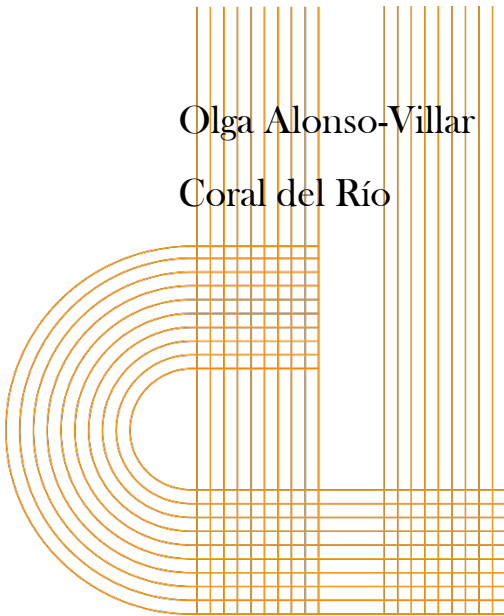# Universida_{de}Vigo

Poverty among Same-Sex Couple Families in the United States: Is There a Premium for Married Couples?

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Poverty among Same-Sex Couple Families in the United States:

Is There a Premium for Married Couples?[*]

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Abstract

Drawing on the official poverty thresholds and using the poverty rate, previous literature has shown that families headed by gay couples have lower unconditional levels of poverty than those headed by married different-sex couples. The latter have lower levels than those headed by lesbian couples, who in turn have lower levels than those of cohabiting different-sex couples. Our analysis takes a step forward by checking whether this ranking persists when: a) employing poverty indicators that allow moving beyond the poverty incidence, b) measuring not only absolute poverty but also relative poverty, and c) distinguishing between married and cohabiting same-sex couples to determine if they have the same marriage premium as different-sex couples do. We determine the poverty levels in the actual income distribution and in a counterfactual in which the groups are equal regarding basic characteristics that are associated with poverty. We do not find a marriage premium for same-sex couples. Married same-sex couples tend to have more conditional poverty than their cohabiting peers do when we move beyond the poverty incidence, with differences among these two groups in the very low tail of their income distributions.

JEL Classification: D31, D63, J12, J15, J16

Keywords: Economic poverty, lesbian couples, gay couples, marriage

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1. Introduction

Not until around 2010 did scholarship begin to document the vulnerability of lesbian, gay, bisexual and transgender (LGBT) people and their children to poverty, a population that had been invisible in poverty studies until then (Albelda et al., 2009; Badgett et al., 2013; Prokos and Keene, 2010). More recent studies also sustain that, when dealing with poverty, the LGBT population is not a group to overlook (Badgett, 2018; Schneebaum and Badgett, 2019; Goldberg et al., 2020; Carpenter et al., 2020; Badgett et al., 2021; Martell and Roncolato, 2022).

Drawing on different data sets (including the American Community Survey, the Census, the Current Population Survey, the National Health Interview Survey, and the Behavioral Risk Factor Surveillance System Survey), this literature shows that poverty affects LGBT people at least as much as it does the rest of the population, which discards the stereotype of LGBT affluence that had prevailed previously. The poverty rate for lesbian couples is higher than it is for married different-sex couples (Albelda et al., 2009; Schneebaum and Badgett, 2019) and the poverty rates for either female or male same-sex couples with children are higher than for married different-sex couples with children (Prokos and Keene, 2010; Brown et al., 2010). Moreover, same-sex couples are more likely to be in poverty than married different-sex couples with similar characteristics are (Albelda et al., 2009; Schneebaum and Badgett, 2019). Furthermore, although self-identified gay men and lesbians do not seem to be at risk of poverty more than similar heterosexuals are, poverty especially affects some subgroups within the LGBT population, as is the case of bisexual people and transgender people (Badgett, 2018; Badgett et al., 2019; Carpenter et al., 2020; Badgett et al., 2021).

The situation during the COVID-19 pandemic also reveals that LGBT people are an especially vulnerable population. Drawing on the Household Pulse Survey, the Census Bureau (2021) reports that during the pandemic the percentage of LGBT adults who reported living in households with food insecurity almost doubled that of non-LGBT adults (13.1% vs. 7.2%). The percentage of LGBT adults with difficulties to pay usual household expenses was also 10 points higher than it was for other adults (36.6% vs. 26.1%).[1]

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[1] They were also more likely to be on governmental assistance, to take on debt to meet spending needs, to have high exposure to the virus due to by their concentration in particular industries, and to lack health insurance coverage (Martell and Roncolato, 2022; Wittington et al., 2020).

Thus far, the few studies that have explored monetary poverty among the LGBT population focused on whether the poverty rate of this group, or the subgroups within it, was higher than that of non-LGBT people. These studies provide the rates observed in the data and also determine the risk of poverty when accounting for factors that affect poverty, such as education, racial composition, and age, which tend to differ between LGBT and non-LGBT people. To do this, these studies often relay on probit or logit regression models to determine the corresponding probabilities together with the role each covariate plays (Prokos and Keene, 2010; Brown et al., 2016; Badgett, 2018; Schneebaum and Badgett, 2019). Some of them additionally decompose the poverty rate differential between two groups (for example, lesbian couples and different-sex married couples) into a composition effect and another effect associated with the different protection that those characteristics give to each group (Schneebaum and Badgett, 2019).

However, when measuring a group's poverty level, one may be interested not only in its incidence—that is, the percentage of individuals below the poverty line that the poverty rate illustrates—but also its intensity. How far is the LGBT population from the poverty line? Additionally, one may wonder whether inequality among the poor is stronger for LGBT people than it is for the rest of the population. Although these questions are central in poverty measurement (Sen, 1979; Jenkins and Lambert, 1997; Foster et al., 2010), to the best of our knowledge, they have not been explored for this group beyond offering some income-to-poverty ratios for families with children (Prokos and Keene, 2010).

In this paper, we aim to delve deeper into the monetary poverty of male and female same-sex couples and their families in the United States, as compared to that of families headed by different-sex couples, accounting for the three poverty dimensions mentioned: incidence, intensity, and inequality among the poor.

In particular, we seek to unveil if marriage protects same-sex couples from poverty as it does different-sex couples. Thus far, the literature has shown that the poverty risk is lower for married heterosexual couples than it is for cohabiting heterosexual couples with similar characteristics (Badgett, 2018; Schneebaum and Badgett, 2019). There are several reasons relationship status can influence heterosexual couples' vulnerability to poverty (Badgett, 2018). Individuals may be more prone to marry when reaching a certain income level and their parents may even financially support them. Once they are married, they may have incentives to follow a model in which one spouse

specializes in paid work and the other spouse works part time and assumes most of the household responsibilities (especially if the fiscal system penalizes two-income couples). Given the marriage wage premium that exists for heterosexual men and considering the persistent gender wage gap, specialization may result in higher family income (at the expense of the women's penalty). In addition, marriage opens access to some public benefit programs that help support families and to health insurance coverage (Badgett, 2010). However, marriage may also convey disadvantages. Specialization within the married couple may involve more vulnerability against unemployment shocks. On the other hand, the tax system and the access to welfare may sometimes make it harder for married couples than for single-parent families (Horn, 2001).

From the above, it is not obvious ex-ante whether the net effect of all these factors will be the same for same-sex couples as it is for different-sex couples, given their different degrees of specialization, labor attachment, and genderization (Lepel, 2009; Jepsen and Jepsen, 2015; Del Río and Alonso-Villar, 2019). Previous studies on poverty did not distinguish married from cohabiting couples among the LGBT population because same-sex marriage was not legal nationwide until 2015 (although it had been legal in some states earlier),[2] which limited available data. In this paper, we aim to fill this gap by exploring if the marriage premium detected for heterosexual couples also exists for same-sex couples.

To quantify poverty we use the FGT indices (named after Foster, Greer and Thorbecke, 1984), which allow us to move beyond the poverty rate. Some of these indicators account for the three poverty dimensions mentioned above simultaneously, whereas others look at them separately. Along with the poverty levels in the actual income distribution, we estimate the poverty levels of the groups as if they are equal regarding basic characteristics associated with poverty. To build this counterfactual income distribution, we follow two methods, nonparametric (Alonso-Villar and Del Río, 2022) and parametric (DiNardo et al., 1996), which allows us to check the robustness of our findings. We also determine the contribution of each covariate to explain the difference between the poverty level in the actual distribution and the parametric counterfactual, accounting for the three dimensions previously mentioned. To do this, we follow Gradín's (2013) proposed method, based on the Shapley value, which does not depend on the order in which the covariates are incorporated in the analysis, thus improving DiNardo and coauthors' method.

