MARRIAGE PENALTIES IN THE EARNED INCOME TAX CREDIT: WHY THEY OCCUR AND HOW TO ALLEVIATE THEM

Minimizing Marriage Penalties with Compassionate and Fiscally Responsible Solutions

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Introduction

The percentage of men and women who are married has steadily decreased since the 1950s. In 1950, about 66% of women and 67% of men were married.[1] These rates were similar across ethnic and educational lines.[2] In 2025, the overall rate is about 51% for men and 49% for women.[3] This not only impacts adults, but also children, as more and more young people are raised in households with unmarried parents. In 1968, data shows that about 13% of children lived with unmarried parents, all of whom were single parents. This number increased to 32% in 2017 (partly because cohabitating couples then made up 35% of unmarried parents), with 2022 data showing that it has remained steady at 31%.[4,5] The marriage decline has been unequal, as less educated Americans have been hit particularly hard. In 2018, only 27% of adults with less than a high school diploma were married compared to 44% of those with a high school diploma and 59% of those with a bachelor's degree or above.

The economic outcomes for less educated Americans also significantly trail those for more educated adults. In 2025, college-educated peers had 1.5 to 2 times the median weekly income and were unemployed at rates 1.5 to 2.5 times lower than those with a high school diploma or less education.[6] Both of these trends are reflected in higher poverty rates for less educated adults. In 2018, almost 26% of adults with no high school diploma lived in poverty compared to 12.7% of those with a high school diploma and 4.4% of those with a bachelor's degree.[7] Not surprisingly, less educated adults rely on safety net programs at much higher rates than college-educated adults. Census data from 2018 showed that adults with no

[1] U.S. Census Bureau. (2025, December 2). *Table MS-1. Marital status of the population 15 years old and over, by sex, race and Hispanic origin: 1950 to present*. https://www.census.gov/data/tables/time-series/demo/families/marital.html.
[2] Schweizer, V. J. (2020). *Marriage: More than a century of change* (Family Profile No. FP-20-21). National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-20-21.
[3] U.S. Census Bureau. *Table MS-1. Marital status of the population 15 years old and over*.
[4] Livingston, G. (2018). *The changing profile of unmarried parents*. Figure 2. Pew Research Center. https://www.pewresearch.org/social-trends/2018/04/25/the-changing-profile-of-unmarried-parents/.
[5] Zill, N. (2024). *The resurgence of the two-parent family*. Institute for Family Studies. https://ifstudies.org/blog/the-resurgence-of-the-two-parent-family.
[6] U.S. Bureau of Labor Statistics. (2025). *Education pays, 2024*. https://www.bls.gov/careeroutlook/2025/data-on-display/education-pays.htm.
[7] U.S. Census Bureau. (2021). *Income and Poverty in the United States: 2018*. Figure 8. https://www.census.gov/content/dam/Census/library/publications/2019/demo/p60-266.pdf.

high school diploma or only a high school diploma participated in the Supplemental Nutrition Assistance Program (SNAP) at rates 3 times and 5 times higher than college-educated adults, respectively. Adults without a high school diploma and adults with a high school diploma participated in SNAP at rates of 25.9% and 38.3%, respectively.[8] Similarly, adults without a high school diploma and those with only a high school diploma participated in the Supplemental Security Income (SSI) and the Temporary Assistance for Needy Families (TANF) programs at rates 4.5 and 5 times higher than college-educated adults.[9]

These higher rates of safety net participation and lower marriage rates among less educated adults are further exacerbated by the existence of marriage penalties in safety net programs. A marriage penalty occurs when a couple receives a smaller benefit when married than they would receive when unmarried. For example, if a couple earns $500 in TANF benefits when married but receives a total benefit of $1,000 when unmarried, then they face a $500 marriage penalty. It is possible to have marriage *bonuses* as well. Indeed, as will be shown later, usually both exist in the same program.

Marriage penalties can occur with two important decisions a couple makes in their relationship. One decision is whether to cohabitate and pool financial resources.[10] There can be bonuses and penalties associated with this decision, as it changes a household's composition and therefore impacts how programs count income and set benefits and thresholds. The second decision a couple makes is whether to marry. There can also be penalties and bonuses associated with this decision because programs change how income and benefits are paid based on marital status. Some couples make the cohabitating and marriage decisions simultaneously, choosing to marry and then afterwards live together. Some couples only make the cohabitating decision and remain unmarried. This state is called the "cohabitating scenario." This report focuses on the cohabitating scenario, as many less educated adults will cohabitate while unmarried at some point in their lives. Data from 2017 shows that about 75% of adults aged 18 to 44 with a high school

[8] King, M. (2021). *More than one-in-seven social safety net recipients in 2017 were college graduates*. U.S. Census Bureau. https://www.census.gov/library/stories/2021/05/more-than-one-in-seven-social-safety-net-recipients-in-2017-were-college-graduates.html.
[9] Ibid.
[10] Cohabitating (and even married) couples do not always share all financial resources; they may share only a percentage of resources. However, for a consistent comparison, it is assumed that all financial resources are shared regardless of marital status.

diploma or less had cohabitated at some point (compared to 59% of college-educated adults).[11] Only 60% of this group had ever been married, while 46% of the group had both been married and cohabitated. All of this suggests that children in low-income families are more likely to be raised in homes with low social and economic stability. As such, effective policy should seek to minimize marriage penalties in safety net programs.

This report will analyze the state of the Earned Income Tax Credit (EITC) program as it relates to marriage penalties and bonuses for cohabitating couples and will recommend a framework for policy design that would minimize both the prevalence and severity of marriage penalties. Established in 1975 under 26 U.S.C. § 32, the EITC program provides tax credits to citizens who earn income within a certain range (part of which is refundable, so those with a negative tax liability can receive a "refund" check from the Internal Revenue Service (IRS)). Unlike many safety net programs, the EITC program requires participants to earn income above a certain threshold to receive the maximum credit. Furthermore, individuals with no income are ineligible for the credit. In tax year 2024, about 24 million filers received the EITC, with total payments of $69.6 billion.[12]

As will be shown in this paper, marriage penalties are unavoidable in the EITC program. This means that potentially millions of Americans face marriage penalties. Policy solutions exist that can mitigate the severity and number of these penalties, and this paper will provide a framework for solutions for the EITC program that can then be extended to other safety net programs.

One important issue not within the scope of this paper is erroneous payments of the EITC as a result of fraudulent claims. As will be discussed in a later section, these improper payments are sizeable and should be addressed. However, for this report, it is assumed that fraud is not in the program. This will show that marriage penalties are inherent in the design of the EITC and not the result of fraudulent claims. They are separate but critical problems.

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[11] Horowitz, J. M., Graf, N., & Livingston, G. (2019, November 6). *The landscape of marriage and cohabitation in the U.S.* Pew Research Center. https://www.pewresearch.org/social-trends/2019/11/06/the-landscape-of-marriage-and-cohabitation-in-the-u-s/.

[12] Internal Revenue Service. (n.d.). *Statistics for tax returns with the Earned Income Tax Credit (EITC).* https://www.irs.gov/tax-professionals/eitc-central/statistics-for-tax-returns-with-the-earned-income-tax-credit-eitc.

Methodology

Definition of Marriage Bonuses and Penalties

For the purposes of this paper, marriage penalties and bonuses are calculated by assuming that a couple lives together, shares all expenses, and pools their financial resources so that their financial behaviors are the same whether married or not. The only thing that has the potential to change is how net income is calculated from a tax or safety net program perspective because of a change in marital status.

For the cohabitating scenario, the marriage bonuses and penalties are calculated using Equation 1:

Equation 1: Marriage Analysis for Cohabitating Scenario

$$\Delta M = \text{Married Net Income} - \text{Unmarried Net Income}$$

$$\text{Married Net Income} = NI(GI_1, GI_2, X_1, X_2)$$

$$\text{Unmarried Net Income} = NI(GI_1, X_1) + NI(GI_2, X_2)$$

The marriage analysis, ΔM, is the difference in net incomes between the scenario in which the couple is married and the scenario in which they are unmarried. The net income is the summation of earned and unearned income, including any in-kind and cash benefits received from the government, minus any taxes. If the calculation of the marriage question is positive, then the scenario has a marriage bonus. Meanwhile, if the calculation is negative, the scenario has a marriage penalty. Finally, if ΔM is zero, then the scenario has marriage neutrality.

"Married Net Income" is calculated by inputting all relevant aspects of the couple's financial situation, including gross income (GI) and any other factors (X), such as children, investments, child care costs, housing costs, etc., in each of the tax or benefit calculations for each program of interest. For "Unmarried Net Income," net income is calculated separately for each unmarried person and then summed to get the total net income.

As an example, consider a couple who made a combined net income of $40,000 while cohabitating, and a combined net income of $42,000 while married. This would result in a $2,000 marriage bonus. In practice, this marriage bonus (or penalty) would be the result of different taxes and benefit calculations for couples based on their legal marital status. For example, the standard deduction and tax brackets differ between filing as married jointly and filing as head of household.

Thus, an unmarried couple would likely see a change in their tax liability as a result of marrying (it may be a bonus or a penalty).

In general, determining the correct inputs for the married and unmarried scenarios requires identifying the correct assistance unit for each analysis. An assistance unit considers what members of a household are included when determining eligibility, how the income of each unit member is treated, and the benefit or tax amount. This analysis only looks at households with two adult parents and their children. In the scenario for Person 1 while unmarried, they are assigned their children and given the filing status of "head of household" (children are unambiguously assigned to one parent, so there is no overlap in dependents when the couple is unmarried). If they have no children, they file as "single." This same process is used for Person 2 as unmarried. For the married scenario, they file as "married filing jointly," and all children in the household are assigned to the parents as dependents.[13]

Tax units will always be independent when considering the couple unmarried, as the tax system does not have a filing status for unmarried couples and does not allow children to be claimed multiple times as dependents. If a couple filed fraudulently and claimed a single child multiple times, this would result in an overlap of assistance units. Because this analysis assumes no fraud there will be no overlap in the assistance units.

As a result, the net income calculations for Equation 1 can be expressed as the summation of the earned income and the refundable tax credit from the EITC program. Thus, every net income can be defined with Equation 2:

Equation 2: Net Income Definition

$$NI(ei, qc, fs) = ei + E_{fs,qc}(ei).$$

For Equation 2, ei is the earned income, qc is the number of qualifying children (QC), and fs is the filing status. The function $E_{fs,qc}$ returns the EITC benefit and is determined by the filing status and the number of QC. All the benefit equations follow the same general piecewise function form as described in Equation 3:

[13] Some programs, like SNAP, would have overlap when defining the assistance units for the unmarried scenarios, as SNAP more broadly defines the assistance unit. Special care would need to be taken to not double-count benefits for those unmarried scenarios.

Equation 3: Generic EITC Benefit Piecewise Function

$$E_{fs,qc}(gi) = \begin{cases} \phi_{fs,qc} * GI, & 0 \le GI < PI_{fs,qc} \\ MC_{fs,qc}, & PI_{fs,qc} \le GI \le PO_{fs,qc} \\ MC_{fs,qc} - \theta_{fs,qc} * \left(GI - PO_{fs,qc}\right), & PO_{fs,qc} < GI \le MI_{fs,qc} \\ 0, & gi > MI_{fs,qc} \end{cases}$$

In Equation 3, ϕ is the phase-in percentage, θ is the phase-out percentage, PI is the phase-in threshold, PO is the phase-out threshold, MI is the maximum income, and MC is the maximum credit. For the actual EITC program, these variables are defined by the IRS, codified in 26 U.S.C. § 32, and vary for each combination of filing status and QC. Table 1 and Table 2 show the parameters for tax year 2026.[14]

Table 1: EITC Parameters for Filing Single, Head of Household, or Widowed

Qualifying Children Claimed	Phase-in Percentage (ϕ)	Phase-out Percentage (θ)	Phase-in Threshold (PI)	Phase-out Threshold (PO)	Maximum Income (MI)	Maximum Credit (MC)
Zero	7.65%	7.65%	$8,680	$10,860	$19,540	$664
One	34%	15.98%	$13,021	$23,890	$51,593	$4,427
Two	40%	21.06%	$18,290	$23,890	$58,629	$7,316
Three+	45%	21.06%	$18,290	$23,890	$62,974	$8,231

Table 2: EITC Parameters for Married Filing Jointly

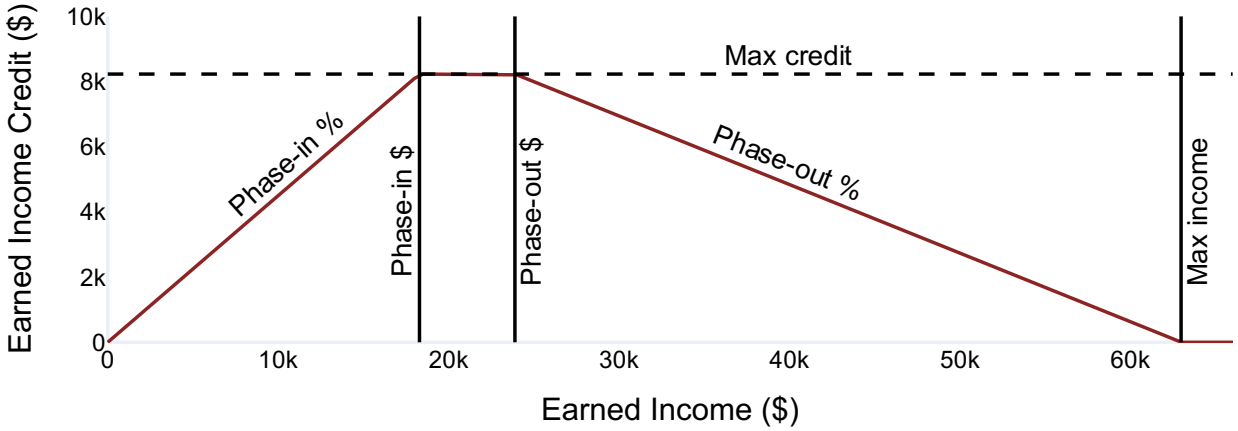
Qualifying Children Claimed	Phase-in Percentage (ϕ)	Phase-out Percentage (θ)	Phase-in Threshold (PI)	Phase-out Threshold (PO)	Maximum Income (MI)	Maximum Credit (MC)
Zero	7.65%	7.65%	$8,680	$18,140	$26,820	$664
One	34%	15.98%	$13,021	$31,160	$58,863	$4,427
Two	40%	21.06%	$18,290	$31,160	$65,899	$7,316
Three+	45%	21.06%	$18,290	$31,160	$70,244	$8,231

Figure 1 shows what Equation 3 looks like for a person filing as head of household and claiming three QC. It illustrates how the parameters impact the benefit curve. The phase-in percentage determines the slope of the benefit curve during the phase-in portion of the program. When the head of household earned income

[14] Internal Revenue Service. (2025). *Revenue procedure 2025-32*. U.S. Department of the Treasury. https://www.irs.gov/pub/irs-drop/rp-25-32.pdf.

