



Poverty among same-sex couple families in the United States: Is there a premium for married couples?

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Abstract

This paper explores the monetary poverty of families headed by same-sex couples, a group understudied in the poverty literature. This research contributes to the literature by documenting how same-sex couples rank with respect to different-sex couples when (a) employing poverty indicators that allow us to move beyond the poverty incidence; (b) measuring not only absolute poverty, which is the usual approach in US studies, but also relative poverty; and (c) distinguishing between married and cohabiting same-sex couples to determine whether they have the same marriage premium as different-sex couples do. Using a reweighting procedure to account for differences in basic characteristics, we document that married/cohabiting male same-sex couples have conditional poverty levels similar to those of married different-sex couples with some indicators, although when using other indicators, they have more poverty. The disadvantage of married male same-sex couples with respect to married different-sex couples increases when moving beyond poverty incidence. Female same-sex couples have more conditional poverty than married different-sex couples regardless of the poverty measure and marital status of the couple. We also find that the marriage premium is unclear for families headed by same-sex couples. Married same-sex couples tend to have more poverty than their cohabiting peers when we move beyond the poverty incidence, with differences among these two groups in the very low tail of their income distributions. Far from the stereotype that married same-sex couples are well off, our results suggest the existence of higher extreme poverty among married female same-sex couples.

Keywords Economic poverty · Same-sex couples · Sexual minorities · LGBTQ+ · Marriage

JEL Classification D31 · D63 · J12 · J15 · J16

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1 Introduction

Not until around 2010 did scholarship begin to document the vulnerability of lesbian, gay, bisexual, transgender, queer, and other (LGBTQ+) 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 LGBTQ+ 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 2023). Drawing on various US 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), scholarship shows that poverty affects sexual minorities at least as much as it does the rest of the population, which discards the stereotype of gay and lesbian affluence that had prevailed previously. Moreover, some subpopulations are especially affected by poverty, as is the case of transgender and bisexual individuals (Badgett 2018; Badgett et al. 2019, 2021; Carpenter et al. 2020; Deal et al. 2023).

Poverty may affect the LGBTQ+ population in a differentiated manner for several reasons, including the effect on earnings of discrimination on the basis of sexual orientation and gender identity, the broader consequences of stigma in terms of health and family connections, the differential attachment of individuals to the labor market depending on their sexual orientation and gender, together with their unequal access to marriage and, consequently, the disadvantage of same-sex couples with regards to taxation, health insurance coverage, social security benefits, or citizenship in case one of the partners was not born in the United States (Leppel 2009; Badgett 2010; Jepsen and Jepsen 2015; Del Río and Alonso-Villar 2019a; Badgett et al. 2021; Friedberg and Isaac 2022; Martell and Roncolato 2023). Differences in sociodemographic factors associated with poverty may also cause differences by sexual orientation. Sexual minorities tend to have higher educational achievements and are less likely to have children in their homes, which gives them some protection (Schneebaum and Badgett 2019).

Studies have shown that the poverty rate for female same-sex couples is higher than it is for different-sex married couples (Albelda et al. 2009; Schneebaum and Badgett 2019) and that the poverty rates for either female or male same-sex couples with children are higher than they are for different-sex married couples with children (Prokos and Keene 2010; Brown et al. 2016). Moreover, same-sex couples are more likely to be in poverty than different-sex married couples with similar characteristics are (Albelda et al. 2009; Schneebaum and Badgett 2019). The situation during the COVID-19 pandemic also revealed that LGBTQ+ people are an especially vulnerable population. Drawing on the Household Pulse Survey, the Census Bureau (2021) reported 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 paying typical household expenses was also 10 points higher than it was for other adults (36.6% vs. 26.1%).¹

Thus far, the few studies that have explored monetary poverty among the LGBTQ+ population focused on whether the poverty rate of this group, or the subgroups within it, was higher than that of non-LGBTQ+ people. These studies provide the poverty rates observed in the data and determine the risk of poverty when accounting for factors that affect

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 (Whittington et al. 2020; Martell and Roncolato 2023).

poverty. To do this, they often rely 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 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 LGBTQ+ population from the poverty line? In addition, one may wonder whether inequality among individuals in poverty is stronger for LGBTQ+ 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).

