Appendix

1 Program Simulation

Traditionally, microsimulation of benefit/transfer programs is focused on cost as one of the key *outputs* of the simulation. Conversely, the model described in this paper treats the budget as an exogenous parameter, or key *input*, and solves for the associated benefit payments based on that budget amount. The advantage of this procedure, which I refer to as a "fixed budget framework," allows for a direct dollar-for-dollar comparison of the benefits for alternative program structures at a given budget level (or cost). For instance, this framework within a microsimulation model allows one to test the outcomes from $100 billion allocated to a more targeted program versus a more universal program. Alternatively, it can test the marginal poverty-reducing impact of additional spending on a given program.

In this section, I first describe my methodology for simulating four income support programs within a fixed budget framework using static calculations, which exclude expected labor supply effects. These programs include a universal guaranteed income, a guaranteed income, a phased guaranteed income, and an earned income credit. I then describe a generalized framework for implementing dynamic calculations to incorporate expected labor supply effects, and associated revenue effects, based on elasticities from the economics literature. For the means-tested programs, the formulas below are generalized for some earnings measure of tax units; however, in my simulations I specifically use "adjusted gross income" to determine eligibility and benefit amounts, which reflects the program structure used in the COVID economic relief payments — the most relevant and recent real-world analogue at the federal level to my simulations.

For each income support program within my simulation model, I incorporate relevant sampling weights from the CPS to make the calculations representative of the US population. In the section on a Universal Guaranteed Income, I describe a generalized model that includes equivalence scales that account for the size and composition of the family. For all other models, I describe parsimonious models that exclude equivalence scales; however, these equivalence scales are included in my microsimulation. In my default model, each equivalence scale incorporates a weight of 1.0 for each adult in the tax unit and 0.5 for each child in the tax unit.

1.1 Static Calculations

For each program, I derive a closed-form solution for static calculations (i.e., excluding labor supply effects) of benefits payments for each eligible tax unit, i, based on an exogenously defined budget amount, B, which I define as equivalent to the sum of payments, P, across all tax units.

$$B \equiv \sum_{i=1}^{n} P_i \tag{1}$$

1.1.1 Universal Guaranteed Income

I define a universal payment program available to all tax units, regardless of work status, as a Universal Guaranteed Income (UGI). The "base level" guaranteed income, G, under such a program is provided to single-person tax units (no spouse or dependents). For all other tax units, the guaranteed income is scaled by the equivalence scale, Q of the tax unit.

$$P_i = G * Q_i \tag{2}$$

By taking the sum of payments across all tax units (equivalent to the budget), one can set the equation equal to the total budget of the program based on Equation 1.

$$B = \sum_{i=1}^{n} (G * Q_i) \tag{3}$$

Since G is constant across all tax units, Equation 3 can be rearranged to solve for the guaranteed payment level.

$$G = \frac{B}{\sum_{i=1}^{n} Q_i} \tag{4}$$

Equation 4 provides for a closed form solution to calculate the base-level payment for a UGI, given an exogenous budget amount. The base-level payment can then be scaled based on the requisite equivalence scale to calculate the payment for any tax unit.

1.1.2 Guaranteed Income

Next, I characterize the Guaranteed Income (GI) program, which provides a means-tested benefit based on income, I, up to a certain eligibility threshold, T. Specifically, the GI provides a maximum benefit, the "guarantee" G, to any tax unit without income, in addition to a proportionately smaller benefit to tax units at higher levels of income up to the eligibility threshold.[1] The rate at which the benefit phases out from the maximum, commonly referred to as the benefit reduction rate or phaseout rate, is defined as τ. Under the assumption of a parsimonious model with a uniform equivalence scale (i.e., G and T do not vary for tax units of different sizes), the payment under such a program is defined as the following piecewise function

$$P_i = \begin{cases} G - I_i \tau & \text{if } I_i < T \\ 0 & \text{otherwise} \end{cases} \tag{5}$$

Given the fact that any ineligible tax unit with incomes at or above the eligibility threshold will drop from the equation (i.e., their payments are zero), I simplify the preceding piecewise function to focus on eligible tax units, which I denote with $i_{\blacktriangledown}$. By taking the sum of payments across all eligible tax units in Equation 5, one can repeat the process used as in the case of the UGI: set the equation equal to B and, assuming a given eligibility threshold, solve for the unknown — in this case, τ.

$$B = \sum_{i_{\blacktriangledown}=1}^{n} G - \sum_{i_{\blacktriangledown}=1}^{n} I_{i_{\blacktriangledown}} \tau \tag{6}$$

Solving for τ is hampered by the fact that there is an additional unknown G; however, G can be rewritten as a function of the eligibility threshold and the phaseout rate, such that

[1] This program is closest in kind to the classic "Negative Income Tax" (NIT) popularized by Milton Friedman (CITATION); however, unlike Friedman's NIT, the GI program in my simulation does not transition to a tax at high levels of income (i.e., in my simulation, payments are never negative).

$G = T\tau$.[2] Using this identity in-place of G and factoring τ, which is a constant, from the subsequent equation yields a solution for τ.

$$\tau = \frac{B}{\sum_{i_{\blacktriangledown}=1}^{n}(T - I_{i_{\blacktriangledown}})} \tag{7}$$

Within my simulations, I extend Equation 7 to incorporate heterogeneous equivalence scales by multiplying the eligibility thresholds by each tax unit's equivalence scale.[3] This also has the effect of producing larger values for G for larger tax units with larger equivalence scales, since G is a function of T. I also incorporate sampling weights into the model by scaling the parameters to be representative of the national population.

1.1.3 Phased Guaranteed Income

The third income support program in my microsimulation, the "Phased Guaranteed Income" (PGI), combines features of both the UGI and the GI. Specifically, it provides a "guaranteed" benefit for all tax units with incomes below an intermediate threshold, referred to as the kink point K, and a benefit payment that phases out at proportionately higher income levels up to an eligibility threshold.[4] Below, I define the formal model of PGI payments for each tax unit based a piecewise function, which incorporates the intermediate and eligibility thresholds

$$P = \begin{cases} G & \text{if } I_i < K \\ G - (I_i - K)\tau & \text{if } I_i \geq K \text{ and } I_i < T \\ 0 & \text{otherwise} \end{cases} \tag{8}$$
$$\text{where } \tau > 0$$

To derive the closed form solution for the PGI based on a fixed budget framework, I again take the sum of all payments across all eligible tax units and set that equal to the budget B. For ease of presentation, I also reformulate the piecewise function such that tax units based on the eligibility "region" that they occupy. I denote tax units with income below the kink point (i.e., the "guarantee" region) with $i_{\triangleright}$ and tax units with income at or above the kink point but below the eligibility threshold (i.e., the phaseout region) with $i_{\blacktriangledown}$. This corresponds with a sum of payments across both regions equal to the following formula

$$B = \sum_{i_{\triangleright}=1}^{n} G + \sum_{i_{\blacktriangledown}=1}^{n} G - \sum_{i_{\blacktriangledown}=1}^{n} (I_{i_{\blacktriangledown}} - K)\tau \tag{9}$$

To solve for the phaseout rate given an exogenous budget and eligibility thresholds, I use the same logic as with the GI program to transform G based on the identity $G = (T - K)\tau$.[5]

$$B = \sum_{i_{\triangleright}=1}^{n} (T - K)\tau + \sum_{i_{\blacktriangledown}=1}^{n} (T - K)\tau - \sum_{i_{\blacktriangledown}=1}^{n} (I_{i_{\blacktriangledown}} - K)\tau \tag{10}$$

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[2] This can be verified by visualizing the GI's payment schedule as a right triangle within a cartesian plane, with the payment on the y-axis and income on the x-axis. The three points of the triangle are represented by the origin, the payment guarantee G, and the eligibility threshold T. The magnitude of G and T are related to each other via the slope formula; therefore, G can be rewritten as a function of the slope, τ, and T.

[3] As an example, take a tax unit with one adult and one child, which would correspond with an equivalence scale of 1.5 in my default simulation. If I model a program with a base level eligibility threshold at $50k, the aforementioned tax unit would have an eligibility threshold of 1.5 multiplied by $50k, or $75k.

[4] This program follows the design of the COVID relief payments included in the 2020 CARES Act and the 2021 American Rescue Plan Act.

[5] In this case, the phaseout rate only applies to incomes above K; therefore, the phaseout region needs to be adjusted to only include dollars greater or equal to than K.

From here, I can factor and solve for the phaseout rate.

$$\tau = \frac{B}{\sum_{i_{\triangleright}=1}^{n}(T-K) + \sum_{i_{\blacktriangledown}=1}^{n}(T-K) - \sum_{i_{\blacktriangledown}=1}^{n}(I_{i_{\blacktriangledown}}-K)} \tag{11}$$

As with the GI, I incorporate equivalence scales into the benefit payment calculations for the PGI. Specifically, I adjust the eligibility threshold based on the tax unit's equivalence scale. I also adjust the kink point based on the number of adults in the tax unit. I also incorporate sample weights to make the calculations appropriately scaled to the US population.

1.1.4 Earned Income Credit

Finally, I model an Earned Income Credit (EIC), which takes a form similar to the federal Earned Income Tax credit.[6] Unlike the preceding income support programs, the EIC does not incorporate an income guarantee for tax units with no income. Instead, it provides no payment to tax units with no income; a payment that subsidizes additional income up to a certain intermediate threshold, the kink point, based on a phasein rate, γ; and a declining payment past the kink point and point up to the eligibility threshold based on the phaseout rate. I define the maximum benefit payment amount (received by tax units with incomes at the kink point) as M. The preceding components equate to an EIC payment based on the following piecewise function

$$P = \begin{cases} I_i\gamma & \text{if } I_i < K \\ M - (I_i - K)\tau & \text{if } I_i \geq K \text{ and } I_i < T \\ 0 & \text{otherwise} \end{cases} \tag{12}$$

As with the PGI, I label tax units with income below the kink point as $i_{\triangleright}$ and tax units equal to or greater than the kink point but below the eligibility threshold as $i_{\blacktriangledown}$. Furthermore, as with G in the PGI, I can rewrite the unknown M such that it is a function of the eligibility threshold, the kink point, and the phaseout rate. I then take the sum of payments across all eligibile tax units and set the equation equal to B

$$B = \sum_{i_{\triangleright}=1}^{n} I_{i_{\triangleright}}\gamma + \sum_{i_{\blacktriangledown}=1}^{n}(T-K)\tau - \sum_{i_{\blacktriangledown}=1}^{n}(I_{i_{\blacktriangledown}}-K)\tau \tag{13}$$

This leaves two unknowns in Equation 13: the phaseout rate *and* the phasein rate. To solve this, I rewrite the phasein rate as a function of the phaseout rate; specifically, I define Ω as the ratio of the phasein rate to the phaseout rate. This is equivalent to the absolute value of the slopes of the payment schedules in each eligibility region, or the maximum payment divided by the kink point over the maximum payment divided by the eligibility threshold.[7] The ratio between the two slopes simplifies to the following ratio of the eligibility threshold to the kink point

$$\Omega = \frac{\gamma}{\tau} = \frac{\frac{M}{K}}{\frac{M}{T}} = \frac{T}{K} \tag{14}$$

[6] An important distinction between the modeled EIC and the Earned Income Tax Credit is that modeled EIC does not include an "earnigns disregard" or flat region where the value of the benefit payment is neither increasing nor decreasing with additional income. The Earned Income Tax Credit incorporates such a feature, with the goal of reducing the degree to which the program distorts labor decisions. I ignored this feature to reduce the number of parameters in the program; however, my calculations could be extended in future work to incorporate it.

[7] The intuition here is that for each region of the EIC, the phasein region and the phaseout region, the benefit schedule can be visualized as two right triangles that share a common side. The phasein rate and the phaseout rate are simply the absolute values of the slopes of the lines in each region, which is the absolute value of the rise over run of each triangle.

Based on Equation 14, the phasein rate can be rewritten as a function of the phaseout rate, or $\gamma = \frac{T\tau}{K}$, leaving Equation 13 with one unknown, the phaseout rate. Rearranging and solving this equation for B yields the following closed form solution for the phaseout rate in the EIC program

$$\tau = \frac{B}{\sum_{i^{\diamond}=1}^{n} \frac{I_{i^{\diamond}} * T}{K}\tau + \sum_{i^{\bullet}=1}^{n}(T-K)\tau - \sum_{i^{\bullet}=1}^{n}(I_{i^{\bullet}} - K)\tau} \tag{15}$$

This phaseout rate can then be plugged back into Equation 14 to solve for the phasein rate.

As with the other programs, I adjust EIC eligibility and generosity to incorporate an equivalence scale. Specifically, the phasein rate and the eligibility threshold scales based on the equivalence scale of the tax unit. I also adjust the program values to reflect the national population using sampling weights in the CPS.