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[2] The first state to legalize it was Massachusetts in 2004.

Additionally, we check the robustness of our findings documenting not only absolute poverty, which is the usual approach in US studies and captures extreme poverty, but also relative poverty, which is the common approach in European countries.[3] In the relative approach, the poverty line is a percentage (usually 50% or 60%) of the living standards in society (usually proxied by the mean or median income). In the absolute approach, the poverty line represents the money necessary to buy a basic consumption basket. Regardless of whether we measure absolute or relative poverty, if we want to move beyond the poverty rate and account for poverty intensity, we need to move from the family or household income distribution to the individual income distribution, which requires using an equivalence scale. To measure relative poverty, we use the square root, which is most often used in distributive analysis in the US (Duclos and Gregoire, 2002; Brady and Kall, 2007; Fisher et al., 2013). However, to address absolute poverty in the US, we have to use a different scale. This paper uses a method to determine the implicit equivalence scale behind the official poverty line (Blackorby and Donaldson, 1980; Rodgers and Rodgers, 1991). Once we have the individual income distribution, we can apply different poverty indicators to it.

2. Background

2.1 Poverty by Sexual Orientation

In the US, the official poverty line is an absolute line showing the minimum income that a family needs to buy a basic food basket. This line varies with family size, composition, and the householder's age and is the reference most frequently used in poverty analysis, despite the critiques this approach has received (Michael et al., 1997; Badgett, 2018).[4] When measuring poverty, the Census Bureau does not count unmarried partners who live together as a family (the cohabiting partner is excluded from the family unit). To address this limitation, studies that explore poverty by sexual orientation extend the definition of family to include cohabiting couples, either

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[3] As Foster (1998) discusses, relativities and absolutes enter into poverty measurement in different ways (including the thresholds and equivalence scales used to identify the poor, decomposability across population subgroups, and invariances against changes in incomes or population size), although the most important consideration involves the poverty line. Poverty is said to be relative when the cutoff is a percentage of a standard of living and is absolute when the cutoff is fixed regardless of the economic situation, which implies that it does not change over time (except for a price rise), although it requires the use of exchange rates in cross-country comparisons. We follow this widely accepted perspective and use the terms relative and absolute poverty to refer to the line.

[4] An alternative measure is the supplemental poverty indicator, which is less used than the official poverty measure partly because it requires information not always available in data sets, especially in those that allow identifying gay men and lesbian women.

homosexual or heterosexual, and the children living with them (Prokos and Keene, 2010; Schneebaum and Badgett, 2019).

Following this idea and using the 2010-2014 American Community Survey (ACS), a data set often employed because of the relatively large sample size it provides for same-sex couples,[5] Schneebaum and Badgett (2019) document that unmarried different-sex couples have a higher poverty rate than lesbian couples, who in turn have a higher rate than married different-sex couples, who in turn have a higher rate than gay male couples. As these authors show, the factors that protect same-sex couples against poverty are their higher education levels and employment rates, together with their lower presence of children in the household. After controlling for these and other factors that affect poverty, same-sex couples are more likely to be poor than different-sex married couples (although no more than different-sex unmarried couples).

Other studies delve deeper into the group of LGBT people to explore whether poverty affects some subgroups more than it does others. These investigations draw on surveys that, although providing smaller sample sizes than the ACS, allow for identifying not only gay men and lesbian women in couples but also those who are unpartnered. Drawing on the 2013-2016 pool sample of the National Health Interview Surveys (NHIS), Badgett (2018) finds that, although self-identified lesbians and gay men are not more likely to be poor than heterosexuals with similar characteristics are, bisexual women and men (and also single childless gay men) are.[6] Using the Behavioral Risk Factor Surveillance System Survey from 2014 to 2017, which allows distinguishing between cisgender and transgender individuals for 35 states, Badgett et al. (2019) also document that the probability of being poor for cisgender gay men and lesbian women do no differ from their heterosexual counterparts'.[7] The higher vulnerability of LGBT people to poverty arises mainly from transgender people and, to a much lower extent, cisgender bisexual women (the poverty rate of cisgender bisexual men does not differ from that of cisgender heterosexual men after accounting for characteristics).

Another topic addressed in this literature, although only scarcely, is whether children in same-sex couples are exposed to a higher risk of poverty than those in other couple types. Drawing on the

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[5] The ACS is also employed in other studies involving same-sex couples, especially when analyzing wages and occupations (Tilcsik et al., 2015; Del Río and Alonso-Villar, 2019; Jepsen and Jepsen, 2022).
[6] In this study, individuals are considered to be in poverty if their family income is below the corresponding official poverty threshold. Unlike the ACS, the NHIS considers the two members of a cohabiting couple as a family.
[7] In this case, an individual is in poverty if their household income is below the official poverty line.

2000 Census, Prokos and Keene (2010) show that lesbian and gay couples with a least one child under 18 living with them have a higher risk of poverty than married different-sex couples with children do,[8] although they have a lower risk of poverty than cohabiting different-sex couple families do. The disadvantage of lesbian families with children with respect to married heterosexual families seems to go beyond age, education level, and employment patterns, whereas the disadvantage of gay families with children rests on their lower education level. In contrast, the lesbians' advantage with respect to cohabiting different-sex families is fully explained by education whereas the advantage of gay families goes beyond age, education, and employment patterns. All this suggests that lesbian families are especially vulnerable to poverty. Using the 2010-2013 pool data from the Current Population Survey, Brown et al. (2016) also find that lesbian couple families have higher poverty rates than different-sex married couple families do, using the supplemental poverty measure (above 6 percentage points more), although the difference is not statistically significant, perhaps due to the small sample size of children in lesbian families, as the authors acknowledge.

2.2 On Measuring Poverty

The literature discussed thus far measures poverty at either the individual or household/family level depending on whether the LGBT population is identified based on self-reported information or instead inferred from information about the householder's gender and that of the partner. This means that some studies calculate the proportion of families headed by individuals of a given sexual orientation who are below the poverty line, whereas others calculate the proportion of LGBT individuals (usually adults) who are below the poverty line. Consequently, when measuring poverty by sexual orientation, the total population that poverty affects is often underestimated given that the number of individuals in poor households is not accounted for (beyond including this as a covariate in econometric analysis). In other words, in analyses at the family level, a family of four has the same effect on the poverty rate as a family of two. However, one may be interested in determining not only the proportion of families headed by same-sex or different-sex couples who are below the poverty line but also the proportion of individuals (including children) who live in those poor families.

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[8] Albelda et al. (2009) and Badgett (2013) also document these findings.

In the income distribution literature, poverty analysis is usually conducted at the individual level, although the family (or the household) unit is used as the reference to determine the household members' well-being. This paper follows this approach and accounts for all the individuals who live in poverty. To determine the family members' well-being, usually measured in terms of income,[9] many scholars adjust the family's income by its needs, which depends on its size and composition. To do that, they use equivalence scales, which allow one to determine the number of equivalent adults in that family. The equivalent income of each individual is obtained by dividing the total family income by the number of equivalent adults. This procedure permits transforming a variable, income, determined at the family level, into an individual income distribution, to which different poverty indicators can be applied.

In the US context, the equivalence scale most often employed in distributive analysis is the square root, so that a family or household income is divided by the square root of its size (Duclos and Gregoire, 2002; Brady and Kall, 2007; Fisher et al., 2013). Regarding the relative poverty line most often employed for this country, scholars set it at one-half of the median income (Smeeding, 2016).[10] According to this approach, an individual is poor if their (equivalent or adjusted) income is below a poverty line that changes when that society's circumstances, reflected on the median income, change.

However, most US poverty studies do not follow a relative approach but an absolute approach, usually taking the official poverty line. In this case, to identify the poor, it is not necessary to use equivalence scales because all the individuals who live in a family whose total income is below the poverty line for that family (established based on family's size and members' ages) are classified as poor. However, as we will explain, if we are interested in looking at other dimensions of absolute poverty, such as its intensity or the combination of incidence, intensity, and inequality among the poor, we need to build an individual income distribution using the scale equivalence behind the official poverty line (Blackorby and Donaldson, 1980; Rodgers and Rodgers, 1991).