So far, most scholarship on poverty has focused on couple-headed families, distinguishing among four demographic groups: married different-sex couples, unmarried different-sex couples, male same-sex couples, and female same-sex couples. This literature shows that the poverty risk is lower for married different-sex couples than it is for comparable cohabiting different-sex couples (Badgett 2018; Schneebaum and Badgett 2019), a pattern that may arise from diverse reasons, including a higher access to marriage for couples with higher incomes and the existence of a wage premium for men in married different-sex couples, together with a more intense within-household specialization among married couples. However, so far, the question has not been posed for same-sex couples, who differ from their different-sex peers in terms of within-household specialization, labor attachment, genderization, and (until recently) access to marriage, all of which may affect them in a distinctive way (Leppel 2009; Jepsen and Jepsen 2015; Martell and Nash 2020; Friedberg and Isaac 2022).

Drawing on the 2015–2019 five-year sample of the American Community Survey, this paper aims to delve deeper into the monetary poverty of a subgroup within the LGBTQ+ population in the United States, that of same-sex couple-headed families,² to answer two questions: (a) How do same-sex couples fare compared to different-sex couples when we go beyond poverty incidence and/or the absolute poverty approach? (b) Does a marriage premium exist for same-sex couples in terms of poverty as there is for different-sex couples?

Our research contributes to the literature on poverty by sexual orientation in several ways. First, we consider not only whether individuals are in different-sex or male/female same-sex relationships, but also their marital status, which results in six family types. Second, to measure poverty, we use the FGT indices (named after Foster et al. 1984), which consider not only the proportion of individuals in poverty (*incidence*), but also their gap to the poverty line (*intensity*) and their income *inequality*. These indices are rarely used in US studies (Brady and Kall 2008; Jolliffe et al. 2019), perhaps because the absolute approach that has dominated the former is focused on identifying individuals in poverty. However, these indices have a long tradition in other countries. For example, Jenkins and Lambert (1997) used them to jointly account for the three Is of poverty (incidence, intensity, and inequality) and documented that poverty increased in the UK during the 1980s, which contrasts with the result obtained with the poverty rate.

² As documented by Badgett et al. (2021), partnership rates for lesbian women and, especially, bisexual women are lower than they are for heterosexual women (53% and 40%, respectively, vs. 59%). The difference is much higher between either gay or bisexual men (whose partnerships rates are, respectively, 43% and 30%) and heterosexual men (64%).

Third, we check the robustness of our findings documenting not only absolute poverty, which is the approach that has dominated the literature, but also relative poverty.³ To do this, we need to move from the family or household income distribution, which is the level at which the poverty of sexual minorities has been measured so far, to the individual adjusted income distribution. To measure relative poverty, we use the square-root equivalence scale, which is most often used in distributive analysis in the US (Duclos and Grégoire 2002; Brady and Kall 2008; Fisher et al. 2013). To address absolute poverty, we use the implicit equivalence scale behind the official poverty lines (Blackorby and Donaldson 1980; Rodgers and Rodgers 1991).

Fourth, along with the poverty levels in the actual income distribution, we explore poverty in a counterfactual income distribution in which all the groups have the same basic characteristics. To build this counterfactual, we follow nonparametric (Alonso-Villar and Del Río, 2023) and parametric (DiNardo et al. 1996) methods, which allows us to check the robustness of our findings. Our analysis allows us to build an entire counterfactual income distribution for each family type, and therefore, to calculate the various FGT indices, if the couples heading these families had been equal in terms of education, racial composition, age structure, etc. 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.

Our analysis shows that the conditional poverty of cohabiting male same-sex couples is not statistically different from that of married different-sex couples using a broad range of indicators. However, married male same-sex couples tend to have higher levels of poverty than their different-sex peers when going beyond poverty incidence. In contrast, female same-sex couples have higher conditional poverty than married different-sex couples regardless of the poverty measure and marital status of the couple. Moreover, with some indicators, the poverty level of female same-sex couples is not statistically different from (or is even higher than) that of cohabiting different-sex couples. We also document that the marriage premium is unclear for same-sex couples. Married same-sex couples differ from their cohabiting peers in the low tail of their income distributions, so that when we use indicators that account for this, the former have higher conditional poverty. Far from the stereotype that married same-sex couples are well off, our results suggest the existence of higher extreme poverty among married female same-sex couples.

