reality. The US Treasury model (US Treasury 2019) and the Tax Policy Center models now assign a large fraction (60%) of the corporate tax directly on shareholders (see Nunns, 2012).

and retirement and social security benefits are included in income).³ Pre-tax income sums up to national income and hence includes all forms of income including all fringe benefits (such as employer sponsored health insurance), owner-occupied equivalent rent, retained earnings of corporations for shareholders, etc.

Using total pre-tax income (instead of solely reported income for tax purposes) is very important at the top of the distribution as the wealthiest. Top 400 Americans (the smallest group we consider and is described by Forbes magazine in its Forbes 400 rich list) have reported incomes only about 45% of pre-tax income (relative to an average of 70% population wide) as estimated in Saez and Zucman (2019b, Table 3) triangulating various sources of publicly available data.

The underlying population used for the collapse are all adults with pre-tax income above one-half of a full year full time minimum wage (\$7,500 of annual pre-tax income). This excludes 10% of the adult population with very low incomes (and for whom tax rates are not going to be meaningful). Most of these adults receive transfers (such as food stamps) or depend on others (e.g. adult children supported by parents). They pay consumption taxes on this transfer income even though they may not have any pre-tax income explaining why the tax rates are not well defined at the very bottom.

Once the data is collapsed, the underlying data is one single basic table with 128 rows (for each percentile and sub-percentiles within the top 1%) and many columns corresponding to each income, wealth, and tax component relevant for the tax computations in the simulator. The key advantage of this procedure is that computations are based on this small collapsed dataset so that they can be done in real time (either on the website or in the excel worksheet). Another advantage is that government agencies could also publicly disclose such a table using their superior internal data that could in turn be used widely outside the agencies. Naturally, when new tax plans are proposed, they might require computing specific new columns out of the micro-data. This is why having the ability to run everything on publicly available data as we do here is particularly valuable.

³Such pre-tax income captures best the resources available to the retirees most of whom have very small labor income (as they are retired) and capital income (as few retirees have large wealth holdings generating significant capital income).

3 Tax Reform Calculations

3.1 Behavioral Responses

The basic version of our simulator does not factor in any behavioral responses to taxes. In principle, taxes can generate tax avoidance/evasion responses and real responses (such as labor supply and saving).

Tax avoidance and evasion. For tax avoidance/evasion, there is a baseline level of tax evasion/avoidance (as it currently exists in the current system, see e.g. Guyton et al. 2019 for a recent analysis). For not yet existing taxes, such as wealth taxes, the simulator allows to pick a level of tax evasion/avoidance.

There is also the possibility that tax avoidance/evasion changes with the tax rate (or the differential tax rate across income components).⁴ This issue is obviously important for scoring. We do not factor this in (yet) in our simulator for simplicity and also because tax avoidance/evasion is primarily of policy choice. Presumably, an administration aiming at increasing taxes substantially on the rich would design its tax increases and the corresponding enforcement mechanisms to match its goals. Conversely, an administration that further lowers taxes would likely cut on the enforcement budget as well (historically tax rates and enforcement efforts tend to go together as we argue in Saez and Zucman 2019). Therefore, keeping tax avoidance/evasion constant is perhaps a good first approximation. Obviously, this has limits in extreme cases. For example, the simulator allows to set tax rates up to 100% for the individual income tax and the corporate effective tax rate. We allow this so that users can see the limits of current tax bases in reach the full underlying economic incomes.

For new taxes like the wealth tax, our simulator allows users to set the evasion/avoidance rate. There is a legitimate debate on how large this evasion/avoidance rate would be (Saez and Zucman, 2019c).

Note that our methodology contrasts with the actual scoring methodology which incorporates behavioral avoidance responses based on past empirical experiences. In our view, this is too narrow a view. Tax experts should be able to advise policy makers on how to structure tax changes to attain the desired goals of distribution and revenue raising while keep avoid-

⁴For example, if capital gains are tax favored, taxpayers may find ways to transform ordinary income into capital gains as in the famous case of the carried interest of private equity and hedge fund managers.

ance/evasion low. For example, official scoring assumes that realized capital gains are very sensitive to tax rates. While true in a narrow sense, there are many ways to adjust capital gains taxation to make the base less elastic (while keeping the burden and distribution the same). For example, closing the step-up of basis at death loophole (as proposed by various candidates), introducing some form of pre-payments on unrealized capital gains (to be credited back upon realization), mark-to-market taxation of capital gains, etc.

As avoidance/evasion responses do not affect (by definition) the real underlying incomes and because we rank individuals by real income, individuals stay in the same percentiles even with tax evasion/avoidance. Therefore, it would be fairly easy to incorporate evasion/avoidance responses.⁵ We leave this extension (most useful for experts) to future development.

Real responses. Tax changes can also affect real economic behavior such as labor supply, savings, or how pre-tax economic output is distributed between and within workers and owners. There is a large body of work on this issue and we are developing a basic way to capture such behavioral responses for the long-run allowing users to choose behavioral elasticities and assess the impact on pre-tax incomes (experimental design is available in the excel version and not yet developed in the website). In our view, it is essential for clarity, to separate and depict separately the effect of a tax reform on 1) pre-tax incomes (due to real behavioral responses), 2) effects on taxes paid.⁶

3.2 Computing Changes in Specific Taxes

Wealth tax. Our distributional national accounts data provide joint measures of income and wealth (itself estimated using the capitalization method).⁷ Therefore, we can easily model wealth taxes. The wealth tax is an annual tax based on the total net worth (sum of all assets owned minus all debts) of wealthy families. Users can pick tax rates in various brackets as well as the evasion rate. The brackets view can be expanded (for example to model the full progressivity

⁵For example, the volume of realized capital gains could shrink with the selected tax rates if the proposed tax plan does not come with an improved design to reduce tax avoidance.

