Paying the Poor to 'Live in Sin' – A New Look at the Marriage Tax*

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Abstract

This paper combines the 2016 Survey of Consumer Finances (SCF) and the 2018 American Community Survey (ACS) to measure net marriage taxation of Americans age 20 to 49 and to assess the impact of marriage taxation on the propensity to marry. Our marriage-tax measure is novel. It incorporates all major federal and state tax and transfer programs, calculates the net tax as the percentage reduction in the actuarially expected remaining lifetime spending resulting from marriage, and controls for partner choice by positing clone marriage – respondents marrying themselves. Our net marriage tax rate averages 2.69 percent across all SCF respondents. The corresponding average for the poor is 3.71 percent. These figures are economically meaningful in their own right, but they belie huge cross-respondent variation. Our sample's maximum net tax rate is 45.8 percent. Its minimum net tax rate is 74.4 percent. Does taxing marriage encourage Americans to "live in sin"? Indeed, it does when we impute SCF-based marriage taxes to unmarried ACS respondents and track their marriage decisions. This is particularly true of poor single females with children. Absent marriage taxation, the annual marriage rate of such females would be 13.7 percent higher.

Keywords: Marriage taxation, disincentives, marriage, social safety net, income tax

JEL Codes: H24, H31, J12

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1 Introduction

Marriage, at least in the U.S., matters. It stabilizes relationships (Lundberg et al. 2016; Waite 1995), improves children's outcomes (Amato 2005; DeLeire and Lopoo 2010; McLanahan and Sawhill 2015), and facilitates spousal human-capital development (Matouschek and Rasul 2008). It also protects marital investments through the provision of alimony. The many advantages to marriage underlie the longstanding interest in the marriage tax – the degree to which marriage raises a couple's net tax burden compared to simply cohabiting. The literature links marriage taxation to lower marriage rates (Alm and Whittington 1999, 2003), delays in first marriage (Alm and Whittington 1995), and higher divorce (Whittington and Alm 1997; Dickert-Conlin 1999).

Marriage taxes are typically discussed with reference to federal income-tax brackets, specifically whether the bracket structure penalizes or subsidizes married couples relative to singles. But other features of the U.S. fiscal system also have the potential to generate significant marriage penalties. In particular, income-eligibility requirements for many benefit programs can make marriage a very costly enterprise. For many low-income people, marriage can lead to a loss of tens of thousands of dollars in means-tested cash or in-kind public benefits and tax credits (Dickert-Conlin and Houser 1998). Gibson-Davis et al. (2005), Wilcox et al. (2016), and others have connected benefit loss with a lower probability of being and getting married.

This paper broadens the definition of the marriage tax to reference marriage's impact on remaining lifetime net taxes and, thus, remaining lifetime spending. Clearly, marriage is a long-term decision that affects all future as well as all current taxes and benefits. Our precise marriage tax measure is the percentage reduction in the expected present value of remaining lifetime spending arising from marriage. The term "expected" references forming an actuarial average across all future survivor paths. As indicated, our tax rate is equivalent to the percentage change per spouse in remaining lifetime net taxes from marrying divided by the present expected value of remaining net lifetime resources absent marriage. Remaining

net lifetime resources equals, in turn, remaining lifetime spending.

We measure the marriage tax using the 2016 Survey of Consumer Finances (SCF). Our first step in this regard entails *singleizing* each married or partnered SCF respondent. This entails trating these respondents as single by allocate to them half of their and their spouse or partner's combined assets and liabilities. Children are assumed to live with their mothers or to the primary respondent in the case of same-sex couples. After singleizing the sample, we determine how each SCF respondent's present expected value of remaining lifetime spending would change were the respondent to marry themselves. Our marriage tax rates is computed as the percentage change in the present expected value of remaining lifetime spending arising from marriage ignoring economies of shared living.

Positing *clone marriage* lets us hold all else equal in calculating marriage taxes. In particular, it ensures that our measure reflects how the structure of the federal and state fiscal system penalizes marriage independent of the endogenous decision concerning whom to marry. As shown, a respondent's state of residence, income, and family composition can materially impact their marriage tax. This variation is used to estimate the impact of marriage taxation on the probability of getting marriage (marriage initiation) and to assess whether marriage is differentially responsive to gross marriage taxes and gross marriage benefits.

Table 1 lists the federal and state fiscal programs included in our analysis and whether they are marriage neutral. Marriage neutrality means marriage doubles the tax or benefit in question.

We use the Fiscal Analyzer (TFA), described in Auerbach et al. (2019) and Altig et al. (2020b), to calculate the remaining lifetime net marriage taxes (henceforth marriage tax) of respondents age 20-49 in the 2016 Survey of Consumer Finances (SCF).[1] TFA is a lifetime consumption-smoothing program that takes into account household borrowing constraints, the listed tax and benefit programs, and all survival paths a married couple might experience.

[1]This age range spans the bulk of family formation. See Alm and Whittington (1995); Moffitt (1994).

Table 1: Included Taxes and Benefits

Taxes and Tax Credits	Rules Level	Marriage Neutral
Personal Income Tax	Federal, State	No
Earned Income Tax Credit (EITC)	Federal, State	No
Child Tax Credit (CTC)	Federal, State	No*
FICA Tax	Federal	Yes
Corporate Income Tax	Federal, State	Yes
Estate and Gift Tax	Federal, State	Yes
Property Tax	State	Yes
Sales Tax	State	Yes
Excise Tax	Federal	Yes
Benefit Programs		
Social Security Benefits	Federal	No
Social Security Disability Insurance (SSDI)	Federal	No
Supplemental Security Income (SSI)	Federal	No
Medicaid/Children's Health Insurance Program (CHIP)	Federal, State	No
Medicare Part B Premiums	Federal	No
Medicare Benefits	Federal	Yes
Marketplace Subsidies	State	No**
Supplemental Nutritional Assistance Program (SNAP)	State	No
Temporary Assistance for Needy Families (TANF)	State	No
Section 8 Housing Vouchers	State, County	No
Child Care and Development Fund (CCDF) Subsidies	State, County	No

*Marriage neutral if both parties make similar income
**Marriage subsidy can arise if the combined income of a couple is higher than the minimum-income eligibility threshold

1.1 Preview of Findings

On average, we calculate a 2.69 percent marriage tax. For workers earning the average wage, this is equivalent to over two years of after-tax earnings, which is economically significant. Marriage tax rates differ substantially between low- and high-income individuals. Households in the lowest quintile of the income distribution face an average marriage tax of 3.71 percent – more than two times larger than the 1.49 percent average rate faced by the top income quintile. Average marriage tax rates vary substantially across states – ranging from 1.53 percent in New Mexico to 3.99 percent in Hawaii. These state-level marriage tax differences are due to a range of state-specific tax and benefit provisions, most notably the expanded

Medicaid eligibility. There is also a sizable individual marriage tax rate variation. Across our sample of 4,396 SCF respondents age 20-49, the minimum marriage tax rate is -304.67 percent, driven by the fact that marriage can provide access to the ACA marketplace subsidy in states that did not expand Medicaid. The maximum is 45.84 percent, driven by the loss of Medicaid and housing subsidies.

The presence of children does little to alter the marriage tax rate, as the tax subsidies offset the transfer penalties. The gross tax rate is -0.5 percent for those with children and 0.33 percent for those without children. The transfer penalty is 3.18 percent for those with children and 2.36 percent for those without.

We exploit this variation in the marriage tax rate to estimate the impact of marriage taxation on the probability of marriage initiation. Using data from the 2018 American Community Survey (ACS), we find a statistically and economically significant negative impact of the marriage tax on the likelihood of marriage. For example, among the 20-to 49-year-old females with children in the 2018 ACS who were unmarried in 2017, a one percentage point increase in the marriage tax rate decreases the probability of marrying in 2018 by 3.69 percentage points. In addition, we find a slightly lower in magnitude but significant negative impact of the marriage tax on the probability of marriage initiation for males. By comparison, a one percentage point increase in the marriage tax rate decreases the probability of a male with children marrying in 2018 by 0.21 percentage points. Adjusting the marriage tax for a partial take-up of benefits by eligible households produces similar reductions in marriage likelihood – 3.95 female (with children) and 1.09 male (with children) percentage points per percentage point rise in the tax rate.

Our simulations show that absent marriage taxation, females and males with children and income in the bottom quintile would have, on average, a 13.68 and 1.46 percentage point higher marriage initiation rate, respectively. Similarly, simulations show that reducing the marriage tax rate to zero would increase marriage initiation rates of females and males without children from the bottom income quintile by 4.7 and 5.1 percentage points,

respectively.

2 Background

Figure 1 charts, by personal income quintiles, the share of married ACS respondents (the marriage rate) as well as the fraction of respondents who reported marrying in the prior year (the marriage initiation rate). For both measures, there is a gap between the higher and lower income groups. However, the rate of marriage initiation increases with income and, in the long-term, it leads to significant gaps in the stock of marriage. For example, only 5.33 percent of those who were single in 2017 and had annual incomes below $26,000 married in 2018 compared to 14.14 percent with annual incomes above $103,100. The marriage rate shows similar differences. Only 35.05 percent of individuals with annual income below $26,000 are married, while the marriage rate for those with annual incomes above $103,100 is twice as large, at 76.33 percent.

These statistics support previous literature that asserts that marriage in the U.S. is correlated with economic well-being. For example, estimates from the Health and Retirement Study (HRS) reported by Waite (1995) show that married individuals' average per capita wealth is more than two times higher than those who have never been married. In a more recent study using HRS data, Zissimopoulos et al. (2015) similarly find that married men have higher earnings and wealth than unmarried men.

This higher level of economic well-being for married individuals is not entirely due to the selection into marriage. Marriage, like informal partnerships, offers a way for couples to share the costs of investments in public goods, including children. But as opposed to cohabitation, it provides a commitment mechanism that promotes cooperation among spouses and increases marriage-specific investments (Matouschek and Rasul 2008; Lundberg and Pollak 2015). In addition, compared to cohabiting individuals, those who are married have healthier behaviors, better career outcomes, and lower mortality (Waite 1995). The reasons are social,

Figure 1: Marriage Rate and Marriage Initiation Rate by Income. Age 20-49.

Source: U.S. Census Bureau, 2018 American Community Survey 1-Year Estimates
The marriage rate is the married share of the population. The marriage initiation rate is the share of the population that married in the prior year.

arising from the enthusiastic support of family and friends, religious, publicly demonstrated via religious ceremony, and legal, due to child support requirements and alimony agreements or, in the extreme, court-ordered judgments.

Child outcomes are also found to be better if they are raised in a family headed by two stable married parents. They are more likely to succeed in school, be gainfully employed, and achieve upward economic mobility. Lerman et al. (2017) analyze data from the National Longitudinal Survey of Youth and find that relative to adult children who lived with both parents at age 14, adult children who lived with a single parent at age 14 have completed

0.36 fewer years of school, are 3.9 percentage points less likely to be working full-time, have 12 percent lower personal income, and 21 percent lower family income. Amato (2005) and McLanahan and Sawhill (2015) find that cohabitation decreases parents' investments in their children, which negatively affects the children's cognitive and social-emotional development and their life chances. However, Lang and Zagorsky (2001) show that some of these adverse outcomes might be caused by other social and economic circumstances correlated with having a single parent. Using parental death as an exogenous cause of absence, they find that the death of a mother negatively affects cognitive performance of a daughter and the death of a father decreases a son's chance of marriage.

Research on marriage taxation dates to Whittington and Alm (1997)'s use of Panel Study of Income Dynamics (PSID) to estimate the impact of the individual income tax on the probability of divorce. They found that income tax incentives matter to divorce decisions, although the impact is small – the elasticity of divorce with respect to the marriage tax penalty is only 0.005. Alm and Whittington (1999) estimate a discrete-time hazard model of the time to first marriage and find that an increase in total per capita income taxes paid by married versus single women has a negative effect on the likelihood of marriage – a one thousand dollar increase in the marriage tax penalty decreases the female probability of marriage by 0.7 percentage points. Alm and Whittington (2003) study the decision to marry rather than cohabit. They find that, for those already living together as a cohabiting couple, the decision to transition from cohabitation to marriage is significantly affected by the tax consequences, with a 10 percent decline in the marriage tax increasing the probability of marriage by 0.7 percent. However, they find a small impact of the marriage tax on the initial transition to marriage; the same ten percent reduction in the marginal tax increases the probability of marriage in the initial decision by only 0.3 percent. Chade and Ventura (2002) analyze the effects of the marriage tax on family formation, divorce, and labor supply. They develop a marriage-market model with search frictions and heterogeneous agents that quantifies the effects of several tax reforms aimed at making the tax system marriage neutral.

They find that these reforms increase the labor supply of married females but have ambiguous effects on the fraction of married people.

