

Simulating Economic Relief Payments

Methodology

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Data:

We use the 2017 extract (the 2018 CPS ASEC) from the [Urban Institute's Transfer Income Model, version 3](#) (TRIM3) as our primary data source for the interactive model. TRIM3 is copyrighted by the Office of the Assistant Secretary for Planning and Evaluation at the Department of Health and Human Services and developed and maintained at the Urban Institute. To compile and modify TRIM3 data for use with other CPS-based analysis files, we rely primarily on [publicly available](#) code and instructions from Zach Parolin, Columbia University/Bocconi University to merge the TRIM3 extracts, remove high-income clones and alien replicates from the sample, and merge with our sample from IPUMS-CPS. We use the following variables from TRIM3 directly in the calculator: the adjusted gross income of the tax unit (AGIOFTAXUNIT); the number of adults in the tax unit for determining filing status (SIZEOFUNIT); the number of dependent children qualifying for the Child Tax Credit in the tax unit (CHILDTAXCREDITQUALIFYINGKIDS); the number of adult dependent children in the tax unit (calculated using NUMADULTDEPKIDS, NUMBEROFDEPENDENTS, NUMBERDEPKIDS, and CHILDTAXCREDITQUALIFYINGKIDS); and the 2018 CPS person weight of the head of the tax unit (calculated using PersonWeight and PersonWeightRatio), which we use as the basis of our primary weight. We use the flag for tax unit heads in TRIM3 (EXPANDEDUNITHEAD and PERSONID) to restrict the sample to a single observation per unique tax unit. The findings presented here required additional imputations and assumptions to the TRIM3 data and are attributable only to the author of this analysis.

We also supplement the TRIM3 data with cleaning/analysis using the University of Minnesota's [IPUMS-CPS](#); however, this data is not used directly in the calculations for our interactive model.

Unit of Analysis:

The relief payments in the CARES Act and the December Consolidated Appropriations Act are administered through the U.S. tax system; therefore, our primary unit of analysis is the “tax unit,” which encompasses the individuals counted on a single tax return. Households can have multiple tax units depending on the number of families and the tax situation of particular family members. We restrict the sample so that it contains a single observation for each unique tax unit.

Analysis:

Our interactive calculator relies on a “target budget” methodology to determine the generosity of relief checks, given several parameters set by the user. Whereas most policy analyses of income support programs use the size of individual payments as an input and calculate the total program budget as one of the primary outputs, we reverse this process by using the budget as one of the primary inputs, along with other user-inputted parameters like the eligibility threshold

and dependent multiplier, and back into the size of relief payments. This allows the user to determine the amount of relief payments from a target budget, while simultaneously changing assumptions about other elements of the simulated program's design (see the accompanying Appendix below for documentation of our approach). We reweight the data using a raking algorithm targeted to administrative targets using data published by the IRS (see the Appendix). The 2018 CPS ASEC includes data on income for 2017; therefore, we inflate all Adjusted Gross Income observations from 2017 dollars to 2019 dollars using the [R-CPI-U-RS series](#).

Interactive Parameters:

Our interactive allows users to modify various “policy parameters,” which are detailed below, to control the simulated relief payment programs. The “slider parameters” have a fixed minimum and maximum range and defined steps (for instance, the Program Budget ranges from \$0 to \$650 billion in steps of \$5 billion).

- **Default Programs:** Allows the user to choose between different “default” simulation programs. The “Custom” option leaves all policy parameters available to the user. The “Consolidated Appropriations Act (\$600)” program simulates the second round of relief payments, which included \$600 payments for adults and \$600 payments for child dependents. The “CARES Act (\$1,200)” simulates the original relief payments distributed in 2020.
- **Program Budget:** Determines the total simulated program budget (aggregate expenditures) for relief payments in billions of dollars. The program budget is adjusted to reflect expenditures on payments to foreign addresses (e.g., U.S. residents living abroad). See “Adjustment to the Budget” in the Appendix.
- **Universal Eligibility:** Governs whether the simulation will use a defined eligibility threshold (“Not Universal”) for calculating relief payments or if it will eliminate phase outs of payments at higher income levels (“Universal”). It is important to note that the Universal setting does not affect Categorical Eligibility. The Universal setting disables the Equivalence Adjustment, Eligibility Threshold, Kink Point, and the Joint Filer Kink Point Multiplier parameters.
- **Phaseout Adjustment:** Determines Eligibility Thresholds for tax units with one or more dependents. If “Equivalent Phaseouts” is selected, then the Eligibility Threshold will be set proportionate to the additional payment the tax unit receives, which results in equal phaseouts for all tax units within a particular filing group (i.e., head of household or joint filers) regardless of the number of dependents. Alternatively, “Force Phaseouts” will force Eligibility Thresholds to the same point for all tax units within a particular filing category. As an example, if the Eligibility Threshold for a joint filing tax unit with no dependents were set at \$150k (this could be accomplished by setting the Eligibility Threshold parameter at \$75k and the Joint filer Kink Point Multiplier at 1.0), the Force Phaseouts setting would cause the simulated payments to any joint filing tax unit with one or more dependents to also phaseout at \$150k. This would lead to a steeper phaseout for tax units with one or more dependents. Alternatively, the Equivalent Phaseouts setting would further extend the Eligibility Threshold for joint filing tax units with one or more dependents such that the phaseouts were equivalent for all tax units within the joint filer group.