⁶For example, we find that the current method of assigning corporate taxes partly to workers is misleading. It would be much clearer to say: if corporate taxes were cut (or eliminated), workers would get higher wages, shareholders would get a lower pre-tax return (and also pay less in corporate taxes).

⁷Saez and Zucman (2019c) discuss the differences in wealth distribution estimates. We have tweaked our DINA wealth estimates at the very top to be half-way between our initial DINA estimates and the SCF+Forbes 400 estimates. This is consistent with our earlier scoring of the Warren and Sanders plans where we average the two data sources. Saez and Zucman (2019c) study in detail these two sources and show that they are pretty close to each other in recent years lending credence to our estimates.

of the Sanders wealth tax plan). With strong tax enforcement, we believe a low evasion rate of 15% is possible (Saez and Zucman 2019c). With weak enforcement, the evasion rate could be much higher (for example the “scoring” of Summers and Sarin 2019 can be rationalized with an evasion rate of 87%).

As users can assess, the wealth tax is the most powerful tool to increase the tax burden on the very top groups. This is because the wealth tax directly hits the stock and hence can theoretically exceed the income generated by the wealth. Indeed, with a wealth tax, income tax rates in excess of 100% are clearly possible. They do not mean that any income would be entirely confiscated (let alone that the marginal tax on income is over 100%) but rather that the wealth tax ends up to be larger than the income so that the person would need a large return on wealth to maintain it.

Corporate taxes. The corporate tax is a complex policy as many factors besides the nominal tax rate affect tax revenue. Therefore, we found it simpler to allow users to pick directly the effective tax rate measured as corporate taxes (state plus federal) divided by corporate profits economy wide (and excluding S-corporations taxed solely at the individual level). In 2018, the effective corporate tax rate was only 16%, historically low. Before 2018, the effective corporate tax rate was around 25% down from over 50% in the 1950s (Saez and Zucman, 2019). Any effective tax rate can be obtained by a proper nominal tax rate combined with the proper corporate tax base and enforcement (but this is a highly technical and hence experts only aspect of the problem).

Better taxation of multinationals. Currently, multinationals can avoid corporate taxation by shifting their profits to tax havens. The option “Better taxation of multinationals” makes multinationals pay more: It imposes a minimum tax of 25% on US multinationals profits country by country so that shifting profits to tax havens no longer pays. It also imposes equivalent remedial taxes on foreign multinationals doing business in the US (as a proportion of their US sales relative to global sales) and use tax havens to avoid taxes. This option is scored in our book project (Saez and Zucman 2019) and we assume that such multinational profits are distributed in the same way as overall corporate profits.

US multinationals. We consider a 25% minimum country-by-country tax rate. This means that if a US corporation books \$10 billion in profits in Bermuda, taxed at 0% in Bermuda, it would

immediately have to pay $(25\% - 0\%) \times \$10 \text{ billion} = \2.5 billion in the US (no deferral). If a US company books \$10 billion in profits in Ireland taxed at 5% in Ireland, it would immediately have to pay $(25\% - 5\%) \times \$10 \text{ billion} = \2 billion in the US. We estimate that such a tax would raise \$68 billion (0.4% of national income) in 2019.⁸

This reform would be equivalent to increasing the effective rate of taxation of the foreign profits of US multinationals by close to 10 points. By contrast the TCJA, which also introduced a minimum tax on foreign earnings (GILTI), increases the effective rate of taxation of the foreign profits of US multinationals by 1.2 point only, or \$7.7 billion (according to JCT projections for 2018), because the tax rate applied to foreign profits (10.5%) is low and the tax is not applied country-by-country but to all foreign earnings combined.

Foreign multinationals selling in the US. For foreign multinationals selling in the United States, the same minimum tax would apply but prorated to the percent of their global sales that they make in the United States. The global tax deficit is the extra tax that each corporation should pay if it was subject to a minimum effective tax rate of 25% in each of the countries where it operates.⁹ We conservatively project that this would generate the equivalent of 40% of the revenue of the 25% country-by-country minimum tax on US multinationals, i.e. \$27 billion in 2019.

Total extra revenue of taxing multinationals better adds up to \$95 billion in 2019.

Individual income taxes. The simulator can be used to change tax rates in the current income tax brackets and also add extra brackets for top earners (as proposed by some candidates in the policy debate). We also allow users to tax capital gains and/or dividends at ordinary rates. We also allow users to integrate the corporate and individual tax. Currently, corporations

⁸We use data from IRS form 8975 (country-by-country reports) for year 2016 (the latest year available) to simulate the static revenue from a 25% country-by-country minimum tax. In 2016 this would have yielded \$61 billion in tax revenue (of which \$55 billion coming from profits booked in tax havens, and \$6 billion coming from profits booked in countries generally not considered tax havens but with corporate tax rates below 25%, e.g., the UK). Assuming a 4% nominal annual growth between 2016 and 2019 gives \$68 billion in static revenue in 2019. This figure under-estimates the true revenue because this computation is based on aggregate data (not firm-level data) and there is heterogeneity in the effective tax rates paid by US firms within each foreign country.