Dickert-Conlin and Houser (1998) find that the transfer system typically has large marriage disincentives, while the income tax system is likely to subsidize marriage for many low-income families. They calculate marriage penalties associated with AFDC, food stamps, SSI, and state and federal income taxes (including EITC) and find a statistically significant correlation between financial incentives and separation decisions. For a sample of married women from the 1990 SIPP, Dickert-Conlin (1999) estimates the marriage tax from the federal income taxes. She finds that couples with more to gain from separating are more likely to do so, conditional on other characteristics. Wilcox et al. (2016) look at couples whose oldest child is two years or younger and find that 82 percent of those in the second and third quintiles of family income face marriage penalties arising from Medicaid, cash assistance, and SNAP. They find that these couples are two to four percentage points less likely to be married if they face a marriage penalty in these programs.

Our work contributes to this literature in three key ways. First, as indicated, we consider the full range of tax and transfer programs in calculating marriage tax rates. Second, since marriage is a long-term decision, we capture remaining lifetime marriage taxation, not just current-year taxation. Third, our analysis includes recent changes to the welfare and tax systems. The levels and distribution of marriage taxes may differ markedly now relative to the past due to the adoption of the 2017 Tax Cuts and Jobs Acts (TCJA), the expansion of SNAP's Broad-Based Categorical Eligibility (BBCE), the introduction of the Health Insurance Marketplace subsidies, the expansion of Medicaid under the ACA, and the introduction of the progressive Medicare premium formula (IRMMA).

3 Marriage Incentives and Disincentives Created by the U.S. Fiscal System

3.1 Federal and State Income Taxes – Marriage Non-Neutralities

Prior to the Tax Cuts and Jobs Act (TCJA) of 2017, individuals with income below $76,550 did not have income tax penalties associated with marriage. Those with income above this threshold, however, faced income tax marriage penalties. After the reform, the federal income tax subsidized marriage for couples with dissimilar incomes and became neutral for those with similar incomes below $300,000. Table 2 provides federal income tax brackets and rates before and after the TCJA.

Table 2: Federal Tax Brackets Pre- and Post-TCJA

Post-TCJA (2018)			Pre-TCJA (2017)		
Rate	Taxable Income (Single)	Taxable Income (Married*)	Rate	Taxable Income (Single)	Taxable Income (Married*)
10%	Up to $9,525	Up to $19,050	10%	Up to $9,325	Up to $18,650
12%	$9,526-$38,700	$19,051-$77,400	15%	$9,326-$37,950	$18,651-$75,900
22%	$38,701-$82,500	$77,401-$165,000	25%	$37,951-$91,900	$75,901-$153,100
24%	$82,501-$157,500	$165,001-$315,000	28%	$91,901-$191,650	$153,101-$233,350
32%	$157,501-$200,000	$315,001-$400,000	33%	$191,651-$416,700	$233,351-$416,700
35%	$200,001-$500,000	$400,001-$600,000	35%	$416,701-$418,400	$416,701-$470,000
37%	Over $500,300	Over $600,000	39.6%	Over $418,401	Over $470,001

* It is assumed the married couple files joint tax returns. However, if the married couple files separate returns, additional rules are applied that are not considered in this analysis.

Under the TCJA, the income limits in the first five tax brackets for married couples filing jointly are double those for single individuals. Therefore, per person tax liability of married individuals with similar income is not higher if they file jointly. However, for the top two tax brackets, the federal income tax penalizes the marriage of two individuals with similar incomes over $300,000. For example, if two single individuals earn $400,000 each, they both face a marginal tax rate (on income over $200,000) of 35 percent. However, if they marry, they would face a 37 percent marginal tax rate on total income over $600,000, and their per

person tax liability would increase.

The tax liability of individuals with dissimilar incomes decreases after marriage. For example, consider a person who earns $60,000 and marries someone with no income. The highest marginal tax rate faced by this person declines from 22 percent to 12 percent, a significant reduction in per person tax liability.

The income tax system of some U.S. states and D.C. creates additional marriage non-neutralities. Twelve states calculate tax liability or taxable income proportional to the federal income-tax levels and therefore have the same pattern of marriage penalties and subsidies. Fifteen states have special joint rate schedules with broader tax brackets for married couples that reduce or eliminate the marriage penalty. Ten states allow married couples to file returns as single individuals that fully eliminates marriage tax. Six states have a flat tax rate with no marital status variation in their deductions or exemptions and, therefore, have no marriage penalty. Finally, nine states have no income tax.

The Alternative Minimum Tax (AMT) provision of the income tax can generate additional marriage penalties. Some households with particularly large "tax preference items" that lower their taxable income are subject to the AMT provided it exceeds an exemption amount. The 2020 AMT exemption is $113,400 for married couples and $72,900 for individuals. Marriage could easily push a couple into AMT territory.

The Earned Income Tax Credit (EITC) is another marriage-tax relevant part of the income-tax system. The EITC is means-tested and available only to filers with earned income below a certain threshold. Therefore, the income of a two-earner family may exceed the maximum allowable income for EITC eligibility, but if the individuals were single, then one (or both) may become eligible with a sufficiently low income. For example, in 2020, the eligibility limit for a single adult with one child was $41,756 compared to $47,646 for a married couple with one child. Clearly, there is a substantial potential loss in tax credits under the EITC associated with marriage.

3.2 Benefit Programs – Marriage Non-Neutralities

Means-tested benefit programs are also not marriage neutral as the combined income of all family members – family income – is counted towards eligibility. Family-income eligibility limits are typically set as a percentage of the federal poverty level (FPL), state median income (SMI), or area median income (AMI) and do not double when the family goes from single to married. Thus, two unmarried individuals with sufficiently low income may be eligible for public assistance separately but not jointly after marriage. Stated differently, any program that conditions participation or benefit levels on family income has the potential to embed a marriage tax. That said, the marriage tax associated with any such program will impact only a subset of marriages. For example, two singles, neither of whom qualify on their own, will continue to disqualify upon marriage.

Temporary Assistance for Needy Families (TANF) provides temporary cash support to families with children when their income is too low to cover their basic needs. Benefit amounts and eligibility are determined at a state level and depend upon income and, in some states, assets. In addition, receipt of cash assistance is limited to a certain number of months in a lifetime. The federal lifetime limit is sixty months, but states can set limits below this.

The Supplementary Nutrition Assistance Program (SNAP) provides needy families with electronic benefit cards, similar to debit cards, that can be used to purchase eligible food items. All household members are considered a part of the SNAP unit, and therefore marriage may leave the household financially ineligible. In addition, the joint benefits of two unmarried low-income individuals may be higher than their total benefits when they are married if the maximum payment for a single-person household exceeds half the maximum payment for a two-person household. SNAP benefits levels are determined at the federal level, with eligibility rules varying by state, family size, family income, and, in some states, assets. Income eligibility limits are based on the FPL and vary by state, as some states have expanded eligibility under the "Broad-Based Categorical Eligibility".

The Child Care and Development Fund (CCDF) provides childcare assistance to low-income families. The benefit amount varies by state, age of the child(ren), and family income. The benefit amount is calculated as the estimated cost for childcare minus the family copayment. Childcare costs vary by state and age of the child, while copayment amounts vary by state, family size, and household income. To start receiving a subsidy, a family's income must be below an initial eligibility threshold. Once eligible, families can continue receiving a subsidy as long as their income is below a continuous eligibility threshold which is typically higher than initial eligibility. States can adjust both thresholds but cannot set them higher than 85 percent of the SMI. SMI levels do not change proportionally with the family size, and therefore marriage can make a family ineligible for a subsidy.

The Housing Choice Voucher Program (Section 8) assists very low-income families, the elderly, and the disabled to afford private-market housing. Participants pay 30 percent of their income towards rent, with the rest covered by a voucher up to a maximum payment standard, including an allowance for utilities. The initial income-eligibility threshold is set at 50 percent of the SMI. Once eligible, a family can keep the voucher indefinitely. However, if a voucher recipient marries someone with income, the voucher amount can go down. Additionally, a family waiting to start receiving the voucher can lose initial eligibility due to marriage.

Both Medicaid and the Children's Health Insurance Program (CHIP) are joint federal and state programs that assist low-income adults and children with medical costs. Eligibility for both programs is based on the FPL. In states that expanded Medicaid, the eligibility for Medicaid is 138 percent of the FPL. In most non-expansion states, adults without dependents are not eligible, and those with dependents face lower income thresh-olds. Income thresholds for CHIP vary by state. Provided FPL levels do not change proportionally with the family size, marriage can push Medicaid or CHIP recipients above the income eligibility limit.

Health Insurance Marketplace (ACA) subsidies are designed to assist the uninsured in joining healthcare plans. The law provides consumers with subsidies, called premium tax

credits, that lower costs for certain households. Eligibility for subsidies is determined at the national level. Family income must be between 100 percent and 400 percent of the FPL. Given that the program has a lower bound on income eligibility, a marriage subsidy can arise if the married couple's combined income is above the poverty line while each individual's income is below the threshold. On the other hand, if combined income exceeds the upper thresholds, a family can lose their premium subsidy as the level of premium tax credits declines with family income.

Supplementary Security Income (SSI) provides cash payments to aged, blind, and disabled individuals or married couples. The federal SSI benefit standards depend on whether the unit is eligible as an individual, a couple, or an individual living with an ineligible spouse. Marriage may decrease SSI benefits in two ways. First, SSI counts a portion of an ineligible spouse's income toward the categorically eligible person's income. Therefore, marriage to an ineligible spouse may sufficiently increase a person's income, leaving them ineligible for SSI. Second, if both members of a couple are categorically eligible for SSI, the sum of their individual payments is higher if they are not married to each other.

4 Methodology

4.1 Intertemporal Budget Balance and Definitions

Consider any realized survival path, i, which is the path for which an individual lives to a specific age with a certain probability. Along this path, the realized present value of a household's total remaining lifetime spending (including bequests), S_i, must equal the realized present value of the household's lifetime net resources along the same path. Thus, path-specific intertemporal budgets satisfy

$$S_i = R_i - T_i, \tag{1}$$

where R_i and T_i reference, respectively, the realized present values on path i of the household's remaining lifetime resources and net taxes (including estate taxes). The realized present value of remaining lifetime resources, R_i, is the sum of the household's current net wealth, W, and path i's realized present value of future labor earnings (realized human wealth), H_i. Thus,

$$R_i = W + H_i. \tag{2}$$

The expected remaining lifetime present values of spending, S, human wealth, H, resources, R, and lifetime net taxes, T, satisfy

$$S = \sum_i p_i S_i, \tag{3}$$

$$H = \sum_i p_i H_i, \tag{4}$$

$$T = \sum_i p_i T_i, \tag{5}$$

and

$$R = \sum_i p_i R_i, \tag{6}$$

where p_i is the probability the household experiences survival path i. The above equations imply:

$$R = W + H, \tag{7}$$

$$S = R - T. \tag{8}$$

The expected remaining lifetime net taxes, T, can be decomposed into the expected present value of remaining lifetime total taxes, Z, minus the expected present value of remaining lifetime transfers, B. Marriage can increase a couple's total tax liability and decrease their total transfer payments relative to their combined pre-marriage total amounts. We define the remaining lifetime net marriage tax rate, τ as the marriage-induced percentage change

in expected lifetime net resources or, equivalently, expected lifetime spending due to the marriage-induced change in lifetime net taxes. We further decompose τ into the remaining lifetime gross tax rate, θ, plus the remaining lifetime transfer penalty, ϕ. Thus,

$$\tau = \frac{\Delta T - \Delta B}{S} \tag{9}$$

$$\theta = \frac{\Delta T}{S} \tag{10}$$

$$\phi = \frac{-\Delta B}{S} \tag{11}$$

4.2 The Fiscal Analyzer

The Fiscal Analyzer (TFA), used in Altig et al. (2020a,b) and Auerbach et al. (2016, 2017), measures lifetime net resources, tax liabilities, and transfer payments. TFA uses an iterative, dynamic programming method to calculate each household's smoothest living standard path over time, assuming the household head and spouse/partner live (with some probability) to their maximum potential age, which is set to 100. The living standard refers to discretionary spending per person, with adjustments for economies in shared living and the relative cost of children.

In forming its path of discretionary spending, TFA takes into account the household's current and future labor earnings, regular and retirement accounts, year-specific demo-graphics, year-specific non-discretionary expenditures on housing, childcare, healthcare, and other off-the-top expenses, and year-specific net taxes (taxes paid less transfers received). Calculations for all other survivor paths are made as part of TFA's computation of life insurance needs. The program determines annual, non-negative term life insurance amounts for household heads and their spouse/partners. These amounts provide survivors (including children) sufficient resources to achieve the same living standard as would arise had no one died. In the course of determining age-specific insurance needs, TFA also calculates survivor-path-specific taxes and transfers.

The program's iteration resolves the simultaneity between the household's paths (through time) of spending, taxes, and transfers. The household's asset income in each year impacts its various tax payments in that year as well as its levels of particular transfers. But the path of taxable asset income depends upon spending. Hence, the household's net tax path depends on its spending path, while at the same time, spending is a function of the net tax payments. Hence, the paths of net taxes and spending must be simultaneously determined.