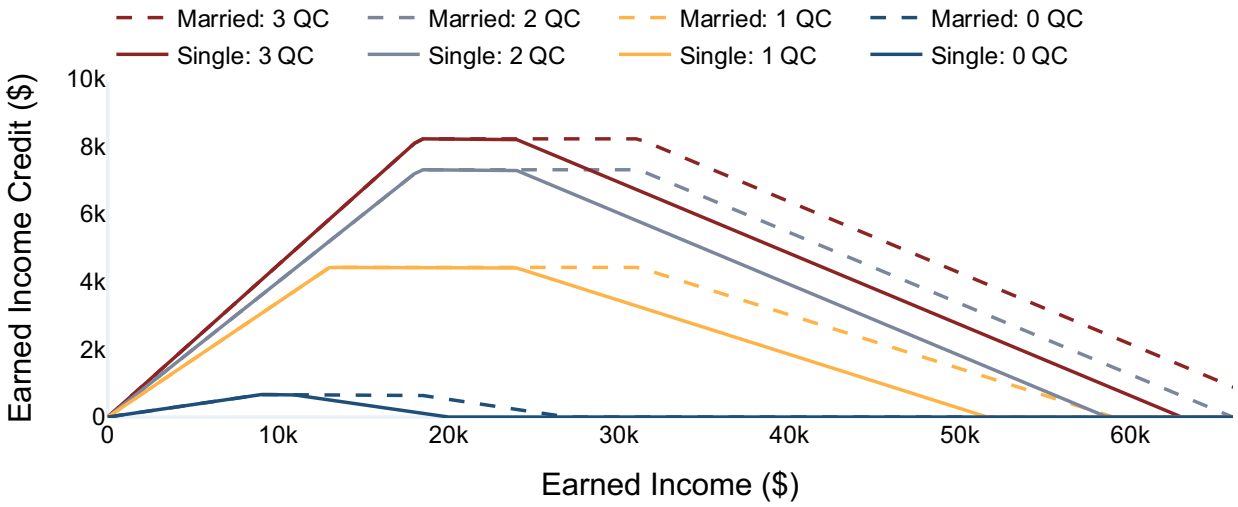
equals the phase-in threshold, they receive the maximum credit until earned income equals the phase-out threshold. At that point, the tax credit decreases at a rate equal to the phase-out percentage until the credit equals zero. This is the point that defines the maximum income limit.

Figure 1: Sample Benefit Chart for EITC Program



As depicted in Table 1 and Table 2, there are eight unique scenarios for the EITC program. Figure 2 shows what each of the benefit curves looks like for the scenarios based on the filing status and number of QC. These plots are used to calculate the EITC benefit, which is then used to calculate the net income as defined in Equation 2. A few characteristics stand out in the current EITC program design. First, there is a large increase in the maximum credit when moving from zero children to one child. This increase gets smaller when moving to two and three children (that is, the marginal benefit of additional children is decreasing). Second, the married benefit curves have the same maximum credit as the single curves when holding the number of QC constant, but a slightly increased maximum income threshold. As will be discussed later, this creates many marriage penalties. Third, the scenarios phase in and out at different rates, depending on the number of QC, which adds some complexity to the analysis of marriage penalties and bonuses.

Figure 2: Benefit Plots for All Scenarios of EITC Programs



Parameter Input Ranges

When performing the marriage analysis for the EITC, it is useful to consider the range of possible scenarios, as solutions will impact many different types of households. The EITC program takes three inputs for computing benefits: (1) earned income, (2) the number of QC, and (3) the filing status. The EITC caps the number of QC at three, so the range of children is zero to three. The EITC also groups filing statuses into only two options: (1) single/head of household/widowed, or (2) married filing jointly.

When computing marriage penalties, both filing status options are used, as the analysis always looks at both the "single/head of household" and "married" scenarios for the analysis. So, the number of unique scenarios is determined by the combination of QC that the couple can have. Because the QC options only range from zero to three, a combination with replacement analysis shows that only 10 unique scenarios exist, as noted in

Table 3. Thus, there are 10 different scenarios to consider when analyzing marriage penalties and bonuses as they relate to the EITC.[15]

[15] The manner in which children are distributed among the partners does not change the analysis. So, the scenario of Person 1 with zero children and Person 2 with one child is identical to the reverse scenario in which Person 1 has one child and Person 2 has zero children. This is because it is assumed that financial resources are pooled the same way whether the couple is unmarried or married. Thus, it makes no difference how the benefit is distributed in the pre-marriage situation. If the distribution of the children mattered, there would be 16 scenarios instead of 10.

Table 3: EITC Combination with Replacement Scenarios for Marriage Question Analysis

Person 1 - Children	Person 2 - Children
0	0
0	1
0	2
0	3+
1	1
1	2
1	3+
2	2
2	3+
3+	3+

A Discussion on the Marriage Tradeoffs Inherent to Benefit Programs

Before analyzing marriage penalties in the EITC, it is important to acknowledge that the current structure of the program makes it mathematically impossible to achieve marriage neutrality. As noted by Professor Boris Bittker of Yale Law School regarding the tax code, "we cannot simultaneously have (a) progression, (b) equal taxes on equal-income married couples, and (c) a marriage-neutral tax burden."[16]

This means that if a program treats families with equal total incomes the same (e.g., a family in which both spouses earn $25,000 would be treated the same as a family in which one spouse earns $50,000 and the other earns $0) and also is progressive (i.e., higher income households have a smaller benefit than lower income households), then the program cannot maintain marriage neutrality. It is mathematically impossible.[17]

[16] Bittker, B. I. (1975). Federal income taxation and the family. *Stanford Law Review*, 27(6), 1396. https://doi.org/10.2307/1228181.

[17] To further explore the mathematical impossibility and for a mathematical proof that shows the logical inconsistency, see: Joint Committee on Taxation. (1980). *The income tax treatment of married couples and single persons*. (JCS-17-80). 26. U.S. Government Printing Office. https://www.jct.gov/getattachment/400005d9-91ee-4b81-abd1-e39fb01c9235/jcs-17-80-3888.pdf.

The tax system and safety net programs in the U.S. have been designed to meet Bittker's first two criteria. For example, the U.S. income tax system is monotonically progressive,[18] and the married filing jointly status does not consider how income is distributed in a household, only the total value. Similarly, safety net programs like SNAP and Medicaid do not pay out benefits in a constant proportional manner, and they also aggregate income without consideration to how income is distributed in the household.

Thus, any solution that attempts to create marriage neutrality must either make the system perfectly proportionate to income (i.e., a constant proportional tax rate for all income) or must tax households at the individual level (i.e., married partners would each pay a tax based on their own individual income and not their aggregate income). It seems unlikely that the tax system will move toward a constant proportional tax. It also seems unlikely that the current choice to tax married

For a brief mathematical example, consider a tax with different tax rates that progressively increase. This is a "progressive" tax system. Now consider two different couples that have the same total income I, but different distributions of income within the couples. The first couple (1) has Person A and Person B, and in this couple, Person A earns all the income. The second couple (2) has Person C and Person D, and the income is split equally among them. Now consider the tax liability for the couples when unmarried (*u*) (that is, each tax is applied to individuals): $T_{1,u} = T_A$, $T_{2,u} = T_C + T_D$. Because the tax system is progressive, there is always a scenario in which $T_{1,u} > T_{2,u}$ even though the total income is the same for the couples. Now consider the situations in which the couples are married (*m*). To maintain equal treatment of couples with equal families (the second clause), it must be that $T_{1,m} = T_{2,m}$, where $T_{1,m}$ and $T_{2,m}$ are the total tax burdens of each married couple. Finally, for marriage neutrality to hold (the third clause), it must be: $T_{1,u} = T_{1,m}$ and $T_{2,u} = T_{2,m}$. Substituting these into the first equation results in: $T_{1,m} > T_{2,m}$, which violates the second clause assumption. Thus, it is logically impossible to maintain all three conditions simultaneously.

[18] A system is monotonically progressive when the marginal tax rate is always equal or increasing for the entire range of incomes. That is, if the marginal rate of income tax is a function of income: $r(I)$, the tax system is monotonically progressive if $r(I_2) \geq r(I_1)$ for all $I_2 > I_1$ in the range of possible incomes. A system is monotonically regressive if $r(I_2) \leq r(I_1)$ for all $I_2 > I_1$. Finally, a system with a constant proportional tax has $r(I_2) = r(I_1)$ for all combinations of $I_2$and I_1. If none of these scenarios are true, a program would be some mix of progressive, regressive, or proportional over the range of incomes. When analyzing benefit programs, many times the phrase "earnings loss rate" is used instead of marginal tax rate. Mathematically, these terms are equivalent and will be used interchangeably. In practice, most safety net programs are not monotonically progressive or regressive. They have regions of regressive or progressive benefits.

people jointly instead of individually will change.[19] Thus, marriage neutrality cannot be achieved within the current design of the tax system.[20]

While neutrality is impossible in a progressive tax system, a marriage "bonus" could be achieved. Choosing to be pro-marriage is not a marriage-neutral position, so it is possible to design programs to maximize marriage bonuses. Practically, most programs will have a mix of both marriage bonuses and penalties. Thus, optimal solutions would have to mitigate the number and severity of marriage penalties while maximizing the number and benefit of marriage bonuses. The next section explains the theory about why almost any program design will have a mix of marriage bonuses and penalties instead of being only penalties or bonuses. But for now, take it as a given that any program will have a mix of marriage penalties and bonuses.

As a result of this fundamental constraint, policymakers cannot be neutral about marriage. They must decide to support economic incentives for marriage, or they will be supporting policies that disincentivize marriage. The last section of this report discusses a design framework that could be applied to any program that would help mitigate marriage penalties and support marriage bonuses for the low-income families these programs typically assist.

A Theoretical Review of Marriage Penalties and Bonuses

When considering program design differences that occur only from differences in program parameters for married versus unmarried couples (e.g., income brackets have different thresholds for single and married filing jointly), there are five common scenarios that occur. Each of these different scenarios will be analyzed for

[19] The original Revenue Act of 1913 established the income tax only at the individual level. This created incentives for couples to allocate income among themselves in a manner that minimized their tax. However, the Revenue Act of 1948 forced a 50/50 "income splitting" policy on a couple, where the couple summed all their income and then equally split it among themselves. This served as the foundation for the "married filing jointly" status and the practice of taxing married couples as a unit instead of individually.

[20] Programs like the Section 8 Housing Choice Voucher Program, which only define assistance units at the household level and not the individual level, are marriage neutral for unmarried cohabitating couples. This is because income is counted the same regardless of marital status and benefits are paid to the entire household regardless of marital status. As such, designing programs to define assistance units at the household level would be a beneficial outcome and would likely reduce the large number fraudulent EITC claims. See the "Additional Considerations" section for more details.

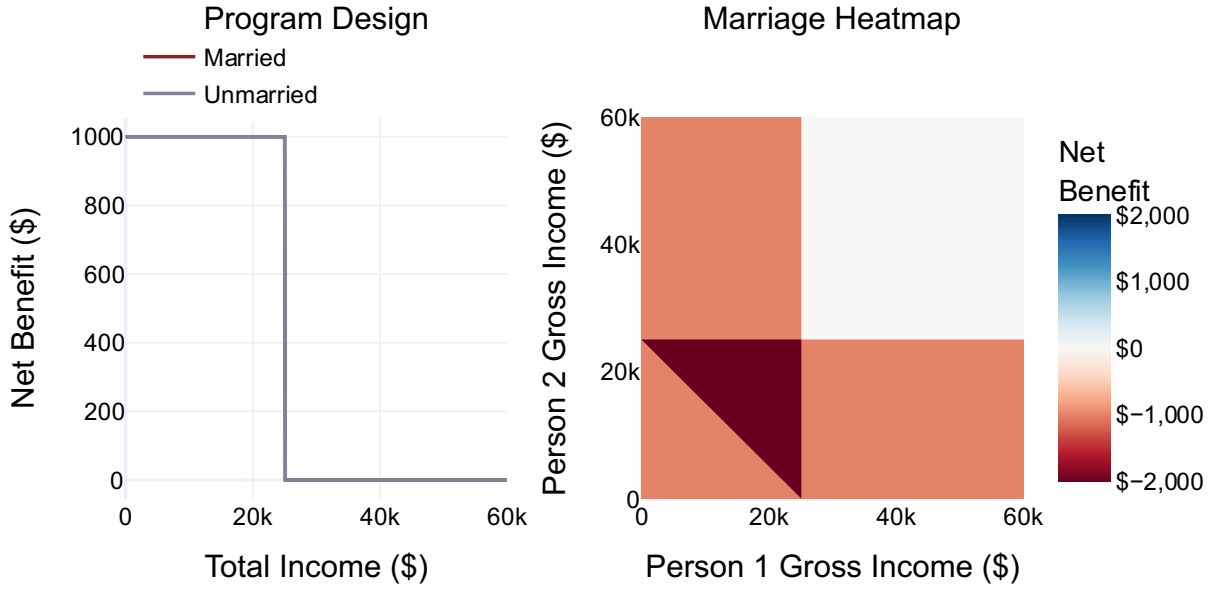
marriage penalties and bonuses. Tax and safety net programs are essentially a mix of these scenarios.

Scenario 1: Zero-Income Safety Net Program with Benefit Cliff and Undifferentiated by Marital Status

Consider a scenario with a safety net program that provides a maximum benefit starting from an income of $0 and provides that maximum benefit until reaching an income threshold, at which point the benefit immediately drops to zero (what GCO has identified as a benefit cliff). For this program, consider that the maximum benefit amount and the maximum income threshold are the same, regardless of marital status. Figure 3 shows an example of the structure of such a program along with the marriage analysis for that program. The left side of the figure shows the program benefit on the y-axis and the earned income on the x-axis for both the married and unmarried scenarios. This example program has a maximum benefit of $1,000 and a maximum income threshold of $25,000. The married and unmarried benefits are the same, so the married line is covered by the unmarried line.

The right side of the figure depicts a heatmap showing the result of the marriage analysis from Equation 1 for combinations of income for Person 1 (x-axis) and Person 2 (y-axis). The color bar on the right depicts the extent of the marriage bonus or penalty. Bigger penalties are darker red colors, bigger bonuses are darker blue colors, and neutral results are white. This program design results in only marriage penalties and has three geographic areas of interest. The first is the light red triangle of marriage penalties in the left corner, the second is the dark red triangle near the lower left of the figure, and the third is comprised of the rectangles of light red penalties in the top left and bottom right of the figure.

Figure 3: Marriage Analysis for Benefit Cliff Program with No Differentiation in Marital Status



The lower left light-colored red triangle describes the scenario in which both Person 1 and Person 2 receive the benefit of $1,000 for a total benefit of $2,000, but marriage results in the couple receiving only a benefit of $1,000, which is a $1,000 marriage penalty. As will be shown in the next theoretical scenario, this penalty can be removed by increasing the maximum benefit for married couples.