⁹Example: assume Nestle's global profits = \$11 billion, of which \$5 billion booked and taxed in Germany at a rate of 30%, \$2 billion booked and taxed in the UK at a rate of 20%, and the remaining \$4 billion booked and taxed in the Cayman Islands at a rate of 0%. If the benchmark minimum tax rate is 25%, then Nestle's global tax deficit is: $\$2 \text{ billion} \times (25\% - 20\%) + \$4 \text{ billion} \times (25\% - 0\%) = \1.1 billion . This global tax deficit would be apportioned to the United States proportionally to the fraction of Nestle's global sales made in the US. Concretely, if Nestle makes 25% of its sales in the US, then the US would collect $25\% \times \$1.1 \text{ billion} = \275 million (on top of any normal corporate tax otherwise due in the US).

pay the corporate tax on their profits and shareholders pay income tax on profits distributed to them as dividends (with a preferential tax rate of 20% at most). With this option on, the corporate tax becomes a withholding tax that is credited back when profits are distributed to shareholders. This way, corporate profits are taxed only once at progressive rates like profits from partnerships. This option also assumes that profits of closely held C-corporations would pay in real time both the corporate (and the supplementary individual tax) regardless of dividend policy distributions effectively aligning the tax treatment of closely held C-corporations with S-corporations. For tax exempt shareholders such as pension funds or endowments of non-profits, the corporate tax is the only tax collected and is not credited back as dividends paid out are not taxable.

For individual income taxes, moving the sliders allows users to see the (fairly) modest impact on progressivity due to the fairly narrow taxable income base. Taxing realized capital at full rates increases sharply the progressivity potential. As discussed above, ensuring that the capital gains tax base does not vanish with high tax rates would require extra steps (making death or transfers a taxable realization, imposing a withholding tax on unrealized tax gains, taxing gains as they accrue, etc.).

In the future, we plan to include more options such as restoring the state and local income tax full deduction (SALT), capping charitable giving contributions (as some candidates are proposing), or transforming the income tax into a progressive consumption tax by exempting net saving (and taxing net dissaving) a policy option often discussed among academics.

Estate tax. The estate tax rubric allows users the change a single tax rate (above the current exemption) and change the avoidance/evasion rate currently set at 60%. The avoidance/evasion includes both the large deductions currently allowed (unlimited spousal and charitable bequests exemptions, favorable valuations) as well as lack of strong enforcement. We plan to refine this rubric to allow more brackets, and more specific enforcement mechanisms (as some candidates have made specific estate tax proposals that we can only model very crudely for now).

National income tax. The national income tax is the broadest possible flat tax on all income sources. It taxes labor and capital income. It is withheld at source by employers on total labor costs gross of payroll taxes and including all fringe benefits, and profits. It also taxes interest and foreign dividends (Saez and Zucman 2019d). Such a tax does not exist currently and you

can choose the national income tax rate on the slider. We estimate that the national income tax base would be slightly over 90% of national income after factoring under-reporting (as it currently exist for the labor income and profits tax bases). On a distributional basis, this tax comes closest to a pure flat tax that increases tax rates almost uniformly across income groups.¹⁰

Value-added-tax (VAT). Note that the assignment of consumption taxes such as VAT cannot be made with very good accuracy given the lack of good micro-data on consumption, income, and savings in America, particularly for high income earners. For the VAT, we assume that taxable VAT consumption is distributed for 75% like current sales and excise taxes and for 25% proportional to factor income as a crude way to capture the fact that the VAT which taxes both services and goods (but still captures only a fraction of consumption) is going to be somewhat less regressive than sales taxes. We also assume that 5 points of a VAT tax would raise about 1.7% of national income (as estimated by CBO, 2018 for the broad VAT option).

Health Care funding. Health care funding is at the heart of democratic primaries debate. Some candidates (such as Warren and Sanders) would like to replace existing private health care insurance currently paid by the corresponding insured workers with public funding.

To make sense of the debate, private insurance premiums of employer sponsored health insurance are best analyzed as a large privatized poll tax on covered workers: a tax because they are mandatory (employers with 50+ workers have to offer insurance) while most other groups get highly subsidized insurance (medicaid, medicare, ACA exchanges); privatized because they are managed by employers; and a poll tax because they are essentially a fixed amount per covered worker (the secretary pays the same amount as the executive). This “privatized poll tax” represents 7% of national income.

By default, our simulator depicts private health insurance contributions as an extra tax paid by the corresponding insurance workers (this option can be removed in the health care rubric in which case the simulator depicts only the governmental taxes). The simulator also allows to replace these private health insurance contributions with a national income flat tax. This option transforms current health insurance contributions into extra wages and funds health insurance through a new 7% flat tax on national income.

¹⁰Note that putting a tax of 10% raises 8% in national income tax because the tax has offsetting effects and reduces the other tax bases.

For the candidates plans, Sanders and Warren plan to replace private health insurance by public funding, which means that current premia become extra wages and current insurance is funded by taxes.¹¹ When the option to display private health insurance as an extra tax is on, the simulator computes the tax surplus net of the 7% of national income needed to replace fully private health insurance at it currently exists with public funding. In words, you can keep your employer provided insurance and the premia currently paid by employee and employer (on average \$13,000 per covered worker) are transformed into extra wages. But any new outlay, such as providing insurance to the currently uninsured, more generous coverage (or in reverse containing costs) is not factored in our computations. Our simulator captures only the funding and tax aspect of the problem and not the complexities of how to change, improve, or expand health insurance coverage.