This paper estimates poverty in the US by sexual orientation using the FGT poverty indices (Foster et al., 1984), which allows looking at poverty beyond its incidence. These poverty measures are

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[9] Some studies use consumption rather than income.

[10] This line is also employed in cross-national comparisons that include the US (Findlay and Wright, 1996; Brady and Kall, 2007). Other studies set the line at 60% of the median income, which is the usual poverty line for European countries, and/or adjust income using the OECD equivalence scale (Findlay and Wright, 1996; Wimer and Smeeding, 2017).

often employed in European studies, although they are barely used in US studies, perhaps because the absolute approach that has dominated the latter is focused on identifying the poor. We use both relative and absolute poverty lines, which allows checking the robustness of our findings.

3. Data and Poverty Measures

Our data set comes from the 2015-2019 five-year sample of the American Community Survey that the IPUMS (Integrated Public Use Microdata Series; Ruggles et al., 2020) provides.[11] As already mentioned, the ACS provides a larger sample of gay men and lesbian women than alternative data sets do, which is especially important when addressing poverty among minority groups. As is standard practice when using the ACS or the census, we can only identify sexual orientation for individuals living in couples. For the "first" family in a household, we have information about the householder's sex, whether they have a partner in the same dwelling, and the partner's sex. For the "second" or subsequent families in the household, we can only identify married couples (together with the sex of the two partners), which can be either same-sex or different-sex.[12] We opt to include these families in the sample because they probably share the dwelling with first families due to economic difficulties. In fact, we find that the percentage of people below the official poverty line is 12.2% for first families, 37% for second families, and above 50% for the remaining families. Our sample consists of 25,822 gay couple families (14,940 are married), 26,573 lesbian couple families (15,782 are married), and 3,488,855 different-sex couple families (3,153,782 are married; the remaining category consists of families headed by unpartnered individuals).

A family's total income is obtained aggregating all pre-tax incomes its members received during the 12 months prior to the interview.[13] To identify the poor, we follow two approaches. First, we label as poor those individuals who belong to families with incomes below the official poverty

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[11] All dollar amounts of the 5-year sample are standardized to dollars in 2019.

[12] Individuals living in second and subsequent families represent around 3.4% of the total population (after using the corresponding weights). For these families, we cannot identify the householder. We identify the sex of the first person that appears in that family according to the data and the sex of her/his spouse (if the latter lives in the same household). If the first person does not have a partner in the house, we move to the second person and repeat the process. The percentage of individuals living in second and subsequent families is larger for same-sex couple families (2.1%) and uncoupled families (9.9%) than it is for different-sex couple families (0.1%).

[13] Income includes wages, commissions, bonuses, and tips; self-employed income; interests, dividends, net rental income, and royalty income; social security retirement; supplemental security income; public assistance and welfare payments from the state or local welfare office; retirement income, pensions, survivor, and disability pensions; and unemployment compensation, child support, and Veterans' payments.

threshold that corresponds to that family.[14] Along with this absolute approach, we also quantify poverty using a relative approach according to which an individual is poor if their adjusted family income is below 50% of the adjusted median income, which is a common relative poverty line in the US (Smeeding, 2016), using the square-root equivalence scale.[15] This individual (adjusted) income distribution allows determining not only poverty incidence (i.e., the proportion of individuals who are below the poverty line) but also poverty intensity (i.e., how far from the line poor individuals are) and the combination of incidence and intensity with the inequality among the poor.

When following instead the absolute approach, studies do not usually build this individual adjusted income distribution because most studies in the US focus on poverty incidence, which only requires identifying of the poor. This paper departs from those studies and builds an individual income distribution compatible with the official poverty measurement. Thus, drawing on Blackorby and Donaldson (1980) and Rodgers and Rodgers (1991), we divide the family income by the number of adult equivalents obtained as the quotient between the official poverty threshold for that family and the threshold of a single-person family. Then, we assign this adjusted income to each family's members.

After determining the adjusted income distribution, either in the absolute case or the relative one, we apply to it the FGT indices (Foster et al., 1984). Let us assume that $(y_1,...,y_p,...,y_n)$ represents the individual income distribution after the corresponding adjustment, where individuals are ranked from the poorest to the richest and p is the individual with the highest income among the poor. This means that we have p poor individuals of a total population of n. The FGT indices can be calculated based on poverty gaps ($g_i = z - y_i$) or normalized poverty gaps ($\Gamma_i = \frac{z - y_i}{z}$), where z stands for the poverty line and y_i is individual i's income. We opt to use normalized gaps because when using absolute poverty lines, it seems most convenient (Rodgers and Rodgers, 1999). Thus, a gap g_i of, for example, $1000 can be thought of essentially challenging depending on the family poverty threshold. Additionally, in the absolute case, using normalized gaps ensures that the FGT

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[14] The ACS does not provide information about near-cash transfers or taxes, which prevents us from quantifying poverty based on the supplemental poverty indicator.
[15] To check the robustness of our results, we also use the relative poverty line and equivalence scale usually employed in Europe (60% of the median income and the OECD scale, respectively).

indices are the same whether they are obtained using the adjusted income distribution and setting the official poverty line at the single-person family threshold, or instead the unadjusted income distribution considering the official poverty threshold that corresponds to each family. In fact, if we denote by y_i^f the unadjusted income of an individual i who belongs to family f and z_1 and z_f are, respectively, the official family poverty thresholds for a single-person family and for family f, then $\Gamma_i = \dfrac{z_1 - \dfrac{y_i^f}{\left(z_f / z_1\right)}}{z_1} = \dfrac{z_f - y_i^f}{z_f}$.

The FGT indices in their normalized version have the following expression:

$$\mathrm{FGT}_\alpha = \frac{1}{n}\sum_{i=1}^{p}\left(\frac{z - y_i}{z}\right)^\alpha,$$

where $\alpha \geq 0$ is an inequality aversion parameter. The higher the value of this parameter, the higher the sensibility of the index to the fact that some poor individuals are in a worse situation than other poor people are. When $\alpha = 0$, the index becomes the well-known headcount ratio or poverty rate. When $\alpha = 1$, the index represents the average poverty gap (over the whole population). Furthermore, when $\alpha > 1$, the index incorporates the three dimensions of poverty (Sen, 1979): incidence, intensity and inequality among the poor.

Note that some poverty measures are not defined for zero incomes or do not behave well for negative incomes (Sandoval and Urzúa, 2009). To address this problem, scholars usually delete these observations or recode those income values (Findlay and Wright, 1996; Duclos and Gregoire, 2002; Urzúa et al., 2007). To use the FGT indices (which do not behave well for negative incomes), we follow Jenkins and Lambert (1997) and set negative and zero incomes at the minimum income determined for positive incomes. The estimates for the FGT indices, together with the statistical inference, are obtained using the Distributive Analysis Stata Package (DASP), freely available at http://dasp.ecn.ulaval.ca/ (Araar and Duclos, 2021).

4. Poverty Levels by Sexual Orientation

To undertake our analysis, we group individuals based on whether they live in same-sex couple families (distinguishing between female and male headed) or different-sex couple families. Both

family types are additionally partitioned by marital status. The remaining population lives in families headed by individuals who do not live with a partner.