1.2 Dynamic Calculations

1.2.1 General Framework

In addition to static calculations, I implement dynamic calculations, which incorporate predicted labor supply effects based on economic theory and applied econometric studies. I decompose labor supply effects along the extensive margin, which describes the "participation" decision to work or not work, and intensive margin, which describes the choice of the number of hours of work. For each of these two margins of labor supply, I model substitution and income effects, which reflect the potential influence of various program design choices on labor supply decisions. The substitution effect describes changes in labor supply decisions in response to changes in the return to work (opportunity cost), all else equal, while the income effect describes changes in labor supply decisions in response to being able to afford more or less leisure at the same level of income.

To measure changes in labor supply associated with the simulated expansion of income support programs, I adapt frameworks used in Corinth et al. (2021) and Goldin, Maag, & Michelmore (2022). As a general framework, individual total income, Y, is given by the sum of after-tax market earnings E, and the benefits from any new income support program B, and non-market earnings V.[8] In my dynamic calculations, I assume that Y is a function of the participation decision, p, and the number of hours worked h, while the tax rate, ϕ, the structure of the income support program, and the non-market sources of income are exogenous parameters.

$$\begin{aligned} Y(p,h) =& E(1-\phi_i) + B + V \\ E =& whp \end{aligned} \tag{16}$$

This formula captures the major dimensions of my dynamic calculations: the participation decision along the extensive margin and the hours decision along the intensive margin. Importantly, based on the preceding characterization of static calculations of my income support programs, labor supply also affects the benefit payment B. Therefore, any changes in Y due to changes in the participation or hours decision will have an unambiguous effect on earnings and an ambiguous effect on benefit payments, depending on the structure of the income support program.

1.2.2 Analytic Solution

In addition to static calculations, I simulate the predicted labor supply effects of each program. Whereas the static calculations allowed for a closed-form or numeric solution to the

[8]While V includes existing non-market income from government payments like food stamps, the new income support program payments I simulate, B, are explicitly excluded from V. V also includes other non-market income, like inheritance.

unique parameters of each program within a fixed budget framework, dynamic calculations that incorporate labor supply effects for each program require an analytic solution, which iterates over budget amounts until the error between the target budget and the actual budget, is within a margin of error of .01%.[9]

The basic algorithm for the dynamic calculations implements the following procedure:

1. Calculate the sum of baseline (status quo) federal tax revenues;
2. Define the target budget amount for a new income support program;
3. Implement static calculations of benefit payments for the new income support program based on the target budget amount in Step 2;
4. Calculate labor supply effects (i.e., movements along the extensive and intensive margins) associated with the static benefit payments in Step 3;
5. Calculate dynamic earnings that incorporate labor supply effects in Step 4;
6. Calculate federal taxes based on dynamic earnings in Step 5;
7. Implement dynamic calculations of benefit payments based on dynamic earnings in Step 5;
8. Calculate actual budget associated with dynamic benefit payments equal to the sum of dynamic benefit payments in Step 7 plus the sum of baseline federal tax revenues in Step 1 minus the sum of recalculated federal tax revenues in Step 6;
9. Calculate the ratio of the previous *target* budget amount from Step 2 relative to the *actual* budget from Step 7;
10. Define a new target budget based on the product of the previous target budget and the ratio from Step 8;
11. Repeat Steps 3 through 8 until the margin of error in the actual budget amount is less than .01%.

Any change in labor supply due to dynamic effects from the implementation of an income support program will have two potential effects: 1) an increase or decrease in the tax unit's benefit payment and 2) an increase or decrease in tax revenues. Whether #1 is positive or negative depends on the sign of the labor supply effects. For instance, a GI is predicted to push people out of the labor force and to lower hours of work (negative effect), which will tend to push tax units toward qualifying for larger payments. For #2, whether the program yields an increase or decrease in revenue will also depend on the sign of the labor supply effect. A negative effect will result in a decline in tax revenues since individuals are working fewer hours. For example, with dynamic calculations, any simulation with negative predicted labor supply effects, will result in a costlier program than the initial target budget specified. People will qualify for more benefits than under the static calculation and tax revenues will be less. Conversely, for positive predicted labor supply effects, the program will be cheaper than the target budget. This leads to the key intuition for the preceding algorithm: any dynamic calculations using a fixed budget framework must start with a *larger* or *smaller* budget (depending on the sign of the labor supply effects) to leave a requisite gap to account for the 1) change in payment amounts caused by changes in predicted labor supply and 2) change in tax revenues caused by changes in predicted labor supply. Thus, my dynamic calculations using a fixed budget framework are inclusive of predicted changes in payments and predicted losses or gains in tax revenue.

[9] For a $10 billion program, this would equate to an error of plus or minus $1 million.

1.2.3 Intensive margin

I measure the predicted change in labor supply along the intensive margin as the total change in number of hours worked, N, due to the simulated policy intervention. Following (Goldin et al., 2022), all labor supply effects are calculated at the individual level for the tax unit's primary filer and, if present, the spouse or secondary filer. For simplicity, I suppress any identifying subscript (i.e., i) from the formulas in this section; however, all formulas should be interpreted as applying at the individual level for the primary or secondary filer in the tax unit. The intensive margin effect is decomposed into substitution and income effects, denoted by N_S and N_I, respectively.

$$N = N_S + N_I \tag{17}$$

To calculate N_S, I take the product of the elasticity of substitution along the intensive margin, ε_N^S, and the percent change in the after-tax hourly wage rate due to the income support policy.

$$N^S = \varepsilon_N^S * \%\Delta w(1-\phi) \tag{18}$$

To calculate the percent change in the after-tax wage rate, I define w_0 as the after-tax wage rate prior to the policy (i.e., the status quo), given by

$$w_0 = w(1-\phi) \tag{19}$$

And I define w_1 as the after-tax *and* post-policy wage rate, which factors in τ and γ, the phaseout or phase-in rate of the new income support program, respectively, which is given by

$$w_1 = w(1-\phi-\tau) \tag{20}$$

Equation 18 can be rewritten as

$$N^S = \varepsilon_N^S * \frac{w_1 - w_0}{w_0} \tag{21}$$

And Equation 21 simplifies to the phaseout or phase-in rate of the income support program divided by 1 minus the tax rate.

$$N^S = \varepsilon_N^S * \frac{-\tau}{1-\phi} \tag{22}$$

1.2.4 Extensive margin

I measure the predicted change in labor supply along the extensive margin as the total change in probability of employment, X, due to the simulated policy intervention. Following Goldin et al. (Goldin et al., 2022), all labor supply effects are calculated at the individual level for the tax unit's primary filer and, if present, the spouse or secondary filer. For simplicity, I suppress any identifying subscript (i.e., i) from the formulas in this section; however, all formulas should be interpreted as applying at the individual level for the primary or secondary filer in the tax unit. As with the intensive margin, the total change along the extensive margin is decomposed into substitution and income effects, denoted by X_S and X_I, respectively.

$$X = X_S + X_I \tag{23}$$

First, to measure the substitution effect along the extensive margin, I adapt a framework detailed in Corinth, Meyer, Stadnicki, & Wu (2021). I define the percentage change in the probability of employment caused by the substitution effect, X_S, as the product of the the labor supply elasticity of substitution along the extensive margin, ε_S^X, and the percentage change in the return to work, $\%\Delta R$, which describes the marginal dollar benefit an individual receives from working relative to not working.[10]

$$X_S = \varepsilon_S^X * \%\Delta R \tag{24}$$

The percentage change in the return to work of each individual is calculated in two instances, R_1 and R_0, corresponding to the predicted return to work in two simulated states of the world: one where a new income support policy is implemented and the other where the status quo prevails. The percentage change in the return to work between these two states is given as

$$\%\Delta R = \frac{R_1 - R_0}{R_0} \tag{25}$$

Taking the status quo simulation state first, the individual return to work for a binary participation choice $p \in 0, 1$, where zero assumes no participation in the work force and one assumes full participation at a desired number of hours, is given as the difference in the predicted after-tax income as a function of participation, $Y(p)$, for each participation choice.

$$R_0 = Y(1) - Y(0) \tag{26}$$

In the status quo state, where there is no introduction of an income support program, the return to work simplifies to the post-tax earnings accrued to the decision to participate in the work force, under the assumption that all other income sources (i.e., non-market income) are equivalent across the decision to work or not work.

$$R_0 = wh(1 - \phi_i) \tag{27}$$

For the simulated policy state, R_1, the return to work is dependent on income $Y(p)$ and a new benefit payment $P(p)$ via the introduction of an income support program exclusive to the policy state.

$$R_1 = Y(1) + P(1) - Y(0) - P(0) \tag{28}$$

Based on the same logic that yielded Equation 27, Equation 28 simplifies to market earnings plus the difference between the benefit payments if the recipient is working versus not working.

$$R_1 = wh(1 - \phi_i) + P(1) - P(0) \tag{29}$$

Plugging in the results of Equations 27 and 29 into Equation 25 yields the reduced-form percentage change in the return to work.

$$\%\Delta R = \frac{P(1) - P(0)}{wh(1 - \phi)} \tag{30}$$

This leads to the final equation for the substitution effect along the extensive margin.

$$X_S = \varepsilon_S^X * \frac{P(1) - P(0)}{wh(1 - \phi)} \tag{31}$$

[10] This includes both market earnings from wages and non-market earnings associated with working or not working.

The main intution from Equation 31 is that, assuming that the elasticity is always greater than zero — which implies a positive labor supply effect for higher wage rates — the sign of the substitution effect along the extensive margin will depend on the difference between the benefit payment received when an individual works relative to the benefit payment if they do not work. For instance, assuming an income support payment structured as an income guarantee, which phases out over higher levels of earnings, the return to work from the benefit payment and the corresponding substitution effect will be negative. In contrast, an earned income subsidy will result in a positive substitution effect since working receives a larger benefit payment. In the case of a universal program, the return to work associated with the benefit payment will be zero, since the same payment can be achieved by working or not working, resulting in no substitution effect.

A second takeaway from Equation 31 is that smaller predicted post-tax earnings levels in the status quo simulation state will yield larger substitution effects, all else equal. Therefore, one can expect that individuals at lower level earnings will have proportionately larger substitution effects than those at higher earnings levels for a given income support program. This could either correspond with larger positive labor supply effects for an earned income subsidy or larger negative labor supply effects for a guaranteed income.

Second, to measure the income effect along the extensive margin, X_I, I multiply the appropriate elasticity by the ratio of the individual's benefit amount and total income.[11]

$$X_I = \epsilon_x^I * \frac{B}{Y} \tag{32}$$

With a negative elasticity of income along the extensive margin, any increase in benefit levels will yield a reduction in the probability of employment for eligible beneficiaries.

1.3 Simulating Labor Supply Effects

I assume only one filer (in two filer units) drops out of the labor force (extensive margin). Return to work is based on the individual's return to work inclusive of their secondary filer remaining in labor force (i.e., their marginal decision).

To determine the earnings level assuming a participation decision, $p = 1$, I use the given earnings level in the CPS for individuals who are working, and I implement a predictive mean matching imputation procedure to predict earnings for respondents who are not working. The imputation is conditioned on respondents' sex, age (binned), race, state of residence, education, marital status, and the size of their family.

1.3.1 Elasticities

I draw on various sources for the elasticity estimates in my microsimulation model, which I summarize in Table A1. I draw from various sources in the literature, including: National Academies of Sciences Engineering and Medicine (2019); Bargain, Orsini, Peichl (2014); Goldin, Maag, & Michelmore (2022); Corinth, Meyer, Stadnicki, Wu (2021). The "groups" in Table A1 refer to the different types of tax units that my elasticities apply to (e.g., "single women" refer to elasticities for tax units headed by a single woman with no spouse — but can include tax units with or without children).

[11] Unlike with the substitution effect, the benefit amount in this case is based on actual earnings.