The dark red triangle reflects the area in which both people receive the maximum benefit of $1,000, but marriage results in the couple receiving zero benefit and thus a marriage penalty of $2,000. This is a common result for any safety net program, as programs usually start from a maximum benefit that eventually ends (a later section will look at programs that taper to an end instead of ending in a cliff). As will be shown in the third theoretical scenario, this penalty can be removed by extending the maximum income threshold and maximum benefit for married couples.

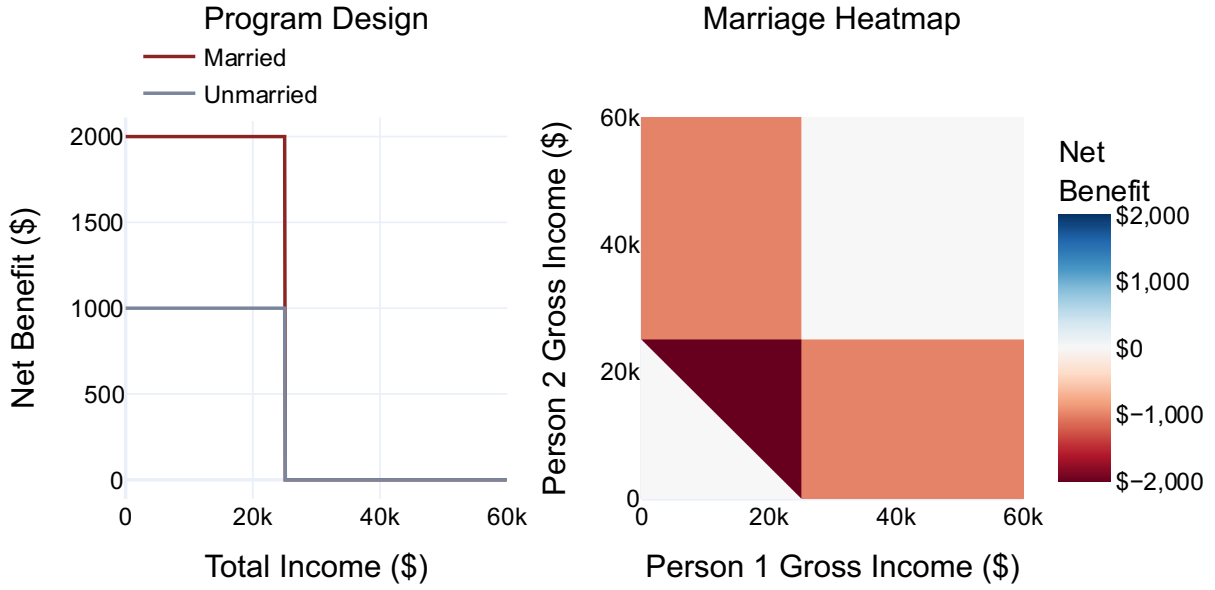
The two rectangles show the situation in which one person in the couple receives the benefit of $1,000 while the other does not, and marrying results in the couple losing the benefit and thus being penalized $1,000. The top left rectangle describes the situation in which Person 1 earns the benefit (as they have income between $0 and $25,000), while Person 2 does not earn the benefit (as they have income beyond $25,000). The bottom right rectangle describes the situation in reverse. Unlike the situations represented by the two triangles, these marriage penalties cannot be removed. Any safety net program that has a maximum income threshold

will have these rectangles of marriage penalties, as a scenario can always exist in which marrying a person with a high enough income will cause the couple to not qualify for the benefit.

Scenario 2: Zero-Income Safety Net Program with Benefit Cliff and Higher Married Benefit

Figure 4 shows the program design for a program that pays a double benefit for married couples ($2,000) but has the same $25,000 maximum income threshold as the single scenario. The marriage analysis heatmap looks the same as the one in Figure 3, except the lower left triangle of marriage penalties has been neutralized. This is because both people are earning the $1,000 benefit in this region when unmarried for a total benefit of $2,000. When married, they still qualify for the program as a couple and receive $2,000. Thus, they have the same combined benefit regardless of marital status. If the benefit for the married couple was more than twice the single benefit, then this region would become a marriage bonus area instead of being marriage neutral. If the married benefit was less than double, there would be a marriage penalty in this region, though it could range in severity.

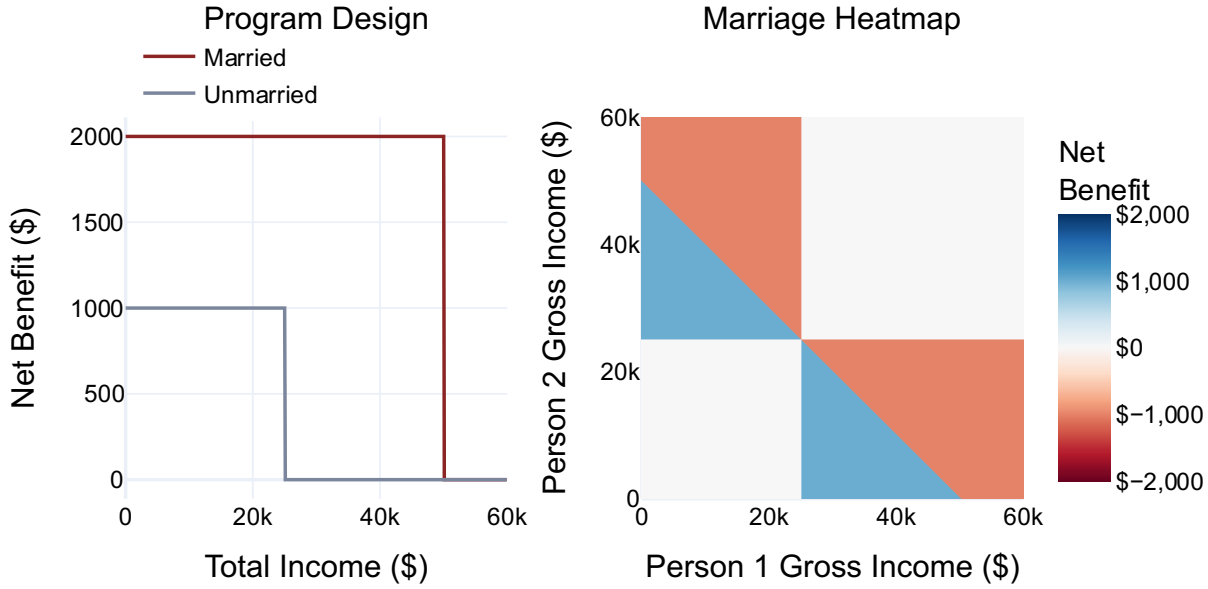
Figure 4: Marriage Analysis for Benefit Cliff Program with Double Benefit for Married Couple



Scenario 3: Zero-Income Safety Net Program with Benefit Cliff and Higher Married Benefit and Married Income Threshold

Figure 5 shows a program design that pays a double benefit for a married couple, $2,000, and has double the income threshold, $50,000. The right side of the figure shows that the dark red marriage penalty triangle from Figure 4 has been neutralized. Furthermore, a couple of light blue marriage bonus triangles have appeared. The dark red marriage penalty triangle is eliminated because previously this triangle indicated the scenario in which both people earned the maximum benefit while unmarried, but marriage resulted in them earning beyond the income threshold. However, with doubling the income threshold and the maximum benefit, now people in this region still qualify for the married benefit. This region could be made a marriage bonus by further increasing the married benefit.

Figure 5: Marriage Analysis for Benefit Cliff Program with Double Benefit and Double Income Threshold for Married Couple

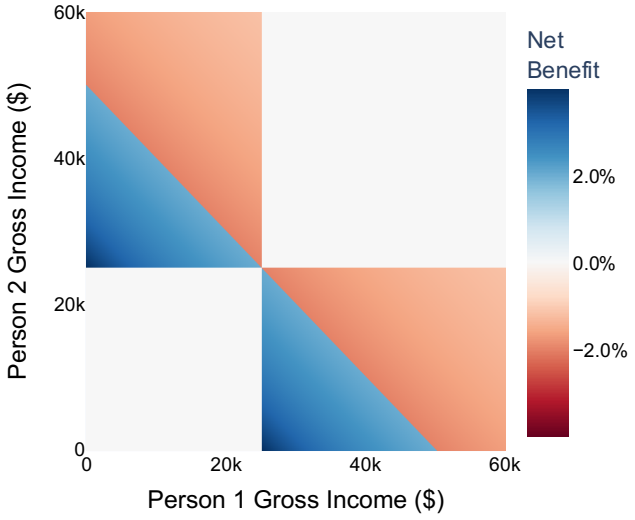


The two blue triangles appear for scenarios in which one person is earning the benefit while unmarried and the other has an income that disqualifies them, so they earn a total benefit of $1,000. If they choose to marry, the increased income threshold means the couple qualifies for the benefit, which is $2,000, so they get a marriage bonus.

There is still a marriage penalty for the scenario in which one person earns the benefit while unmarried but the second person does not earn the benefit, and when married, the couple no longer qualifies for the benefit. The only way to

remove this region of marriage penalties is to have a program with no income threshold. While this is a disheartening result at first, it is important to realize that as incomes increase, the "pain" of the marriage penalty decreases. A couple making $40,000 will feel the pain of losing $1,000 much more than a couple making $120,000. As such, sometimes it can be helpful to consider penalties and bonuses as a percentage of the couple's combined income. Figure 6 shows the scenario from above with results as a percentage of the couple's total income. In this figure, both benefits and penalties fade from darker colors to lighter colors as incomes increase. This is because the penalties and bonuses in the regions are constant while the income is increasing. So, as a percentage of total income, the impact of the bonuses and penalties decreases as incomes increase. As a result, while the penalties are impossible to remove in the regions of red, the impact of the penalties continuously diminishes with increasing income.

Figure 6: Marriage Analysis with Heatmap Using Benefits as a Percentage of Couple's Income

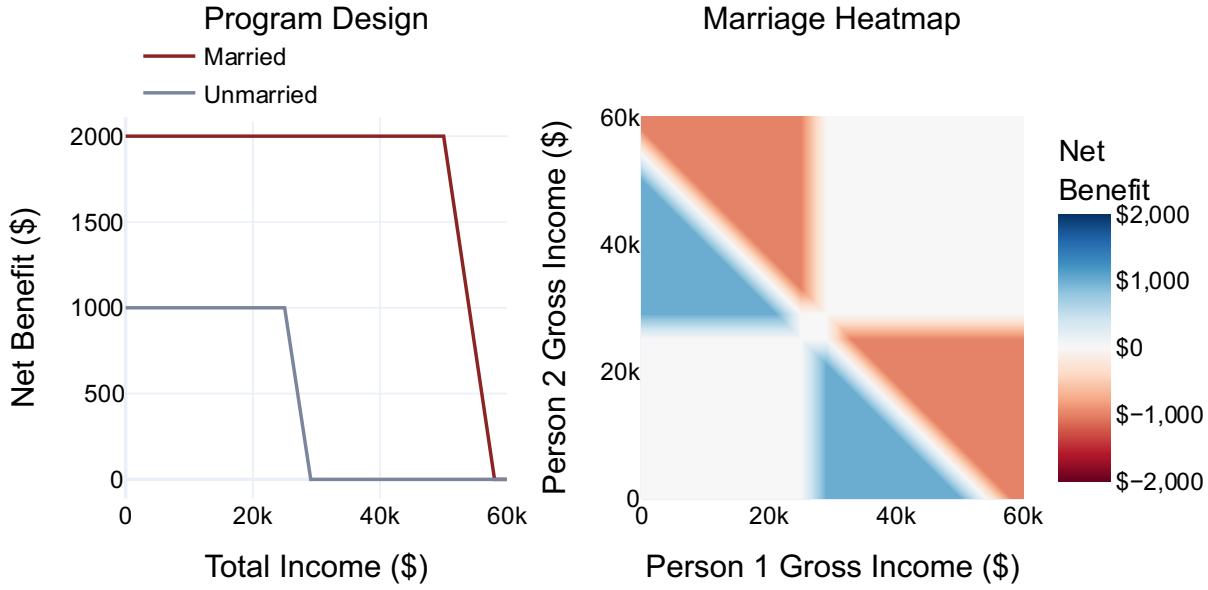


Scenario 4: Safety-Net Program with Tapered Phase-Out Region

The previous scenarios had program designs that had a fixed benefit amount and an immediate end of the program at the income threshold. Figure 7 shows a program design that is the same as that in Figure 5 but includes a taper that is the result of a reduction rate of 25% after the income threshold. This results in a gradual change from marriage bonuses to marriage penalties along the diagonal of $50,000. Previous designs all had a sharp change from bonus to penalty because the program had no taper. In reality, many programs have regions of gradual

benefit reduction that will result in programs that look more like Figure 7, with gradual changes between benefits and penalties.

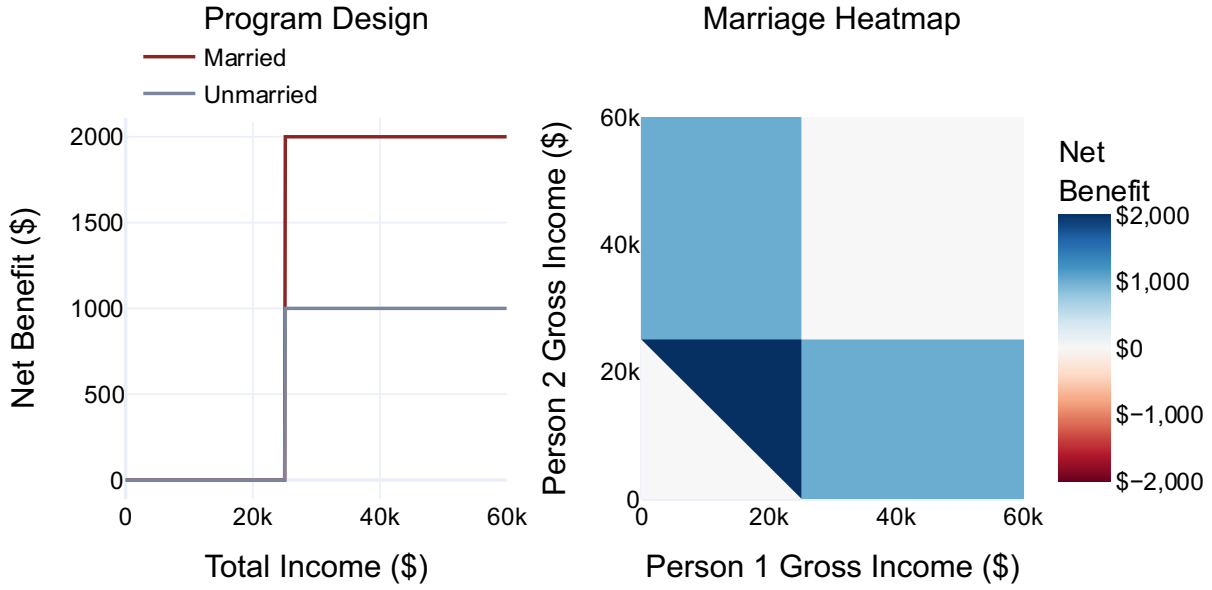
Figure 7: Marriage Analysis for Benefit Cliff Program with Taper



Scenario 5: An All-Marriage Bonus Program

Figure 8**Error! Reference source not found.** shows a program that phases in at $25,000 and has a maximum benefit of $1,000 and $2,000 for single and married people respectively. The program has no maximum income threshold, so it continues for all incomes greater than $25,000. As can be seen from the figure on the right, this program design results in only marriage bonuses. If this program had a tapered phase-in to the maximum credit, it would match the EITC structure. However, unlike the EITC, it has no phase-out, so the program would pay a benefit to all incomes above the threshold (including to extremely high-income earners). This would be both fiscally expensive and wasteful, as it would provide benefits for economically secure households. So, while the marriage bonuses are desirable, the overall program design is not practical.