4.1 A First Look at the Density Function of the Adjusted Income Distribution

Figure 1 displays the density function of the adjusted income distribution for different family types using both the absolute and the relative approach (top and bottom panel, respectively).
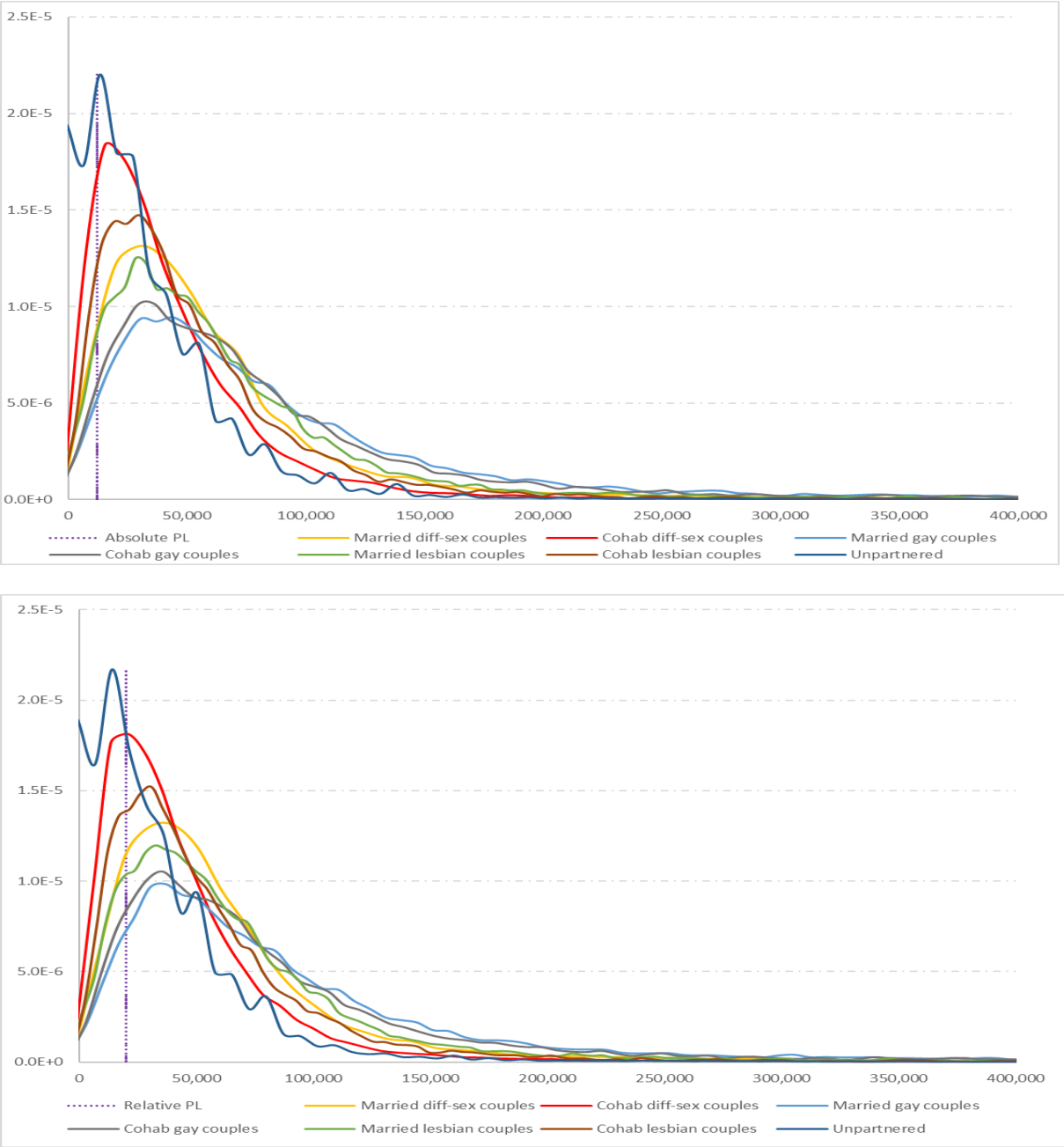

Figure 1. Density function of the adjusted income distribution for different families based on absolute poverty (top) and relative poverty (bottom)

The corresponding poverty lines are also included ($12,261 in the absolute case and $20,000 in the relative one).[16] We see that with the two approaches the density functions are quite similar, which suggests that when adjusting income, the two equivalence scales behave similarly. The main difference between the two poverty approaches rests on the threshold, which is much lower in the absolute case.

Families headed by unpartnered individuals have the largest proportions of individuals below the poverty line whereas among coupled families, those with cohabiting different-sex partners have the highest poverty rates and married gay couple families have the lowest rates, which is in line with previous studies (Prokos and Keene, 2010; Schneebaum and Badgett, 2019). These findings remain whether we use an absolute approach or a relative one.[17]

4.2 Incidence, Intensity, and Inequality among the Poor

The density functions shown above provide an initial picture of the size of the poor population for different family types. However, to have a more precise idea of the poverty situation of each group, we should not only look at the poverty rate (which is equal to the FGT_0 index) but also at poverty intensity (FGT_1) and at the combination of incidence, intensity, and inequality among the poor (as, for example, with the indices FGT_2 and FGT_3). Figure 2 provides these indicators in the absolute and the relative case (the corresponding values and confidence intervals are provided in the Appendix, Table A1). The index FGT_2 is popular in the income distribution literature, whereas the FGT_3 index is used less often because it involves a more extreme inequality aversion. The latter is included in the chart to provide a more complete view of the patterns detected with the former.

We see that families headed by unpartnered individuals are by far the ones with more poverty, regarding both absolute and relative poverty. Thus, for example, 25.1% of individuals in these families are below the absolute poverty line ($FGT_0 = 0.2509$) and the average poverty gap (over all individuals in families with unpartnered householders) represents 12.7% of the absolute poverty line ($FGT_1 = 0.1270$). The FGT_2 and FGT_3 indices are also much higher for them. However, given our interest in the effect of sexual orientation, in what follows, we will focus on individuals who live in families that couples head.

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[16] Given that single person-families have two official poverty lines depending on individual's age, we use the smallest threshold for 2019.

[17] Although not shown here, these rankings also remain when we use the OECD equivalence scale and set the poverty line at 60% of the median income, which is common practice in European countries.
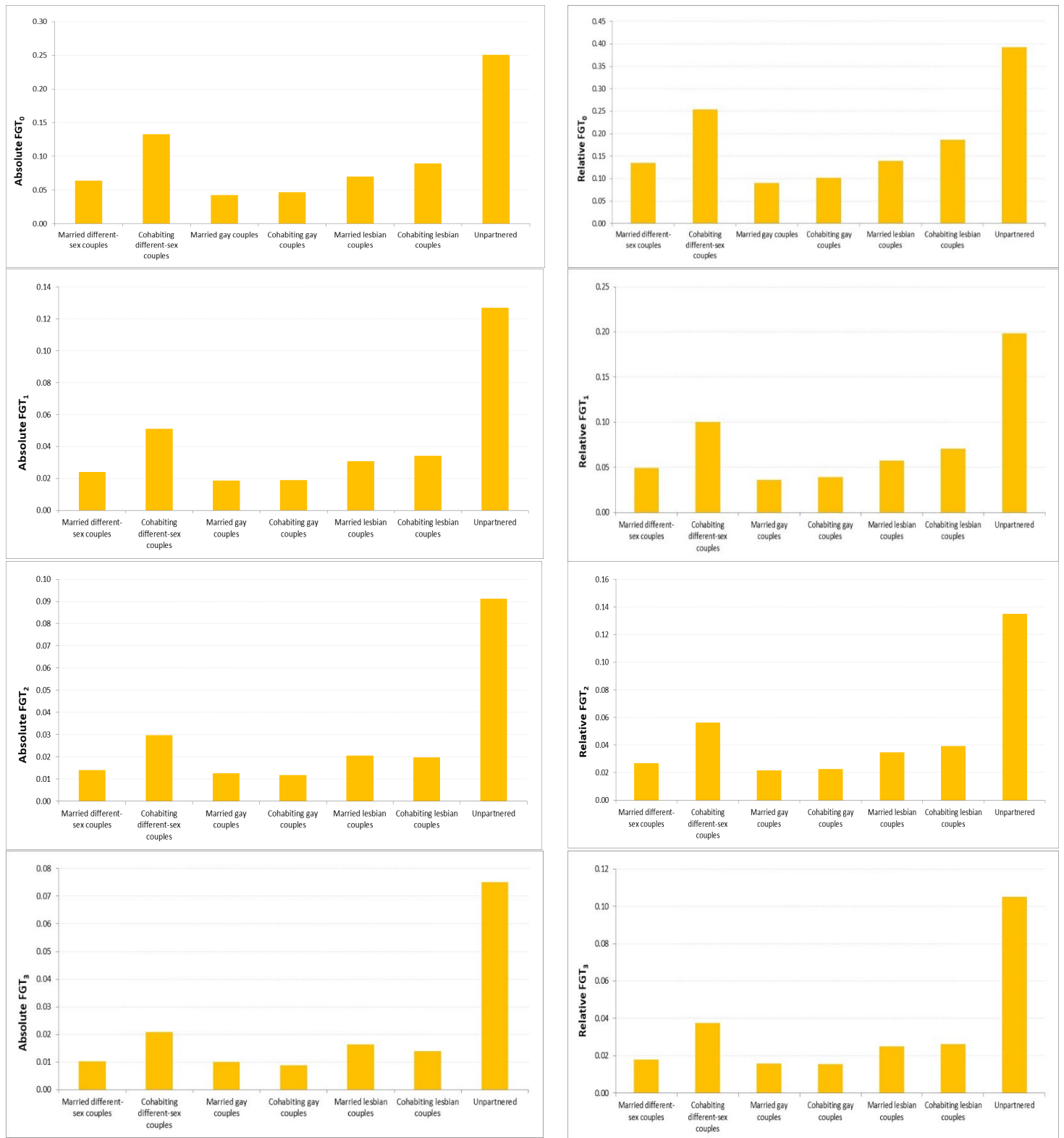
Figure 2. Absolute and relative poverty indices for different family types