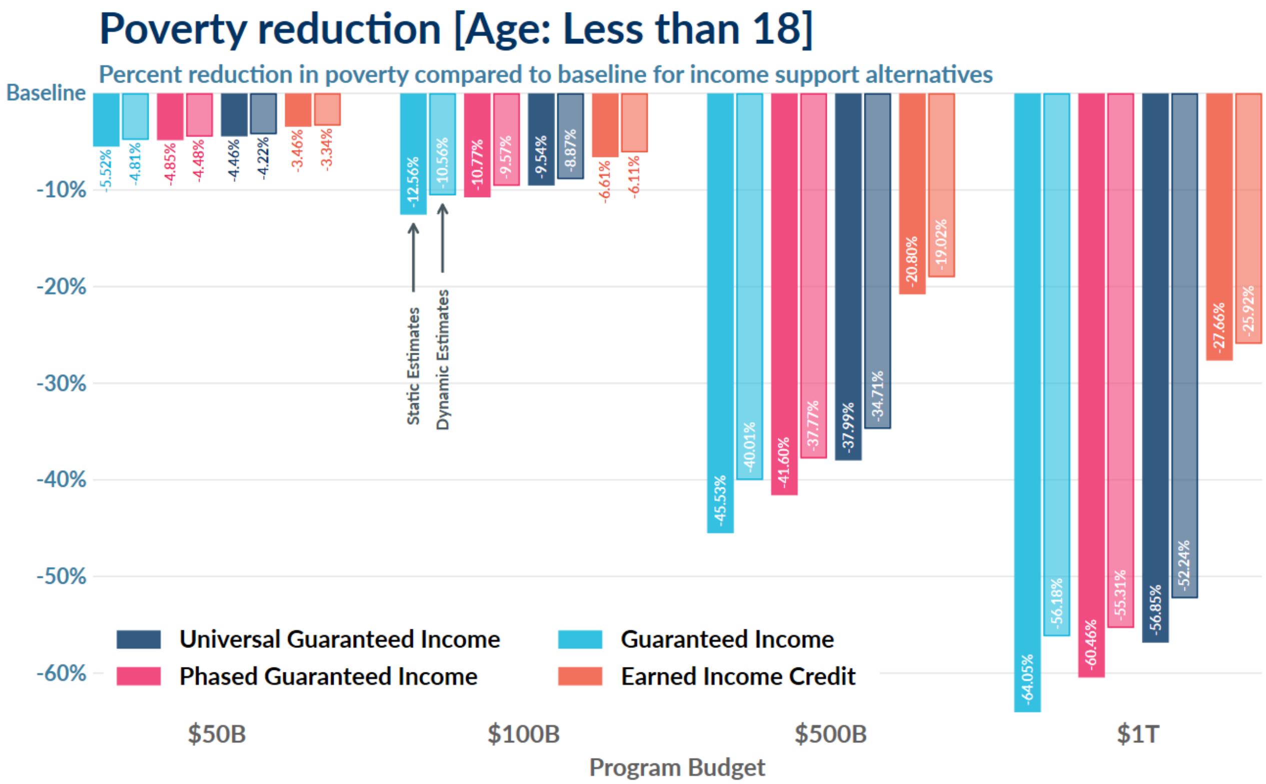
Table A1: Elasticity Estimates from Select Studies.

Group	Source	Extensive Margin		Intensive Margin	
		Substitution	Income	Substitution	Income
Single Men	NAS	—	0	—	-.05
	BOP	.18	-.005	.02	-.005
	GMM	$.2^{c}$	-.05	$.2^{c}$	-.05
	CMSW	.25	-.05	—	—
Single Women	NAS	—	-.085	—	-.07
	BOP	.19	-.003	.03	-.003
	GMM	$.2^{c}$	-.085	$.2^{c}$	-.07
	CMSW	.75	-.085	—	—
Married Men	NAS	—	0	—	-.05
	BOP	.04	$.001^{\star}$	.03	0
	GMM	$.2^{c}$	-.05	$.2^{c}$	-.05
	CMSW	.25	-.05	—	—
Married Women	NAS	—	-.12	—	-.09
	BOP	.12	0	.02	0
	GMM	$.3^{c}$	-.12	$.3^{c}$	-.09
	CMSW	.25	-.05	—	—

Selected elasticity estimates highlighted in red.
c: Denotes combined income and substitution effects.
NAS: National Academies of Sciences Engineering and Medicine (2019)
BOP: Bargain, Orsini, Peichl (2014)
GMM: Goldin, Maag, & Michelmore (2022). Estimates only apply to parents. Apply estimates to both parents in two-parent families.
CMSW: Corinth, Meyer, Stadnicki, Wu (2021)

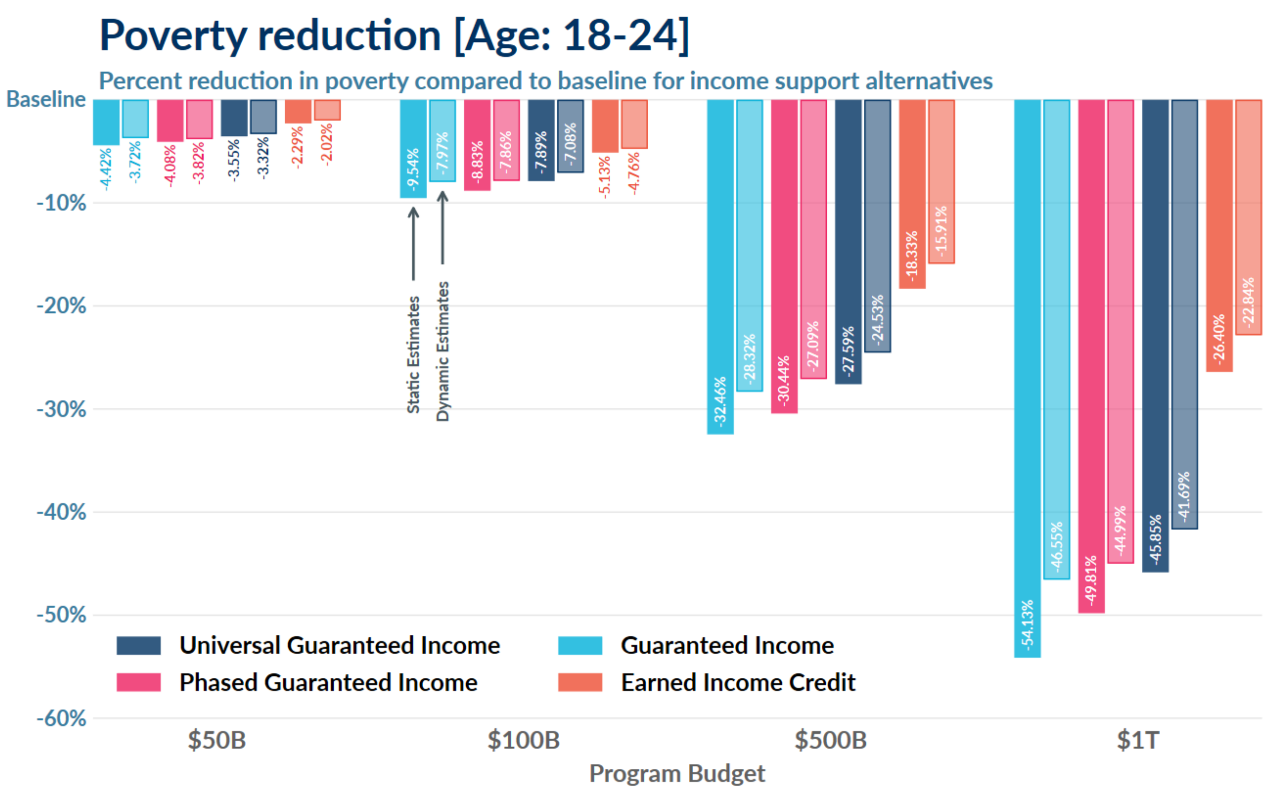
2 Demographic Results

Figure A1



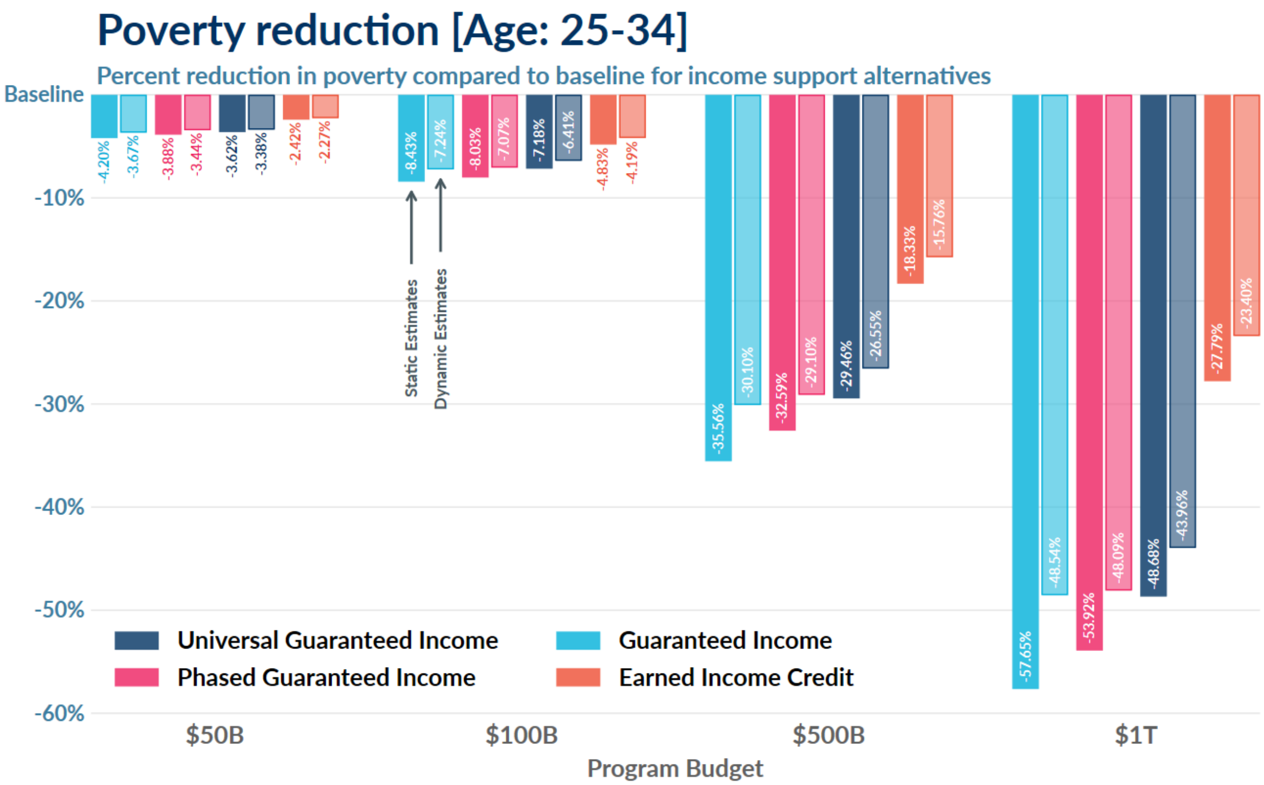
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A2



Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A3



Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
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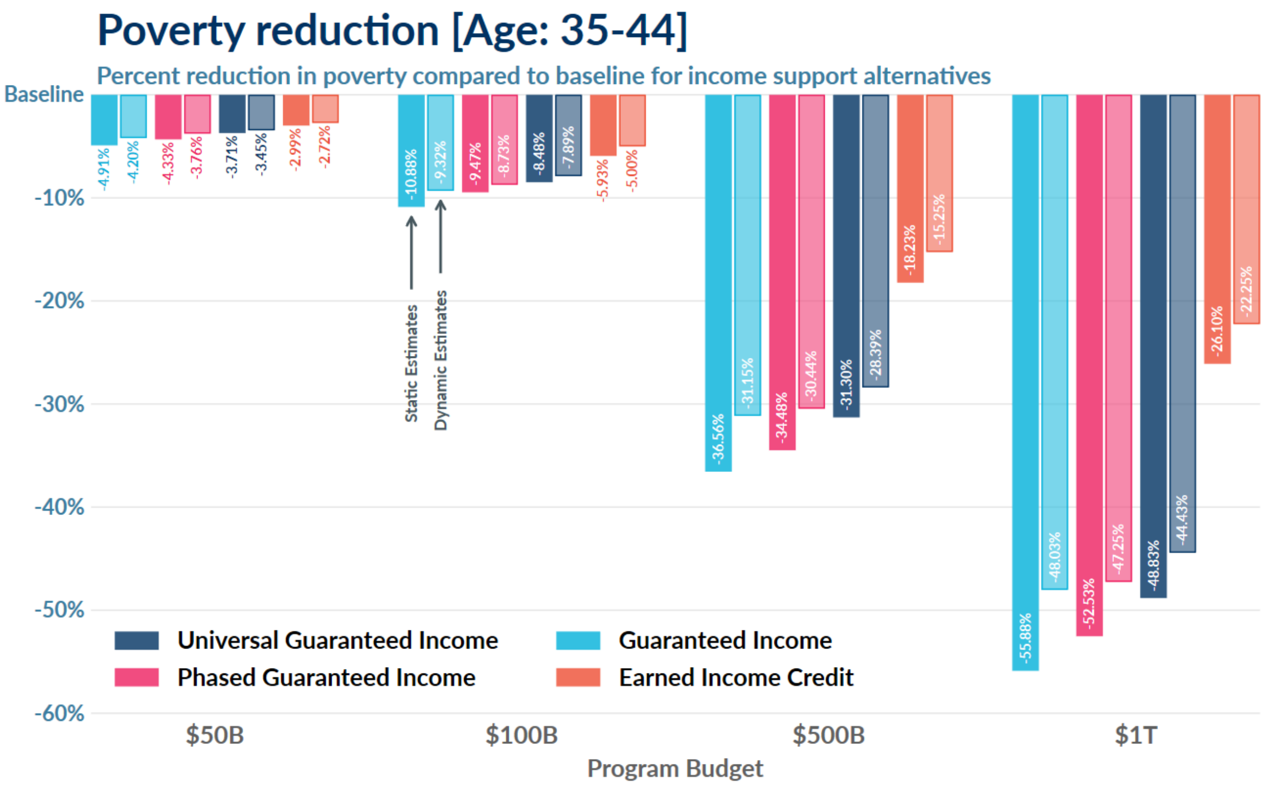
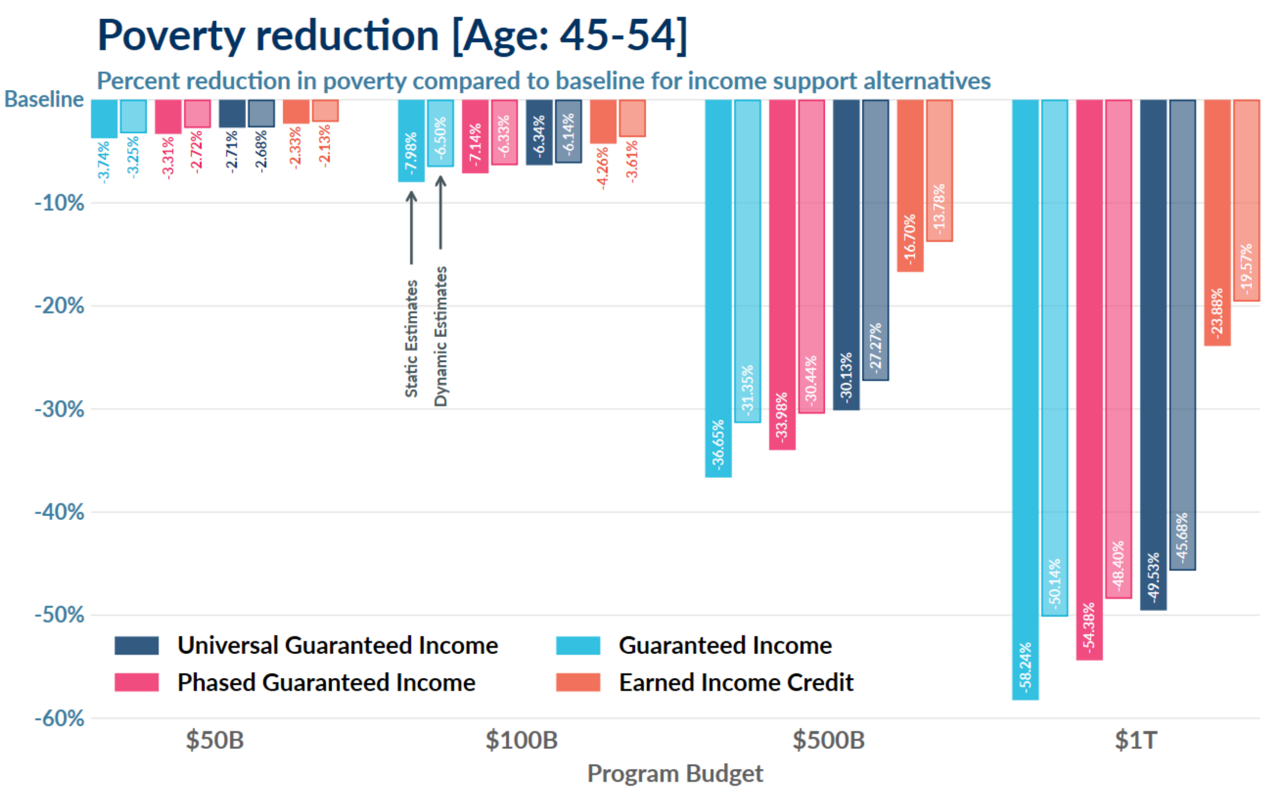
Figure A4



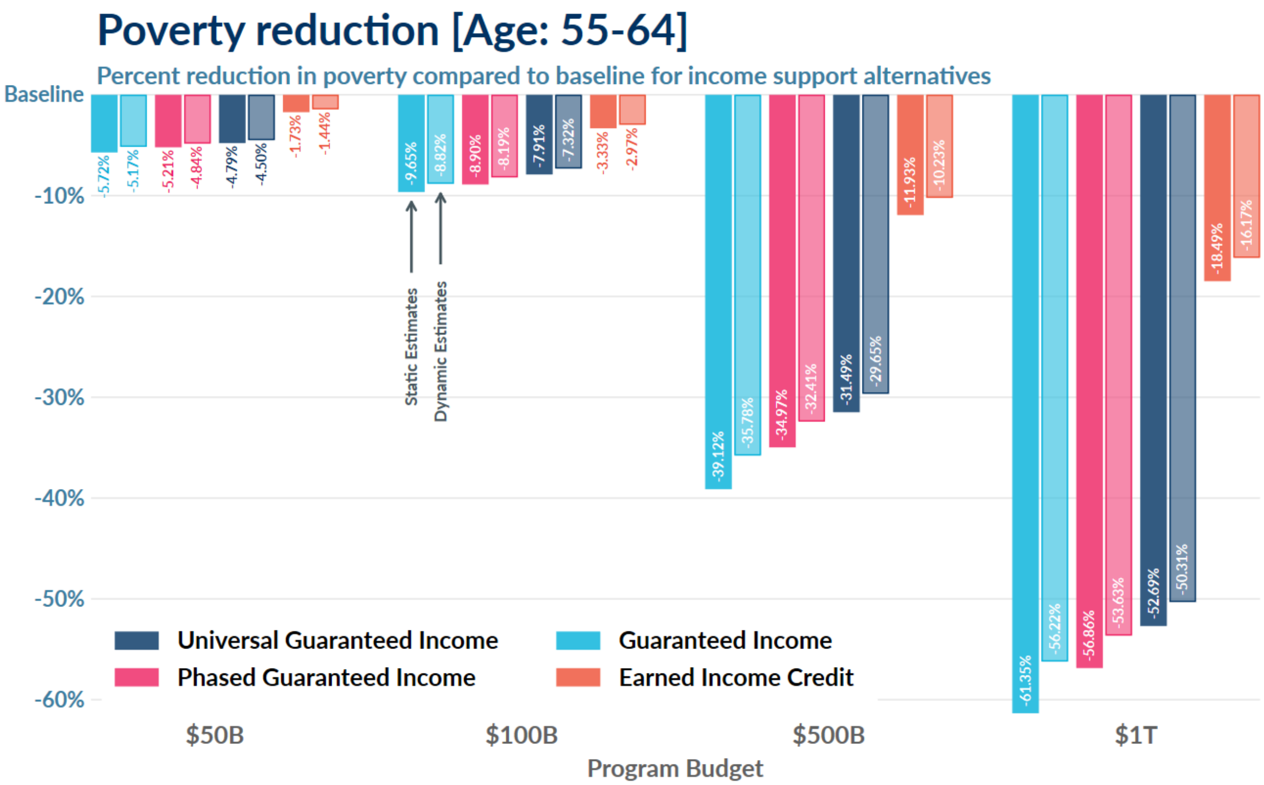
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A5



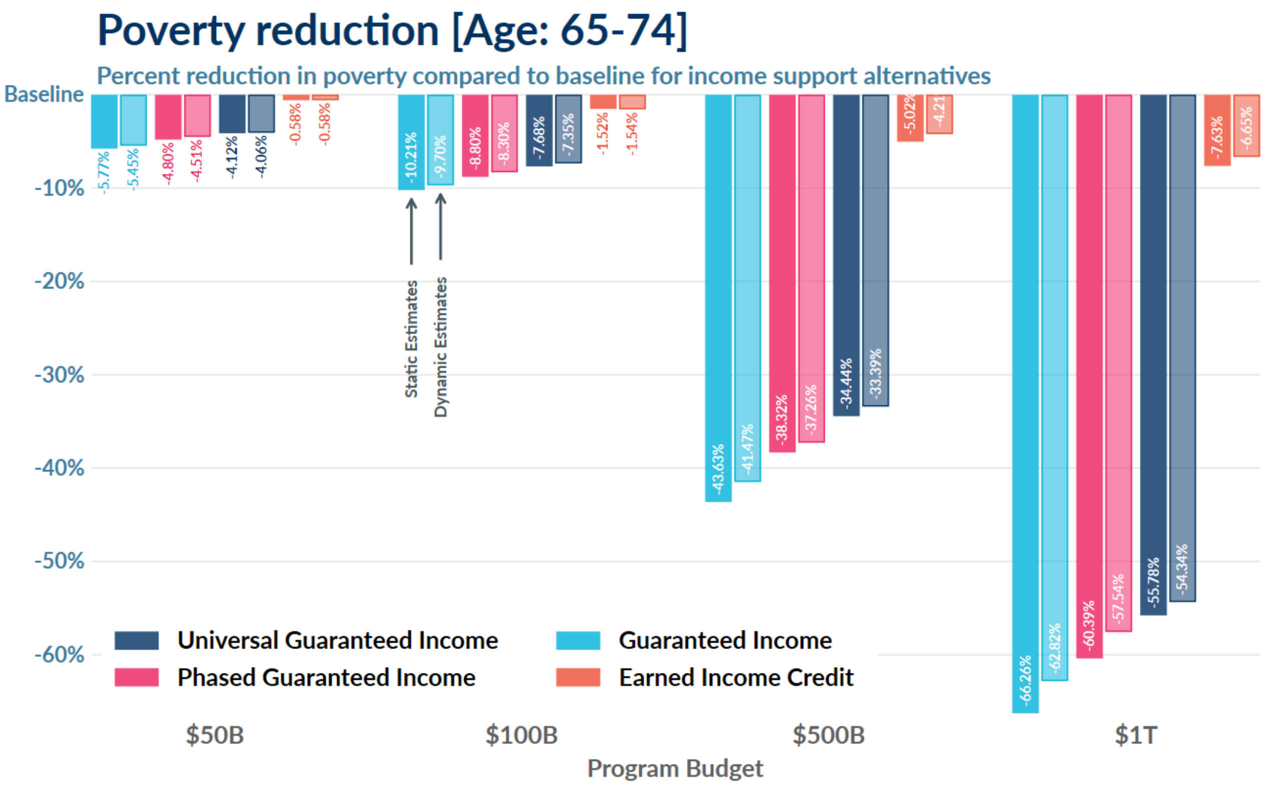
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A6



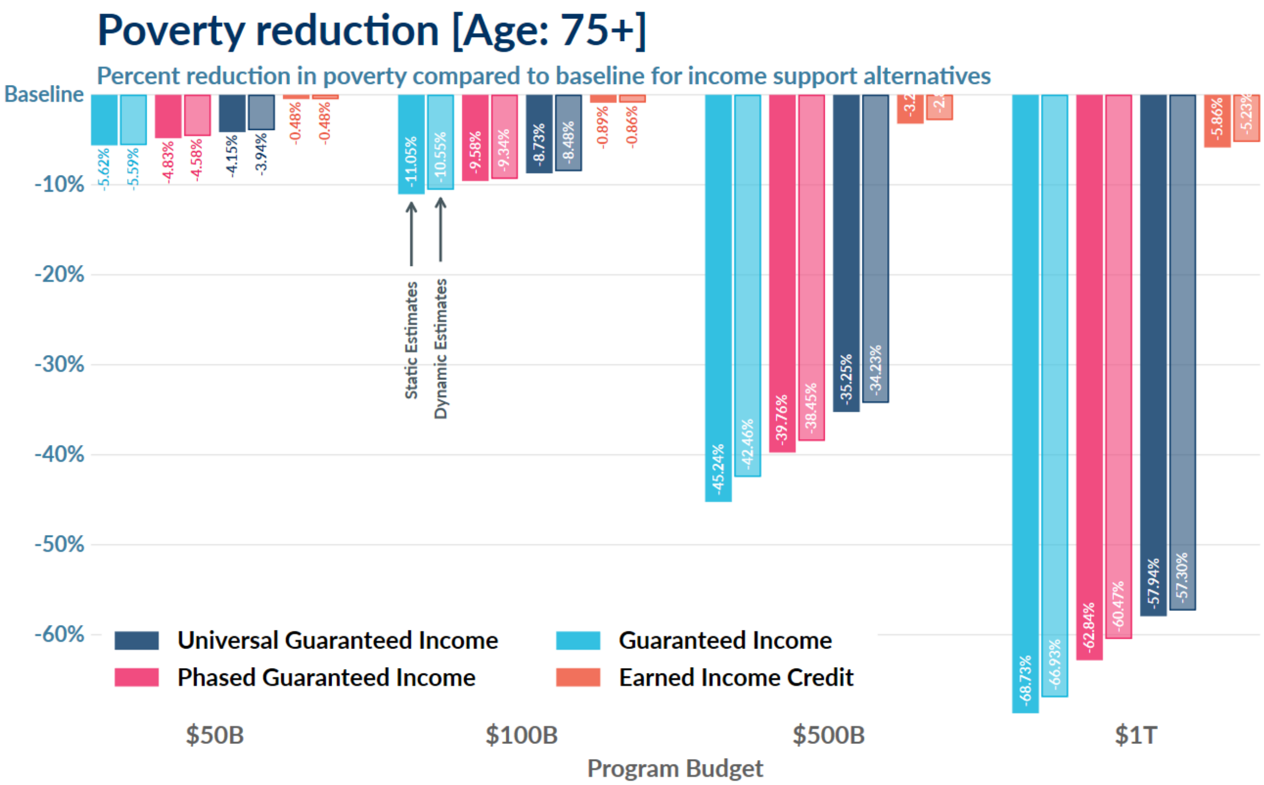
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A7