Figure 8: Safety Net Program Design with Only Marriage Bonuses



Current State of Marriage Penalties in the EITC Program

The next two subsections focus on the two major properties in the EITC program that relate to marriage penalties. The two issues, labeled "penalty pipelines" and "triangle troughs" because of their geometric properties, will be discussed at length. Most of the analysis follows from the discussion on theoretical properties in the previous section. However, the EITC differs from that analysis in two ways. First, the EITC has a "phase-in" region in which the benefit starts from zero at an income of zero and increases until a maximum is reached. This will result in regions of marriage bonuses at very low incomes. Secondly, the EITC adds an additional dimension of analysis as program parameters change based on the number of QC in the couple's household. As shown in

Table 3, this results in 10 different scenarios for the marriage analysis based on how the children are allocated between the couple. This section analyzes how this added dimension impacts the program design and the marriage analysis for the EITC.

Issue 1: Penalty Pipelines

The first issue inherent in the EITC program from a marriage penalties perspective is the existence of long stretches of marriage penalties outside of the program

limits called “penalty pipelines.” Because the EITC has a tapered phase-in period and a tapered phase-out period, there is a region of transition that is analogous to the transition seen in the theoretical scenario for Figure 7.

Figure 9 shows a heatmap of the results of calculating Equation 1 for earned incomes ranging from $0 to $100,000 for the scenario of a single person with one child (henceforth called Person 1) marrying a single person with no children (henceforth called Person 2). The income of Person 1 increases along the x-axis, while the income of Person 2 increases along the y-axis. Each grid shows the marriage penalty or benefit for that combination of incomes. A blue square indicates a marriage bonus, where the combined EITC is greater than if the couple remained unmarried. A red square indicates a marriage penalty, where the combined EITC is less than if the couple remained unmarried. A white square indicates marriage neutrality, where the combined benefit is the same regardless of marital status.

The highlighted section in the figure is an example of a penalty pipeline. These penalty pipelines exist for every single combination of children that a couple may have for the EITC program (

Table 3). They exist for the same reasons that marriage penalties exist even in the theoretical program from Figure 5. Essentially, there exists a combination of income in which one person earns the credit and the other does not, and when they marry, they no longer qualify for the credit as a couple. Because the EITC has a tapered phase-in period and a tapered phase-out period, there is also a region of transition that is analogous to the transition seen in the theoretical scenario for Figure 6.

Figure 10 shows program parameters graphically, which helps illustrate how program design is linked to these marriage penalty trends. The vertical annotations show the program boundaries for Person 1 (on the x-axis), the horizontal annotations show the program boundaries for Person 2 (on the y-axis), and the diagonal annotations show the program boundaries when the couple is married. The annotations clearly illustrate that the penalty pipeline begins once a married couple’s income exceeds the maximum income limit for the married scenario, and when Person 1’s income is within the phase-in and phase-out amount while unmarried. The penalty pipeline’s maximum value is exactly equal to the maximum credit that is earned for the single parent with one child. In general, the maximum penalty for the penalty pipeline is equal to whatever maximum credit is applicable to a single person based on the number of QC they claim. Because the EITC has a

tapered phase-in period and a tapered phase-out period, there is a region of transition that is analogous to the transition seen in the theoretical scenario for Figure 7.

Figure 9: Penalty Pipeline on Marriage Analysis Heatmap - Person 1 with One Child and Person 2 with No Children

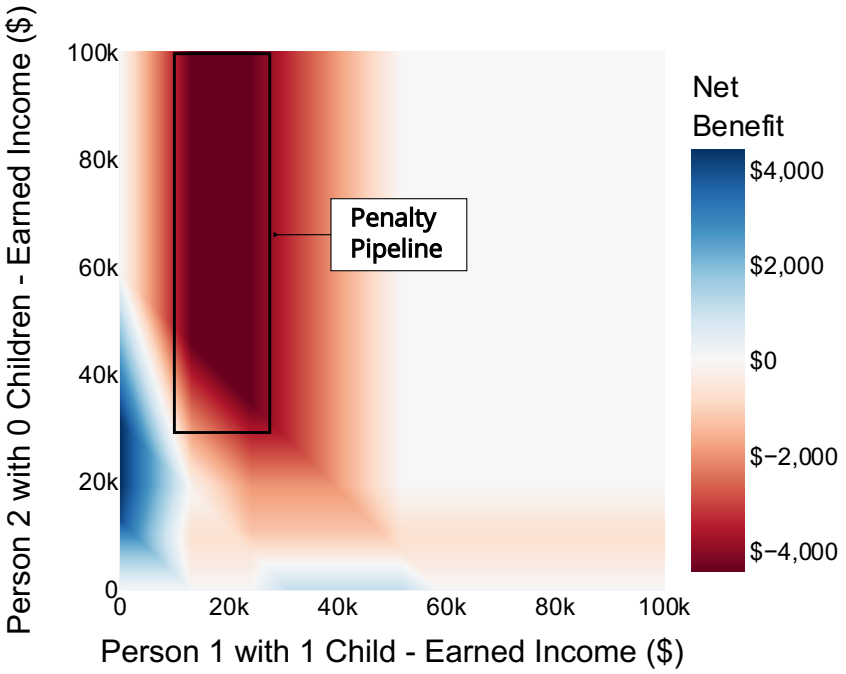


Figure 10: Annotated Marriage Analysis Heatmap for Couple with One Child

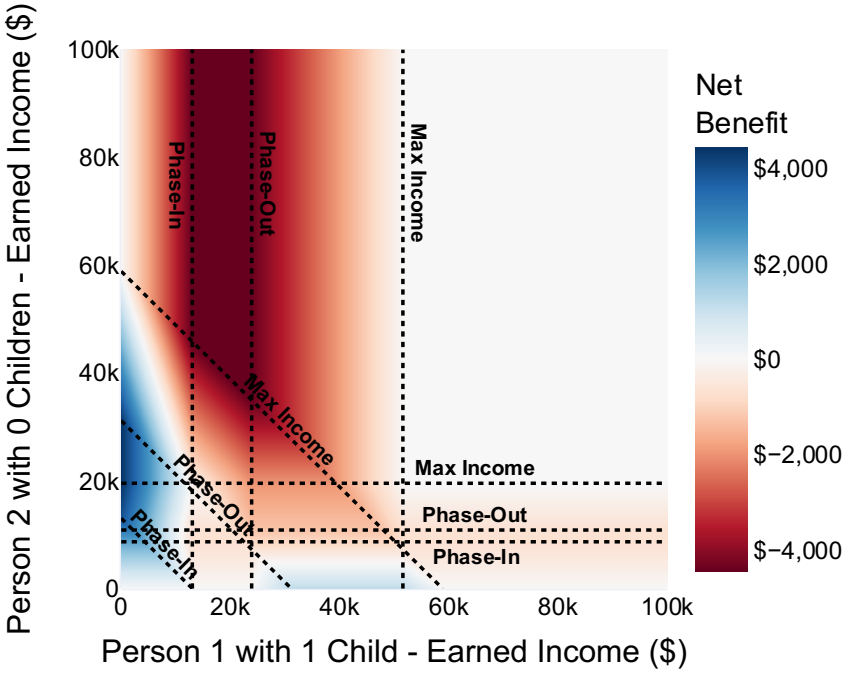
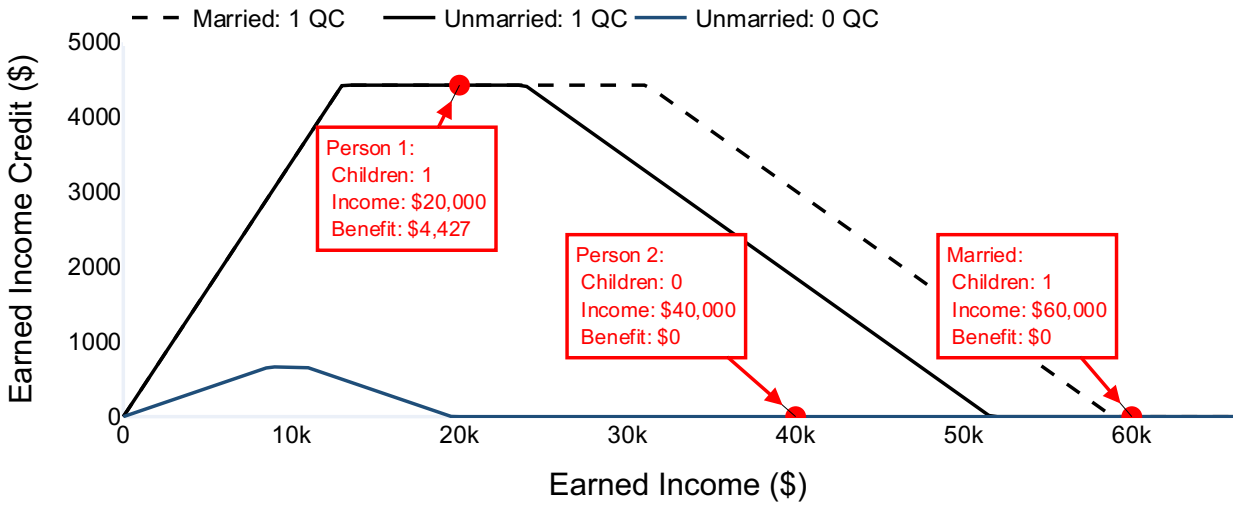


Figure 11 shows graphically the explanation for the penalty pipeline. It displays the EITC benefit curves for an unmarried person with zero children or one child, and a married couple with one child. If Person 1 has one child and an earned income of $20,000, they will receive a tax credit of $4,427. If Person 2 has zero children and an earned income of $40,000, they will receive no benefit. If this couple decides to get married, they will then have a combined earned income of $60,000 but will receive no tax credit. If they continue cohabitating, their earned income would still be $60,000, but they would also receive the $4,427 tax credit from Person 1. Thus, in this scenario, the marriage penalty is exactly equal to the maximum credit of $4,427.

Figure 11: Penalty Pipeline Marriage Penalty for Cohabitating Couple with One Child



Issue 2: Triangle Troughs

The second issue inherent in the EITC program is the existence of marriage penalties in the program parameters called “triangle troughs.” Figure 12 shows an example of a triangle trough for the scenario in which a cohabitating couple each has one child and then decides to get married. These triangle troughs appear in any scenario, though they are most easily seen in scenarios in which each member of the couple has the same number of QCs. Unlike the penalty pipeline, the penalties for these troughs are *greater* than any individual maximum credit. These troughs form for the same reason as the dark red triangles in Figure 3: **both** people in the relationship lose benefits when they get married.

Figure 12: Triangle Trough on Marriage Question Heatmap for Cohabitation Scenario - Person 1 with One Child and Person 2 with One Child

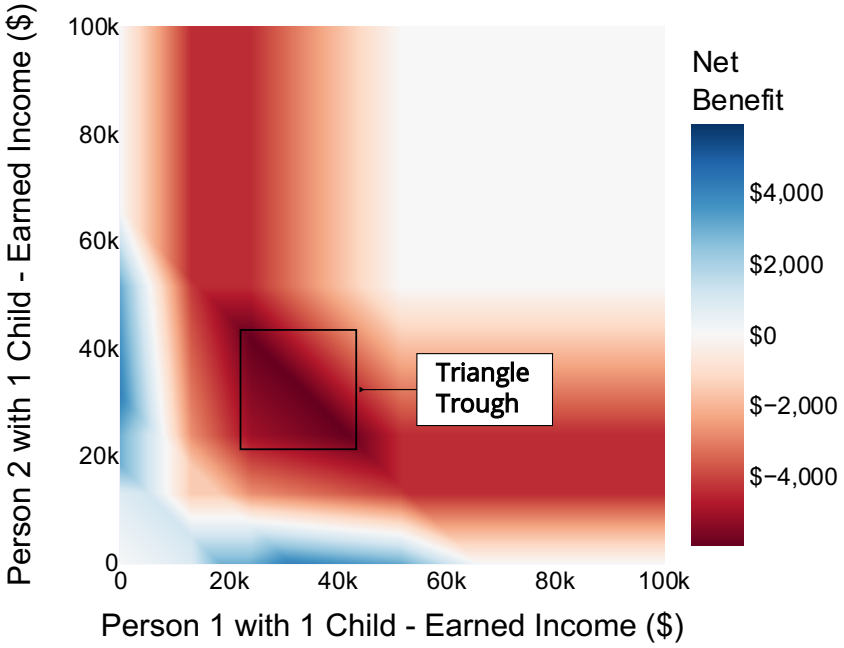
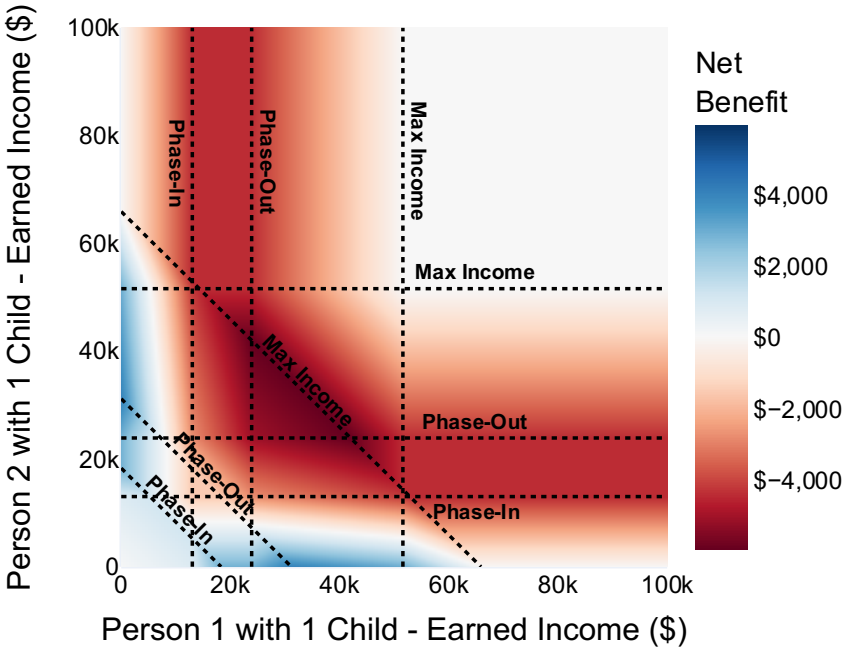


Figure 13 displays the program boundaries for the scenario illustrated in Figure 12. This figure shows that the triangle trough appears in the area bound by the maximum income limit for a married couple and the phase-out amounts when considering Person 1 and Person 2 as unmarried. Unlike the theoretical scenario in Figure 3, the phase-out rates may not be identical in all scenarios. As a result, two different cases can occur. In the first case, the maximum penalty will be a line along the married maximum income limit because of differing phase-out rates for the single and married scenarios. In the second case, the maximum penalty will be constant for the entire boundary of the triangle trough as a result of identical phase-out rates for single and married scenarios. The next two sections take a deeper look at the two cases.