The ranking of the various couple-headed families is the same regarding incidence (FGT_0) and when we include intensity (FGT_1). This pattern holds whether we follow an absolute approach or a relative one. For example, the ranking with the absolute FGT_0 index (in ascending order) is: families headed by married gay couples (4.24% of this population is poor), followed by families headed by cohabiting gay couples (4.65%), married different-sex couples (6.38%), married lesbian couples (6.97%), cohabiting lesbian couples (8.96%), and cohabiting different-sex couples (13.31%). According to the absolute FGT_1 index, the average poverty gap is 1.86% of the absolute poverty line for married gay couples, 1.89% for cohabiting gay couples, 2.39% for married different-sex couples, 3.07% for married lesbian couples, 3.42% for cohabiting lesbian couples, and 5.11% for cohabiting different-sex couples.

Married and cohabiting gay couples have less poverty than do the remaining couples, not only with the FGT_0 and FGT_1 indices but also with the index FGT_2, the differences being statistically significant.[18] However, married gay couples do not always have lower poverty than their cohabiting peers. In fact, the former have more poverty than the latter with the absolute FGT_2 and FGT_3 indices (and with the relative FGT_3). In any case, the differences between these two groups are not statistically significant in the absolute case with the FGT_0, FGT_1, FGT_2, and FGT_3 indices, whereas in the relative case, they are significant with FGT_0 and FGT_1 (with less poverty among married gay couples), but not with FGT_2 and FGT_3.

The advantage of married lesbian couples regarding their cohabiting peers also diminishes, or even disappears, when accounting for the inequality among the poor (especially with the absolute approach, which captures more extreme poverty). In fact, the differentials between married and cohabiting lesbian couples regarding FGT_0 and FGT_1 are statistically significant in both the absolute case and the relative one. However, they are not statistically significant with the absolute FGT_2 index, and with the absolute FGT_3 index, married lesbian couples even have more poverty than cohabiting lesbian couples do. With the relative FGT_3 index, their differences are not statistically significant either.

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[18] The differences are also significant with the FGT_3 index, except between married heterosexual couples and married gay couples with the absolute FGT_3 index.

All of this suggests there may be more heterogeneity among poor married lesbian and gay couples than among their cohabiting peers, which implies that when using indices with high sensitivity to the lowest incomes, poverty may be higher for the married ones.

To check the robustness of our results, we also estimate relative poverty using different lines depending on a family's place of residence. To do this, we distinguish among eight residential locations, accounting for the four census regions and whether the families reside in large metropolitan areas (at least 1 million inhabitants in 2010). Setting each line at 50% of the median income of the corresponding territory, the estimated values for all poverty indices barely change regarding those obtained above, despite that, as shown in Table A2 in the Appendix, the distributions of the different family types across these eight territories differ (especially gay couples').

5. Comparing Poverty Levels after Controlling for Characteristics

To account for differences in (observable) characteristics that may explain why poverty differs across couple-headed families by sexual orientation (and marital status and gender), we build a counterfactual economy in which married/cohabiting gay couples, married/cohabiting lesbian couples, and cohabiting different-sex couples have the same attributes as married different-sex couples have. To build this counterfactual, we follow two methods: nonparametric (Alonso-Villar and Del, Río, 2022) and parametric (DiNardo et al., 1996; Gradín, 2013). These two methods require, first, partitioning each family type in several cells or subgroups, which results from combining a set of characteristics. Second, using a re-weighting scheme, which is not the same for the two methods, each group's cells are given the same weights they have in the reference group (i.e., married different-sex families), whereas individuals' incomes in those cells do not change. Thus, if a certain combination of characteristics is very likely among married different-sex couples, in the counterfactual economy, that characteristic combination will be also very likely for each of the other family types. In this way, we remove the differences among families that arise from differences in characteristics.

5.1 Control Variables and Counterfactual Methods

Using the nonparametric method, each cell's weight in a target group is replaced by that in the reference group (Alonso-Villar and Del Río, 2022). Namely, if we denote by z the vector of

covariates describing the cell and F is a dummy variable indicating family type, the re-weighting scheme for married lesbian families, for example, is the quoting between the frequency of married different-sex couples with those characteristics and the frequency of married lesbian couples with the same characteristics: $\Phi_z = \dfrac{f(z|F = \textit{married diff-sex})}{f(z|F = \textit{married lesbian})}$. To build the counterfactual economy, the same procedure has to be followed for the remaining families (i.e., cohabiting lesbian couples, married and cohabiting gay couples, and cohabiting different-sex couples). This implies that in the counterfactual all family types have the same characteristics.

When using instead the parametric method (DiNardo et al., 1996), re-weighting requires logit estimations. In this case, $\Phi_z = \dfrac{\Pr(F = \textit{married lesbian})}{\Pr(F = \textit{married diff-sex})}\dfrac{\Pr(F = \textit{married diff-sex}|z)}{\Pr(F = \textit{married lesbian}|z)}$, where the first term is approximated by the ratio of the married lesbian families' population to the married different-sex families' population in the sample, whereas the second term is obtained by estimating the probability of an individual whose family's attributes are equal to z to belong to a married different-sex family (rather than a married lesbian family) using a logit model: $\Pr(F = \textit{married diff-sex}|z) = \dfrac{\exp(z\hat{\beta})}{1+\exp(z\hat{\beta})}$, where $\hat{\beta}$ is the associated vector of estimated coefficients.

The parametric method allows us determining easily the contribution of each covariate to explain the difference between conditional and unconditional poverty. To do this decomposition, we follow Gradín's (2013) adaptation, which does not depend on the sequence in which the different factors are included.

These two re-weighting procedures work better when the combination of characteristics does not give rise to empty cells in a target group (e.g., married lesbian couples) whereas the corresponding cells have important weights in the reference group—the "out of support" problem. This implies that we should be careful about the number of factors/categories used in the analysis.

The literature on poverty identifies several factors that influence a person's or a family's chances of being economically vulnerable (Brady and Kall., 2008; Schneebaum and Badgett, 2019). Women tend to earn lower wages than men do, so that distinguishing among lesbian couples, gay couples, and different-sex couples seems pertinent, a distinction already contemplated in the definition of our groups. Differences in poverty could also exist if the householder's educational achievements differ by type of couple. Table A2 in the Appendix, which provides some descriptive

statistics, shows that there are indeed important differences in education among families, which implies this is a variable for which we should control. If younger couples are more likely among some family types, as is the case of same-sex couples, poverty levels could also vary. Besides education and age, another key characteristic is racial composition. Belonging to racial/ethnic minorities increases the probability of being in poverty because Black, Native American, and Hispanic workers tend have lower earnings than comparable Whites do (Paul et al., 2022; Alonso-Villar and Del Río, 2022), which increases their odds to be poor (Albelda et al., 2009). Given the disparities in racial/ethnic composition among family types, we also include this control in our analysis. Having children importantly predicts poverty as well, and the probability of having children is not the same for different- and same-sex couples.