Sales Tax Elimination. Sales taxes are administered by state and local governments. They apply when you buy goods (but typically not services). They are the most regressive taxes. This option eliminates all sales taxes (and also Trump tariffs that are another form of sales tax). Excise taxes on specific goods (primarily gasoline and fuel, alcohol, and tobacco) are left unaffected (as taxing such goods have justifications in terms of negative externalities on the climate and discouraging use of highly addicting and harmful alcohol and tobacco products). As sales taxes are decided locally, the federal government does not have a directly control on this lever but could possibly be part of a solution replacing sales taxes by less regressive taxes such as a value added tax or the national income tax.

3.3 Book tax plan

In our book, Saez and Zucman (2019), we have proposed an example of a tax reform that greatly increases the progressivity of the tax system by instituting a wealth tax on the very rich, plugging loopholes in the international corporate tax system (allowing to increase corporate tax rates), increasing the progressivity of the individual income taxes, and replacing the more regressive taxes (the privatized health insurance “poll tax” and the state and local sales taxes) by a new

¹¹Economists believe that fringe benefits such as health insurance costs are fully borne by workers in the long-run (which means that if such a benefit is no longer paid by the employee or employer), the wage of the employee increases by the full amount regardless of who pays nominally the premia. In the short-run, the incidence on wages would have to be legislated to make sure alternative funding transforms existing premia into extra wages 100%. With such legislated incidence, the labor costs to the employer do not change.

and modern truly comprehensive flat “national income” tax on labor and capital income. The website allows to visualize the reform we described in the book as an option.

3.4 Wealth tax page

On this page, users can explore how a wealth tax would erode the wealth of the richest Americans (had they existed since 1982). This page is based on the detailed calculations presented in Saez and Zucman (2019c). It is actually more computationally intensive as it calculates the effects of cumulative wealth taxation on the wealth of all Forbes 400 individuals from 1982 to 2018.¹² The calculations assume that each year, the wealth tax reduces wealth by the average tax rate on wealth. Therefore, the effect of the wealth tax build up geometrically over time. A 5% average wealth tax reduces wealth to 95% after 1 year, to $.95^2=90.25\%$ after 2 years, ..., $.95^{15}=46.3\%$ after 15 years, etc. Because new young billionaires constantly arise, the wealth tax never abolishes billionaires but it can sharply reduce the time individual billionaires (and especially dynasties) remain billionaires. The wealth tax has a much larger cumulative effect on inherited and mature wealth than on new wealth.

The figure on the website depicts the share of total wealth owned by the top 400 richest Americans since 1982 from Forbes magazine (the top 400 are included in 2018; in prior years, the number of richest individuals included is indexed to the total number of families in the economy, so as to capture the same fraction of families in all years, which is most meaningful economically to measure ultra-wealth concentration). The figure also depicts what their wealth share would have been if wealth tax (parametrized by the sliders) had been in place since 1982. The nominal thresholds for the wealth tax brackets apply in 2018 and are indexed to the average wealth per family economy wide in prior years. The table on the website lists the name, and wealth in 2018 of the top 11 richest Americans (Forbes magazine estimates). The last column shows what their wealth would have been if the wealth tax (parametrized by the sliders) had been in place since 1982.

¹²Forbes updated its database to 2019 in early October 2019 and we will accordingly update the page with newer data.

4 Candidates Tax Plans

We have tried to model the major candidates tax plans within our parameters. Two important things should be noted. First, our crude parametrization does not allow us to model exactly what the candidates plans are proposing but we are using our best judgement to get the best approximation we can given our parameters. We have tested on the more complete micro-data that our approximation comes close to a more comprehensive and more accurate modeling in various cases.¹³ Second, many of the tax plans are not yet sufficiently fleshed out to be fully defined. Some candidates might still announce new tax plans. We have modeled the aspects that were sufficiently detailed for us to do so (as of October 10, 2019). We will revise our parametrization as more details come out. We have contacted each of the campaigns to make sure we understood their plans correctly and asking for additional clarifications when there weren't sufficient details publicly available. Table 1 summarizes how we understand the candidates plans and how we model them. Importantly, this is our interpretation and our modeling of the candidates tax plans (and not the campaigns'). Understandably, the campaigns are eager to emphasize the outlays they are proposing (more so than tax increases). Because of focus is on taxes only, our tax simulator cannot do justice to this aspect of the debate. But our basic scoring can assess how much revenue “gunpowder” is left to fund proposed outlays (over and above the current tax system which is itself in structural deficit).¹⁴

4.1 Joe Biden

The campaign has not yet given much details on their tax plans limiting our ability to provide a complete picture yet. There are 4 main components that have been mentioned on the candidate website.

Corporate tax. The federal corporate statutory tax rate would be increased to 28% midway between the current tax rate of 21% and the pre-Trump tax rate of 35%. Tax expenditures for fossil fuels would be eliminated. Therefore we correspondingly assume a corporate effective tax rate (summing the federal and state corporate taxes) of 21% midway between the current 16%

¹³For example, Bernie Sanders' wealth tax halves the brackets for singles, something our current simulator does not do but the effect is very minor as the vast majority of the wealthy are married couples.

¹⁴In 2019, a peak year of the business cycle, the federal government has a deficit of \$1 trillion or 5.5% of national income. As a rule of thumb, deficits above 3-4% are not sustainable in the long run.

and the pre-TCJA of 25%.

Individual income tax. The campaign plans to raise income tax rates on top earners (but not the middle class) back to pre-TCJA levels. We therefore assume that the current top rate of 37% goes up to 39.6% (and rates in other brackets do not change). The plan is to limit the per-dollar benefit from tax expenditures to 28%. This increases slightly the tax rate on the upper brackets. We model this very approximately by increasing the top rate of 39.6% up to 40% and adding 1 point to the second and third brackets (taxpayers with taxable income above \$315,000 for married).