Figure 13: Figure 12 Annotated with Program Boundaries



Case 1 of Triangle Trough: Varying Phase-out Rates

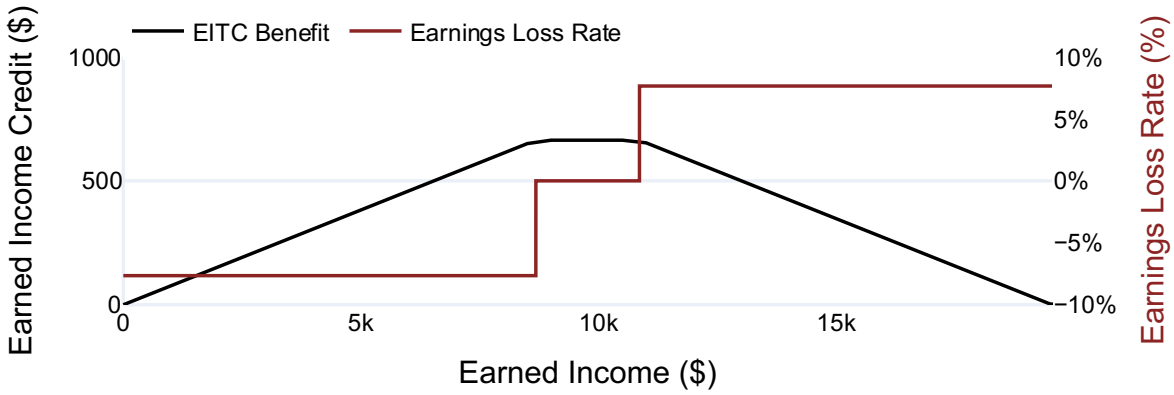
Figure 13 above shows an example of varying phase-out rates between the single and married scenarios. The maximum penalty occurs when the couple's earned income equals $65,899 (the maximum income limit for a couple with two children) and their individual incomes are past the phase-out amounts of $23,890. The maximum penalty occurs here because it is the result of the interaction of the earnings loss rates (ELRs) for the three curves of interest: the unmarried curve for Person 1, the unmarried curve for Person 2, and the marriage curve. Understanding this interaction requires understanding ELRs and how they are calculated in the context of the EITC.

The ELR is the slope of the benefit curve.[21] It describes the rate at which a benefit is decreasing (or increasing if the rate is negative). For the EITC program, because all curves are piecewise linear functions, these slopes are constant for the range of each function. For example, the phase-out percentage for a single person with zero children is 7.65%, and this is exactly the ELR. Figure 14 shows the ELR for the EITC benefit curve for a person filing single with no children. The ELR has three distinct

[21] An ELR is mathematically the same as a marginal tax rate, though they are used in separate contexts.

phases. The first occurs when the ELR is negative (thus providing an increasing benefit) during the phase-in region. The second occurs in the region between the phase-in and phase-out amounts, where it is 0%, as there is no change in benefit. The third occurs in the region past the phase-out amount, where the ELR is greater than zero as the benefit is phased out (it returns to zero again when it goes beyond the program limits). All the benefit curves and ELRs look similar for the EITC program, although the rates vary based on the number of children.

Figure 14: EITC Benefits and Marginal Tax Rate for Filing Single with No Children

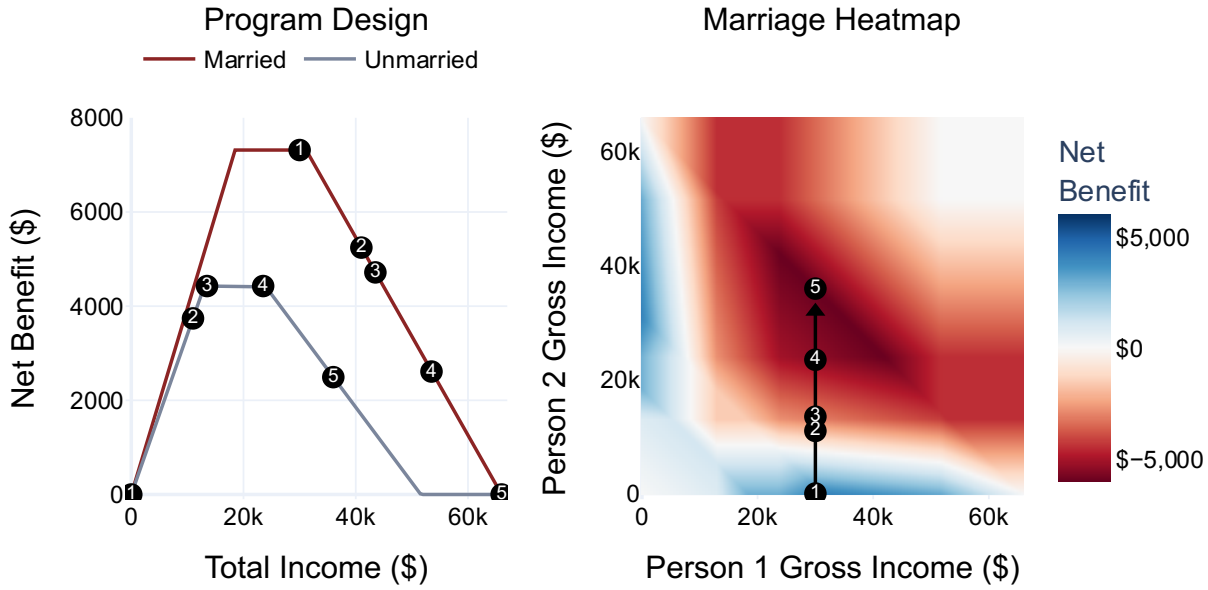


As such, it can be shown that when holding one person's income constant and increasing the other person's income, the marriage penalty will increase in severity whenever the ELR for a marriage curve is greater than an unmarried person's curve's ELR. This is because the benefit while married will decrease at a greater rate than the unmarried rate. So, if Person 1's income increased by $1,000, then the married couple's income would also increase by $1,000. This same income change would apply to the different rates and thus cause an increase in the marriage penalty. It follows that the marriage penalty will remain the same when the marriage curve's ELR is equal to the single person's curve's ELR, and that the marriage penalty will decrease when the ELR for the marriage curve is less than the ELR of the single person's curve.

Figure 15 shows how the marriage penalty increases in severity in the EITC program. The scenario occurs when each partner in a couple has one child. For this scenario, it is assumed that Person 1 has a constant income of $30,000, which results in a benefit of $3,451 when unmarried. The left figure shows the EITC benefit payouts for Person 2 when unmarried and when the couple is married. The labels detail the scenario as Person 2's income increases, starting from $0 at Point 1

to $36,000 at Point 5. The initial scenario at Point 1, in which Person 1 has an income of $30,000 and Person 2 has an income of $0, results in a net marriage benefit (NB) of $3,865 if the couple marries. At this point, Person 1 receives an EITC of $3,451, but Person 2 receives no EITC. Point 1 of the figure on the left shows the couple receives a benefit of $7,316 when married. Thus, they receive a $3,865 marriage bonus. The bonus decreases and becomes a penalty when moving from Point 1 to Point 5. The table below the figure shows the NB for each point. This increase in the marriage penalty is the result of the ELR for the married scenario being greater than the ELR for the unmarried scenario. In each case for Points 1 to 5, the ELR on the married curve is greater than the ELR on the unmarried curve; thus, the marriage penalty increases. At Point 5, there is a maximum penalty because the ELR for the married curve becomes 0% as the couple no longer qualifies for the benefit, while Person 2 is still in the phase-out region of the program and is losing the benefit. As such, the marriage penalty *decreases* after this point (seen by the lighter red colors above Point 5) until Person 2's income is beyond the unmarried maximum income threshold and both curves have an ELR of 0%, making the marriage penalty constant.

Figure 15: Explanation of Marriage Penalties Trend for Case 1 of Triangle Trough as Person 2's Income Increases and Person 1's Income Is Constant at $30,000



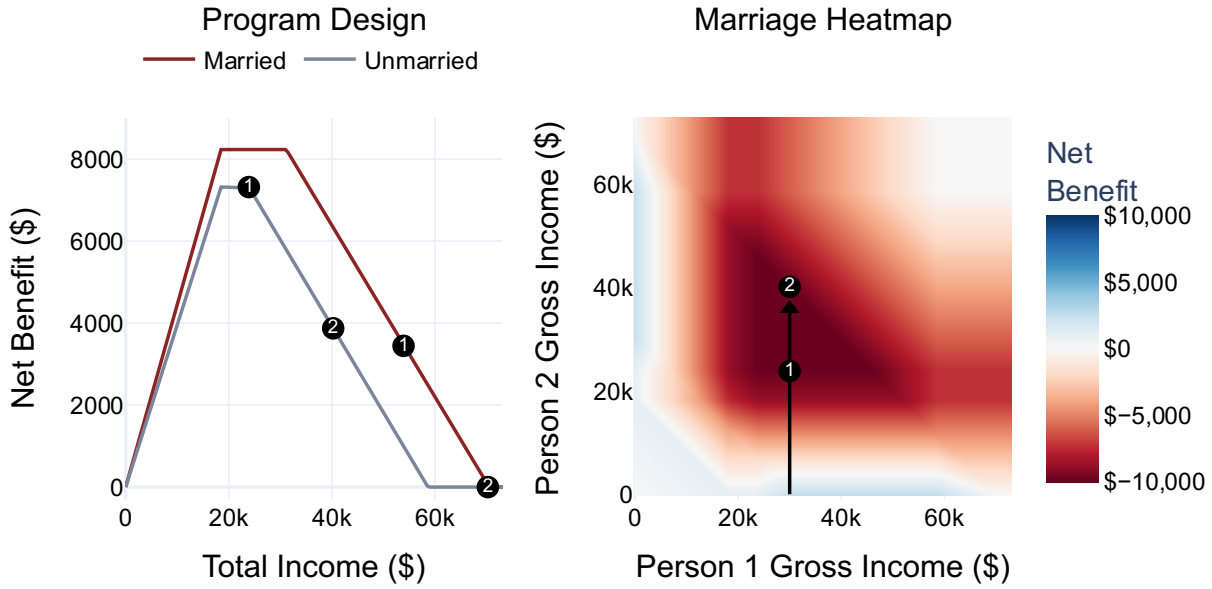
Scenario	1	2	3	4	5
Unmarried	-34% ELR	-34% ELR	0% ELR	0% ELR	16% ELR
Married	0% ELR	21% ELR	21% ELR	21% ELR	21% ELR
Heatmap	$3,865 NB	$-1,947 NB	$-3,161 NB	$-5,267 NB	$-5,943 NB

Case 2 of Triangle Trough: Identical Phase-out Rates

The second case of triangle troughs occurs when the maximum penalty is present in the entire area in the triangle trough. This happens when the phase-out rates (and thus ELRs) for the single and married scenarios are the same. With the EITC, an example of this is evident when both people each have two or more kids. Figure 16 shows this scenario, in which Person 1 has a constant earned income of $30,000 and an unmarried EITC of $6,029. The left side of the figure shows the benefit for Person 2 when unmarried and the benefit for the couple when married. The first point manifests when Person 2 has an income of $23,890. This gives Person 2 a benefit of $7,316, and thus the unmarried couple has a total benefit of $13,345. When married, the couple's combined income of $53,890 is represented at Point 1 on the "married" track in the figure on the left and results in an EITC benefit of $3,444. This causes a $9,901 marriage penalty as shown at Point 1 in the figure on the right. This is the maximum penalty the couple can receive. This penalty remains constant at $9,901 as the couple moves from Point 1 to Point 2 because the ELR is the same (21%) on both the married and unmarried tracks. So, at Point 2, Person 2 now receives a benefit of $3,872. This is a $3,444 decrease from Point 1. Because the married benefit also drops by $3,444 as it goes from a value of $3,444 to $0, the marriage penalty is still $9,901. This is the expected result of both the unmarried and married scenarios having identical ELRs.

Understanding the behavior of marriage penalties as it relates to differing phase-out rates explains why marriage penalties and bonuses will always occur in programs that phase-in or phase-out (or, like the EITC, do both). If there is a phase-out region, it will have a different ELR than when the couple or individual is not on the program (and the ELR is zero). Thus, there will always be scenarios in which the ELR is greater or less than zero, so marriage penalties or bonuses will always arise. It is mathematically unavoidable.

Figure 16: Explanation of Marriage Penalties Trend for Case 2 of Triangle Trough as Person 2's Income Increases and Person 1's Income Is Constant at $30,000



Scenario	1	2
Unmarried	21% ELR	21% ELR
Married	21% ELR	21% ELR
Heatmap	$-9,901 NB	$-9,901 NB

Optimal Program Design for Varying Numbers of Children

The marriage penalty problems with the EITC should be clear now. So what can be done? As discussed in the theoretical review of marriage penalties, many penalties can be eliminated if the maximum benefit and maximum income threshold for the married scenario are double those in the unmarried scenario (see Figure 5). This section applies this idea to the EITC program to motivate a design structure that would mitigate the severity and number of marriage penalties in the EITC program.