We use family-level covariates, most of which involve only the householder.[19] Our list of controls is the following:[20]

- racial/ethnic composition (six categories: White householder and partner, White householder and non-White partner, Black householder, Asian householder, Hispanic householder, and other race householder),
- educational achievements (five categories: householder with less than high school, high school diploma, some college, bachelor's degree, and master's degree or higher),
- age structure (three categories: householder's age up to 35, between 36 and 55, and above 55), and
- presence of children in the household (two categories: at least one child below 18 years of age and none).

We acknowledge that other factors could also be included as control variables. However, this study only controls for the basic demographic factors, together with education, because the sample size of our target groups, married and cohabiting same-sex couples, is not so large as to give rise to cells with enough observations when including many characteristics simultaneously.[21]

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[19] Primary families have a householder but other families do not. In this case, we consider that the person of reference is the member of the couple with the highest income.

[20] The correlation between householder's race, education, and age and those of the partner is quite high, which explains why we focus on the householder.

[21] Being an immigrant is likely to increase the odds of being poor. This characteristic is contemplated in our analysis given that most recent immigration comes from Hispanics and Asians, two groups already considered in our racial/ethnic composition. Living in rural or small metropolitan areas and region of residence may also affect the odds

5.2 Our Findings

Figure 3 depicts the FGT_0, FGT_1, and FGT_2 indices in the two counterfactual economies, together with their values in the actual economy, both in the case of absolute and relative poverty. We find that the poverty level of families headed by cohabiting different-sex couples decreases after controlling for characteristics, whereas the poverty of families headed by either married/cohabiting gay couples or married lesbian couples increase. Unlike them, the poverty of cohabiting lesbian couples decreases slightly with some indices and barely changes with others. These patterns remain whether we measure poverty incidence, or poverty intensity (together with incidence), or if we combine these dimensions with the inequality among the poor. Our findings are also robust to the approach followed (absolute or relative) and the counterfactual method (parametric or nonparametric).

We also see that for gay couples (whether married or not), the estimated poverty in the parametric counterfactual is higher than in the nonparametric one. For gay couples, the parametric counterfactual cannot replicate the distribution of characteristics of the reference (married different-sex couples) as precisely as the nonparametric counterfactual does. When using the logit estimations, gay couples' poverty tends to be overestimated because the procedure allocates more couples with children to gay families than it should, according to the weight families with children have among different-sex couples. However, for the remaining groups, the two counterfactuals bring similar results. Given that the nonparametric counterfactual offers a better replication of the characteristics of the reference group for all the groups, in what follows we focus on this counterfactual, leaving the parametric one only for the factor decomposition analysis.

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of being poor, although our previous analysis shows that the poverty levels do not change. Other characteristics, such as being an unemployed or a part-time worker also affect the chances individuals have to escape poverty. Although the results are not shown here, when controlling for all these factors (together with education, age, racial composition, and presence of children at home), it is difficult for same-sex couples, especially cohabiting gay couples, to replicate the distribution of characteristics of married different-sex couples.
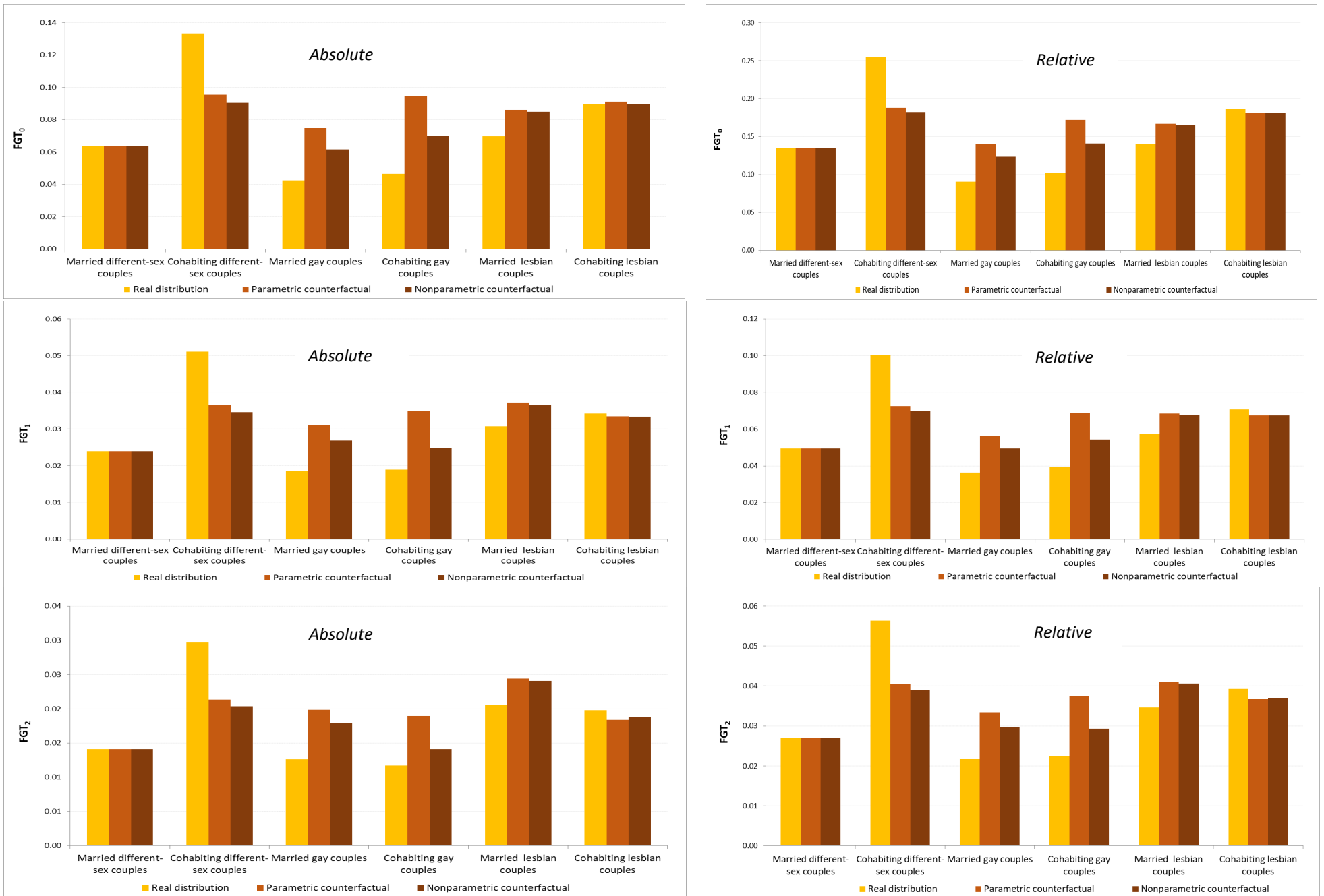
Figure 3. Absolute poverty (left) and relative poverty (right) in the actual income distribution and in the counterfactuals

Focusing on the nonparametric counterfactual, we find that the poverty levels of married/cohabiting gay couples do not differ much from those of married different-sex couples, although married gay couples tend to have more poverty than their heterosexual peers do when we move beyond poverty incidence within the absolute approach (Table A3 in the Appendix provide the confidence intervals).[22] This may indicate more extreme poverty among married gay couples than among married heterosexual couples, a situation that cannot be captured with the popular poverty rate. In contrast, the poverty levels of married/cohabiting lesbian couples are quite similar to those of cohabiting different-sex couples. Moreover, the poverty level of married/cohabiting lesbian couples and that of cohabiting different-sex couples is higher than that of either married different-sex couples or married/cohabiting gay couples, and the differences are statistically significant. This happens with various relative and absolute poverty indicators.[23]

Previous studies have documented the existence of a marriage premium for different-sex couples (Badgett, 2018; Schneebaum and Badgett, 2019). Our analysis does not reveal a marriage premium for gay couples. The poverty level of cohabiting gay couples (in the nonparametric counterfactual) is not statistically different from that of their married counterparts with the absolute FGT_0 and FGT_1 indices and is lower with the absolute FGT_2 index. (In the case of relative poverty, the FGT_0 index is higher for those who cohabite and the values of the FGT_1 and FGT_2 indices for the two groups are not statistically different.) We also do not find a marriage premium for lesbian couples. The absolute FGT_0 and FGT_1 indices for cohabiting lesbian couples are not statistically different from those of their married counterparts and the FGT_2 index is lower for those cohabiting. (In the case of relative poverty, the FGT_0 is lower for those married, the FGT_1 does not depend on marital status, and the FGT_2 is lower for those cohabiting.) Our analysis also suggests that the disadvantage of married same-sex couples regarding their cohabiting peers tends to increase when moving beyond the poverty incidence, and especially with the FGT_2 index. This may be because there is a

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[22] As opposed to previous studies, we do not find systematic higher conditional poverty for gay couples (when aggregating the married ones and those cohabiting) than for married different-sex couples. In the relative approach, with some indices, gay couples have more poverty, but with other indices, it is either the opposite or the differences are not statistically significant. This happens even when we include additional controls (employment status, immigration profile, city size, and region) in the nonparametric counterfactual. However, in the absolute case, gay couples have more poverty, and this difference is statistically significant when using FGT_1 and FGT_2.