The tax plan equalizes tax rates on capital gains and ordinary income for taxpayers with at least \$1 million in income and eliminates the step-up in basis at death for all taxpayers. We set the option of taxing fully capital gains and dividends on (as the majority of capital gains and dividends accrue to high-income taxpayers and the current sliders only allow to tax all dividends and realized capital gains at ordinary rates). We do not yet model the step up of basis at death which is an increase in the tax on capital gains for all taxpayers. Therefore, on net, the option of taxing fully capital gains and dividends should be a close approximation to the proposed plan.

Social security taxes. The campaign has mentioned that high-income wages would be subject to the normal payroll tax rates (12.4% split equally between employees and employers) but without any further details on whether this means eliminating entirely the current cap (at \$132,000 of earnings per individual) or starting the normal social security tax rate of 12.4% above some higher level (creating a donut hole) and including investment income in the base as other campaigns have proposed. Given this uncertainty that the campaign has not yet dispelled (based on email exchanges), we are not trying to model this aspect of the Biden tax plan yet and wait until more details are released.

Health care premia. The Biden campaign has proposed more generous health insurance premium support to middle-income families who purchase health insurance through the ACA exchanges with no change in the employer sponsored health insurance system. Therefore, we assume that the existing private health insurance deducted from workers labor compensation stays as is (ACA insurance payments are very small in aggregate relative to the 7% of national

income paid in health insurance through employers).

4.2 Bernie Sanders

The Sanders campaign has come out with the most detailed set of tax plans. The campaign has offered specific plans for the wealth tax, the estate tax, expanding the social security tax, paying for medicare for all (as well as financial transaction tax and taxing excessive CEO compensation). They have not yet disclosed specific plans for the corporate tax and individual income tax (but senator Sanders had released plans on these in his funding medicare for all options before the 2020 campaign and hence we can use these as placeholders until specific plans are released).

Wealth tax. We model the Sanders wealth tax following the rate structure laid out in the proposal. We assume a 15% evasion rate (as in the scoring we provided to the campaign in September 2019). Because our sliders do not allow to halve brackets for singles, we make the 1% tax start at \$25 million mid-way between the \$16 million threshold for singles and the \$32 million threshold for marrieds. Note that the Sanders wealth tax need to “more brackets” option to display fully up to the top tax rate of 8% above \$10b.

Estate tax. We crudely model the Sanders estate tax plan available at <https://www.sanders.senate.gov/download/estate-tax-one-pager> as an increase of the current tax rate above \$11m from 40% to 55% and a reduction in the avoidance/evasion rate from 60% down to 40%. This roughly captures the fact that the exemption threshold would be lowered and that there would be much more graduation in the tax rates.

Corporate tax. Bernie Sanders is a strong proponent of coming back to the 35% tax rate and closing international tax loopholes as outlined in his Medicare for all funding options. As we wait for the exact plan, we tentatively (and perhaps conservatively) model his corporate tax plan as an effective tax rate of 25% on corporations (coming back to pre-TCJA effective tax rate) further boosted by the better taxation of multinationals option.

Individual income tax. The campaign has proposed to introduce an extra income tax of 12.4 percentage points on high earners (presented formally as an extension of the social security tax on high incomes both from labor and capital). The tax would be based on adjusted gross income

and would affect both labor and capital income for taxpayers with income above \$250,000. We model this surtax as an extra 12 points of tax rates in the top two brackets (\$400,000 and above for married) and an extra 4 point in the bracket \$315,000 to \$400,000 (for married). This is because taxable income is slightly less than adjusted gross income due to deductions.

As part of funding Medicare for all, the campaign has also proposed to creating a 4 percent income-based premium paid by individuals, exempting the first \$29,000 in income for a family of four. As the exemption corresponds approximately to the current standard deduction (\$24,000 for a married couple), we model this surtax as an extra 4 points of tax rates across all brackets.

The campaign has not yet disclosed its exact plan for increasing the regular tax rates. As we wait for details (and will update accordingly), we use the previous individual tax plan that Bernie Sanders had proposed earlier that increases tax rates up to 52% for taxable income above \$10 million (hence 15 points more than the current 37%). See <https://www.sanders.senate.gov/download/options-to-finance-medicare-for-all>. Hence, these combined increases lead to a top income tax rate of 68% = (52%+4%+12%). We also assume that realized capital gains and dividends will be taxed at full rates (as mentioned in this earlier document).

Employer payroll tax funding medicare payroll tax. The campaign has also proposed creating a new 7.5 percent payroll premium paid by employers but exempting the first \$2 million in payroll for each business to protect small businesses. We currently approximate this payroll tax with the labor component of a national income tax of 2% that raises approximately the same revenue.

Taxing excessive CEO compensation The campaign has also proposed higher corporate tax rates on companies that pay their CEOs disproportionately relative to their median workers. We model this as the corporate profits component of the 2 points of the national income tax.

Funding health care. The campaign is proposing to replace current private contributions to health insurance through employer sponsored plans by public funding. Therefore, it is useful to include health care private contributions (7% of national income) in total taxes when assessing the effect the Sanders tax plan.

4.3 Elizabeth Warren

We model the main components of the campaign tax proposals as they have been currently specified.

Wealth tax. We model the Warren wealth tax of 2% tax on family wealth above \$50m and 3% above \$1b as in the proposal and we assume a 15% evasion rate (as in the scoring we provided to the campaign in January 2019).