In Figure 5, marriage neutrality was achieved within the program limits by making the marriage benefit and income threshold twice the unmarried benefit and income threshold. This doubling is not strictly necessary; instead, what is required is that the unmarried benefits and thresholds sum to equal the married benefits and thresholds. Mathematically, this means:

Equation 4: Calculation for Married Benefit Curve Phase-out Threshold and Maximum Credit

$$\phi_m = \phi_{s1} + \phi_{s2}$$

$$c_m = c_{s1} + c_{s2},$$

where ϕ_m is the phase-out threshold for the married couple, and $\phi_{s1,2}$ is the phase-out threshold for Person 1 and Person 2 respectively. The same subscript meanings hold for the second equation, where c is the maximum credit. Thus, using 2026 EITC data, an optimal married phase-out threshold and maximum credit for a couple with zero children could be:[22]

$$\text{Phase-out Threshold: } \$10{,}860 + \$10{,}860 = \$21{,}720$$

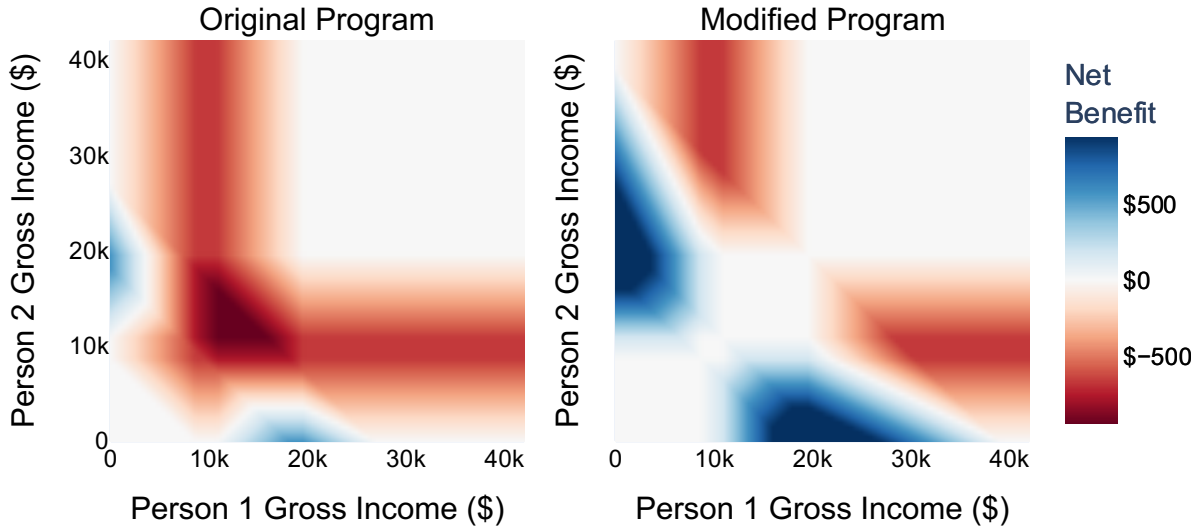
$$\text{Maximum Credit: } \$664 + \$664 = \$1{,}328$$

Figure 17 depicts an adjusted EITC program using the phase-out threshold and maximum credit from above for a cohabitating couple with no children. The figure on the right is the heatmap generated using the revised EITC program parameters, while the figure on the left is the current program. By adjusting the maximum credit and phase-out threshold, the triangle trough is eliminated, and marriage neutrality is achieved for the entire triangle trough region. Some penalties still exist within the program income thresholds, but if the phase-out percentage increased to a 100% value, all scenarios within the program limits would be either marriage bonuses or marriage neutral.[23]

[22] As will be shown later, some initial parameter values must be picked, which can be arbitrarily chosen and still yield marriage-optimal solutions. In this case, the initial parameters are the current 2026 EITC values.

[23] As will be discussed later, a phase-out percentage of 100% would cause a benefit cliff, which is not a preferable solution. Instead, a taper is preferred to reduce the ELR.

Figure 17: Marriage Question for Cohabitation Scenario with Current EITC Parameters for Couple with Zero Children (Left); Heatmap of Same Scenario with Adjusted Parameters (Right)[24]



This result is in line with the theoretical design analyzed in Figure 5. It shows that many penalties could be eliminated in the current EITC program if the maximum credit for any unmarried scenario was never greater than the sum of the maximum credits for the married scenario. Unlike the simple theoretical scenario, the EITC parameters change based on the number and allocation of children. Parameters can be properly established by solving a set of linear equations based on Equation 4. Table 4 is a matrix that shows all the unique equations for the EITC (blank cells are redundant equations):

Table 4: Matrix of Unique Equations Derived from Equation 4 for Each Married and Single Scenario That Could Occur When Two People Marry

# of Children	0	1	2	3
0	$M_0 = 2 * S_0$			
1	$M_1 = S_1 + S_0$	$M_2 = 2 * S_1$		
2	$M_2 = S_2 + S_0$	$M_3 = S_2 + S_1$	$M_3 = 2 * S_2$	
3	$M_3 = S_3 + S_0$	$M_3 = S_3 + S_1$	$M_3 = S_3 + S_2$	$M_3 = 2 * S_3$

For each of the equations M_n is the desired married parameter for n number of children, and S_n is the desired single parameter for n number of children. In this case, because the maximum number of children is three, any M_n where n is greater

[24] To generate this heatmap, the author adjusted the 2026 parameters for a married couple with no children to have: maximum credit = $1,328, phase-out threshold = $21,720. The unmarried parameters stayed the same.

than three is required to be M_3. The equations work if the parameter is the maximum credit or the phase-out threshold.

Solving these equations using the standard matrix equation $Ax = b$ would fail, as the equation is over-constrained (there are 10 equations and eight variables). If the analysis focused only on the equations in which the total number of children is three or less, there would be eight variables and six equations, which would make it under-constrained. However, if initial values are picked for S_0 and S_1, this would leave six unknowns and six equations, which could be solved. Rearranging the equations so that all unknowns are on the left and all known values are on the right would give us:

Equation 5: Linear Equations for the Maximum Credit Values for Each Scenario in Which the Total Number of Children Is Less Than Three Assuming S_0 and S_1 Are Given Initial Values

$$M_0 = 2 * S_0$$

$$M_1 = S_1 + S_0$$

$$M_2 - S_2 = S_0$$

$$M_2 = 2 * S_1$$

$$M_3 - S_3 = S_0$$

$$M_3 - S_2 = S_1$$

If a maximum credit of $500 is selected for an unmarried person with zero children, and a maximum credit of $3,000 is selected for an unmarried person with one child, Equation 5 could be solved to get the following values:

Table 5: Example of the Maximum Credit Parameters When Solving Equation 5 Using Initial Values of $500 and $3,000 for Unmarried Persons with Zero Children and One Child, Respectively

# of Children	Single Maximum Credit	Married Maximum Credit
0	$500	$1,000
1	$3,000	$3,500
2	$5,500	$6,000
3	$8,000	$8,500

Doing this would eliminate the triangle trough for all the scenarios represented by the equations. This table illuminates two key ramifications of designs that minimize marriage penalties. First, when considering couples with no children, the marriage parameter must be double the unmarried parameter to remain marriage neutral. In this scenario, the credit of $500 for a single person with no children requires a

marriage credit of $1,000 for a married couple with no children. Second, each additional child must have an increase that is constant in value. In this case, each additional child in the family must result in an increase of $2,500 in the benefit to minimize penalties.[25]

However, this solution is not perfect. As mentioned earlier, creating Equation 5 required discarding the scenarios in which the combination of children was greater than three. By doing so, the solution leaves unfixed marriage penalties for couples who have a total number of children greater than three. For example, if both people had two children, they would still face marriage penalties that look like Figure 16. This is because there is no increase in benefits when moving from three to four children. The only way to mitigate marriage penalties in these scenarios would be to extend the program to increase benefits and income thresholds for families with more than three children. Of course, this would increase the cost of the program, so there would be a tradeoff in choosing to expand it.

Recommended Solution Framework and Design Tradeoffs

The EITC design discussed in the previous section sheds some light on a design direction but still leaves unresolved many design choices. As such, this section highlights important constraints and objectives for the program design and puts forth a framework for redesigning the EITC. The word "framework" is used intentionally, as tradeoffs are inherent in the required decisions and no singular optimal solution exists. However, some guardrails in design can help limit the number of options and tradeoffs that policymakers must weigh.

The nature of program design is that the options have endless possibilities. For the purposes of this paper, one key assumption is that the structure of the EITC program cannot be changed, so only program parameters (such as phase-out rates) can be adjusted.

Two further constraints are recommended, which can be generalized to any program design. The first constraint is that a program should not introduce benefit cliffs into the program. A benefit cliff is the result of an ELR greater than 100%. Furthermore, the ELR should be limited so that it does not deter people from seeking pay raises and furthering their careers. GCO defines an ELR of 25% as low,

[25] This is a result of the initial values of $500 and $3,000 for the unmarried benefit for a person with zero and one child respectively. The $2,500 is the difference in these two values. Different initial values would result in different additions, but the overall pattern would be the same.

so this should be the target.[26] Because people often receive benefits from multiple safety net programs at the same time, any solution should strive to keep a *combined* ELR below this threshold. Currently, the ELR is very high when considering the combined effects of different programs. GCO has modeled the combined effects of many safety net programs through its benefit cliffs model and shown that the ELRs for programs in combination regularly average between 44%-99% for a variety of scenarios.[27] This is merely an average, and many points well exceed 100%. As such, it is recommended that the solution for a revamped EITC program should not result in an ELR of more than 10%. This lower value leaves room below the cumulative goal of 25%, as other programs will have ELRs that stack on top of the EITC's ELR. While this will not solve the cumulative ELR problem that results from the combination of the many safety net programs, it would lead to a smaller ELR than most of the phase-out portions of the current EITC program and be a step in the right direction. As such, a 10% ELR for the phase-out region should serve as the maximum rate.

The second constraint is that the phase-in and phase-out percentages should be identical for all scenarios. The reason for this change is that consistency in the ELRs makes the program much simpler. The various interactions of different ELRs contribute to increased marriage penalties and introduce a level of complexity that is not needed. Matching the ELRs in the phase-in and phase-out regions, respectively, will make the program easier to design and easier to understand.

In terms of objectives, there are three main goals for the changes to the EITC program. First, the program should minimize the severity and prevalence of marriage penalties. Second, the program should minimize cost. Third, the program should minimize the reduction in benefits for single parents with children. The first objective is clearly important for designing pro-marriage safety net programs. The

[26] Randolph, E. (2023). *Solving the food assistance (SNAP) benefits cliffs*. Georgia Center for Opportunity. https://foropportunity.org/wp-content/uploads/2023/10/SNAP-Cliffs-Solution-v1.9.pdf.
[27] Randolph, E. (2024). *The NC benefits cliffs problem—and it's worse than you think*. Georgia Center for Opportunity. https://d1f2pmkajn85sd.cloudfront.net/wp-content/uploads/2024/03/The-NC-Benefits-Problem.pdf. Currently, the model includes the effects of payroll taxes; federal income taxes; state income taxes; TANF; the child tax credit; the EITC; SSI; SNAP; the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the national school lunch program and school breakfast program; Medicaid; the Children's Health Insurance Program (CHIP); the Affordable Care Act Health Insurance Exchanges (ACA HIX) premium tax credits; state-specific child care subsidies; Section 8 housing; and the Low Income Home Energy Assistance Program (LIHEAP).

second objective is in line with GCO's desire to produce fiscally responsible solutions. The third objective is consistent with GCO's belief that safety net programs should help provide economic stability to children in low-income, single-parent households.

As such, program solutions should meet the required constraints and objectives. Below is a recommended framework for the EITC redesign:

1. Make all phase-in rates equal to simplify the program design.
2. Make all phase-out rates equal to simplify the program design.
3. The phase-out rate should be no greater than 10% to limit the ELR, which acts as a tax on increased income.
4. Use Equation 5 to generate the maximum credit and phase-out income thresholds, as this minimizes marriage penalty severity and occurrences within the program limits.

One immediate ramification of this framework is that phase-out rates would be lower than the current design in most scenarios. This would increase the cost of the EITC program if income thresholds or maximum credits are not lowered, as the phase-out would be slower. Thus, a tradeoff exists between program cost and the number of participants in the program based on the guideline to lower the phase-out rate.

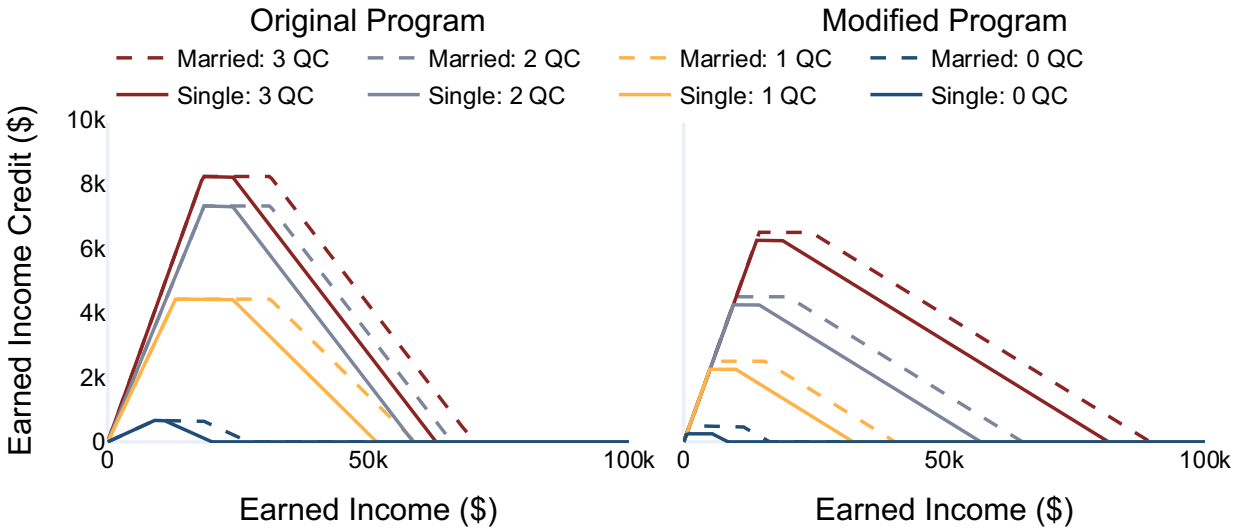
A second result is that benefits are likely to be reduced for participants with no or one child and increase for participants with two or three children. This is because the current EITC program design decreases the marginal benefit for each additional child beyond one, while the design from Equation 5 is constant in marginal benefit as children are added. As such, the recommended framework will be more generous to families with more children. Any fiscally responsible design would have to decrease the benefit for lower numbers of kids to offset the increased benefit for larger families.

Figure 18 shows a solution that reduces benefits overall to account for the longer phase-out regions and also to avoid a large increase in cost. The current EITC program is on the left, and an example solution using the recommended framework is on the right. Per the design requirements, all the programs phase in at the same rate, which is why the lines overlap during the initial phase-in. The phase-outs are much less steep to reduce benefit cliffs, and all have the same slopes. Finally, the

increases in the benefit for each additional child is constant in value, instead of the decreasing marginal value in the original program.

provides the details of this sample program as well as comparison heatmaps for every scenario. This is not the only possible solution within the framework but serves as an example that might be close to cost neutral.[28]

Figure 18: Comparison of Original EITC Program to a Solution Using Recommended Framework



Further trade-offs exist based on a variety of design options that would still need decisions. The phase-in rate could be large or small, with larger rates allowing participants to earn the maximum credit more quickly but increasing the cost of the program, or vice versa. The income thresholds and the maximum credits for the unmarried scenarios with zero children and one child still need to be chosen to provide initial values for Equation 5. Larger income thresholds or credits would increase the program cost, but smaller thresholds or credits would result in reducing benefits for current program participants. A larger *difference* in maximum credits between the zero and one child scenarios would result in a greater payout for each additional child, which would increase the cost of the program but result in a greater safety net for low-income children. Policymakers will need to weigh these tradeoffs when redesigning the EITC program. Table 6 provides a summary of potential solution options, their impact on marriage, and their tradeoffs.

[28] A next step in the analysis would be to use census and participation data to estimate the potential cost changes, benefit changes, and marriage penalty changes of proposed solutions so that different options can be evaluated.