[23] Except that married gay couples do not show an advantage with the absolute FGT_2.

higher proportion of individuals with very low earnings among married same-sex couples, which is a situation that the poverty rate cannot capture.

Figure 4 indicates each covariate's contribution to explain the difference between actual and conditional poverty (in the parametric counterfactual). For simplicity, the chart only shows the decomposition for the absolute FGT_2 index (the results are similar for the relative FGT_2 and when using other indices).
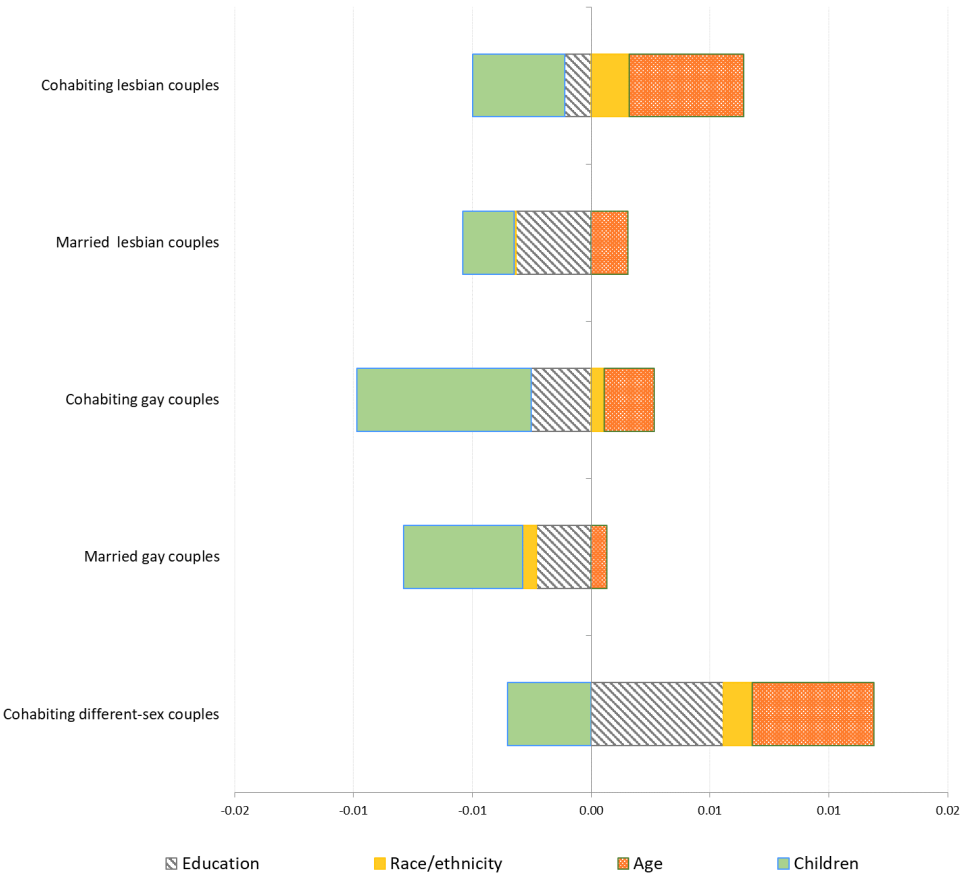
Figure 4. FGT_2 in the actual distribution minus FGT_2 in the counterfactual distribution and factors' contribution (absolute poverty)

The existence of a higher percentage of families not having children is the most important factor explaining the lower poverty of gay couples in the actual economy, followed by their higher educational achievements (the younger age of cohabiting gay couples penalizes them). However, that married lesbian couples have higher poverty than married different-sex couples do in the actual economy does not seem to arise from their characteristics (except that their younger age

does penalize them slightly). If more families headed by married lesbians had children at home and their education achievements were lower (to have the same characteristics as married different-sex couples do), their poverty levels would rise. This reflects married lesbian couples' economic vulnerability. The pattern for cohabiting lesbian couples is a bit different. An important part of their poverty in the actual distribution stems from their younger age. Their racial composition penalizes them as well (Black householders are more likely here than among married different-sex couples). Furthermore, although the presence of children is lower among these families than among married different-sex couples and their education achievements are slightly higher, these two factors offset the opposite effects of age and racial composition. This explains why the poverty levels of cohabiting lesbian couples barely change in the counterfactual. This set of characteristics does not explain their high poverty. Finally, note that poverty for cohabiting different-sex families seems to arise mainly from their lower educational achievements, their youth, and their greater racial diversity (with more Black- and Hispanic-headed couples), whereas the lower presence of children in these families protects them.

6. Final Comments

Drawing on the official poverty thresholds, previous literature showed that families headed by gay couples have lower unconditional shares of poor than those headed by married different-sex couples. The latter have lower shares than those headed by lesbian couples, who in turn have lower shares than those of cohabiting different-sex couples (Albelda et al., 2009; Prokos and Keene, 2010; Schneebaum and Badgett, 2019). Our analysis has taken a step forward by checking whether this ranking persists when a) employing poverty indicators that allow moving beyond the poverty incidence, b) measuring not only absolute poverty but also relative poverty, and c) distinguishing between married and cohabiting same-sex couples to determine if they have the same marriage premium as different-sex couples do.

Our research has revealed that the groups' ranking persists when looking at the groups' average poverty gap, embedded in the FGT_1 index, and when joining accounting for incidence, intensity, and inequality among the poor using the FGT_2. Moreover, we find that both married and cohabiting gay couples have lower poverty levels than married different-sex couples do. We also document the higher (respectively, lower) poverty levels of married and cohabiting lesbian couples compared

to married (respectively, cohabiting) different-sex couples. All these intergroup differences are statistically significant and robust to the poverty approach used (absolute and relative).

We have also shown that, if married/cohabiting lesbian couples had the same educational achievements, racial composition, age, and children as married different-sex couples have, lesbian couples would be more vulnerable to poverty than married different-sex couples, according to all of our poverty indices, independently of whether we use an absolute approach or a relative one, which shows the robustness of our findings. Unlike them, married/cohabiting gay couples have conditional poverty levels similar to those of married different-sex couples with some indicators, although with others, they have more poverty. The disadvantage of married gay couples with respect to their heterosexual peers seems to increase when moving beyond poverty incidence, something that cannot be captured with the popular poverty rate. This may indicate more extreme poverty among the former.

Regarding the marriage premium, we have documented it exists for different-sex couples using a wide range of poverty measures, thus complementing previous studies based on the poverty rate. We have additionally explored this premium for families headed by same-sex couples and found that in this case, the marriage premium is unclear. Married same-sex couples tend to have more poverty than their cohabiting peers when we move beyond the poverty incidence, and especially with the FGT_2 index, which suggests differences among these two groups in the very low tail of their income distributions.