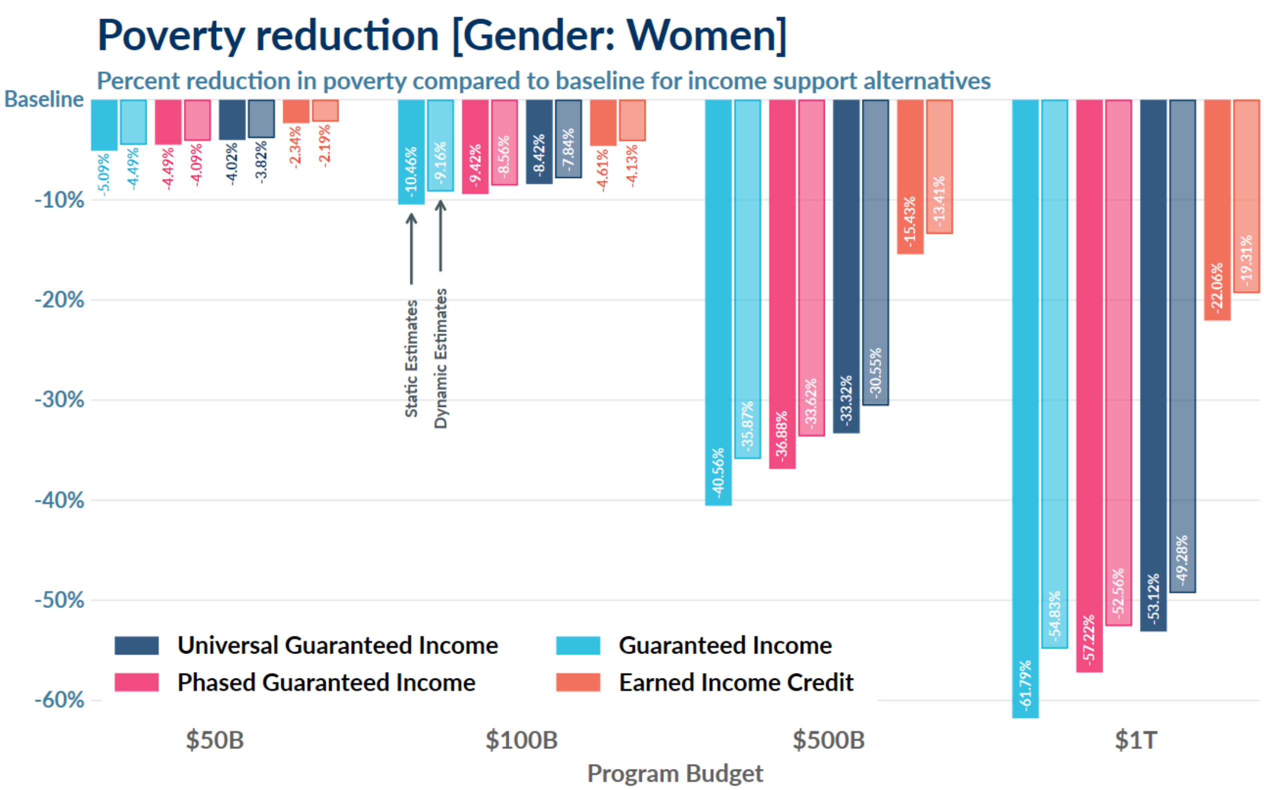
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A8



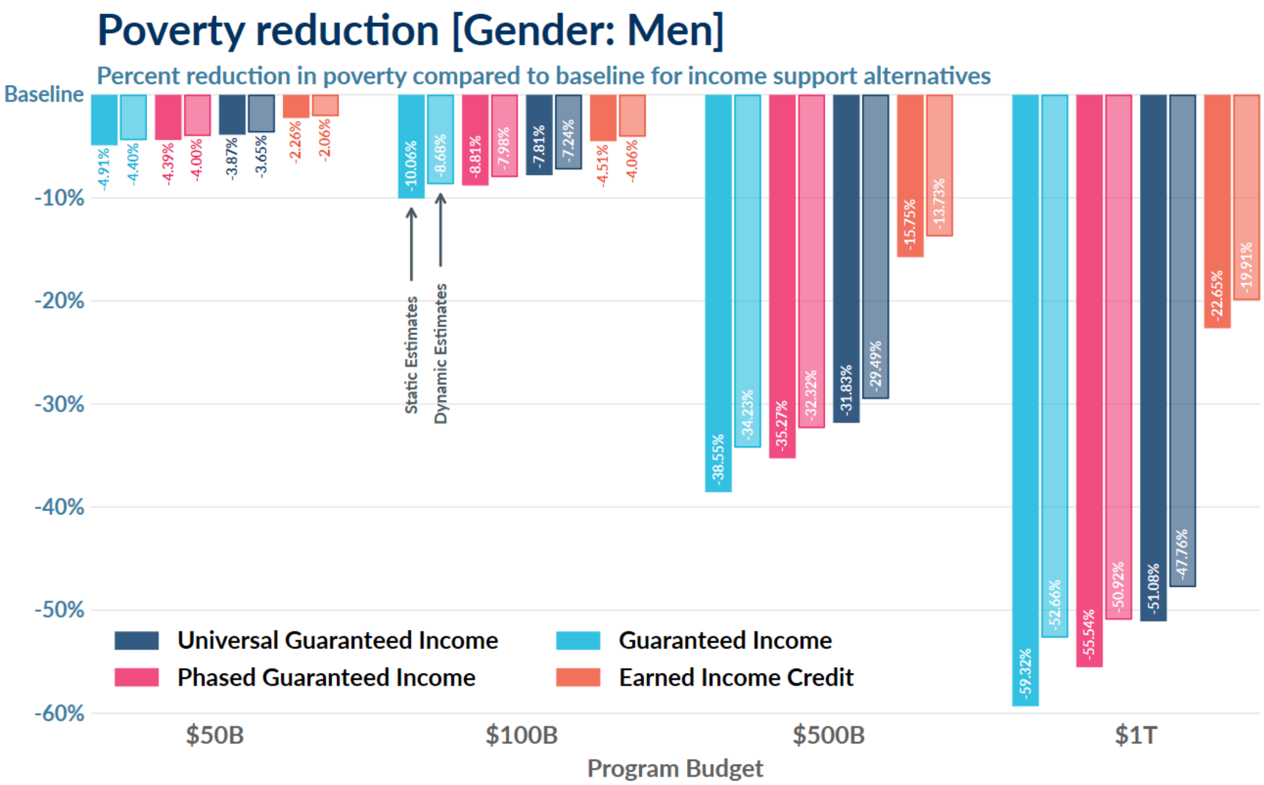
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A9



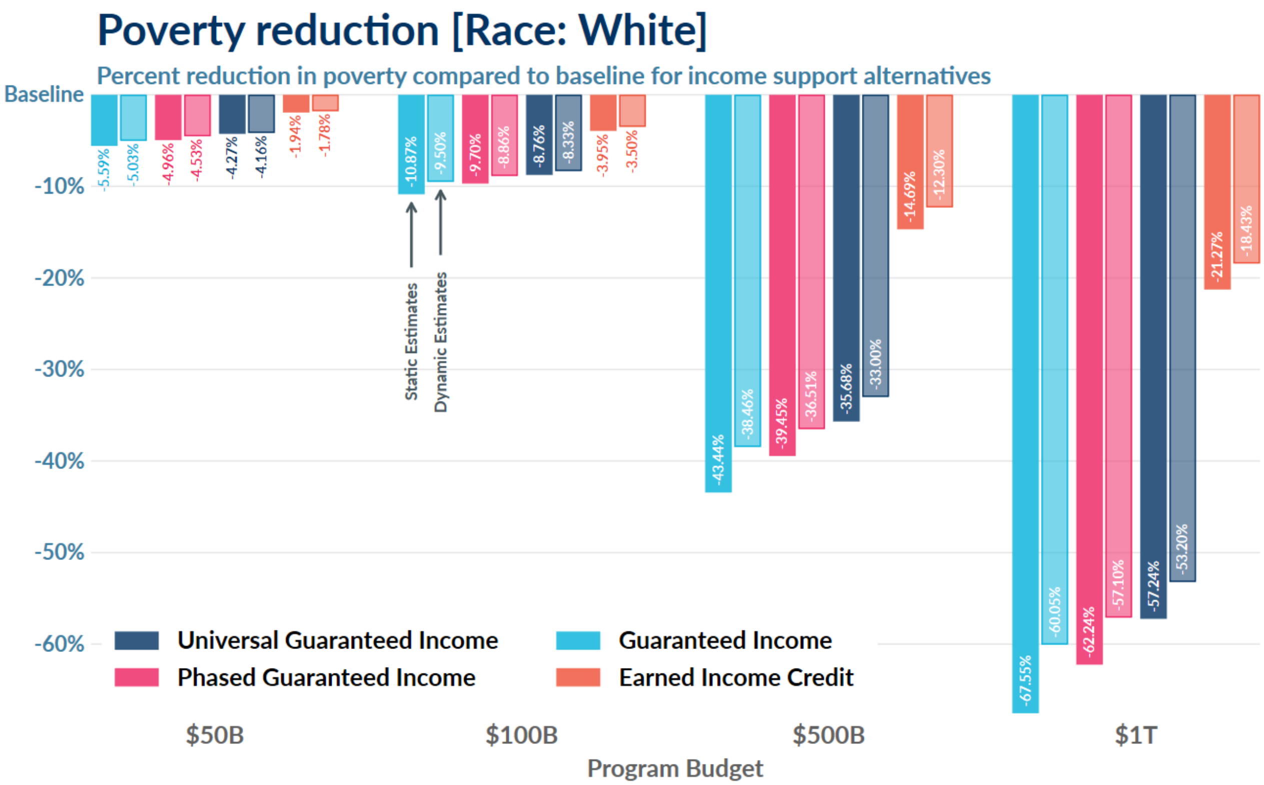
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A10



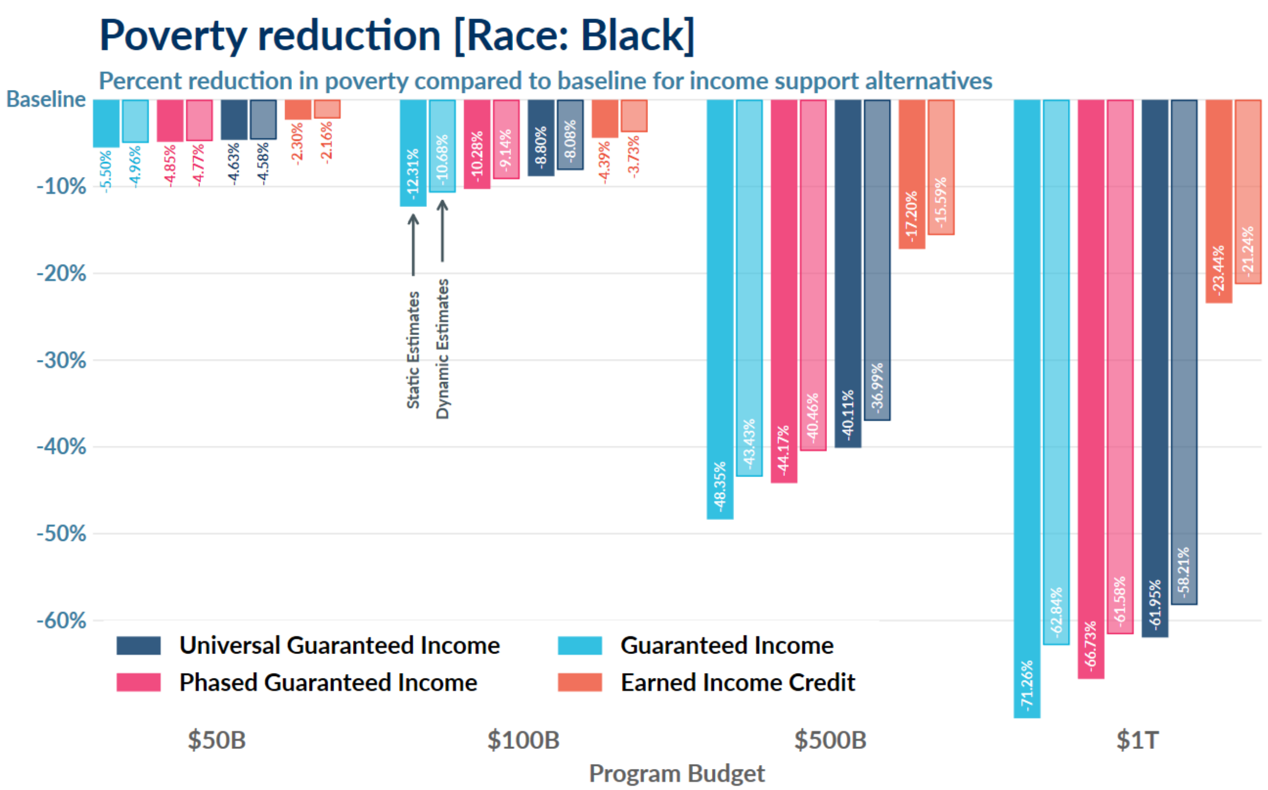
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A11