Table 6: Review of Proposed Solutions, Their Impact on Marriage, and Inherent Tradeoffs

ID	Solution	Marriage Analysis	Tradeoff
General Safety Net Recommendations			
1	Increase benefit for married couple relative to unmarried couple.	Removes or reduces marriage penalties when both people in the relationship earn a benefit while unmarried and qualify for the benefit while married (Figure 4).	Requires decreasing current benefits for single parents to remain cost neutral; otherwise, this increases overall program cost.
2	Increase income phase-out threshold for married couple relative to unmarried couple.	Removes or reduces marriage penalties that occur when one or both people in the relationship earn a benefit while unmarried but do not qualify when married (Figure 5).	Requires decreasing current benefits for single parents to remain cost neutral; otherwise, this increases overall program cost.
3	Require phase-out rates of 10% or less.	No impact on marriage neutrality. Creates a slower transition from marriage penalties to bonuses (or vice versa) and reduces ELRs.	Lower phase-out rates increase the maximum income thresholds and thus increase program costs. To remain cost neutral, benefits would have to be reduced for current participants.
4	Use the same phase-in rates for all marital statuses and any number of children. Do the same for phase-out rates.	No impact on marriage neutrality. This simplifies program design for ease of administration and analysis.	Case-by-case tradeoff based on program. If phase-out rates increase (or phase-in rates decrease), this will reduce benefits. Opposite result could also occur.
EITC-Specific Recommendations			
5	Use Equation 5 to generate maximum credits and income	Removes or reduces marriage penalties in the manner noted above in Solutions 1 and 2.	Requires expansion of current benefits for current married participants, which will increase program costs if

	phase-out rates based on marital status and number of children.		unmarried benefits are not reduced.
6	Increase the maximum number of children for the EITC to four.	Removes or reduces marriage penalties when each person in the couple has less than three children, but marriage results in them having more than three total children.	Adding a higher child limit requires increasing maximum benefits and income thresholds to avoid marriage penalties. This results in higher program cost unless current benefits are reduced simultaneously.

Additional Considerations

While the primary focus of this report is on reducing marriage penalties in the EITC program, there are additional issues that plague the program that must be addressed.

One of the EITC program's largest issues is noncompliance via overpayments. In 2022, the program provided $18.2 billion in overpayments, almost 32% of the entire $57 billion in EITC payments.[29] Around 80% of these overpayments likely went to people who were ineligible for the credit.[30] Most of the ineligible payments occurred because of misclaiming a qualified child or misreporting income (particularly self-employment income).[31] Thus, a holistic approach to the EITC program should address this noncompliance issue along with marriage penalties.

Another major issue with the EITC program is that it treats cohabitating unmarried couples differently than married couples. This analysis assumed no structural change was possible for the program, but a thorough approach would consider defining the household differently for the EITC. Many safety net programs consider

[29] U.S. Government Accountability Office. (2023). *Improper payments: fiscal year 2022 estimates and opportunities for improvement*. (GAO-23-106285). Table 1. https://www.gao.gov/assets/gao-23-106285.pdf.
[30] Internal Revenue Service. (2014). *Compliance estimates for the Earned Income Tax Credit claimed on 2006-2008 returns*. Table 2b. https://www.irs.gov/pub/irs-soi/EITCComplianceStudyTY2006-2008.pdf.
[31] Internal Revenue Service. (2014). *Compliance estimates for the Earned Income Tax Credit claimed on 2006-2008 returns*. Table 4. https://www.irs.gov/pub/irs-soi/EITCComplianceStudyTY2006-2008.pdf.

benefits at a household level, but because the EITC is administered by the IRS and tied to the tax system, no filing status exists for unmarried couples. Cohabitating couples are not required to fill out household information when filing their tax forms and must do so separately. This provides the opportunity for some couples to take advantage of the EITC program by splitting up children within their household to maximize their EITC benefit. There are risks involved in this in terms of significant fines,[32] but even if the IRS catches these fraudulent attempts to claim the EITC, they usually assume an error instead of fraud and are not likely to prosecute.[33] To mitigate the chances of household misrepresentation, the IRS could add an additional field within tax forms requiring cohabitating couples to identify their partner and their partner's dependents. Or they could cross-check other programs that collect this information.[34] They would then treat cohabitating couples as married couples and provide benefits based on the appropriate marriage benefit curve. Doing so would help mitigate $7 to $10 billion dollars in erroneous claims paid on average each year from 2006 to 2008 as a result of QC errors.[35] Cross-checking with other programs would also help verify that self-employment income is not being misrepresented across different programs to maximize benefits. Doing this would help mitigate the $3.2 to $3.8 billion in erroneous claims paid on average each year from 2006 to 2008 as a result of errors in reported self-employment income.[36] The QC and self-employment errors compose around 70% of EITC improper payments so these changes would help ensure that the revised EITC program is being properly administered in a fair and compassionate way that promotes workforce engagement for families of many different compositions.

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[32] Tax evasion, for example, carries up to a $10,000 fine with up to five years in prison. 26 U.S.C. § 7201 (1982).

[33] The language from the IRS on EITC fraud is lenient, as the IRS usually assumes an error in the return and so follows up to correct information. It does not seem to be a common practice to seek litigation. See Internal Revenue Service. (n.d.). *EITC fraud FAQ*. https://www.eitc.irs.gov/tax-preparer-toolkit/frequently-asked-questions/fraud/fraud.

[34] TANF and SNAP collect household information and could be cross-checked to verify claims of dependents and incomes. This was the Heritage Foundation's recommendation for reducing overpayments of the EITC. Rector, R., & Hall, J. B. (2016). *Reforming the Earned Income Tax Credit and Additional Child Tax Credit to end waste, fraud, and abuse and strengthen marriage.* https://www.heritage.org/sites/default/files/2018-04/BG3162.pdf.

[35] Internal Revenue Service. (2014). *Compliance estimates for the Earned Income Tax Credit claimed on 2006-2008 returns*. Table 5. https://www.irs.gov/pub/irs-soi/EITCComplianceStudyTY2006-2008.pdf.

[36] Ibid.

Conclusion

This report reviewed the theoretical nature of marriage penalties and bonuses inherent in all safety net programs. Current program design in the United States focuses on making progressive (though sometimes regressive) systems treat family incomes the same, regardless of how income is distributed in the family. As a result, it is mathematically impossible to achieve marriage neutrality. However, as discussed, the number and severity of marriage penalties can be reduced if programs carefully pick maximum benefits and maximum income thresholds for the unmarried and married scenarios. An analysis of the EITC program in particular showed how a program could be designed to take into account changing parameters for both marital status and the number of children, thereby mitigating marriage penalties. Picking just a few initial conditions resulted in a system of equations that could be solved for the remaining scenarios in a marriage-optimal manner.

Using this analysis, GCO recommended a framework for program design that would reduce benefit cliffs, simplify the design, and lessen marriage penalties. This framework still left room for many policy decisions, which would have numerous tradeoffs in meeting the objectives of minimizing marriage penalties, minimizing cost, and minimizing benefit reduction to single-parent, low-income families. The purpose of this paper was not to solve these tradeoffs but to acknowledge their existence so that policymakers can have clarity when making policy recommendations. GCO is developing a methodology to estimate the impact of policy changes on program cost, marriage penalty prevalence and severity, and single-parent households to help evaluate policy solutions and weigh the tradeoffs. The EITC program can be significantly improved with some simple design changes that would only require updating certain parameters, and not a total restructuring of the program. These changes would serve as a practical first step in making safety net programs more pro-marriage.

This matters because previous research suggests that economic factors can deter marriage, especially for women.[37,38] The research is not all aligned, as some evidence suggests that marriage penalties have no effect on the marriage

[37] Alm, J., & Whittington, L. A. (1999). For love or money? The impact of income taxes on marriage. *Economica*, 66(263), 297–316. https://doi.org/10.1111/1468-0335.00172.
[38] Fisher, H. (2013). The effect of marriage tax penalties and subsidies on marital status. *Fiscal Studies*, 34(4), 437–465. http://www.jstor.org/stable/24440312.

decision.[39,40] However, unmarried EITC recipients seem to have some belief that getting married will result in a reduced tax credit, although this perception is mixed, as a large group was unsure of any effect (a very small percentage thought benefits might increase).[41] This puts those who believe benefits might decrease in the position of having to weigh a tradeoff between marriage and lost income. GCO has conducted focus group studies and seen couples choose to forgo marriage because of marriage penalties. However, these penalties are likely not the primary reason that people choose not to get married. Small penalty amounts or lack of knowledge of potential penalties would mitigate the negative impact of marriage penalties (and the positive impact of marriage bonuses). But with millions of people facing marriage penalties, even small effects can have large consequences. Any holistic approach to promoting marriage and providing economic stability for children should include mitigating marriage penalties. As such, public policy should adopt the principle of not penalizing marriage whenever possible, even if the effect on marriage may be small.

Further holistic change should also consider how to mitigate fraud in the EITC program and restructure how the household is defined for the program. EITC recipients have admitted to choosing their filing status as head of household and claiming more children to maximize the tax credit.[42] Many times, this occurs without low-income recipients realizing this constitutes fraud.[43] Regardless, considering the large number of improper EITC payments, solutions must be created to address this problem as well.

[39] Ellwood, D. T. (2000). The impact of the Earned Income Tax Credit and social policy reforms on work, marriage, and living arrangements. *National Tax Journal*, 53(4), 1063–1105. https://doi.org/10.17310/ntj.2000.4s1.03.
[40] Dickert-Conlin, S., & Houser, S. (2002). EITC and marriage. *National Tax Journal*, 55(1), 25–40. https://doi.org/10.17310/ntj.2002.1.02.
[41] Edin, K., Tach, L., & Halpern-Meekin, S. (2014). Tax code knowledge and behavioral responses among EITC recipients: policy insights from qualitative data. *Journal of Policy Analysis and Management*, 33(2), 413–439. https://doi.org/10.1002/pam.21739.
[42] Ibid.
[43] Ibid.

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About the Author

Jason Gaby is a Research Fellow supporting the Policy Research and Development Team at the Georgia Center for Opportunity (GCO). He works extensively on GCO's revolutionary Benefit Cliff Model, providing technical support, quality assurance, and product enhancement through computer programming and modeling. He also performs data analysis and adds economic insights to GCO's policy research regarding family, poverty, and economic development.

Before working with GCO, Jason was a technology consultant at Ernst & Young, helping develop automated tools that deployed business software in the cloud infrastructure for Fortune 500 companies. Jason earned bachelor's degrees in natural science from Covenant College and in mechanical engineering from Georgia Tech. He also earned a master's degree in economics from Georgia Tech.

Jason spends his weekends enjoying cocktails carefully crafted by his wife Jessica and playing with his two daughters, Eliza and Lydia. Considering the importance of family in his own life, Jason feels great purpose in supporting GCO's efforts to empower impoverished families to find long-term economic flourishing. Jason believes that his work on both the Benefit Cliff Model and economic policy analysis provides the foundation for policy solutions that enrich lives.

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Acronyms and Definitions

ACA	Affordable Care Act (Pub. L. 111–148)
ACA HIX	Affordable Care Act Health Insurance Exchanges
CHIP	Children's Health Insurance Program
Cohabitating Scenario	The scenario in which a couple cohabitates while unmarried and must decide whether to marry or not
EITC	Earned Income Tax Credit
ELR	Earnings loss rate, the same concept as a marginal tax rate
GCO	Georgia Center for Opportunity
IRS	Internal Revenue Service
LIHEAP	Low Income Home Energy Assistance Program
QC	Qualifying children, as defined in the EITC program
SNAP	Supplemental Nutrition Assistance Program
SSI	Supplemental Security Income
TANF	Temporary Assistance for Needy Families
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children

Appendix A: Comparisons of Example EITC Solution with Current EITC Program

Table 7: Unmarried Parameters for Example EITC Solution

Qualifying Children Claimed	Phase-in Percentage (ϕ)	Phase-out Percentage (θ)	Phase-in Threshold (PI)	Phase-out Threshold (PO)	Maximum Income (MI)	Maximum Credit (MC)
Zero	45%	10%	$556	$5,556	$8,055	$250
One	45%	10%	$5,000	$10,000	$32,500	$2,250
Two	45%	10%	$9,444	$14,444	$56,944	$4,250
Three+	45%	10%	$13,888	$18,888	$81,388	$6,250

Table 8: Married Parameters for Example EITC Solution

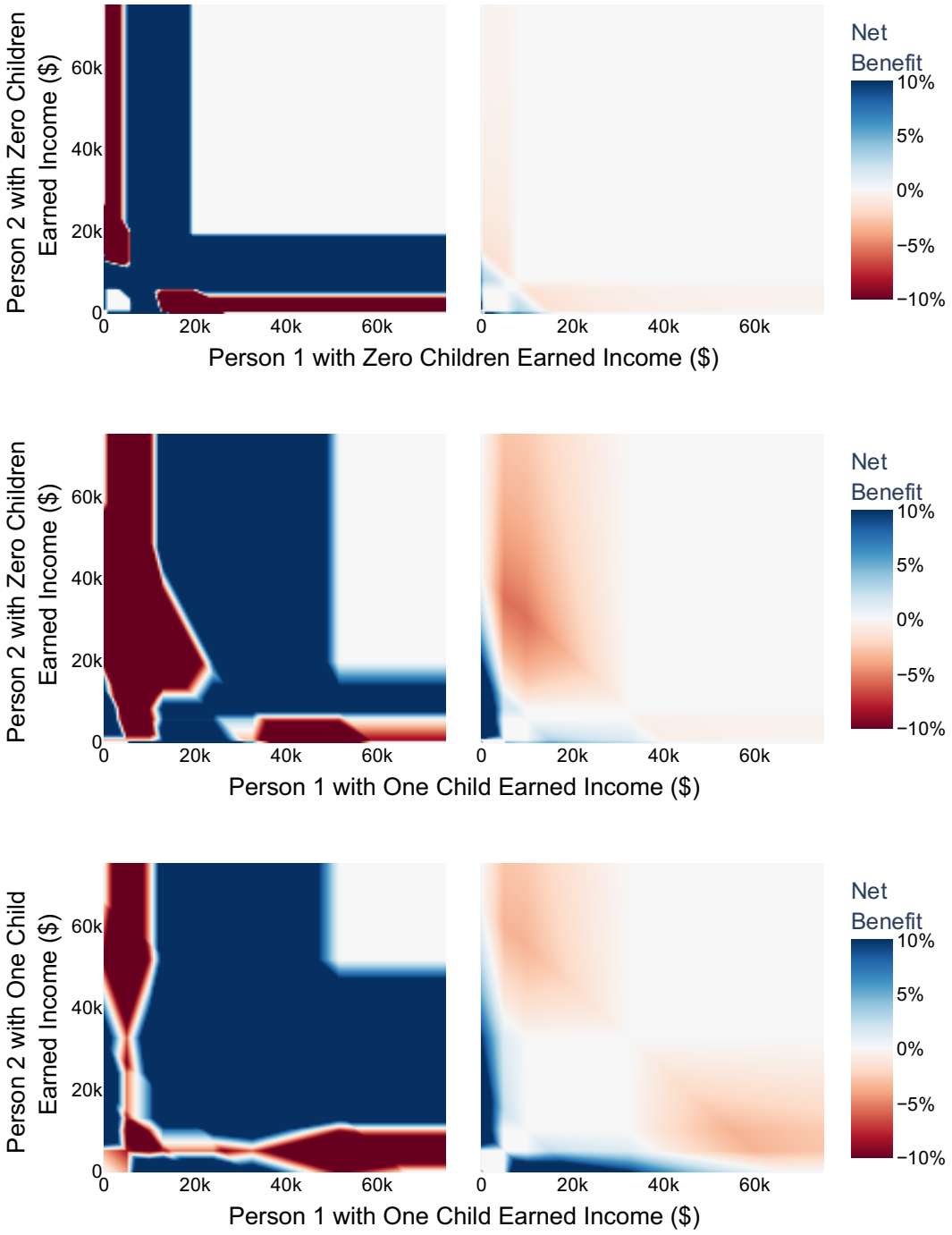
Qualifying Children Claimed	Phase-in Percentage (ϕ)	Phase-out Percentage (θ)	Phase-in Threshold (PI)	Phase-out Threshold (PO)	Maximum Income (MI)	Maximum Credit (MC)
Zero	45%	10%	$1,111	$11,111	$16,111	$500
One	45%	10%	$5,555	$15,555	$40,555	$2,500
Two	45%	10%	$10,000	$20,000	$65,000	$4,500
Three+	45%	10%	$14,444	$24,444	$89,444	$6,500