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Appendix

Table A1. (Absolute and relative) FGT_0, FGT_1, FGT_2, and FGT_3 indices and confidence intervals in the actual distribution

	Absolute FGT0	[95% Conf. interval]			Relative FGT0	[95% Conf. interval]	
Married different-sex couples	.0638	.0636	.0640	Married different-sex couples	.1346	.1343	.1349
Cohabiting different-sex couples	.1331	.1322	.1340	Cohabiting different-sex couples	.2542	.2530	.2553
Married gay couples	.0424	.0396	.0452	Married gay couples	.0901	.0861	.0940
Cohabiting gay couples	.0465	.0430	.0501	Cohabiting gay couples	.1021	.0971	.1071
Married lesbian couples	.0697	.0665	.0729	Married lesbian couples	.1400	.1358	.1443
Cohabiting lesbian couples	.0896	.0850	.0941	Cohabiting lesbian couples	.1863	.1802	.1925
Unpartnered	.2509	.2504	.2514	Unpartnered	.3920	.3914	.3926
	Absolute FGT1	**[95% Conf. interval]**			**Relative FGT1**	**[95% Conf. interval]**	
Married different-sex couples	.0239	.0238	.0240	Married different-sex couples	.0494	.0493	.0496
Cohabiting different-sex couples	.0511	.0507	.0515	Cohabiting different-sex couples	.1004	.0998	.1009
Married gay couples	.0186	.0171	.0202	Married gay couples	.0363	.0343	.0382
Cohabiting gay couples	.0189	.0173	.0205	Cohabiting gay couples	.0394	.0371	.0417
Married lesbian couples	.0307	.0290	.0324	Married lesbian couples	.0574	.0552	.0595
Cohabiting lesbian couples	.0342	.0321	.0363	Cohabiting lesbian couples	.0708	.0679	.0737
Unpartnered	.1270	.1267	.1274	Unpartnered	.1986	.1983	.1990
	Absolute FGT2	**[95% Conf. interval]**			**Relative FGT2**	**[95% Conf. interval]**	
Married different-sex couples	.0141	.0140	.0142	Married different-sex couples	.0270	.0269	.0271
Cohabiting different-sex couples	.0297	.0294	.0301	Cohabiting different-sex couples	.0564	.0560	.0568
Married gay couples	.0126	.0113	.0139	Married gay couples	.0217	.0202	.0232
Cohabiting gay couples	.0117	.0105	.0129	Cohabiting gay couples	.0224	.0208	.0241
Married lesbian couples	.0205	.0191	.0220	Married lesbian couples	.0346	.0330	.0363
Cohabiting lesbian couples	.0198	.0182	.0214	Cohabiting lesbian couples	.0393	.0372	.0413
Unpartnered	.0911	.0908	.0914	Unpartnered	.1350	.1346	.1353
	Absolute FGT3	**[95% Conf. interval]**			**Relative FGT3**	**[95% Conf. interval]**	
Married different-sex couples	.0102	.0101	.0102	Married different-sex couples	.0179	.0178	.0180
Cohabiting different-sex couples	.0209	.0206	.0212	Cohabiting different-sex couples	.0376	.0373	.0380
Married gay couples	.0101	.0089	.0113	Married gay couples	.0157	.0144	.0171
Cohabiting gay couples	.0088	.0077	.0099	Cohabiting gay couples	.0154	.0141	.0167
Married lesbian couples	.0164	.0151	.0177	Married lesbian couples	.0251	.0236	.0266
Cohabiting lesbian couples	.0140	.0127	.0154	Cohabiting lesbian couples	.0261	.0244	.0277
Unpartnered	.0750	.0748	.0753	Unpartnered	.1050	.1047	.1053

Table A2. Basic characteristics of couple-headed families

Education	Married diff-sex couples	Cohabiting diff-sex couples	Married gay couples	Cohabiting gay couples	Married lesbian couples	Cohabiting lesbian couples	Total
Householder: less than high school	9.9	14.3	7.7	5.7	7.1	5.8	10.3
Householder: high school	21.4	28.7	15.8	15.2	17.1	19.7	22.1
Householder: some college	29.2	34.1	25.6	29.4	29.6	35.6	29.7
Householder: bachelor's degree	23.1	16.0	26.5	28.1	22.3	22.3	22.4
Householder: master's degree or higher	16.4	6.9	24.4	21.7	24.0	16.6	15.5
Race/ethnicity							
White householder and partner/spouse	62.4	50.6	56.9	54.4	62.1	56.6	61.1
White householder and non-White partner/spouse	5.2	8.3	13.2	16.5	7.5	9.3	5.6
Black householder	7.4	11.8	6.0	6.7	9.1	12.8	7.9
Asian householder	6.6	2.6	5.5	3.1	3.9	2.3	6.2
Hispanic householder	16.3	23.2	15.4	15.9	14.3	15.1	17.0
Other race householder	2.1	3.6	3.0	3.3	3.2	3.9	2.3
Age							
Householder's age up to 35	17.8	48.3	16.7	33.4	24.0	39.0	21.1
Householder's age between 36 and 55	48.4	38.7	47.0	42.5	46.1	39.0	47.4
Householder's above 55	33.7	13.0	36.3	24.1	29.9	22.0	31.5
Children							
No child below 18 years in the family	43.0	43.2	77.1	87.5	56.6	62.3	43.3
At least one child below 18 years in the family	57.0	56.8	22.9	12.5	43.4	37.7	56.7
City Size and Census Region							
Large MA (at least 1 million) in the Northeast	11.4	10.3	14.6	13.3	13.0	11.1	11.3
Large MA (at least 1 million) in the Midwest	9.8	10.0	8.9	10.6	8.7	10.0	9.8
Large MA (at least 1 million) in the South	19.2	17.6	20.8	23.7	18.2	21.2	19.1
Large MA (at least 1 million) in the West	14.9	15.0	21.4	21.6	18.5	15.0	15.0
Rural area or small MA in the Northeast	5.6	6.8	5.2	5.2	7.3	6.2	5.8
Rural area or small MA in the Midwest	11.4	12.8	6.8	7.3	9.2	9.9	11.5
Rural area or small MA in the South	18.3	17.3	13.5	11.6	15.8	17.4	18.1
Rural area or small MA in the West	9.4	10.1	8.6	6.6	9.3	9.4	9.4
Observations (individuals)	9,546,958	956,749	35,122	23,683	41,480	27,412	10,631,404
Population (in %)	88.50	10.33	0.31	0.22	0.38	0.26	100.00

Table A3. (Absolute and relative) FGT$_0$, FGT$_1$, and FGT$_2$ indices and confidence intervals in the nonparametric counterfactual distribution

	Absolute FGT0	[95% Conf. interval]			Relative FGT0	[95% Conf. interval]	
Married different-sex couples	.0638	.0636	.0640	Married different-sex couples	.1346	.1343	.1349
Cohabiting different-sex couples	.0902	.0894	.0911	Cohabiting different-sex couples	.1821	.1809	.1833
Married gay couples	.0616	.0566	.0667	Married gay couples	.1231	.1163	.1300
Cohabiting gay couples	.0701	.0606	.0795	Cohabiting gay couples	.1406	.1287	.1526
Married lesbian couples	.0847	.0805	.0889	Married lesbian couples	.1653	.1599	.1707
Cohabiting lesbian couples	.0894	.0831	.0957	Cohabiting lesbian couples	.1812	.1726	.1897
	Absolute FGT1	[95% Conf. interval]			Relative FGT1	[95% Conf. interval]	
Married different-sex couples	.0239	.0238	.0240	Married different-sex couples	.0494	.0493	.0496
Cohabiting different-sex couples	.0346	.0342	.0350	Cohabiting different-sex couples	.0700	.0694	.0706
Married gay couples	.0269	.0240	.0298	Married gay couples	.0494	.0459	.0529
Cohabiting gay couples	.0249	.0215	.0283	Cohabiting gay couples	.0542	.0489	.0596
Married lesbian couples	.0365	.0343	.0386	Married lesbian couples	.0678	.0651	.0705
Cohabiting lesbian couples	.0333	.0308	.0359	Cohabiting lesbian couples	.0674	.0638	.0711
	Absolute FGT2	[95% Conf. interval]			Relative FGT2	[95% Conf. interval]	
Married different-sex couples	.0141	.0140	.0142	Married different-sex couples	.0270	.0269	.0271
Cohabiting different-sex couples	.0204	.0200	.0207	Cohabiting different-sex couples	.0390	.0386	.0394
Married gay couples	.0179	.0153	.0204	Married gay couples	.0297	.0268	.0325
Cohabiting gay couples	.0141	.0119	.0163	Cohabiting gay couples	.0293	.0259	.0326
Married lesbian couples	.0241	.0222	.0259	Married lesbian couples	.0406	.0385	.0427
Cohabiting lesbian couples	.0188	.0169	.0206	Cohabiting lesbian couples	.0371	.0346	.0395