Corporate tax. The campaign has proposed a real corporate profits tax of 7% on the largest corporations and clearly expressed the wish to close multinational tax loopholes so we set the better tax of multinationals option on (we do not know yet the quantitative magnitude of the final plan).¹⁵ The campaign has also expressed the wish to increase the corporate tax rate back to where it was before 2018 so we set the effective tax rate to 25% (relative to its current 16%).

Individual income tax. The campaign has proposed to introduce an extra income tax of 14.8 percentage points on high earners. The tax will be an additional payroll tax of 14.8% above individual earnings of \$250,000 split equally between employee and employer. The tax will also include a 14.8% surtax on investment income for incomes above \$400,000 (in the case of a married couple) and above \$250,000 (in the case of single taxpayers). Therefore, the tax would cover both labor and capital income of high earners. We model this surtax as an extra 15 points of tax rates in the top two brackets (\$400,000 and above for married) and an extra 5 point in the bracket \$315,000 to \$400,000 (for married). This is because taxable income is slightly less than adjusted gross income due to deductions.¹⁶ Note that the payroll tax component is split between employees and employers. In the long-run, economists traditionally believe that the employee bears the full burden (and this is the modeling choice we have made). In the short-run however the employer portion of the tax might be borne by the employer (in the form of lower profits for shareholders, higher prices for the consumers of the goods they produce, or lower pay increases across all workers at the firm). We do not try to model this as our simulator

¹⁵Details at <https://medium.com/@teamwarren/im-proposing-a-big-new-idea-the-real-corporate-profits-tax-29>

¹⁶After TCJA caps deductions for state and local taxes at \$10,000, itemized deductions for the wealthy are primarily charitable giving so the difference between adjusted gross income and taxable income for top earners is much smaller than it used to be. See early 2018 tax statistics at <https://www.irs.gov/statistics/filing-season-statistics>.

keeps pre-tax incomes fixed.

Funding health care. The campaign is proposing to replace current private contributions to health insurance through employer sponsored plans by public funding. Therefore, it is useful to include health care private contributions (7% of national income) in total taxes when assessing the effect the Warren tax plan. As of early October, the campaign has not yet specified how this is going to be funded explaining why the current Warren tax plan shows a deficit of 2.0% of national income (\$400 billion in 2019) relative to current tax system. We will update the plan as soon as the funding source is specified.

Estate tax. We crudely model the Warren estate tax plan available at <https://www.congress.gov/bill/116th-congress/senate-bill/787/text> as an increase of the current tax rate above \$11m from 40% to 55% and a reduction in the avoidance/evasion rate from 60% down to 40%. This roughly captures the fact that the exemption threshold would be lowered and that there would be much more graduation in the tax rates.

4.4 Other candidates

A number of other candidates have offered tax plans, sometimes with careful details. We plan to incorporate more plans as the primary campaign develops.

4.5 Comparing the candidates tax plans

The table summarizes the tax proposals made by the campaigns for each tax rubric as we have described them above. We have tried to approximate these proposals using our tax simulator. Some of the proposals are not yet fully specified (in which case we do not model them unless there is a prior plan to draw upon or the candidates have made salient statements about their intentions). The row “plan status” for each rubric indicates how advanced each proposal is. Sanders and Warren will replace the existing private insurance health care contributions through employers (=7% of national income) by public funding. In this case, current private health insurance contributions become extra cash wage income for workers and extra taxes fund health insurance. Revenue estimates in the bottom row are based on the parts we modeled and the best approximation we could make using our tax simulator (the Warren plan is in deficit because funding for health care has not yet been fully specified).

Note that we do not include in this computation any new outlays (such as higher social security benefits or providing health insurance to more) as our focus is on taxes only (we view existing private insurance contributions as a privatized tax on covered workers). New outlays would benefit the working class and middle class but are not modeled here. The candidates tax plans are not yet finalized (and hence our analysis may not reflect fully the campaigns' goals). We will update the figure as proposals are refined, completed, or expanded. This understanding, modeling, and analysis are our own (not the campaigns).

The Biden tax plan raises 1.6% of national income extra in taxes (relative to current system). The Warren tax plan raises 2.0% of national income *less* (as the public health funding source is not yet fully specified). The Sanders tax plan raises 2.6% of national income extra (relative to current system). It is important to understand that this net surplus is the tax revenue collected over and above what would be raised by the current tax system. Extra spending or outlays promised by the candidates would have to come from this surplus.¹⁷ In the case of health care, our computation simply means that the Sanders and Warren plans would pay fully for employer provided health insurance as it currently exists (7% of national income) but does not factor in any extra outlay the candidates may be proposing such as insuring the currently uninsured, or providing health insurance plans more generous (for example with lower deductibles or copays) or conversely tightening up costs than what currently exists. Another way to put it is that if employer health care contributions are not factored in taxes (an option one can use the tax simulator in the health care rubric), then the current Sanders tax plan raises 9.6% of national income extra (instead of 2.6%) and the current Warren tax plan raises 4.9% of national income extra (instead of -2%).

Figure 1 depicts the average tax rate by income groups in 2018 (after the Trump tax cut) and under the three leading candidates for the democratic presidential primary: Joe Biden, Elizabeth Warren, and Bernie Sanders. All federal, state, and local taxes are included. We also include private health insurance contributions (7% of national income) as an extra tax paid by workers as Warren and Sanders plan to replace these private contributions by public funding.¹⁸

¹⁷Note also that the current tax system has a structural deficit as even at the peak of the business cycle in 2019, it is predicted to generate a deficit of almost \$1 trillion in 2019 or 5.7% of national income (a sustainable long-run deficit should probably not exceed much above 3%) implying that the US tax system currently has a 2-3% of national income tax revenue structural deficit.