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 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

³ As Foster (1998) discussed, relativities and absolutes enter into poverty measurement in different ways (including the thresholds and equivalence scales used to identify individuals in poverty, decomposability across population subgroups, and invariances against changes in incomes or population size), although the most important consideration involves the poverty line. We follow this widely accepted perspective and use the terms relative poverty and absolute poverty to refer to the line.

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 same-sex or different-sex, 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 female same-sex couples, who in turn have a higher rate than married different-sex couples, who in turn have a higher rate than male same-sex 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 experience poverty than different-sex married couples (although no more than different-sex unmarried couples).

Other studies delve deeper into the group of LGBTQ+ 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 sexual minorities in couples but also those who are unpartnered. Drawing on the 2013–2016 sample of the National Health Interview Surveys (NHIS), Badgett (2018) finds that, although self-identified lesbians and gay men are not more likely to experience poverty than heterosexuals with similar characteristics are, bisexual women and men (and also single childless gay men) are. The higher economic vulnerability of bisexuals is also documented by drawing on the Household Pulse Survey (Deal et al. 2023). On the other hand, 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 experiencing poverty for cisgender gay men and lesbian women do not differ from their heterosexual counterparts'. The higher vulnerability of LGBTQ+ 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 of same-sex couples are exposed to a higher risk of poverty than those in other couple types. Drawing on the 2000 Census, Prokos and Keene (2010) show that female and male same-sex 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,⁶ although they have a lower risk of poverty than cohabiting different-sex couple families do. The disadvantage of female same-sex couples with children with respect to married different-sex couples seems to go beyond age, education level, and employment patterns, whereas the disadvantage of male same-sex

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 sexual minorities.

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 2019a, 2019b; Jepsen and Jepsen 2022).

⁶ Albelda et al. (2009) and Badgett et al. (2013) also document these findings.

couples with children rests on their lower education level. In contrast, the female same-sex couples' advantage with respect to cohabiting different-sex families is fully explained by education whereas the advantage of male same-sex couples goes beyond age, education, and employment patterns. All this suggests that female same-sex couples are especially vulnerable to poverty. Drawing on the 2010–2013 data from the Current Population Survey and using the supplemental poverty measure, Brown et al. (2016) also find that female same-sex couples have higher poverty rates than different-sex married couples do (above 6 percentage points more), although the difference is not statistically significant, perhaps due to the small sample size of children in female same-sex couples, as the authors acknowledge.

2.2 Marital status

The literature has shown that the poverty risk is lower for married different-sex couples than it is for cohabiting different-sex couples with similar characteristics (Badgett 2018; Schneebaum and Badgett 2019). Relationship status can influence different-sex couples' vulnerability to poverty for several reasons (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 men in different-sex couples 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 up the possibility of accessing some public benefit programs as well as 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 limited access to welfare may sometimes make it harder for married couples than for single-parent families (Horn 2001).

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. The positions of women and men in the labor market are not independent of whether they live in same-sex or different-sex couples. Thus, within-household specialization is less intense for same-sex couples than it is for different-sex couples (Jepsen and Jepsen 2015). Differences in labor participation between partners are also lower for same-sex couples (Leppel 2009). In addition, the labor supply of women and men in same-sex couples differs from those in different-sex couples, as does their occupational achievements and average wages (Tebaldi and Elmslie 2006; Klawitter 2015; Tilcsik et al. 2015; Del Río and Alonso-Villar 2019a, 2019b).⁷

On the other hand, the legal right to marriage was not afforded nationwide to same-sex couples until 2015 (although it had been legal in some states earlier),⁸ which has long limited the potential returns of marriage for sexual minorities in terms of earnings, savings, health insurance coverage, benefits, and taxes, as Badgett's (2010) pioneering work revealed.

⁷ Most of this literature has shown that gay men have a wage penalty compared to heterosexual men with similar characteristics, whereas lesbian women have a wage premium with respect to their heterosexual peers.

⁸ The first state to legalize same-sex marriage was Massachusetts in 2003, although it became effective in 2004.