A similar chicken and egg problem arises in calculating year-specific life insurance needs. The amount of life insurance needed depends upon the living standard and, thus, base spending path. But the associated insurance premiums limit what can be spent. Hence, the path of life insurance needs depends on spending, but the path of spending depends on life insurance needs.

TFA is comprised of three dynamic programs that jointly iterate to solve these simultaneity problems. The first entails consumption smoothing along the base path– maintaining the living standard per resident household member through time subject to borrowing constraints. The second computes the value of taxes and public benefit, and the third calculates life insurance needs. Each program takes the outputs of the other two as inputs. [2]

4.3 TFA's Algorithm

TFA's base program smooths consumption utilizing the following dynamic program. Total discretionary expenditures of the household in period t, e_t, satisfies

$$e_t = c_t(N_t + \lambda K_t)^\gamma \tag{12}$$

[2]TFA's development has been supported by the National Institute of Aging, Boston University, the Sloan Foundation, the Goodman Institute, the Federal Reserve Bank of Atlanta, and other non-profit entities, as well as the Economic Security Planning, Inc. The program's underlying calculation engine is MaxiFi.com, a personal financial planning software program developed by Laurence Kotlikoff through Economic Security Planning, Inc. (ESP). The precision and speed of the calculations reflect proprietary algorithms developed by ESP.

where c_t is consumption per equivalent adult, N_t is the number of adults in the household, K_t is the number of children, and λ is the weight given to the children in the household, assumed to equal 0.7. The parameter γ governs "economies of joint living". Since the goal is to isolate the marriage tax from other potential costs and benefits of marriage, we set γ the economies of joint living to one, thus ignoring potential savings due to cohabitation. We assume that all non-disabled children leave the household when they reach age 19. Disabled children are assumed to remain in the household through the year of death of the last remaining spouse/parent.

The dynamic program starts from the final year, F (set to 100), in which a household head or spouse/partner could be alive. In the final year, the household consumes all resources:

$$e_F = x_F,$$

where x references the household's cash on hand in the final year, F. Cash on hand includes regular (non-retirement account assets), labor income, asset income, withdrawals from retirement accounts, plus all other income less all fixed expenses on housing, other off-the-top expenditures, such as alimony and child support payments, specified bequests, and funeral expenses, as well as net tax payments. In-kind benefit payments are incorporated after the fact when determining our expected remaining lifetime marriage tax rate τ. Trapped home equity is treated as trapped and not spent in year F.

For periods $t < F$,

$$c_{t+1} = \begin{cases} \phi(x_{t+1}), \text{ if } e_t < x_t \\ x_t \text{ otherwise} \end{cases} \tag{13}$$

where ϕ is a consumption function and

$$x_{t+1} = x_t - e_t \tag{14}$$

TFA's second dynamic program calculates life insurance needs. Specifically, TFA determines the non-negative amount of life insurance each spouse needs to hold in each period to ensure that if the agent were to die at any point before reaching their maximum potential age of life, the survivors will have at least the same living standard (consumption per equivalent adult) as would be expected with no unexpected death.

TFA's third dynamic program calculates the value of all taxes and transfers for all programs listed in Table 1. TFA determines eligibility in each year for each transfer program and computes the estimated value of that benefit.

Each dynamic program takes the outputs of the other programs as inputs. The algorithm iterates between the three programs until convergence, at which point TFA multiplies survivor-path specific results by the survivor path's probability and calculates expected present values.

4.4 Imputing Past and Future Earnings

To calculate Social Security benefits, TFA needs earnings histories for the household head and spouse/partner. Consequently, we follow the Auerbach et al. (2016) methodology to impute past earnings and forecast future earnings using all past waves of the Current Population Survey through 2013. To impute annual labor earnings, we first group CPS observations by age, sex, and education. Next, we estimate annual earnings growth rates by age and year for individuals in each sex and education cell. The cell growth rates are used to "backcast" and forecast each individual's earnings history. These forecasts additionally assume a 1 percent real growth rate in economy-wide earnings. [3]

[3] For additional details on TFA and its' algorithm see Kotlikoff (2019)

4.5 The 2016 Survey of Consumer Finances, "Clone" Marriage and Calculating Marriage Taxes

The Survey of Consumer Finances (SCF) is a cross-sectional survey conducted every three years. The survey over-samples wealthy households in collecting data from, in the case of the 2016 Survey, 6,254 households. SCF includes detailed information on household labor and asset income, assets and liabilities, and demographic characteristics. Our first step in calculating the marriage tax is to "singlelize" all married and partnered respondents. In doing so, we allocate half of each couple's combined assets and liabilities to each spouse. In addition, children are assigned to live with their mothers or the primary respondent in the case of same-sex couples. Table 3 provides summary statistics for the SCF individuals in our artificially "singleized" dataset.

Table 3: "Singleized" 2016 Survey of Consumer Finances. Summary Statistics

	Female		Male	
	With Children	No Children	With Children	No Children
Age*	36.38	34.80	39.60	36.09
	7.35	8.94	6.99	8.03
Income**	34,995	34,000	46,500	50,000
	(47,033)	(34,886)	(337,556)	(124,612)
Number of Children*	1.97	–	1.56	–
	(1.00)	–	(0.68)	–
Renters	0.39	0.51	0.41	0.42
Sample Size	1,610	759	368	1,935

*Mean values are reported
**Median values are reported
Standard deviation is reported in parenthesis
Income is defined as an individual's current year earned and unearned income from all sources. Children of married couples were assigned to the mother when individuals were "singleized".

Next, we project the lifetime earnings of the single and "singlelized" respondents and run the projected earnings through TFA to calculate the potential lifetime net taxes. Step four involves re-running each respondent through TFA, assuming they married their clone, but without doubling the number of children. Finally, step five entails calculating the overall marriage tax rate, the gross marriage tax rate, and the gross transfer penalty tax rate based

on equations 9 - 11. Table A1 in the Appendix illustrates our marriage tax calculation for a selected SCF respondent.

An issue in step five is that there are no state identifiers in the SCF public-use file. The Federal Reserve-use file, to which we have access, does have state identifiers. But the file's weights are national, not state-specific. To deal with this state-weight problem, we used the ACS, which includes state identifiers. Specifically, we statistically matched each SCF household to ACS households based on common characteristics. This matching permits us to infer the share of each SCF household type located in each state and, thus, to allocate each household's SCF weight across the 50 states and the District of Columbia. Then we ran each respondent, as single and as clone married, through each state to produce our three state-specific marriage tax rates. These state-specific tax rates were then weighted by the ACS state-specific weights to produce national state-weighted average values of the tax rates for each respondent.

4.6 Adjusting for a Partial Take-up of Benefits

Although TFA contains all eligibility rules for the programs listed in Table 1, simply applying those rules to eligible households could overestimate the marriage tax rate. Program participation rates among eligible households are generally less than 100 percent due to a variety of reasons, including, but not limited to, lack of information, stigma, and complicated application procedures, as well as supply constraints of some of the programs (Stuber et al. 2000; Finkelstein and Notowidigdo 2019).

Table 4 provides national take-up rates or the share of eligible families participating in major programs and tax credits. Our baseline calculations of the marriage tax rates assume full take-up of benefits and tax credits. However, given the low take-up rates in certain programs, we also produce alternative calculations of the marriage tax that account for imperfect take-up of public assistance. To be precise, in our calculations of the marriage tax, we weight the receipt of public benefit for eligible families by the probability of program

take-up, as shown in Table 4.

Table 4: Estimated Participation and Take-Up of Benefit Programs

	Number of Participating Units ('000)	Number of Eligible Units ('000)	Year	Take Up Rate (%)
TANF	1,213 families	4,869 families	2016	24.9
SNAP	40,776 persons	60,334 persons	2018	67.6
CCDF Childcare Subsidy	2,099 children	8,417 children	2015	24.9
Section 8 Housing Voucher	2,200 families	19,517 families	2016	11.2
Marketplace Subsidy	9,600 persons	112,942 persons	2020	8.5
Medicaid (Adults)	39,042 persons	48,863 persons	2016	79.9
Medicaid/CHIP (Children)	35,953 persons	38,370 persons	2016	93.7
EITC	26,500 taxpayers	33,974 taxpayers	2018	78.0
CTC	48,000 taxpayers	56,946 taxpayers	2020	84.3

Sources: Data on the number of participating and eligible units for TANF is taken from Giannarelli (2019). Data on the number of participating and eligible units for CCDF is taken from Chien (2019). The number of participating and eligible units for Medicaid is taken from the Kaiser Family Foundation (https://www.kff.org/). The number of expected Child Tax Credit claims is from the Joint Committee on Taxation (https://www.jct.gov). Participation and eligibility data on EITC is from the Internal Revenue Service (IRS) statistics for tax returns (https://www.eitc.irs.gov/eitc-central/participation-rate/eitc-participation-rate-by-states). The number of participating units for SNAP is taken from the USDA website (https://www.fns.usda.gov). The number of participating units for the Section 8 Housing Voucher is provided by the Housing and Urban Development Department's (HUD) Office of Policy Development and Research (https://www.huduser.gov). The number of eligible units for SNAP, Section 8 Housing Voucher, Health Insurance Marketplace Subsidy, and Child Tax Credit are estimated by applying Policy Rules Database (Ilin and Terry 2021) to the Annual Social and Economic Supplement of the Current Population Survey.

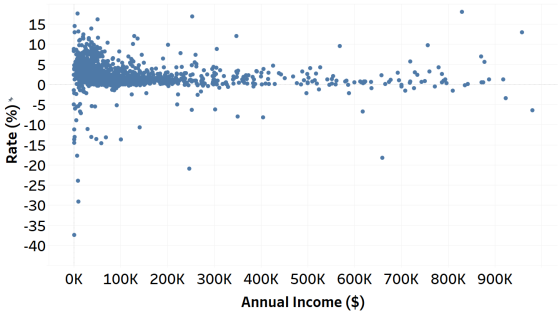
5 The Size and Distribution of Marriage Taxes

Figure 2 shows the distribution of marriage tax rates, gross marriage tax rates, and transfer penalty rates by SCF respondents' annual total family income. Given that each SCF respondent has a marriage tax rate calculated for all 50 states and D.C., each dot represents an average marriage tax across all states. Charts show that low-income households face the largest penalties, driven by the substantial transfer penalties for marriage.

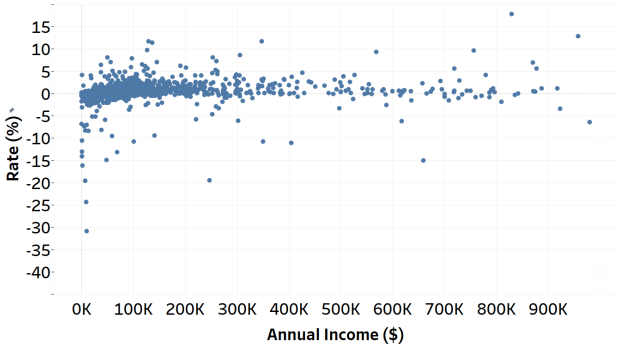
Table 5 shows average marriage penalties for the full SCF sample and separately for families with and without children. The overall average marriage tax rate is just under 2.7 percent and is not a function of the presence of children. However, the composition of penalties is different. On average, individuals with children face higher transfer penalties

Figure 2: Distribution of Marriage Tax Rates in 2016 Survey of Consumer Finances

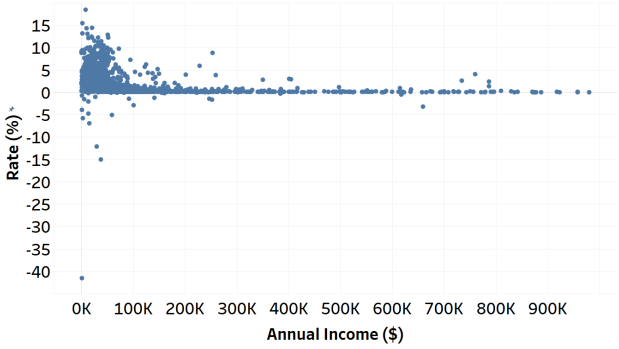
(a) Marriage Tax Rate



(b) Gross Marriage Tax Rate



(c) Transfer Penalty Rate



than those without because some benefit programs, such as CHIP and CCDF, are available only for families with children. Moreover, in some states, Medicaid is available only for adults with dependents.[4] Higher transfer penalties for individuals with children are partially offset by a larger gross marriage tax subsidy – taxpayers with children are generally eligible for more generous federal and state tax credits, such as the EITC and the CTC.

Table 6 summarizes average marriage penalties by gender and child status. Average marriage taxes are higher for females as they tend to have both lower incomes and more children (see Table 3). The presence of children and lower earnings make females eligible for more benefit programs that could be lost after marriage. Thus, on average, females have higher transfer penalties. However, families with children have significant gross marriage tax subsidies that partially offset transfer penalties and decrease overall marriage taxes.