¹⁸Private insurance premiums are best analyzed as a large privatized poll tax as we argue in Saez and Zucman (2019, Chapter 9): a tax because they're mandatory (employers with 50+ workers have to offer insurance); privatized because they're managed by employers; and a poll tax because they are essentially a fixed amount

In this case, current private health insurance contributions become extra cash wage income for workers and extra taxes fund health insurance.

5 Conclusion

We hope that taxjusticenow.org will help citizens understand and participate in the tax debate. We have tried to create a useable and hence simplified depiction of the tax system and how it would change under a variety of tax reforms. The website is constructed based on the best data we could create. It is updated from our publication Piketty, Saez, and Zucman (2018). The tax computations themselves under different parametrizations are very simple but we think they are quantitatively good approximations to what a more sophisticated scoring based on micro-data would generate.¹⁹ Obviously, the tool could be further refined, calculations could be improved, assumptions can be changed. We welcome your reactions and suggestions. Based on the feedback, this tool will evolve, expand, and improve in the coming months and years. We encourage other tax experts to build upon the tool and adapt it to their own use.²⁰

per covered worker (the secretary pays the same amount as the executive).

¹⁹We are sure that users will notice glitches especially for extreme scenarios and we will try and correct them. We have tried to check carefully that our scoring matches the very useful scoring numbers presented in US Congressional Budget Office (2018b) for a wide range of policy options.

²⁰The excel version online at <https://eml.berkeley.edu/~saez/taxsimulator.xlsx> allows users to quickly navigate the computations. We may develop STATA or R versions as well in the future that will be even easier to understand and adapt.

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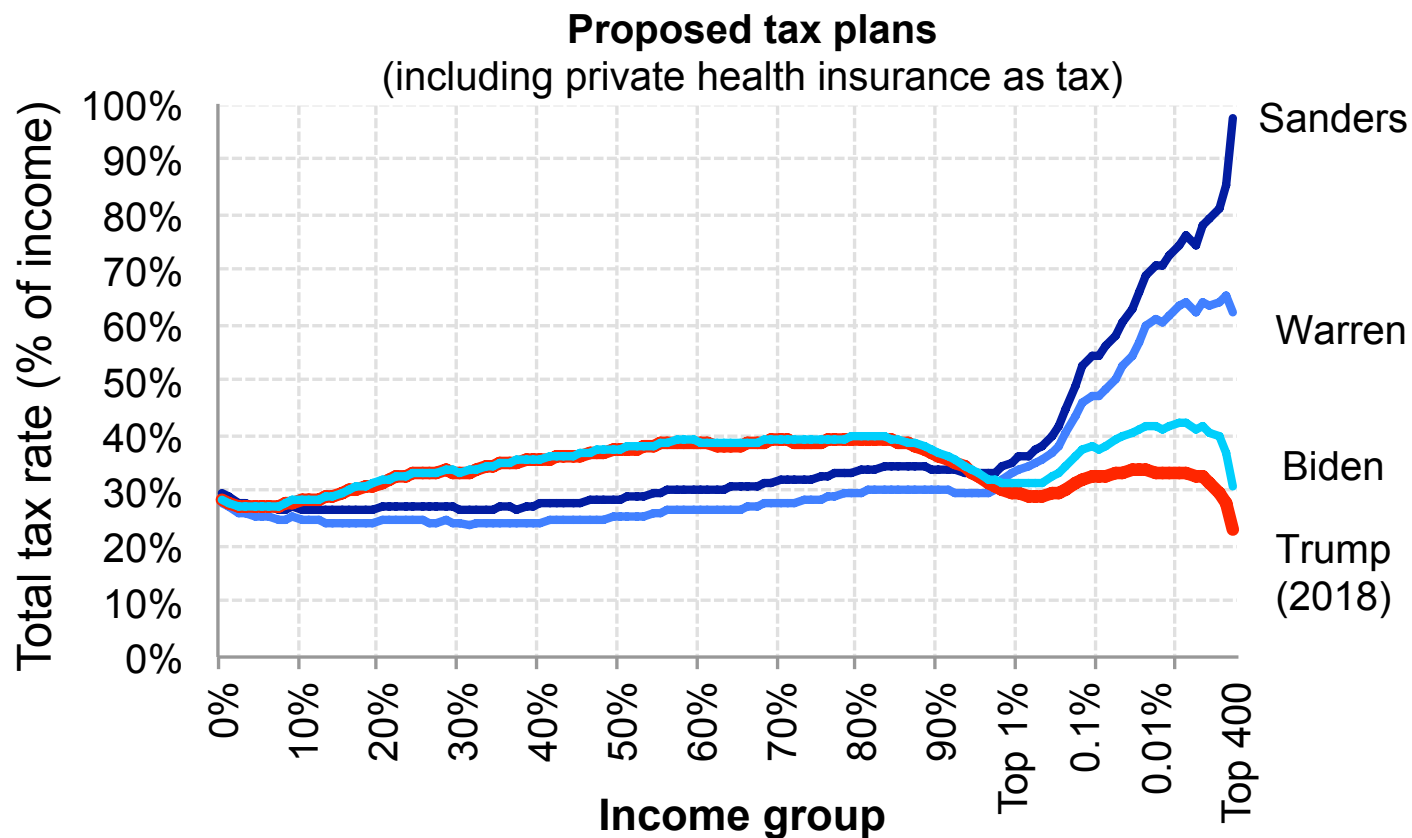
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Table 1: Modeling of Candidates' Tax Plans (in progress as of October 10, 2019)