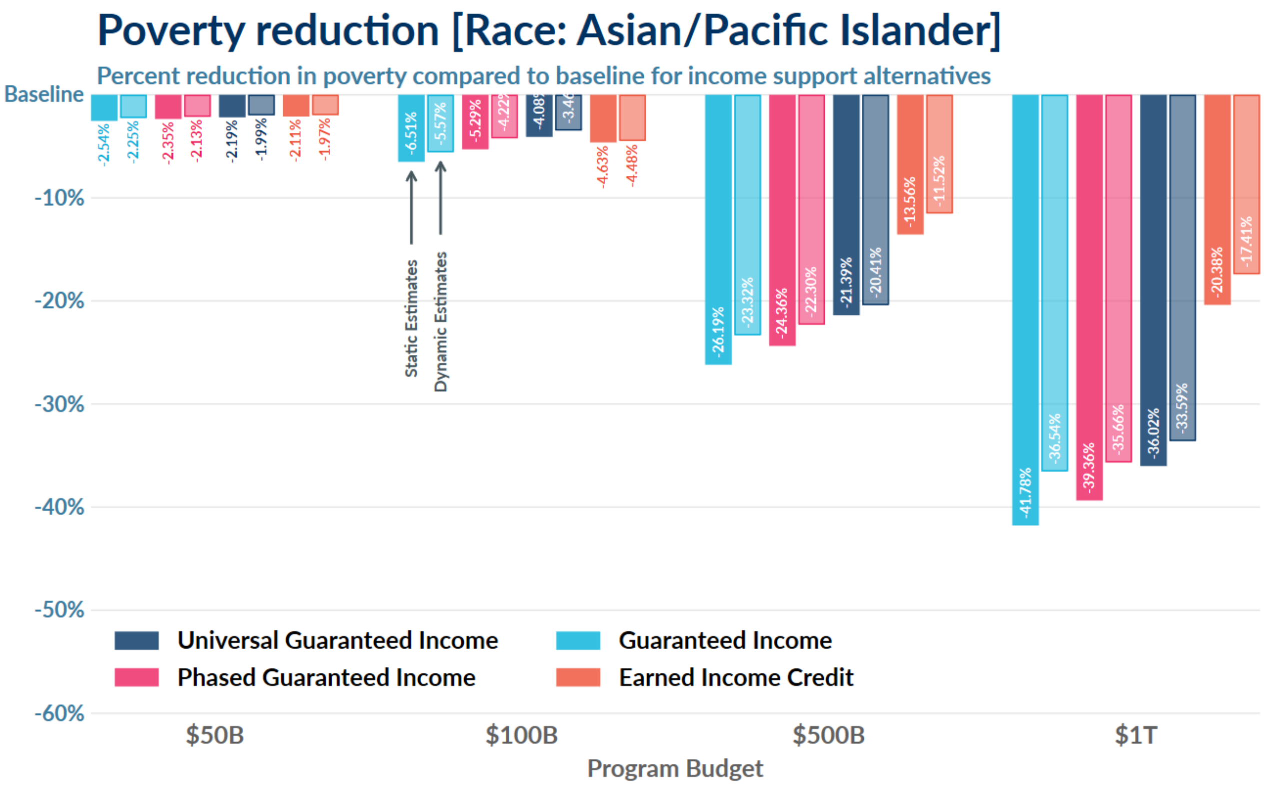
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A12



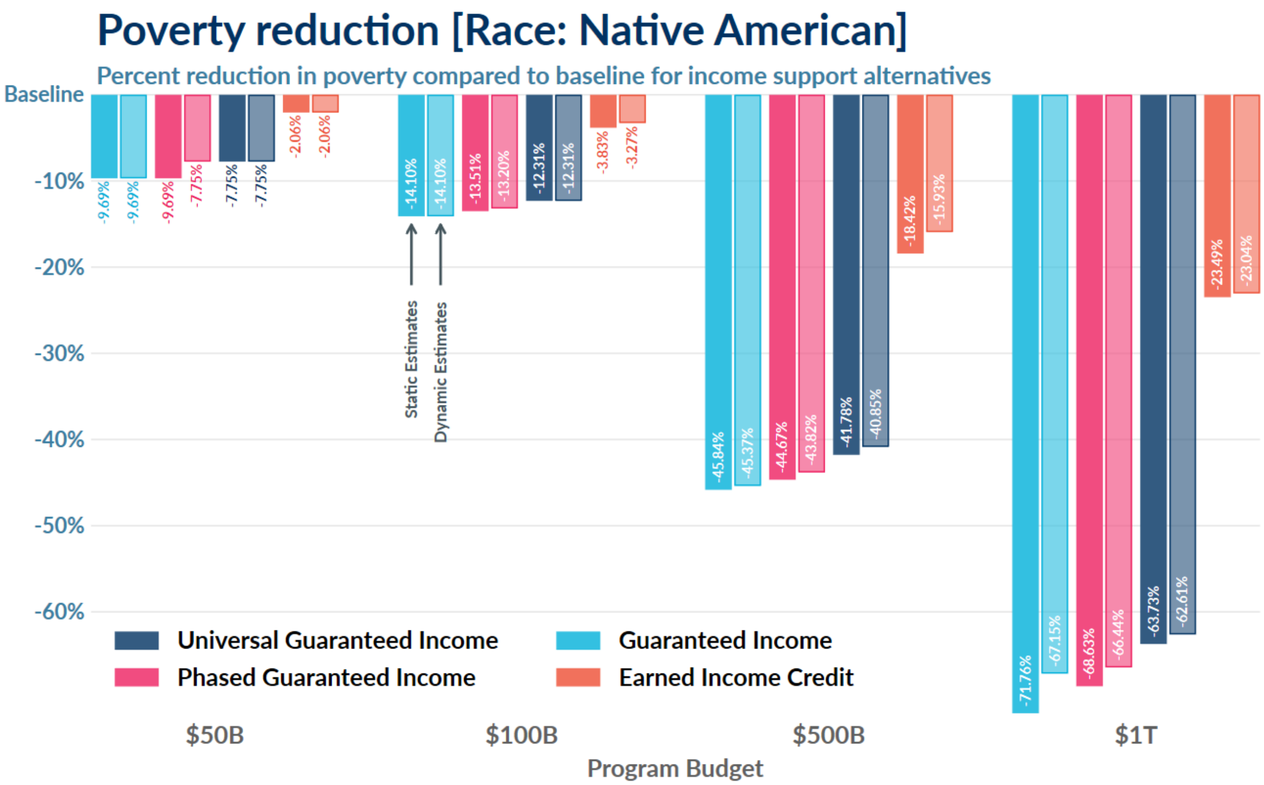
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A13



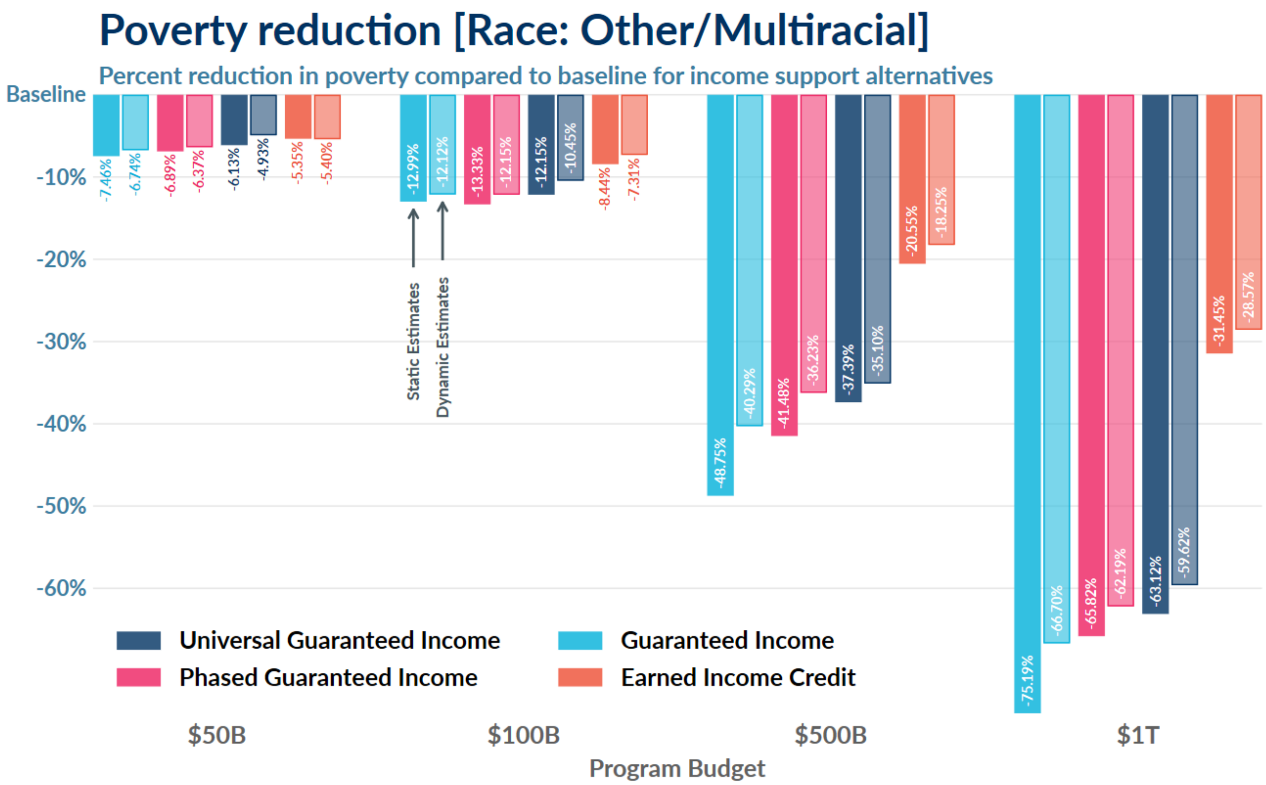
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A14