[4] As of 2019, Medicaid coverage was not available for adults without dependents in the following states: Alabama, Florida, Georgia, Kansas, Mississippi, Missouri, Nebraska, North Carolina, South Carolina, South Dakota, Tennessee, Texas, Utah, and Wyoming.

Table 5: Average Lifetime Marriage Penalties in the 2016 SCF

	Marriage Tax	Gross Marriage Tax	Transfer Penalty
Full Sample	2.69	0.06	2.63
	(4.68)	(2.54)	(4.12)
With Children	2.68	-0.50	3.18
	(4.78)	(2.49)	(4.23)
Without Children	2.69	0.33	2.36
	(4.63)	(2.51)	(4.03)

Standard deviation is reported in parenthesis
Income is defined as individuals current-year earned and unearned income from all sources

Table 6: Average Lifetime Marriage Penalties in the 2016 SCF by Gender and Child Status

	Female		Male	
	With Children	No Children	With Children	No Children
Marriage Tax Rate	2.71	2.98	2.02	2.59
	(1.05)	(1.08)	(4.73)	(1.13)
Gross Marriage Tax Rate	-0.49	0.25	-0.64	0.36
	(0.36)	(0.58)	(0.97)	(0.42)
Transfer Penalty	3.21	2.73	2.67	2.24
	(1.04)	(1.35)	(5.38)	(1.15)

Standard deviation is reported in parenthesis

Finally, Table 7 reports the average marriage tax rate by income quintiles. The rate is the largest for individuals with incomes between $26,000 and $40,000. On average, they face a 3.95 percent marriage tax rate, more than two times the 1.49 percent rate for the top income quintile. The bottom income quintile has the highest transfer penalty rate. On average, this group loses 4.65 percent of their lifetime spending power from decreases in transfer payments. This loss is partially offset by a reduction in the total tax liability of one percent. The transfer penalty rate declines monotonically with income, and the top income quintile faces virtually no transfer penalty. The gross tax rate is close to zero or negative for all but the top two income quintiles. The top income quintile loses 1.09 percent of its lifetime spending due to an increase in total tax liabilities.

The source of the marriage tax differs by income quintiles. For each income quintile,

Table 7: Average Marriage Tax by Income Quintiles

Income Quintile	Lifetime Net Marriage tax	Gross Marriage Tax	Transfer Penalty
0 to $26K	3.71	-0.94	4.65
	(6.57)	(2.86)	(5.49)
$26K to $40K	3.95	-0.28	4.23
	(4.35)	(1.43)	(4.30)
$40K to $58.5K	2.99	0.01	2.98
	(4.16)	(1.54)	(4.05)
$58.5K to $103.1K	1.38	0.41	0.97
	(3.43)	(2.34)	(2.10)
$103.1K+	1.49	1.09	0.40
	(3.57)	(3.43)	(1.11)

Standard deviation is reported in parenthesis
Income is defined as individuals current-year earned and unearned income from all sources

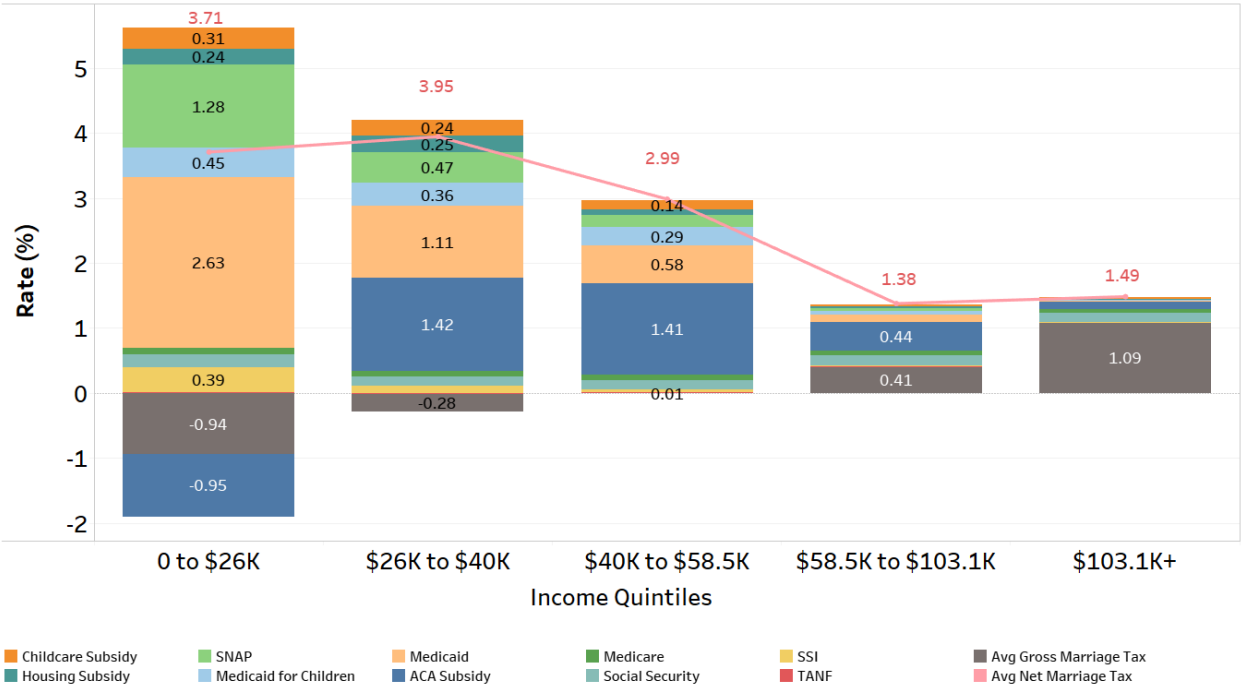
Figure 3 breaks down the average marriage tax rate into ten components, including the change in total tax liability and the change in nine major benefit programs (childcare subsidy, housing subsidy, SNAP, Medicaid, Medicare, ACA subsidy, Social Security, SSI, and TANF).

The bottom income quintile, on average, loses 2.63 percent of their lifetime net resources from the loss of Medicaid for adults, 1.28 percent from the decline in SNAP, and 0.5 percent from the loss of Medicaid for children. However, 0.95 percent of lifetime net resources are gained due to an increase in the ACA subsidy. In addition, marriage allows otherwise ineligible families to increase combined income above 100 percent of the FPL and gain access to the premium subsidies. Finally, 0.94 percent is gained in the lifetime net resources due to a decrease in total tax liability.

Those in the second and third income quintiles are more likely to lose access to the premium subsidies after marriage. In general, the loss of healthcare-related programs (Medicaid for adults and children and ACA premium subsidies) is the main contributor to the marriage tax for those in the bottom three income quintiles.

A detailed description of the marriage tax rates across income quintiles is reported in Table 8. There is a sizable variation in the individual marriage tax rate across and within income quintiles. Across the full sample, the minimum marriage tax rate is -74.45 percent,

Figure 3: Decomposition of Marriage Taxes by Income Quintile



and the maximum is 45.84 percent. The distribution of marriage tax rates is the most disperse for the lowest income quintile (with an interquartile range of 5.43 percentage points), and the dispersion declines monotonically with income.

Table 8: Summary Statistics for the Marriage Tax Rates (%)

Income Quintile	min	q10	q25	median	mean	q75	q90	max
All	-74.45	0.00	0.42	1.62	2.69	4.52	8.05	45.84
0 to $26K	-74.45	-1.32	1.30	4.19	3.71	6.73	9.87	45.84
$26K to $40K	-54.05	0.17	0.92	3.30	3.95	6.18	9.52	33.79
$40K to $58.5K	-25.52	0.06	0.41	1.48	2.99	4.73	8.84	30.04
$58.5K to $103.1K	-34.71	-0.05	0.26	0.80	1.38	1.97	4.19	25.03
$103.1K+	-23.66	-0.08	0.29	0.98	1.49	2.22	3.77	44.18

Income is defined as individuals current-year earned and unearned income from all sources

There are several explanations for the substantial negative marriage tax rates (i.e., subsidies) in our SCF sample. First, in some states, Medicaid coverage is available only for those adults that have dependents. Therefore, in our "singleized" SCF sample, childless "clones" of adults to whom children were initially assigned can gain eligibility for Medicaid coverage

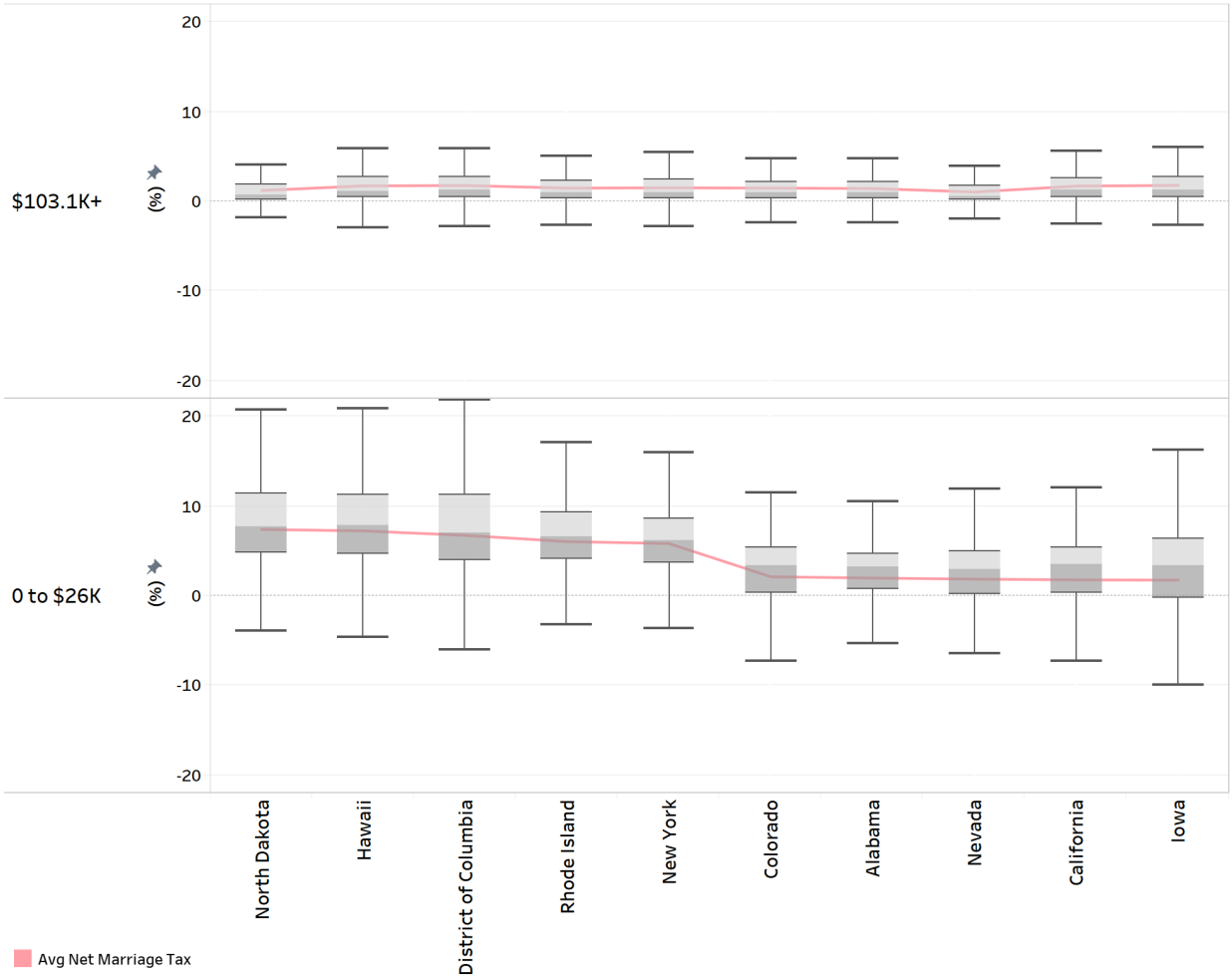
due to marriage. Second, as was discussed, certain families can gain access to the ACA premium subsidy after marriage. Finally, certain individuals in the top income quintiles have large gross marriage tax subsidies related to the structure of tax brackets and standard deductions. As a result, considerable observed marriage tax rates arise when marriage makes families ineligible for Medicaid, housing subsidies, and ACA premium subsidies. Additionally, taxpayers in the top brackets have their total taxes increased after marriage. Figures A4 and A5 in the Appendix decompose the sources of the sample's largest and smallest marriage tax rates in our sample for each income quintile.

5.1 Variation in the Marriage Tax Across States

Our marriage tax measure varies by state due to differences in benefit program rules, taxes, and tax credits, as illustrated in Figure 4. For the five states with the highest and the five states with the lowest average marriage tax rate, we plot the 10th, 25th, 50th, 75th, and 90th percentiles of marriage tax rates for the top and the bottom income quintile. The solid red line shows the average rate across all states. Variation in the marriage taxes across all states and income quintiles is provided in Figure A1 in the Appendix.