	Trump (2018) Current tax system	Joe Biden	Elizabeth Warren	Bernie Sanders
Wealth tax	None	None	Graduated tax: 2% above \$50m, 3% above \$1bn Strong enforcement: 15% evasion rate	Graduated tax: 1% above \$32m, 2% above \$50m, ..., up to 8% above \$10bn Strong enforcement: 15% evasion rate
Plan status			Released with details	Released with details
Corporate tax	Effective fed+state corporate tax rate of 16% on US profits Negligible tax on foreign profits made by US multinationals	Effective fed+state corporate tax rate increased to 21% [nominal federal rate up to 28% halfway between Obama's 35% and Trump 21%] No change proposed yet	Effective fed+state corporate tax rate up to 25% (Obama level) [our guess] Better taxation of multinationals (real corp profit tax)	Effective fed+state corporate tax rate up to 25% (Obama level) [our guess] + extra surtax when CEO pay excessive Better taxation of multinationals [our guess]
Plan status		No detailed release yet	Released partly	Released partly
Individual income tax	Graduated rates up to 37%	Top rate only increases back to 39.6% (as under Obama) and 28% limit on tax expenditures Dividends / capital gains taxed at ordinary rates (for incomes above \$1m) + eliminate the step-up in basis at death for all taxpayers	Graduated rates up to 37%+new 14.8% high income social security surtax Dividends / capital gains taxed at ordinary rates (for surtax) Released partly [only surtax]	Graduated rates up to 52% +12.4% high income social security surtax+4% income surtax Dividends / capital gains taxed at ordinary rates Released partly [only surtaxes]
Plan status		No detailed release yet	No detailed release yet	Released with details
Private health insurance contributions through employers	Insured workers pay full cost regardless of earnings		Private insurance contributions (employer+employee) become extra wages Funding not yet fully specified	Private insurance contributions (employer+employee) become extra wages 4% income surtax (in individual income tax above) and new employer 7.5% payroll tax
Extra tax for funding (over and above other items)				
Plan status			No detailed release yet	Released with details
Estate tax	Tax rate of 40% above \$11m with weak enforcement		Increase in estate tax progressivity and enforcement (modeled approximately)	Increase in estate tax progressivity and enforcement (modeled approximately)
Other tax plans not modeled		Subject high-income wages to the normal payroll tax rates (no sufficient details yet to model)	Tax on lobbying (revenue effects small)	Detailed financial transaction tax (revenue effects likely small)
Net tax revenue surplus (% of national income):		1.6%	-2.0%*	2.6%
(relative to current tax system, taking into account only the parts we modeled based on existing statements and announcements)				

*Preliminary: tax plan shows a deficit because the funding source for replacing private health insurance by public funding is not yet fully specified.

Notes: The table lists the tax proposals made by the campaigns for each tax rubric. We have tried to approximate these proposals using our tax simulator (complete details in the technical appendix online). Some of the proposals are not yet fully specified (in which case we do not model them unless there is a prior plan to draw upon or the candidates have made salient statements about their intentions). The row "plan status" for each rubric indicates how advanced each proposal is. Sanders and Warren will replace the existing private insurance health care contributions through employers (=7% of national income) by public funding. In this case, current private health insurance contributions become extra cash wage income for workers and extra taxes fund health insurance. Revenue estimates in the bottom row are based on the parts we modeled and the best approximation we could make using our tax simulator (the Warren plan is in deficit because funding for health care has not yet been fully specified). Note that we do not include in this computation any new outlays (such as higher social security benefits or providing health insurance to more) as our focus is on taxes only (we view existing private insurance contributions as a privatized tax on covered workers). New outlays would benefit the working class and middle class but are not modeled here. The high income social security surtaxes of Warren and Sanders are modeled approximately as higher tax rates in top brackets for the individual income tax. The Sanders 7.5% employer payroll tax and excessive CEO pay corporate surtax is modeled as a 2% national income tax (on labor income and corporate profits) that raises approximately the same revenue. The candidates tax plans are not yet finalized (and hence our analysis may not reflect fully the campaigns' goals). We will update the figure as proposals are refined, completed, or expanded. This understanding, modeling, and analysis are our own (not the campaigns).



Notes: The figure depicts the average tax rate by income groups in 2018 (after the Trump tax cut) and under the three leading candidates for the democratic presidential primary: Joe Biden, Elizabeth Warren, and Bernie Sanders. All federal, state, and local taxes are included. We also include private health insurance contributions (7% of national income) as an extra tax paid by insured workers as Warren and Sanders plan to replace these private contributions by public funding. In this case, current private health insurance contributions become extra cash wage income for workers and extra taxes fund health insurance. The candidates tax plans are not yet finalized (and hence may not reflect fully the campaigns goals). We will update the figure as proposals are refined, completed, or expanded. The Biden tax plan raises 1.6% of national income extra in taxes (relative to current system). The Warren tax plan raises 2.0% of national income *less* (as the public health funding source is not yet fully specified). The Sanders tax plan raises 2.6% of national income extra (relative to current system). Taxes are expressed as a fraction of pre-tax income. Pre-tax income is comprehensive (it includes all labor and capital income including fringe benefits, retained earnings of corporations, etc.) and sums up to national income as described in Piketty, Saez, and Zucman (2018). Individual adults are divided into percentiles with finer breakdown within the top 1%. Incomes within married couples are split equally. The sample is limited to adults with pre-tax income above \$7,500 (half-time work at federal minimum wage) as taxes become large relative to pre-tax income for very low incomes. This sample includes 90% of adults and virtually 100% of national income. All results can be reproduced and explored at taxjusticenow.org.