- Eligibility Threshold: This parameter sets (in dollars) the end of the phaseout range for single adult tax units (no dependents). Single adult units with Adjusted Gross Incomes at or above this threshold are ineligible for simulated payments. The Eligibility Threshold for other filing groups (head of household and joint filers) is most directly controlled by the setting on the “Joint Filer Kink Point Multiplier” parameter; however, other parameters will indirectly determine this value as well. For instance, if the Phaseout Adjustments parameter is set to “Equivalent Phaseouts” then a higher Dependent Multiplier will push the Eligibility Threshold up for head of household and joint filing tax units.
- Kink Point: This parameter sets (in dollars) the start of the phaseout range for single adult tax units (no dependents). Tax units with Adjusted Gross Incomes at or below this point are eligible for the maximum payment under the simulated relief program. Relief payments are reduced by the phaseout rate for tax units with Adjusted Gross Incomes above the Kink Point and below the Eligibility Threshold.
- Joint Filer Multiplier: Determines the generosity of payments for families that file their taxes jointly relative to tax units with a single adult. A Joint Filer Multiplier of 1.0 will result in maximum payments to joint filer tax units that are 100% higher than the maximum payment for single adults. A setting of .5 would correspond with maximum payments that are 50% higher.
- Joint Filer Kink Point Multiplier: Sets the Kink Point -- the start of the phaseout range -- for joint filer tax units relative to the Kink Point for single adult tax units. A Joint Filer Kink Point Multiplier of 1.0 will result in the start of the phaseout for joint filer tax units being set 100% higher than the start of the phaseout for single adult tax units. A value of 0 will result in equivalent Kink Points for single adult tax units and joint filer tax units. For example, if the Kink Point is set at \$75k for single adult tax units (with no dependents), and the Joint Filer Kink Point Multiplier is set to 1.0, then joint filer tax units (with no dependents) will have a Kink Point of \$150k, representing the start of their phaseout range. The start of the phaseout for tax units with a head of household status is set to a fixed 50% of the difference between the start of the phaseout for single adult tax units and joint filer tax units.
- Categorical Eligibility: We include two categorical eligibility options: inclusion of tax units without a Social Security Number (SSN) and inclusion of adult dependents. As we discuss in the Methodology, we do not have direct data for SSN status within our sample of the U.S. householder population. Therefore, we conduct our own imputations to infer this status. We also do not directly impute “mixed household status” as one of our assumptions is that if one spouse is imputed to have an SSN, both spouses do. We also do not directly observe or impute whether respondents have a Individual Tax Identification Number (ITIN), which many undocumented immigrants use to pay taxes. Adult dependents include any dependents who do not qualify for the Child Tax Credit.
- Weight Specification: We compute custom weights that are adjusted to target aggregated administrative data released by the Internal Revenue Service for the CARES Act. These “raked weights” match the number of payments distributed in the CARES Act along a number of dimensions (see “Raked Weights” in the Appendix). We recommend using these weights for simulations with the interactive; however, we also include the original CPS weights for any interested users.

Limitations:

Our sample includes the “usual residents” of U.S. households and non-institutional group quarters, which excludes correctional facilities, nursing homes, and mental hospitals, and individuals who are experiencing homelessness. We assume 100% take-up among our eligible sample of tax units. The best available evidence suggests that upwards of [9 million individuals](#) who were potentially eligible for CARES Act relief payments did not receive them -- with missed payments concentrated among individuals who are traditionally [non-filers](#). Using the original 2018 CPS weights, we generally underestimate the number of relief payments. Using the raked weights, the original weights are adjusted to match targets published by the IRS for the number of relief payments. The model also generally overestimates the typical size of relief payments; therefore, our simulations with the raked weights will tend to overestimate the cost of a given program (see the Appendix for benchmarking of our model). Relief payments are technically treated as “[advanced refunds](#)” by the Internal Revenue Service; therefore, some tax units will qualify for supplemental “recovery rebates” if their next year’s tax return’s reported income or number of dependents would qualify them for a larger relief payment. We do not attempt to model whether tax units will receive a supplemental recovery rebate due to updated information on their tax return. In lieu of a direct question in TRIM3 or the CPS related to whether the respondent holds a valid Social Security Number (SSN), which is required to qualify for relief payments, we use various survey questions in the CPS, including respondent’s birthplace, year of immigration, and father and mother’s birthplace, to impute legal immigration status. We assume that if one spouse holds an SSN, the other spouse also does; therefore, we do not model ineligibility for “mixed status” tax units where one spouse does not hold an SSN. We allow for broad flexibility of user inputs into the model, which means that some combinations of parameters will yield programs that are not feasible on certain political or policy criteria. We restrict the kink point to 90% of the accompanying eligibility threshold to avoid benefit cliffs. Still, some combinations of parameters could have sizable phaseout rates. Relatedly, we do not make an attempt to account for any potential labor supply effects; however, the calculator does report phaseout rates so that the user can evaluate potential feasibility for themselves.

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