The main reason the marriage tax varies across states is related to taxes. First, states set their income-tax schedules and tax credits. Second, eligibility requirements for certain benefit programs vary by state. For example, the Section 8 Housing Voucher and CCDF childcare assistance eligibility is determined based on the Area Median Income (AMI) or State Median Income (SMI). In addition, even though the rules for SNAP and Medicaid are determined at the federal level, states can adjust income eligibility limits. For example, SNAP's federal income eligibility threshold is 130 percent of the FPL, but Broad-Based Categorical Eligibility (BBCE) allows states to set higher thresholds. Finally, health care benefits also vary by state. The Affordable Care Act of 2010 allowed states to expand Medicaid coverage to families with income up to 138 percent of the FPL, which was only implemented by some states. Additionally, each state has income eligibility guidelines related

Figure 4: Variation in Marriage Taxes Across States



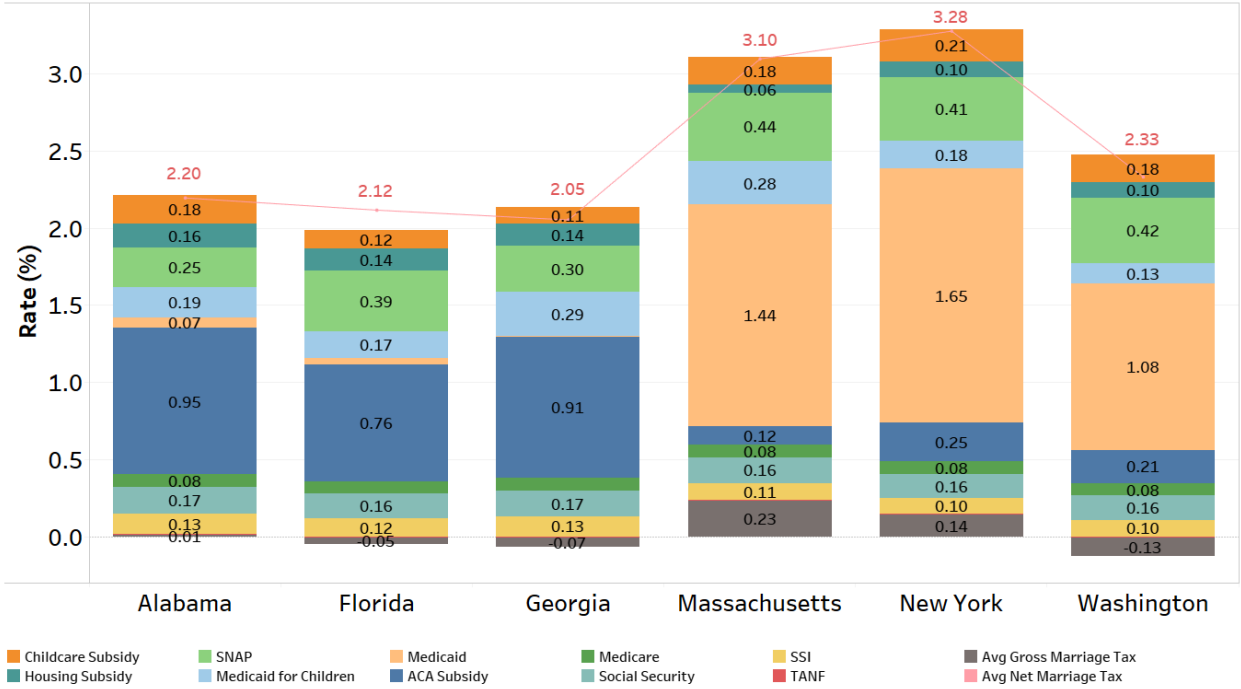
to the CHIP coverage of uninsured children.

5.2 Medicaid Expansion and the Marriage Taxation

The loss of Medicaid is one of the largest drivers of the marriage tax. Figure 5 shows the marriage tax composition for three states that expanded Medicaid in 2014, Massachusetts, New York, and Washington, and three states that did not, Alabama, Florida, and Georgia. In the expansion states, individuals can receive Medicaid coverage if family income is below 138 percent of the FPL. In most states that did not expand Medicaid coverage, adults without dependents are not eligible for Medicaid, while adults with children can still receive it but

only if their income is low enough – typically around 40 percent of FPL.

Figure 5: Marriage Tax and Medicaid Expansion.



Medicaid expansion provided healthcare coverage to many uninsured individuals and families. However, it also raised marriage taxes in expansion states by including more Medicaid-covered individuals who could lose coverage by marrying. Although marriage would likely lead to eligibility for ACA premium subsidies, these subsidies are of smaller value than Medicaid. In states that did not expand Medicaid, there is a much smaller Medicaid marriage penalty. However, given that in the absence of Medicaid, subsidized healthcare through the Marketplace is the primary source of affordable healthcare for low-income people, the phase-out of ACA premium subsidies is the most significant component of the marriage tax. For example, a low-income person in an expansion state can keep Medicaid coverage up to 138 percent of the FPL and then switch to a subsidized, but still more costly, ACA marketplace coverage at higher income levels. For this person, the loss of Medicaid is the main source of marriage taxation. A similar low-income person in a non-expansion state would not have access to Medicaid but is eligible for the ACA premium subsidy. If family

income increases after marriage, the amount of the subsidy declines. This decline generates substantial marriage taxes for low-income families in non-expansion states.

6 The Effect of Marriage Tax on Marriage Initiation

Marriage tax rates estimated using the SCF are of interest on their own, but the relevant policy question is whether the marriage tax influences the decision to marry. The 2018 ACS asks respondents about their prior-year marital status and whether they married over the prior year. However, the household resource data is not sufficiently detailed to accurately estimate marriage taxes. Hence, we apply a two-step estimation procedure. For the first step, we regress the calculated SCF marriage tax rates on observables common to both surveys and use the regression to predict the three marriage tax rates for ACS respondents. In the second step, marriage initiation is regressed on the first-stage estimates of the marriage tax, controlling for other individual characteristics. Finally, we apply generated regressor correction by bootstrapping standard errors of the second-stage coefficients.

6.1 Stage 1 – Marriage Tax Rates Equation

As was shown in the previous section, our measure of the marriage tax captures the mechanical effect of the U.S. fiscal system absent of any behavioral elements such as the decision of whom to marry. Thus, the measure varies only by characteristics that directly affect eligibility status for public assistance, the value of benefits, and the size of tax liabilities. For example, eligibility for and the value of means-tested public assistance is a non-linear function of total family earnings. Income eligibility thresholds for most benefit programs and tax credits are based on the FPL, SMI, or AMI, which vary by family size. Families with children are eligible for additional benefit programs, and if the child is under the age of 12, the family can access subsidized childcare through the CCDF. There is also the possibility of housing support for renters. In addition, age linearly affects the health insurance

premium and, thus, the value of the public health insurance. Finally, eligibility rules for these programs vary at the state level. In addition to differences in program eligibility, there are also differences in the projections of lifetime earnings by level of education, which has implications for the value of the marriage tax. Our regression model is given by

$$\tau_{is} = \beta_{0sg} + \beta_{1sg} F_i(Y_i + Y_i^2) + \beta_{2sg} K_i^{0-12} F_i(Y_i + Y_i^2) \\ + \beta_{3sg} K_i^{13-18} F_i(Y_i + Y_i^2) + \beta_{4sg} H_i F_i(Y_i + Y_i^2) + \delta_{sg} X_i + \epsilon_i, \quad (15)$$

where for each SCF respondent i: τ is a marriage tax rate; F is a family size, K^{0-12} is an indicator for whether the respondent has children under age 12; K^{13-18} is an indicator of whether the respondent has children between age 13 and 18; H references housing status (home owner or renter); Y is total household income from all sources; and X is a vector that includes integer age and level of education. Equation 15 is estimated separately for each state s and gender g.

6.2 Predicting Marriage Tax Rates for 2018 American Community Survey

We restrict the ACS sample to respondents who were unmarried at the beginning of 2017 and were in the age range of 20 to 49 to match the sample in the SCF. We further break down our sample by gender and presence of children. Additional summary statistics are provided in Table 9.

We predict marriage tax rates for ACS respondents using the estimated coefficients from Equation 15. Table 10 reports average predicted marriage penalties for the ACS sample by gender and child status.

In general, individuals with children face higher marriage tax rates and transfer penalties relative to childless adults, as do females relative to males with the same child status. This difference is expected as adults with children are eligible for a more extensive set of benefit

Table 9: 2018 American Community Survey. Summary Statistics

	Female		Male	
	With Children	No Children	With Children	No Children
Married in the Previous Year	0.13	0.10	0.15	0.08
Age*	30.09	29.09	29.25	29.89
	(7.62)	(7.63)	(7.77)	(7.56)
Income**	16,769	25,563	22,904	27,608
	(27,521)	(36,942)	(34,649)	(45,406)
Number of Children*	1.72	–	1.62	–
	(0.92)		(0.84)	
High School Degree or Less	0.51	0.28	0.62	0.42
Some College or Associate	0.34	0.30	0.28	0.28
College Degree	0.15	0.42	0.11	0.29
White, non-Hispanic	0.39	0.63	0.44	0.62
Black, non-Hispanic	0.27	0.17	0.18	0.15
Hispanic	0.29	0.17	0.34	0.19
Other Race	0.04	0.04	0.04	0.04
Renters	0.54	0.53	0.46	0.50
Sample Size	73,784	129,303	55,126	169,239

*Mean values are reported
**Median values are reported
Standard deviation is reported in parenthesis
Sample includes individuals age 20-49 that were not married in 2017.
Income is defined as individuals current-year earned and unearned income from all sources

programs that increase the size of the transfer penalty. In addition, males, on average, have higher income; thus, they have less benefits to lose than female respondents. Finally, female transfer penalty rates are somewhat higher for the ACS sample than for the SCF, which is reasonable as the ACS oversamples wealthier individuals (see Table 6).

6.3 Stage 2 – Estimating the Effect of the Marriage Tax on Marriage Initiation

After predicting marriage tax rates for the ACS sample, we estimate the effect of marriage taxation on marriage initiation using a linear probability model. Additional discussion of our choice to use the linear probability model over Probit can be found in Section 6.4. Our

Table 10: Average Predicted Marriage Penalties in the 2018 ACS by Gender and Child Status

	Female		Male	
	With Children	No Children	With Children	No Children
Marriage Tax Rate	3.35	2.67	2.53	2.34
	(1.05)	(1.08)	(4.73)	(1.13)
Gross Marriage Tax Rate	-0.75	-0.45	-0.67	-0.17
	(0.36)	(0.58)	(0.97)	(0.42)
Transfer Penalty	4.10	3.12	3.20	2.51
	(1.04)	(1.35)	(5.38)	(1.15)

Standard deviation is reported in parenthesis

second-stage regression is given by

$$M_i = \gamma_{0g} + \gamma_1 \hat{\tau}_i + \gamma_{2g} Y_i + \gamma_{3g} Y_i^2 + \gamma_{4g} A_i + \gamma_{5g} A_i^2 + \gamma_{6g} A_i (Y_i + Y_i^2) + \beta_g^T X_i + \mu_s + \epsilon_i, \quad (16)$$

where M_i is the binary outcome of whether individual i initiated marriage in the 12 months preceding the survey; $\hat{\tau}_i$ is the predicted marriage tax rate; μ_s is a state fixed-effect; Y_i is the total individual income from all sources; A_i is age; and X_i is a set of individual-level controls that includes race, education, and a number of children. Equation 16 is estimated separately for each gender g. Next, we re-estimate Equation 16, replacing the overall marriage tax with the two distinct components of the tax, the transfer penalty and the gross marriage tax. The generated regressors from the first stage lead to biased and inconsistent standard errors (Pagan 1984). Thus, we use the bootstrap method to produce standard errors for both stages.

The marriage tax has a statistically significant negative effect on the probability of marriage initiation for both females and males, independent of the presence of children. A one percentage point increase in the marriage tax rate decreases the probability of marriage initiation for females with children by 3.69 percentage points and 1.12 percentage points for females without children. For females with children, both components of the marriage tax

Table 11: Effects of the Marriage Taxation on the Probability of Marriage Initiation

	Female				Male			
	With Children		No Children		With Children		No Children	
Marriage Tax	-3.69***	–	-1.12***	–	-0.21*	–	-1.54***	–
	(0.64)	–	(0.29)	–	(0.09)	–	(0.39)	–
Transfer Penalty	–	-2.14**	–	0.07	–	-0.63***	–	-2.17***
	–	(0.67)	–	(0.37)	–	(0.18)	–	(0.38)
Gross Marriage Tax	–	-14.86***	–	-6.00***	–	-2.78***	–	2.13*
	–	(1.51)	–	(1.08)	–	(0.83)	–	(1.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	73,784	73,784	129,303	129,303	55,126	55,126	169,239	169,239

***, ** and * indicate significance levels at 0.1%, 1% and 5% respectively
Note: Standard errors are reported in parenthesis
Bootstrap standard errors are based on 50 bootstrap samples

— the transfer penalty and the gross marriage tax — have statistically significant negative effects on the probability of marriage initiation. A one percentage point increase in the transfer penalty and gross marriage tax decreases their probability

In the sample of males with and without children, we also find that the marriage tax and its' components have a statistically significant negative effect on marriage initiation, with a one percentage point increase in the marriage tax decreasing the probability of marriage initiation of males with children by 0.21 percentage points and by 1.54 percentage points for males without children. In addition, for males with children, the marginal effect is lower than for females. However, for males without children, the marginal effect of transfer penalties is larger than for single females, but the gross marriage tax is actually positive, resulting in somewhat similar overall marriage tax rates.