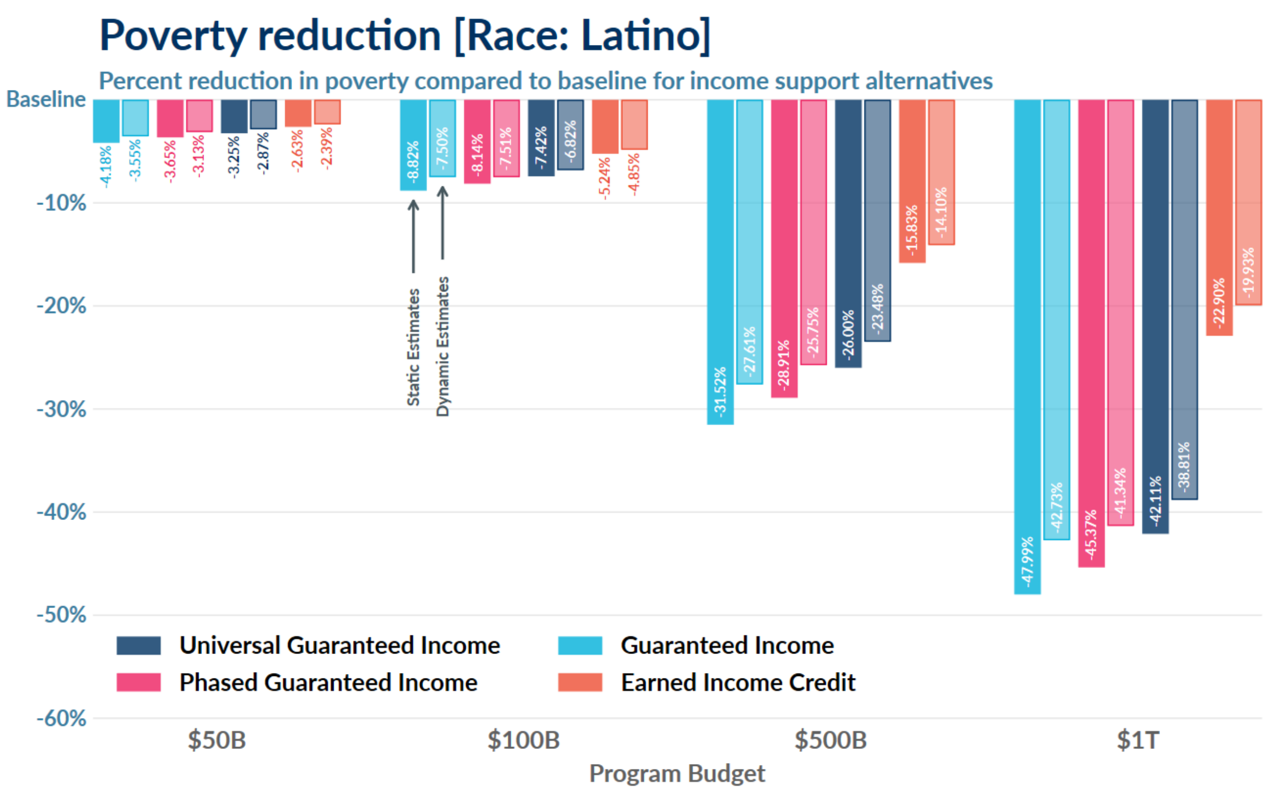
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A15



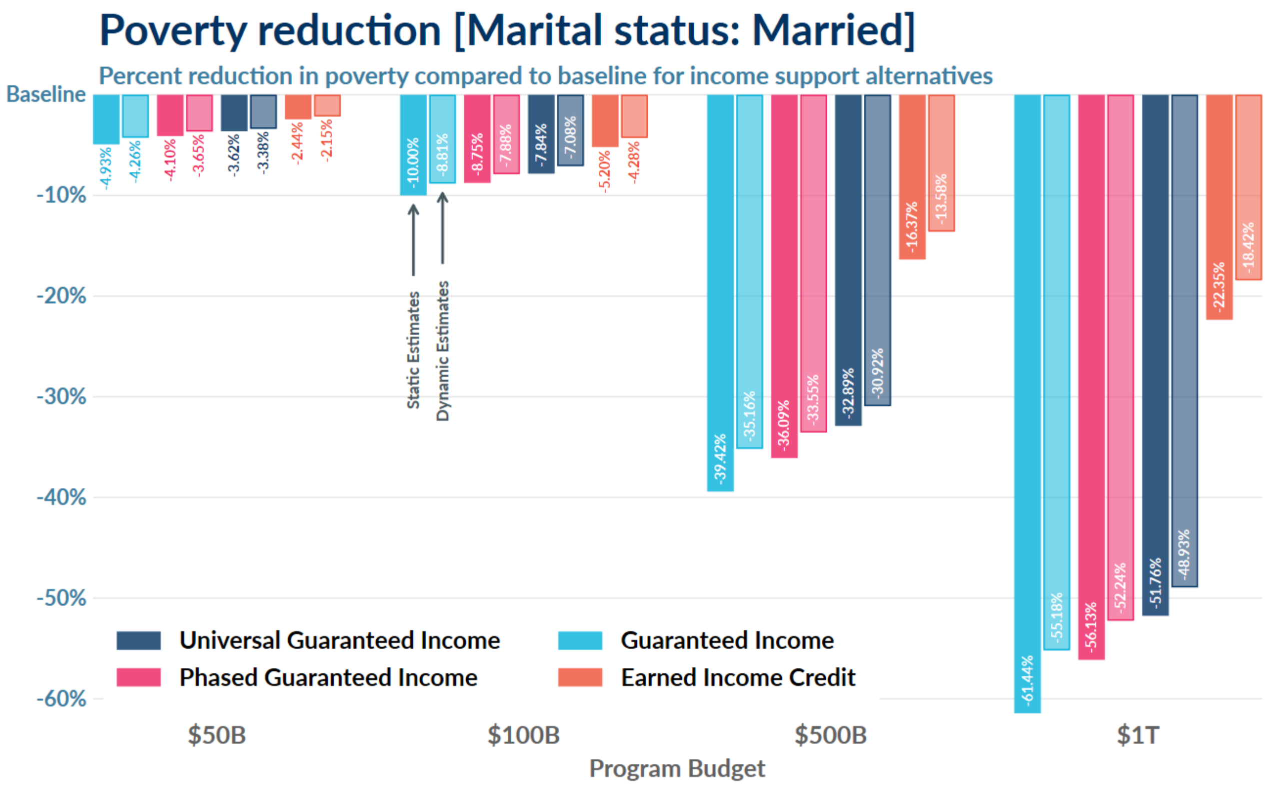
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A16



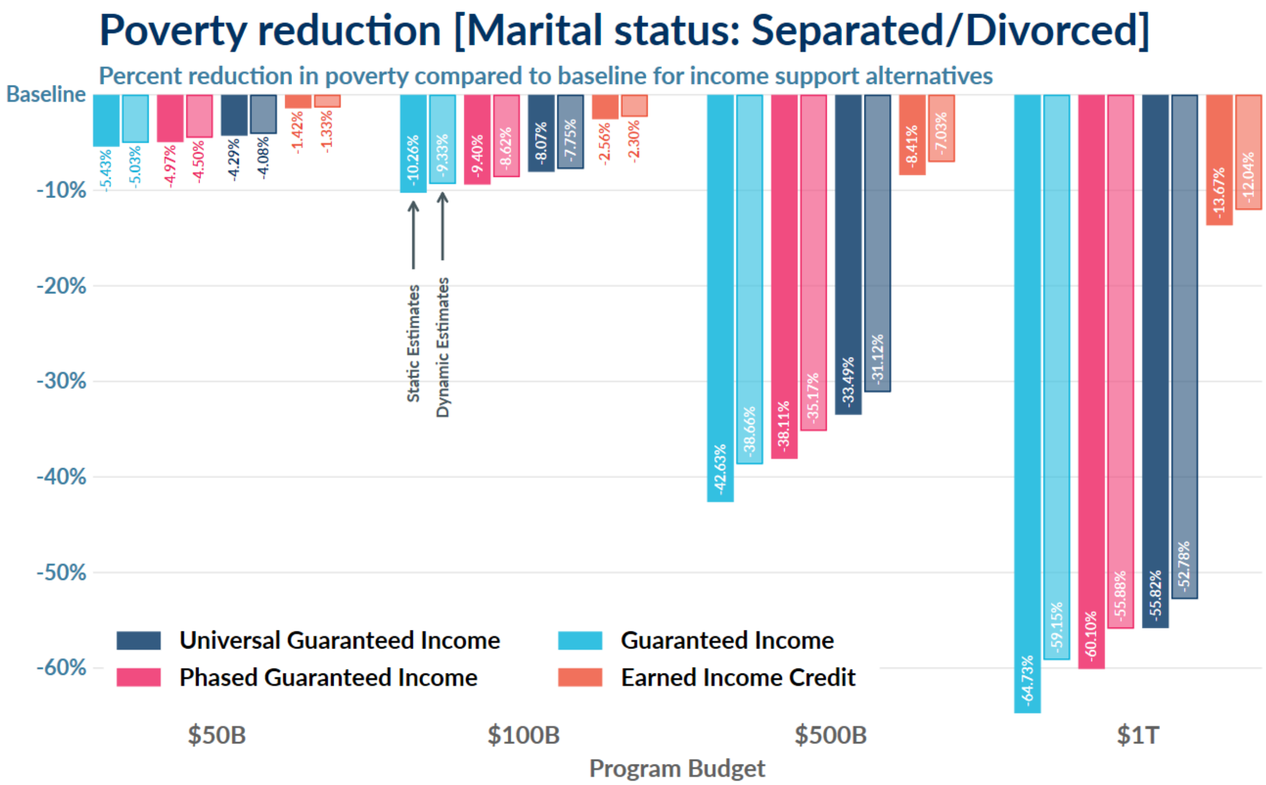
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A17



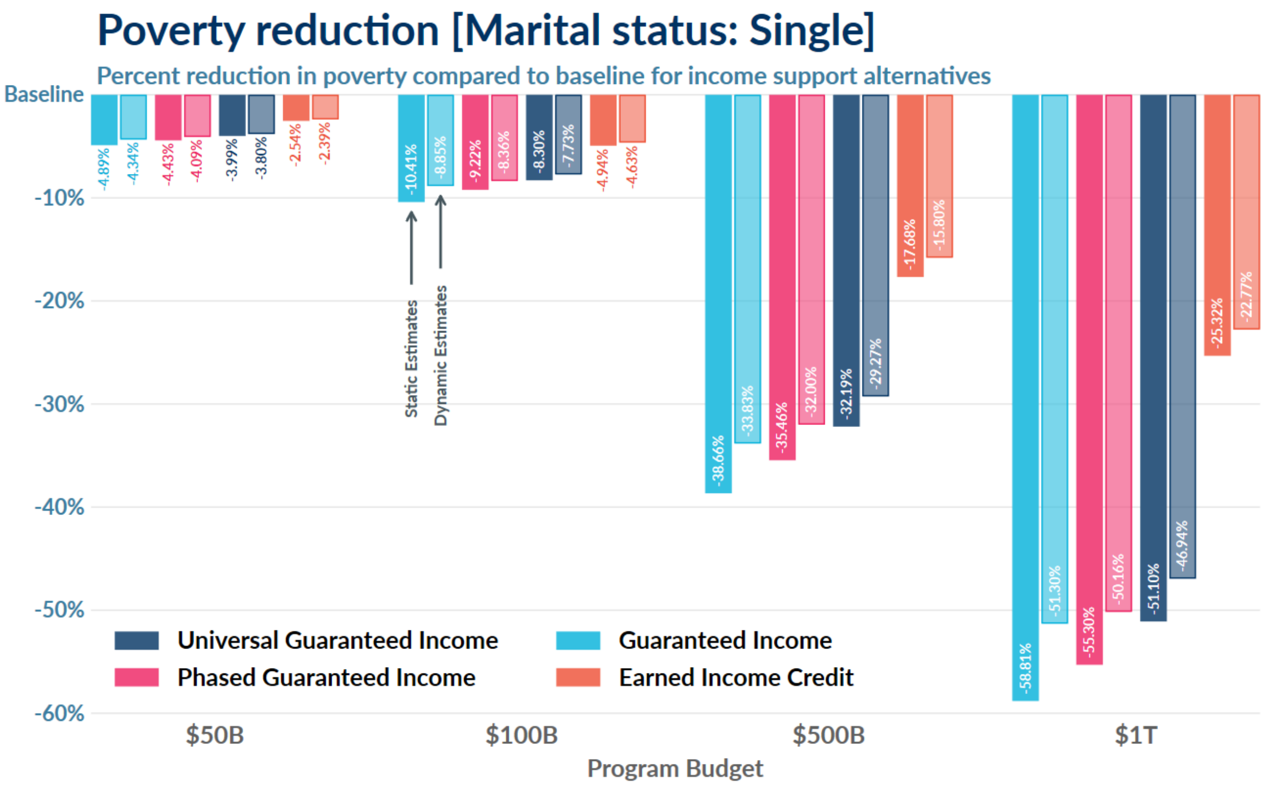
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A18