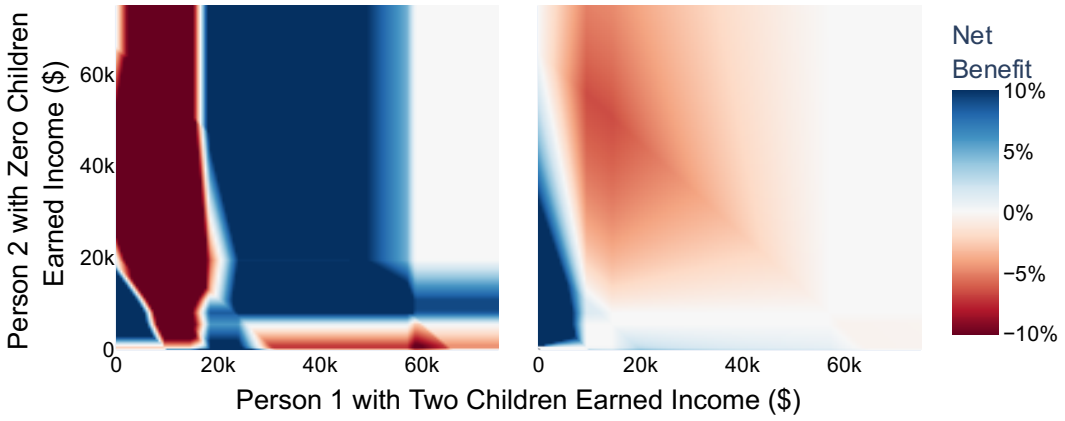
The figures below show two heatmaps for the example solution. The heatmap on the left shows the percent net benefit for the example solution minus the percent net benefit for the original program. The percentage values are determined by dividing the net benefit by the maximum married credit based on the sum of the children in the scenario. This shows that differences arise from penalties being reduced on a maximum credit basis, and are not the result of the example solution having smaller overall maximum credits (and thus smaller penalties and bonuses in general). The blue regions in the graph at left show where the example solution results in a reduction of the marriage penalty (increase in bonus), while the red regions show an increase in the penalty. For instance, if the example solution had a point with a net benefit of 35% and the original solution had a net benefit of -10%, the difference would be 45% and dark blue. These figures show that, in general, the example solution results in many situations in which penalties decrease, especially those in which there are two income earners. There are situations that result in an increase in the penalty (or a reduction in the benefit), particularly in scenarios in

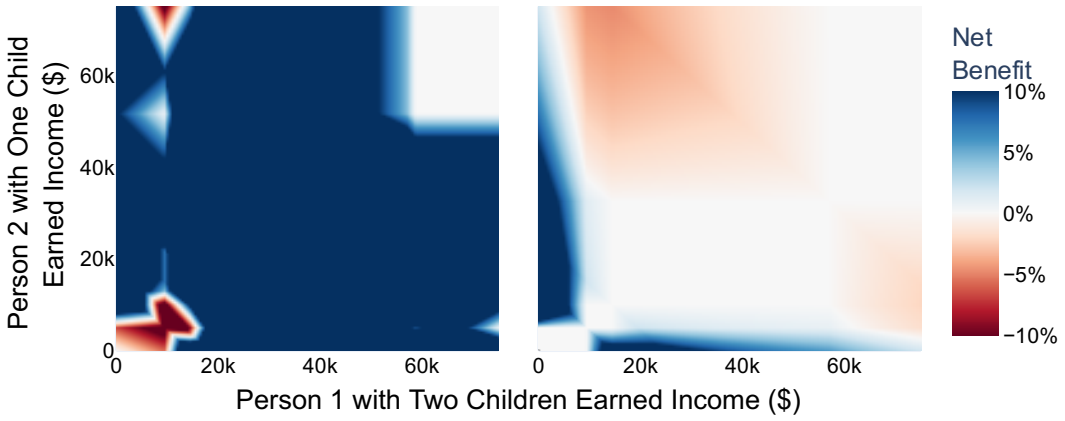
which the parent with children does not work and the person with no children does work. However, these situations were already strong bonuses in the original EITC program, so their reduction does not necessarily result in a marriage penalty, but instead just a reduced bonus.

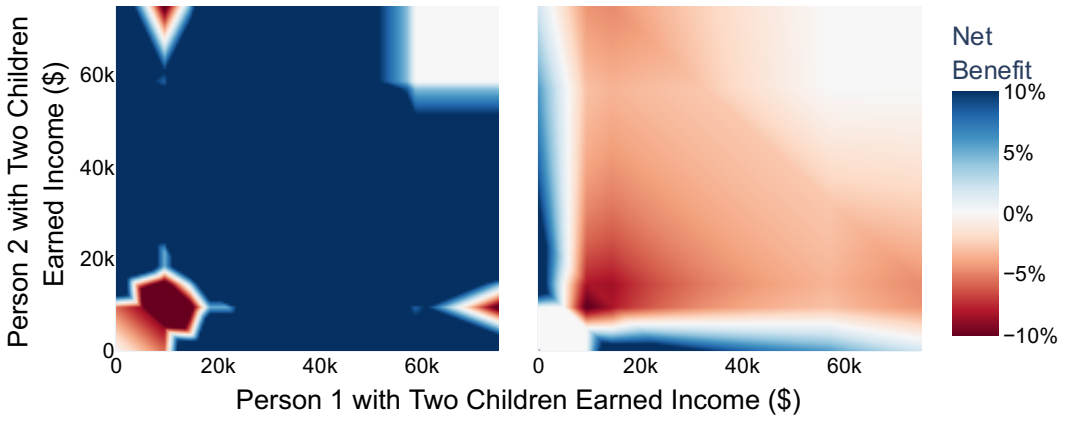
The right figure shows the net benefit as the percentage of total income for the couple at that point. As expected, the penalties are most clearly eliminated in scenarios in which the total number of children is three or less, as these scenarios were solved for in Equation 5. However, even the scenarios with more than three total children (e.g., two kids and two kids, or three kids and one kid) show a reduction in the severity of marriage penalties. The scenario with the least change is the one in which both people have three children. This is expected, as in this scenario, the people are each earning a large credit, but the program design restricts the credit when married.

Figure 19: Difference in Net Benefit Percent Between Example EITC Program and Actual EITC Program (Left); Net Benefit Heatmap for Example Solution (Right) for All Child Combinations




Person 2 with Zero Children Earned Income ($)
0
20k
40k
60k
0
20k
40k
60k
Person 1 with Two Children Earned Income ($)
Net Benefit
10%
5%
0%
−5%
−10%


Person 2 with One Child Earned Income ($)
0
20k
40k
60k
0
20k
40k
60k
Person 1 with Two Children Earned Income ($)
Net Benefit
10%
5%
0%
−5%
−10%


Person 2 with Two Children Earned Income ($)
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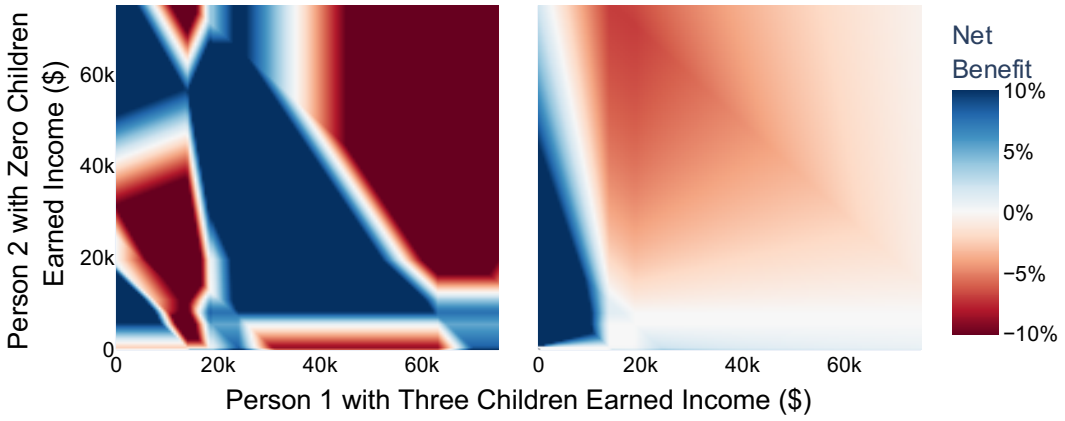
20k
40k
60k
0
20k
40k
60k
Person 1 with Two Children Earned Income ($)
Net Benefit
10%
5%
0%
−5%
−10%


Person 2 with Zero Children
Earned Income ($)
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60k
0
20k
40k
60k
Person 1 with Three Children Earned Income ($)
Net
Benefit
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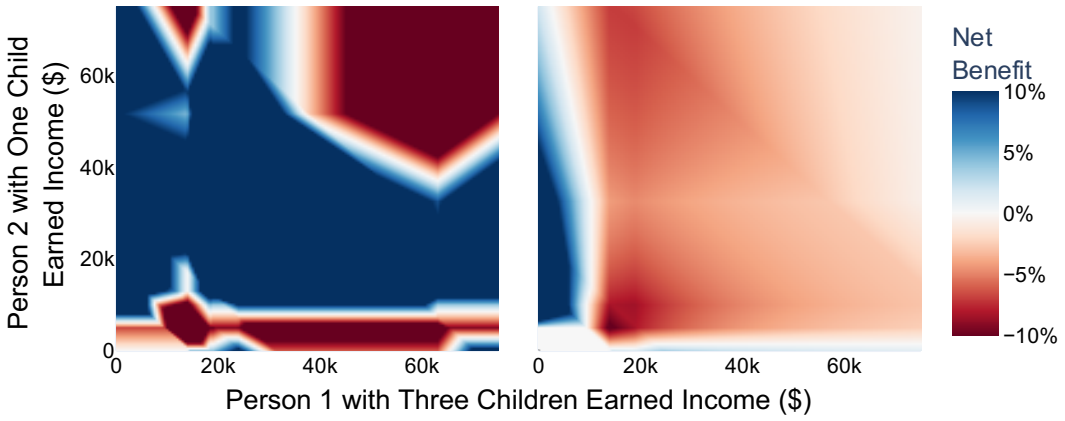
5%
0%
−5%
−10%


Person 2 with One Child
Earned Income ($)
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Person 1 with Three Children Earned Income ($)
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Benefit
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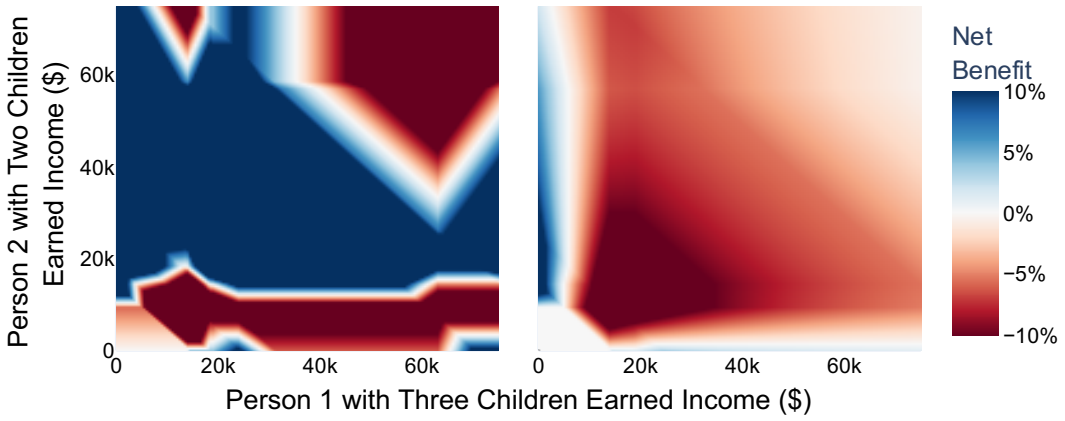
Person 2 with Two Children
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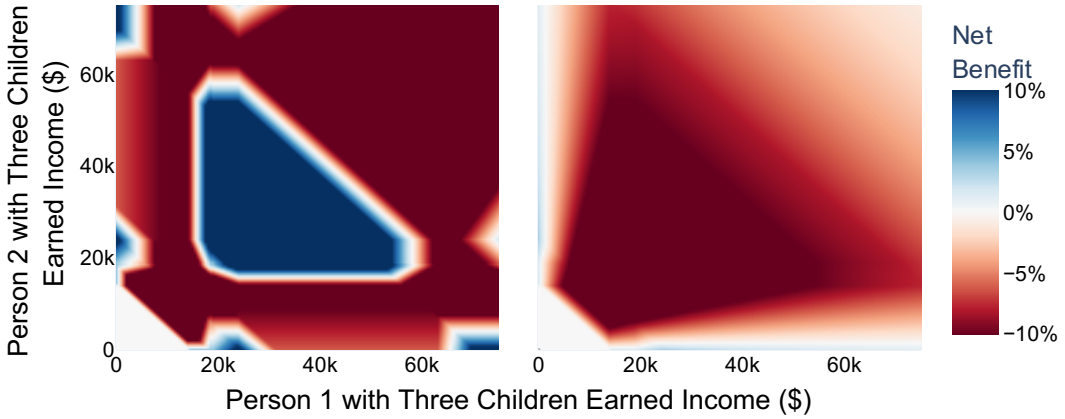
Person 2 with Three Children Earned Income ($)
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0
20k
40k
60k
Person 1 with Three Children Earned Income ($)
Net Benefit
10%
5%
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−5%
−10%

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