6.4 Potential Biases in Estimates

6.4.1 Measurement Error

Equation 16 contains two sources of measurement error that can potentially bias our estimates.

First, marriage tax rates used in the second stage regression 16 are not directly observable, but rather generated using the first stage regression. This "generated regressor" contains some measurement error that is carried over to the second stage regression. Anderson et al. (1976) and Barro (1977) show that under some regularity conditions, consistency and asymptotic normality of least squares estimator is preserved, but asymptotic variance has a different form in general. We correct standard errors for both stages by applying bootstrap method (Pagan 1984).

Second, it is possible that our marriage tax rate measure τ is itself and imperfect measure of the "true" marriage tax and contains a measurement error. If the difference between the estimated marriage tax and the actual marriage tax is orthogonal to the actual tax rate, then our OLS estimates are unbiased and consistent. However, there can be multiple reasons, why this condition is not satisfied. It can create downward or upward biases in our OLS estimates. For example, if low-income SCF respondents systematically under-report income, then τ would *underestimate* the actual marriage tax for low-income families. In this case, the measurement error is negatively correlated with income and would bias the OLS coefficients downward. As another example, if assortative mating assumption is inaccurate and people tend to marry partners with higher income, then τ would consistently *overestimate* the actual marriage tax for low-income people. In this case, measurement error is positively correlated with income and produce upward bias of the OLS coefficients.

6.4.2 Linear Probability Model vs Probit

Alternatively, the second-stage equation 16 can be estimated using Probit models. However, as shown in Figure 2 and Table 8, marriage tax rates tend to be more volatile for low-income people. For example, for the bottom income quintile, the interquartile range (IQR) of the marriage tax rate distribution is 8.05 percent – more than 4 times larger than the 1.93 percent IQR of the top income quintile. Thus, the error terms of the first stage regression (equation 15) are larger for observations with low income. It introduces heteroskedasticity

in the second stage regression (equation 16). Probit and Logit models would produce biased and inconsistent estimates, while OLS estimates are unbiased and consistent (Yatchew and Griliches 1985; Inkmann 2000; Moussa 2019).

6.5 Magnitudes of the Estimated Effects

To show the economic significance of estimated coefficients, we simulate marriage initiation rates in the absence of marriage taxation. These simulations by gender, child status, and prior-year income levels are shown in Table 12. In all cases, marriage initiation would be higher in the absence of the marriage tax, but the differential is largest for women with children, especially those in the lower earnings quintiles. For example, if the marriage tax rate is set to zero for females with children in the bottom income quintile, the average probability of marriage initiation increases by 13.68 percentage points. For poor males with children, setting the marriage tax to zero would also have a significant positive effect on marriage initiation. It would increase their average probability of marriage initiation by 2.46 percentage points.

As an example of how this negative impact of marriage taxation on the *annual* marriage initiation affects stock of marriage over time, let's consider the case of a single 25-years-old female without children that earns $33,614 and faces lifetime marriage tax rate of 2.61 percent - average values among females in our sample. Estimated probability that she will get married over the next ten years is 76 percent. In the absence of marriage taxation, this probability would increase to 83 percent. [5]

[5] To produce these estimates, we compute weighted average predicted marriage initiation rates with and without marriage tax across all states, education groups, and races.

Table 12: Impact of Marriage Taxation on Marriage Initiation

	Marriage Initiation Rate (%)	Predicted Marriage Initiation without Marriage Tax
Female, with Children		
0 to $26K	9.40	23.08
$26K to $40K	11.82	25.57
$40K to $58.5K	16.36	27.70
$58.5K to $103.1K, Q4	22.73	30.88
$103.1K+	26.80	34.74
Female, without Children		
0 to $26K	6.47	11.17
$26K to $40K	9.81	13.79
$40K to $58.5K	12.15	15.12
$58.5K to $103.1K	13.52	16.07
$103.1K+	14.28	17.18
Male, with Children		
0 to $26K	7.49	8.95
$26K to $40K	15.24	17.45
$40K to $58.5K	23.17	23.31
$58.5K to $103.1K	29.92	31.21
$103.1K+	43.28	47.58
Male, without Children		
0 to $26K	3.51	8.61
$26K to $40K	7.08	11.47
$40K to $58.5K	9.88	13.24
$58.5K to $103.1K	12.44	15.81
$103.1K+	15.49	20.73

Source: 2018 American Community Survey, authors calculations

6.6 Sensitivity Analysis

6.6.1 Partial Take-up of Benefit Programs

Our baseline results assume that everyone eligible for a particular benefit receives it. However, some eligible people fail to participate in the public support programs for a variety of reasons. Therefore, as a robustness check, we adjust our estimates of marriage penalties by multiplying each benefit-related component by the probability of participation in the

program, as reported in Table 4.

Table 13 reports the new average marriage tax rate, gross marriage tax rate, and transfer penalty rate by gender. As expected, the average take-up rates-adjusted marriage tax and transfer penalty rates are less than half the size of the full take-up rates reported in Table 10.

Table 13: Average Predicted Marriage Penalties in the 2018 ACS by Gender, Adjusted for Partial Take-up Rates

	Female		Male	
	With Children	No Children	With Children	No Children
Marriage Tax Rate	2.36	1.61	0.90	0.94
	(1.22)	(1.18)	(1.61)	(1.03)
Gross Marriage Tax Rate	-0.75	-0.45	-0.67	-0.17
	(0.36)	(0.58)	(0.97)	(0.42)
Transfer Penalty	3.11	2.06	1.57	1.11
	(1.20)	(1.37)	(2.01)	(0.93)

Standard deviation is reported in parenthesis

Next, we re-estimate Equation 16 with the adjusted marriage penalties. Table 14 shows the results by gender and presence of children. In all samples, take-up rates adjusted marriage tax has a significant negative effect on the probability of marriage initiation. Effects are of the same magnitude and direction as the estimated effects of unadjusted marriage tax rates, although the components move in different directions for males with no children.

6.6.2 Current-Year Estimates

To compare our results with the earlier literature, we analyze the current-year marriage tax, i.e., the share of current-year resources that would be immediately lost after marriage. Table 15 shows the average current year predicted marriage penalties for ACS respondents. The current-year marriage tax is larger than the lifetime, especially for the transfer penalty. This difference is likely due to the higher rates of transfer benefits for younger ages and families with children, with children only being dependents for a portion of an individual's lifetime.

Table 14: Effects of the Marriage Taxation on the Probability of Marriage Initiation. Marriage Penalties Are Adjusted for Partial Take-up of Benefits

	Probability of Marriage Initiation (%)							
	Female				Male			
	With Children		No Children		With Children		No Children	
Marriage Tax	-3.95***	–	-1.55***	–	-1.09***	–	-1.26**	–
	(0.32)	–	(0.69)	–	(0.30)	–	(0.45)	–
Transfer Penalty	–	-2.67***	–	-0.78*	–	-1.38***	–	0.81
	–	(0.70)	–	(0.37)	–	(0.36)	–	(0.44)
Gross Marriage Tax	–	-15.52***	–	-5.58***	–	-2.03**	–	-2.88**
	–	(1.52)	–	(1.01)	–	(0.67)	–	(1.06)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	73,784	73,784	129,303	129,303	55,126	55,126	169,239	169,239

***, ** and * indicate significance levels at 0.1%, 1% and 5% respectively
Note: Standard errors are reported in parenthesis
Bootstrap standard errors are based on 50 bootstrap samples

Table 15: Average Predicted Current-Year Marriage Penalties in the 2018 ACS by Gender

	Female		Male	
	With Children	No Children	With Children	No Children
Marriage Tax Rate	5.26	4.06	4.11	2.56
	(1.77)	(2.18)	(10.94)	(1.18)
Gross Marriage Tax Rate	-0.28	-0.24	-0.31	-0.25
	(0.22)	(0.20)	(0.69)	(0.18)
Transfer Penalty	5.54	4.30	4.42	2.81
	(1.83)	(2.30)	(11.50)	(1.27)

Standard deviation is reported in parenthesis

Equation 16 is then re-estimated using the current-year marriage tax rates, with the results shown in Table 16. The effect of the current-year marriage tax on female and male marriage initiation is negative and significant but smaller in magnitude than the effect of the lifetime transfer penalty. The same is true for the effect of the current-year transfer penalty, which is significant and negative for samples of females with children and males without children.

Table 17 shows simulated marriage initiation rates by gender, child status, and the prior

Table 16: Effects of the Current-Year Marriage Taxation on the Probability of Marriage Initiation

	Probability of Marriage Initiation (%)							
	Female				Male			
	With Children		No Children		With Children		No Children	
Marriage Tax	-1.45***	–	-0.83***	–	-0.08*	–	-2.58***	–
	(0.38)	–	(0.21)	–	(0.03)	–	(0.31)	–
Transfer Penalty	–	-0.92*	–	-0.30	–	-0.06	–	-1.77***
	–	(0.43)	–	(0.22)	–	(0.04)	–	(0.35)
Gross Marriage Tax	–	-22.40***	–	-14.13***	–	0.36	–	-10.88***
	–	(1.83)	–	(1.53)	–	(0.43)	–	(1.85)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	73,784	73,784	129,303	129,303	55,126	55,126	169,239	169,239

***, ** and * indicate significance levels at 0.1%, 1% and 5% respectively
Note: Standard errors are reported in parenthesis
Bootstrap standard errors are based on 50 bootstrap samples

year income levels in the absence of current-year marriage taxation. Comparing to Table 12 the simulated increase in the marriage initiation rate is significantly smaller, emphasizing the importance of the lifetime perspective on marriage taxation. For example, in the absence of a lifetime marriage tax, the marriage initiation rate for females with children in the bottom income quintile would be 13.68 percentage points higher. Conversely, setting current-year marriage tax rates to zero would increase marriage initiation rates for this group by only 0.68 percentage points.

7 Conclusion

This paper measures U.S. children. It does so by singleizing married and partnered respondents to the 2016 Survey of Consumer Finances and then determining how they and single respondents would fare, in terms of lifetime spending, were they to marry themselves. Our measure of marriage taxation considers all major and most minor federal and state tax and benefit programs. The current average level, and distribution of, marriage taxes differ

Table 17: Impact of Current-Year Marriage Taxation on Marriage Initiation

	Actual Marriage Initiation	Predicted Marriage Initiation without CY Marriage Tax
Female, with Children		
0 to $26K	9.40	10.18
$26K to $40K	11.82	13.45
$40K to $58.5K	16.36	16.58
$58.5K to $103.1K, Q4	22.73	21.46
$103.1K+	26.80	28.63
Female, without Children		
0 to $26K	6.47	7.71
$26K to $40K	9.81	10.85
$40K to $58.5K	12.15	12.67
$58.5K to $103.1K	13.52	14.20
$103.1K+	14.28	16.13
Male, with Children		
0 to $26K	7.49	8.34
$26K to $40K	15.24	16.86
$40K to $58.5K	23.17	22.76
$58.5K to $103.1K	29.92	30.79
$103.1K+	43.28	48.82
Male, without Children		
0 to $26K	3.51	4.57
$26K to $40K	7.08	7.84
$40K to $58.5K	9.88	9.96
$58.5K to $103.1K	12.44	12.99
$103.1K+	15.49	18.60

Source: 2018 American Community Survey, authors calculations

markedly from the past due to the adoption of the 2017 Tax Cuts and Jobs Acts (TCJA), the expansion of SNAP's Broad-Based Categorical Eligibility (BBCE), the introduction of the Affordable Care Act's Health Insurance Marketplace subsidies, the expansion of Medicaid under the ACA, and the progressive Medicare premium formula (IRMMA). Our marriage tax measure is the expected present value of current and future annual net marriage taxes, averaged over all possible survival paths. Our marriage tax rate captures the percentage

reduction in a respondent's lifetime spending from marrying themselves.