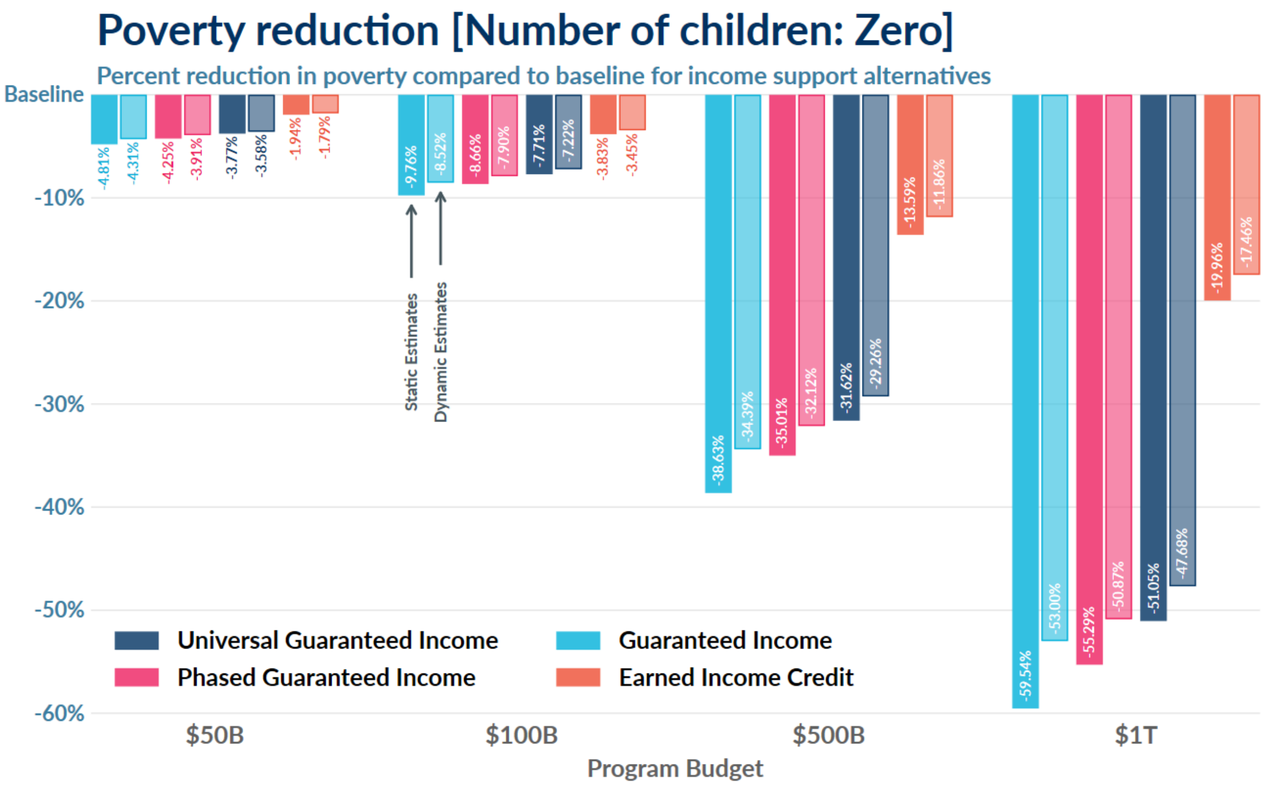
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A19



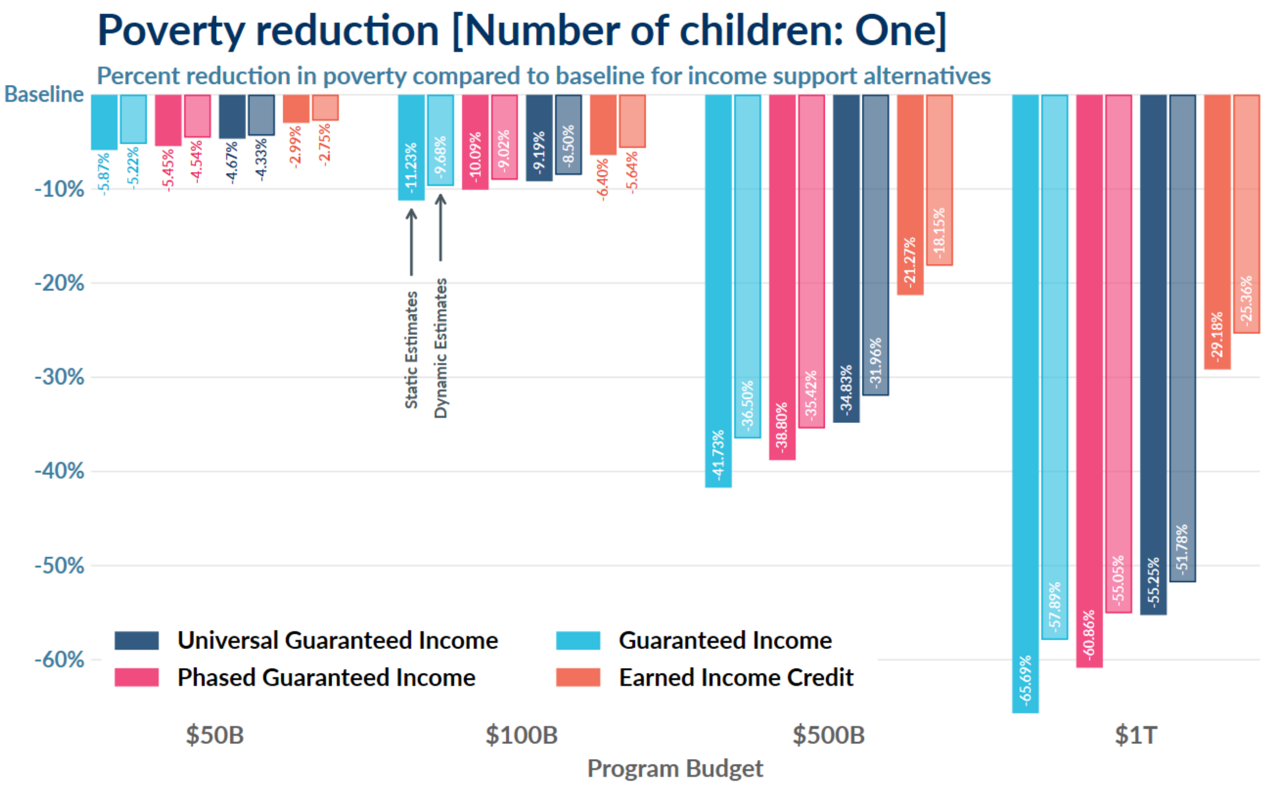
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A20



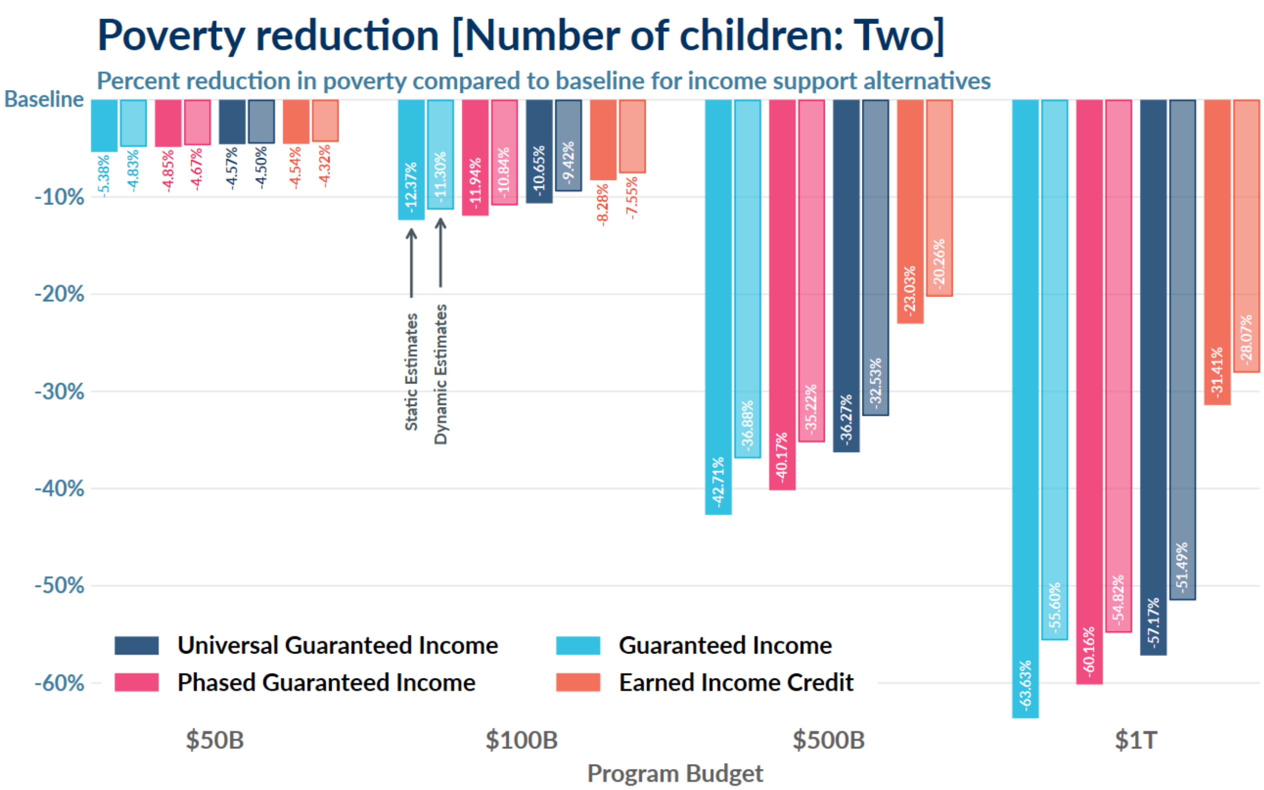
Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A21



Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

Figure A22



Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

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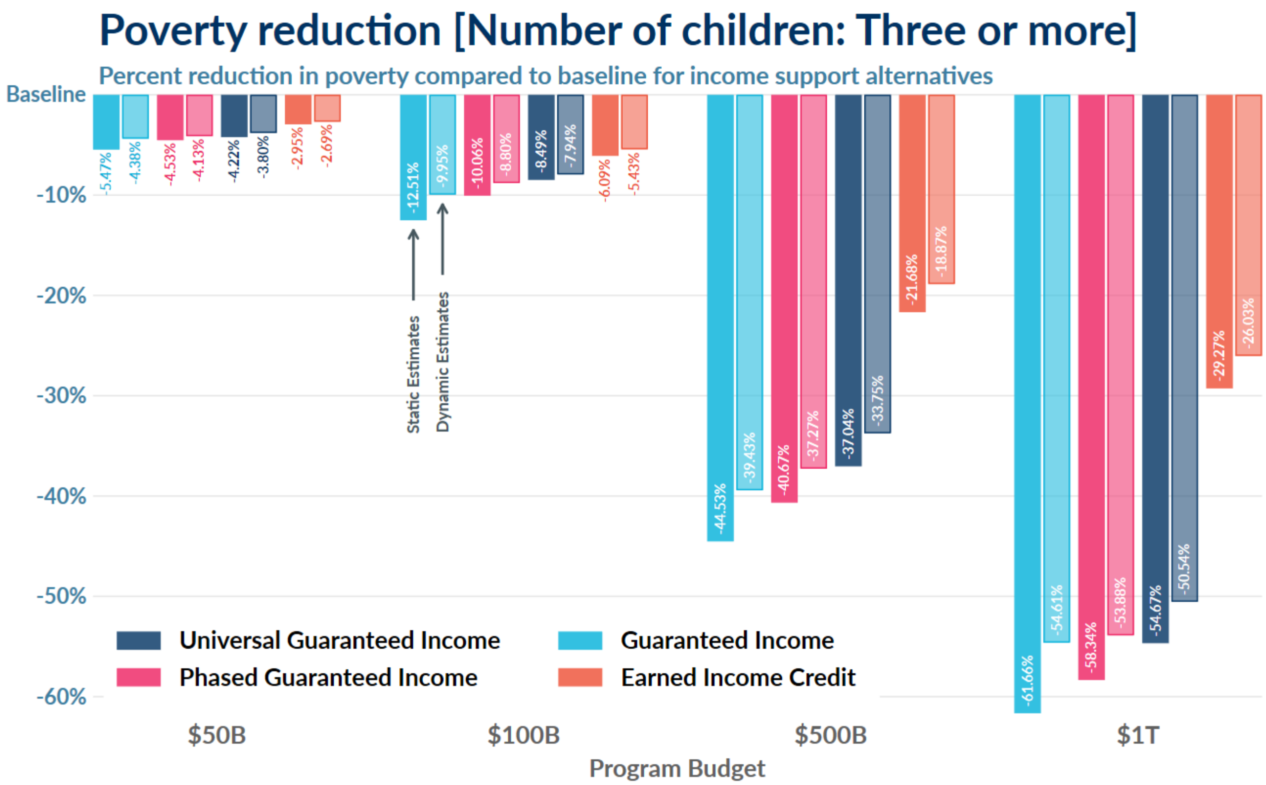

Source: Authors' analysis of IPUMS-CPS and TRIM3. **Sample:** All families.
Notes: This chart illustrates the reduction in poverty rates achieved by alternative income support programs at different budget levels. Program budgets are shown in either billions (B) or trillions (T) of dollars. Static estimates refer to simulations that omit predicted labor supply effects. Dynamic estimates refer to simulations that incorporate predicted labor supply effects. For the GI, PGI, and EIC programs eligibility thresholds are set at a $100k baseline for single adult tax units (and are scaled up based on tax units' equivalence scale). Kink points are set at 50% of the corresponding eligibility threshold for the PGI and EIC programs. Citizenship or simulated authorized residency is required for program eligibility.

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