Assuming full benefit-program participation, we calculate a 2.69 percent average marriage tax rate facing those aged 20 through 49. Our measured marriage tax rates differs substantially by income. The average marriage tax for the lowest quintile of household income is 3.71 percent, more than two times larger than the 1.49 percent faced by the top income quintile. Interestingly, the tax from marrying is not higher, on average, for the lowest quintile with children than for those without children. Thus, more children lead to higher benefit losses when one marries but larger tax savings. The average lifetime net marriage tax rate varies substantially across states, from 1.53 percent in New Mexico to 3.99 percent in Hawaii. State marriage-tax differences arise due to a range of state-specific tax and benefit provisions, including, as discussed, Medicaid expansion under the ACA.

We exploit this state variation in the marriage tax rate to estimate the impact of marriage taxation on the probability of marriage initiation. Using data from the 2018 American Community Survey, we find a statistically and economically significant negative impact of the marriage tax, inferred via the SCF, on the likelihood of marriage initiation. Among 20- to 49-year-old in the 2018 ACS who were unmarried in 2017, a one percentage-point increase in the marriage tax rate decreases the probability of marriage for females with and without children by 3.69 and 1.12 percentage points, respectively. Similarly, for males with and without children, a percentage-point increase in the marriage tax rate decreases the probability of marriage by 0.21 and 1.54 percentage points, respectively. Our simulations show that absent marriage taxation, females and males with children and income in the bottom quintile would have 13.68 and 2.46 percentage point higher marriage initiation rates, respectively.

One of the major contribution of this work is the calculation of the net lifetime marriage tax, rather than the more commonly used current-year marriage tax that ignores future consequences of marriage. The results suggest that using the current-year marriage tax underestimates the impact of the marriage tax on marriage initiation. The marriage initiation

rate for females with children in the bottom income quintile would be 13.68 percentage points higher if the lifetime net marriage tax were set to zero, but removing the current-year marriage tax would only increase marriage initiation rates for this group by only 0.68 percentage points.

The results of this research suggest that the current welfare and tax systems actively discourage marriage initiation. Combining it with the results from the previous literature that suggests marriage is beneficial, especially for children, policymakers should work to redesign eligibility criteria to soften the impact of the marriage decision on lifetime wealth.

References

Alm, J. and Whittington, L. A. (1995). Does the income tax affect marital decisions? *National Tax Journal*, pages 565–572.

Alm, J. and Whittington, L. A. (1999). For love or money? the impact of income taxes on marriage. *Economica*, 66(263):297–316.

Alm, J. and Whittington, L. A. (2003). Shacking up or shelling out: income taxes, marriage, and cohabitation. *Review of Economics of the Household*, 1(3):169–186.

Altig, D., Auerbach, A., Higgins, P., Koehler, D., Kotlikoff, L., Terry, E., Ye, V., et al. (2020a). Did the 2017 tax reform discriminate against blue-state voters? *National Tax Journal*, 73(4):1087–1108.

Altig, D., Auerbach, A. J., Kotlikoff, L. J., Ilin, E., and Ye, Y. (2020b). Marginal net taxation of americans' labor supply. *NBER Working Paper*, (w27164).

Amato, P. R. (2005). The impact of family formation change on the cognitive, social, and emotional well-being of the next generation. *The future of children*, pages 75–96.

Anderson, G., Pearce, I., and Trivedi, P. (1976). Output, expected demand and unplanned stocks. *A Model of Output, Employment, Wages and Prices in the UK*, pages 21–40.

Auerbach, A. J., Kotlikoff, L. J., Koehler, D., et al. (2019). Us inequality and fiscal progressivity–an intragenerational accounting. Technical report, Boston University-Department of Economics.

Auerbach, A. J., Kotlikoff, L. J., Koehler, D., and Yu, M. (2017). Is uncle sam inducing the elderly to retire? *Tax Policy and the Economy*, 31(1):1–42.

Auerbach, A. J., Kotlikoff, L. J., and Koehler, D. R. (2016). Us inequality, fiscal progressivity, and work disincentives: an intragenerational accounting. *NBER Working Paper*, (w22032).

Barro, R. J. (1977). Unanticipated money growth and unemployment in the united states. *The American Economic Review*, 67(2):101–115.

Chade, H. and Ventura, G. (2002). Taxes and marriage: a two-sided search analysis. *International Economic Review*, 43(3):955–985.

Chien, N. (2019). Factsheet: Estimates of child care eligibility & receipt for fiscal year 2015. *Washington, DC: US Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.*

DeLeire, T. C. and Lopoo, L. M. (2010). *Family structure and the economic mobility of children.* Economic Mobility Project.

Dickert-Conlin, S. (1999). Taxes and transfers: their effects on the decision to end a marriage. *Journal of Public Economics*, 73(2):217–240.

Dickert-Conlin, S. and Houser, S. (1998). Taxes and transfers: A new look at the marriage penalty. *National Tax Journal*, pages 175–217.

Finkelstein, A. and Notowidigdo, M. J. (2019). Take-up and targeting: Experimental evidence from snap. *The Quarterly Journal of Economics*, 134(3):1505–1556.

Giannarelli, L. (2019). What was the tanf participation rate in 2016. *Urban Institute.*

Gibson-Davis, C. M., Edin, K., and McLanahan, S. (2005). High hopes but even higher expectations: The retreat from marriage among low-income couples. *Journal of marriage and family*, 67(5):1301–1312.

Ilin, E. and Terry, E. (2021). Policy rules database. *Federal Reserve Bank of Atlanta. Available at www.frbatlanta.org/economic-mobility-and-resilience/advancing-careers-for-low-income-families/policy-rules-database.aspx. . Last Accessed 4/21/2021.*

Inkmann, J. (2000). Misspecified heteroskedasticity in the panel probit model: A small sample comparison of gmm and sml estimators. *Journal of Econometrics*, 97(2):227–259.

Lang, K. and Zagorsky, J. L. (2001). Does growing up with a parent absent really hurt? *Journal of human Resources*, pages 253–273.

Lerman, R. I., Price, J., and Wilcox, W. B. (2017). Family structure and economic success across the life course. *Marriage & Family Review*, 53(8):744–758.

Lundberg, S. and Pollak, R. A. (2015). The evolving role of marriage: 1950-2010. *The Future of Children*, pages 29–50.

Lundberg, S., Pollak, R. A., and Stearns, J. (2016). Family inequality: Diverging patterns in marriage, cohabitation, and childbearing. *Journal of Economic Perspectives*, 30(2):79–102.

Matouschek, N. and Rasul, I. (2008). The economics of the marriage contract: Theories and evidence. *The Journal of Law and Economics*, 51(1):59–110.

McLanahan, S. and Sawhill, I. (2015). Marriage and child wellbeing revisited: Introducing the issue. *The Future of Children*, pages 3–9.

Moffitt, R. (1994). Welfare effects on female headship with area effects. *Journal of Human Resources*, 29(2).

Moussa, R. K. (2019). Heteroskedasticity in one-way error component probit models. *Econometrics*, 7(3):35.

Pagan, A. (1984). Econometric issues in the analysis of regressions with generated regressors. *International Economic Review*, pages 221–247.

Stuber, J. P., Maloy, K. A., Rosenbaum, S., and Jones, K. C. (2000). Beyond stigma: What barriers actually affect the decisions of low-income families to enroll in medicaid?

Waite, L. J. (1995). Does marriage matter? *Demography*, 32(4):483–507.

Whittington, L. A. and Alm, J. (1997). 'til death or taxes do us part: the effect of income taxation on divorce. *Journal of Human Resources*, pages 388–412.

Wilcox, W., Price, J., and Rachidi, A. (2016). Marriage penalized. does social-welfare policy affect family formation. *Institute for Family Studies, Charlottesville, VA).*

Yatchew, A. and Griliches, Z. (1985). Specification error in probit models. *The Review of Economics and Statistics*, pages 134–139.

Zissimopoulos, J. M., Karney, B. R., and Rauer, A. J. (2015). Marriage and economic well being at older ages. *Review of Economics of the Household*, 13(1):1–35.

A Appendices

A.1 Example of a Marriage Tax Calculation

The following example demonstrates how we measure the lifetime net marriage tax for SCF respondents. Consider a 30 year-old, Connecticut woman with two young children under the age of 12. She earns $27,000 per year and receives a variety of public-assistance benefits. Table A1 shows estimated dollar amount of lifetime transfer payments and tax liabilities for her and for her financial, but childless, clone.

If the woman doesn't marry, she pays $29,936 in expected lifetime taxes and receives $257,256 in expected lifetime benefits. To be precise, she receives, at different stages of her life, TANF, SNAP, Housing Voucher, SSI, Medicaid for adults and children, Medicare, Marketplace (ACA) subsidy, and CCDF childcare subsidy. The childless clone pays more in lifetime taxes and receives less in lifetime benefits because she has no children.

After marriage, the couple's combined tax liability and eligibility for benefit programs changes. Over the lifetime, the married couple receives less in TANF, SNAP, Housing Voucher, SSI, Medicaid, Medicare, and childcare benefits. This loss is partially offset by larger ACA subsidies and a decrease in lifetime taxes.

If the woman remains single, her lifetime net tax is -$227,320. Her childless financial clone's expected lifetime net tax is -$71,671. Together, these sum to -$298,991, which is $61,960 larger subsidy than the -$237,031 they would receive if they marry. Dividing $61,960 by the combined lifetime net resources (lifetime spending) of $1,078,969 of the two single adults results in a 5.74 percent lifetime net marriage tax for the clone couple.

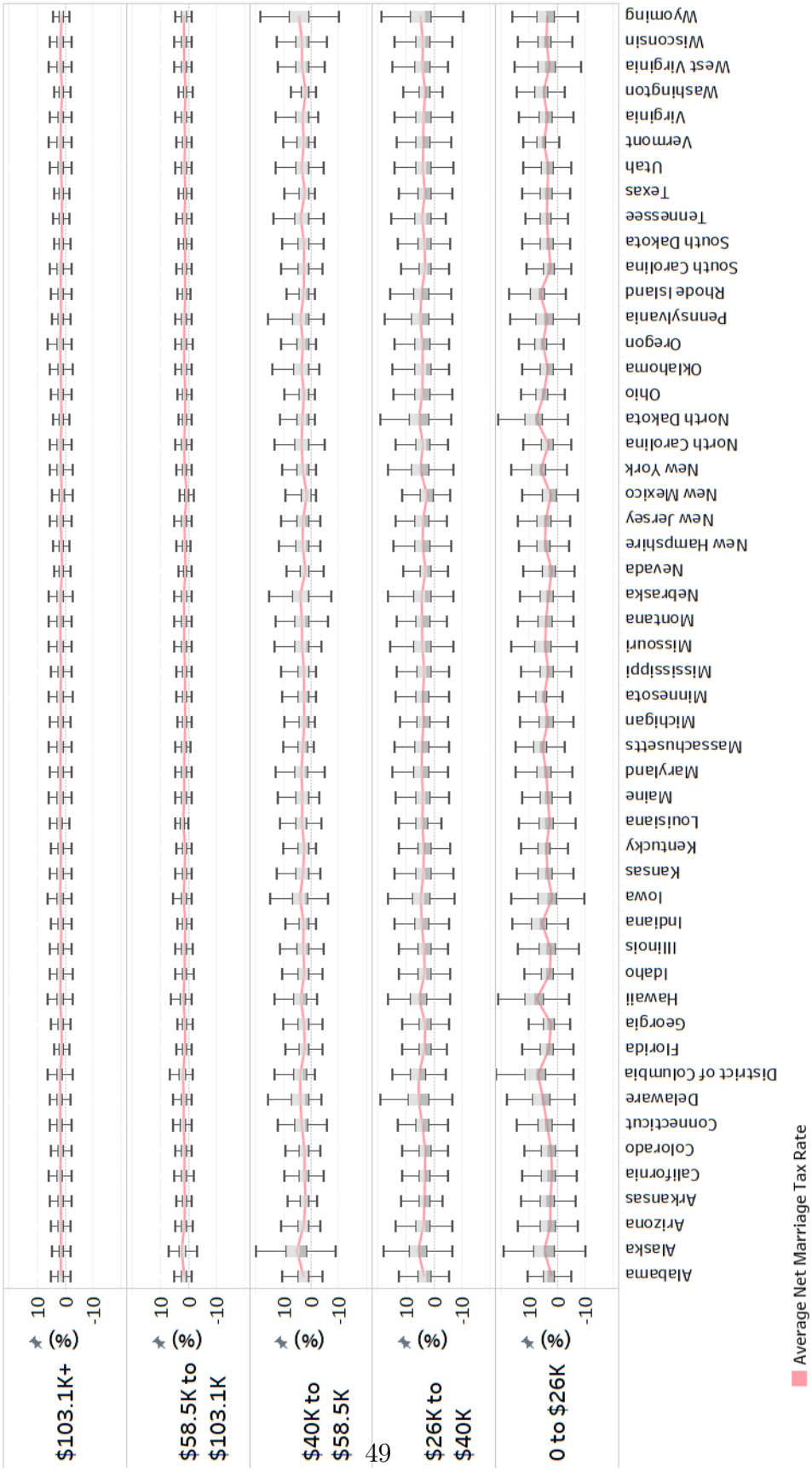
Table A1: Example Calculations of the Marriage Tax Rate

	Single Adult 1	Single Adult 2	Married	Δ**
TANF*	4,513	0	0	-4,513
SNAP	15,646	5,083	0	-20,729
Housing Voucher	15,649	13,938	20,226	-9,361
SSI	1,151	1,151	0	-2,301
SSDI	0	0	0	0
Social Security	14,595	14,595	28,352	-839
Medicaid for Adults	50,644	11,534	1,301	-60,877
Medicaid for Children	55,330	0	42,379	-12,950
Medicare	12,044	12,044	23,389	-699
ACA Subsidy	70,343	107,868	231,285	53,074
CCDF Subsidy	17,341	0	2,890	-14,451
Total Taxes	29,936	94,542	112,792	-11,686
Total Transfers	257,256	166,213	349,822	-73,646
Net Taxes	-227,320	-71,671	-237,031	61,960
Total Resources	389,989	389,989	779,978	0
Net Resources	617,309	461,660	1,017,009	-61,960

*Connecticut fiscal rules are applied to determine eligibility for benefit programs and corresponding benefits values
**Δ = Married - (Single Adult 1 + Single Adult 2)
Single Adult 2 is identical to Single Adult 1 except she has no children.

A.2 Variation in the Marriage Tax Across States

Figure A1: Variation in Marriage Taxes Across the U.S. States



A.3 Further Decomposition of the Marriage Tax Rate

Figure A2: Decomposition of the Marriage Tax by Income Quintile. Individuals with Children.

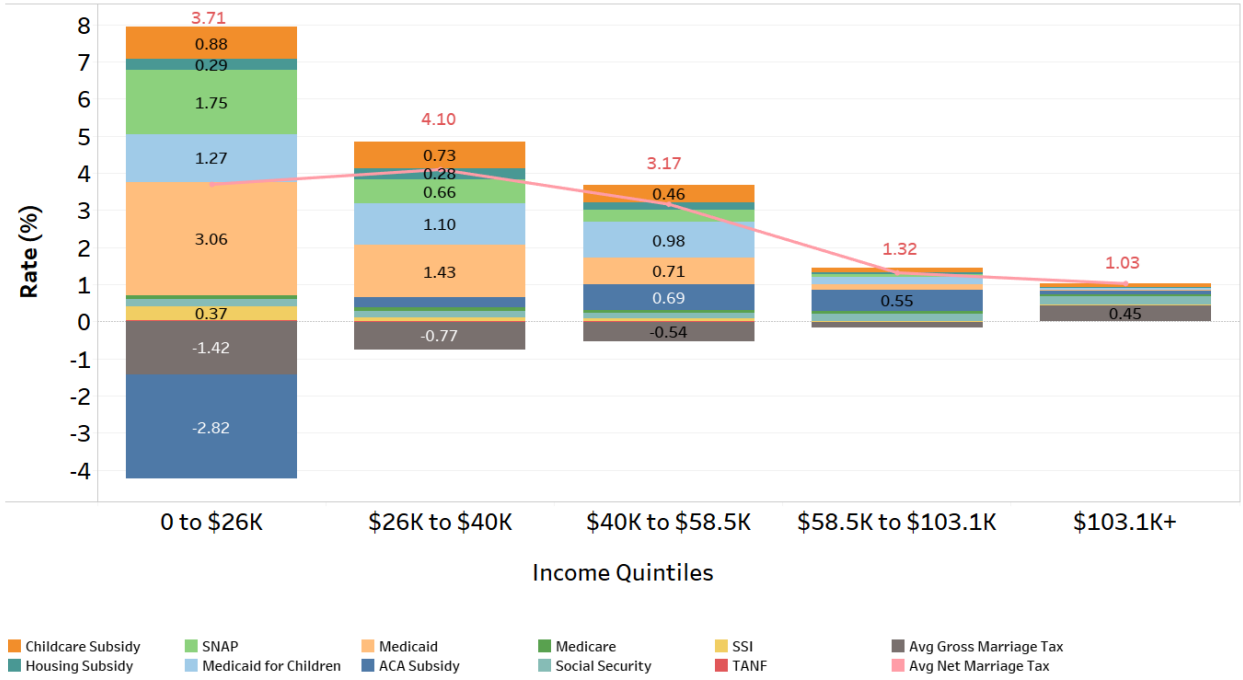


Figure A3: Decomposition of the Marriage Tax by Income Quintile. Individuals without Children.

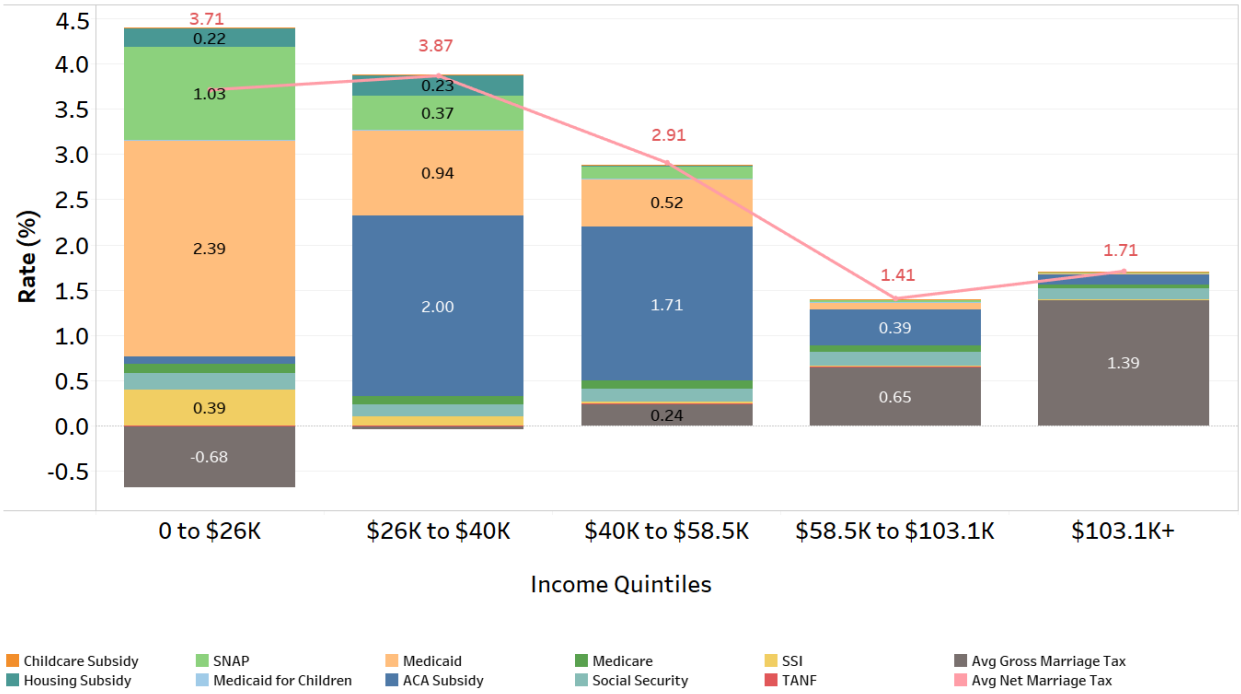


Figure A4: Decomposition of the Marriage Tax by Income Quintile. Maximums.

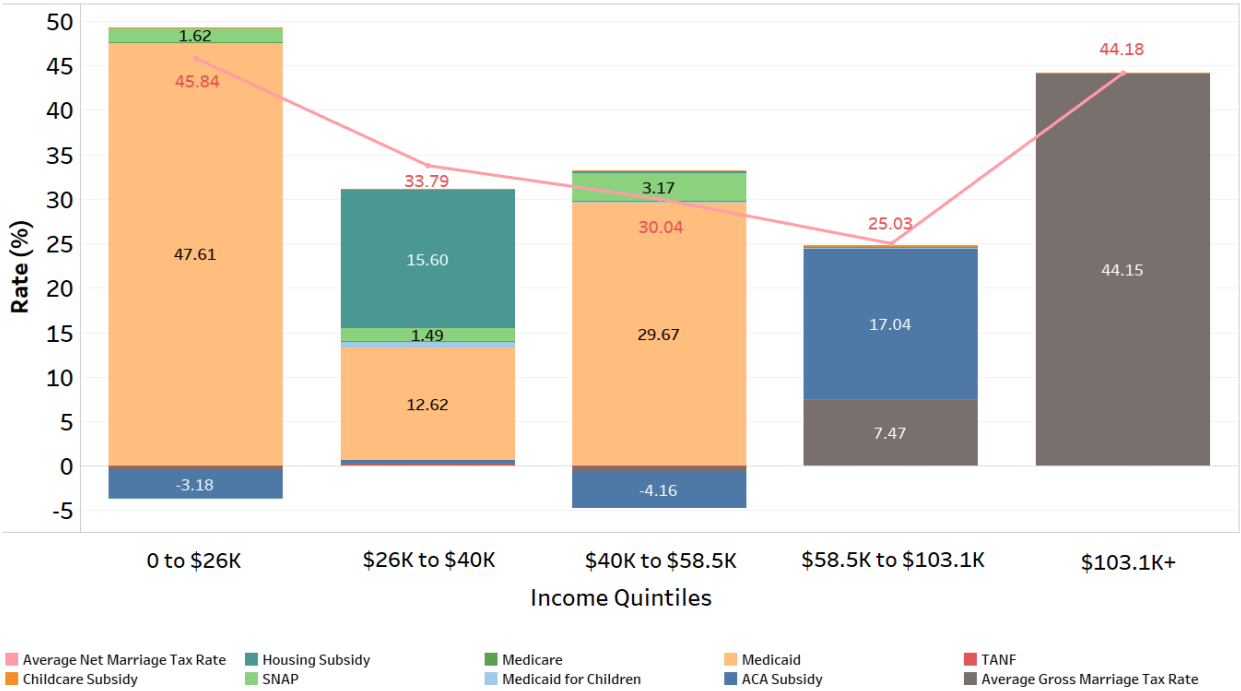
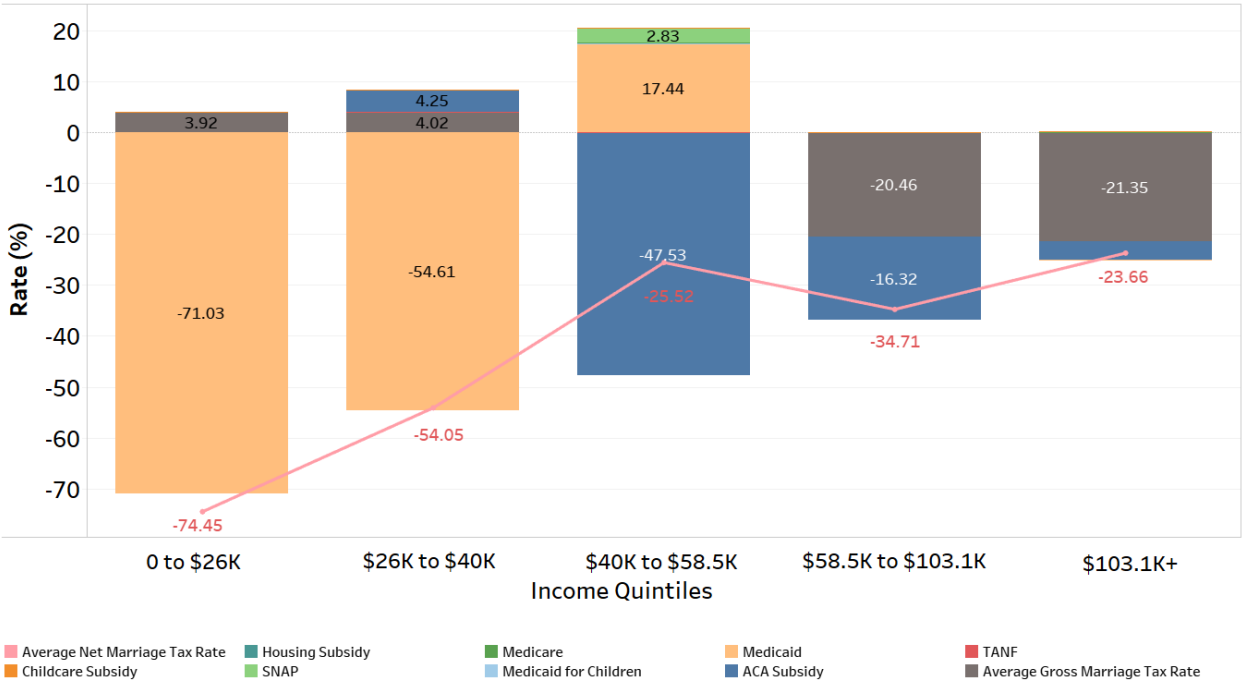



Figure A5: Decomposition of the Marriage Tax by Income Quintile. Minimums.