Martell and Nash (2020) documented that marriage recognition has increased the earnings of both male and female same-sex couples, compared with those who cohabit, and they suggested that this advantage arises from within-household specialization, which could be traditionally lower for same-sex couples solely due to legal constraints (not to differences in preferences).⁹ Additional effects of legal marriage recognition that have been documented include the higher probability that individuals in same-sex couples will have health insurance and access to healthcare, along with their tax incentives to marry (Carpenter et al. 2021; Friedberg and Isaac 2022). However, marriage may also entail some costs for same-sex couples to the extent that disclosure of sexual orientation may result in discrimination against them (Schneebaum and Schubert 2017).

From the above, it is unclear whether poverty is expected to be lower for same-sex couples who are married, a question this paper seeks to answer.

2.3 On measuring poverty

The literature discussed thus far measures poverty at either the individual or household/family level depending on whether the LGBTQ+ 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 sexual minorities who are below the poverty line, whereas others calculate the proportion of LGBTQ+ 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 experiencing poverty 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 families.

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,¹⁰ 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 Grégoire 2002; Brady and Kall 2008; Fisher et al. 2013). Regarding the relative poverty line most often employed for this country, scholars set it at one-half of the

⁹ However, Sansone (2019) estimated that marriage equality has not led to higher specialization in terms of hours worked, perhaps because fertility did not increase.

¹⁰ Some studies use consumption rather than income (Slesnick 1991, 1993; Meyer and Sullivan 2012).

median income (Smeeding 2016).¹¹ According to this approach, an individual is in poverty 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 individuals in poverty, 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 in poverty. However, if we are interested in exploring the whole income distribution, 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).

3 Data and poverty measures

Our data set comes from the 2015–2019 five-year sample of the American Community Survey (ACS) that the IPUMS (Integrated Public Use Microdata Series; Ruggles et al. 2020) provides.¹² As already mentioned, the ACS provides a larger sample of sexual minorities 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.

We measure poverty using information at the family level, not the household level. This basic unit of income and consumption refers to individuals who live together and are related by marriage, partnership, birth, adoption, and fosterage. A household may consist of one family or more. 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. We opt to include these families in the sample because they probably share the dwelling with primary 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.¹³ Our sample consists of 25,822 male same-sex couple families (14,940 are married), 26,573 female same-sex 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.

To obtain a family's total income, we add all pre-tax incomes its members received during the 12 months prior to the interview using the information on

¹¹ This line is also employed in cross-national comparisons that include the US (Findlay and Wright 1996; Brady and Kall 2008). 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).

¹² All dollar amounts of the 5-year sample are standardized to dollars in 2019.

¹³ 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 household, 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%).

family interrelationships provided by the IPUMS.¹⁴ To identify the individuals in poverty, we follow two approaches. First, we identify individuals who belong to families with incomes below the official poverty threshold that corresponds to that family.¹⁵ Along with this absolute approach, we also quantify poverty using a relative approach according to which an individual experiences poverty if their adjusted family income, based on the square-root equivalence scale, is below 50% of the adjusted median income.¹⁶ 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 poverty line they are) and the combination of incidence and intensity with the inequality among individuals in poverty.

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. This paper departs from those studies and builds an individual (adjusted) 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 $(y_1, \dots, y_p, \dots, y_n)$ 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 those in poverty. This means that we have p individuals below the poverty line 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 1991). Thus, a gap g_i of, for example, \$1000 can be perceived as a situation of greater vulnerability if the family poverty threshold is \$12,000 than if it is \$55,000. Additionally, in the absolute case, using normalized gaps ensures that the FGT 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_l and z_f are, respectively, the official family poverty thresholds

for a single-person family and for family f , then $\Gamma_i = \frac{z_l - \frac{y_i^f}{z_f}}{z_l} = \frac{z_f - y_i^f}{z_f}$.

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

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

¹⁴ 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.

¹⁵ The ACS does not provide information about near-cash transfers or taxes, which prevents us from quantifying poverty based on the supplemental poverty indicator.

¹⁶ We also provide the poverty levels using the relative poverty line and equivalence scale usually employed in Europe by Eurostat (60% of the median income and the OECD scale, respectively).

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 lower tail of the income distribution. 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). When $\alpha > 1$, the index incorporates the three dimensions of poverty (Sen 1979): incidence, intensity, and inequality.

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 Grégoire 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.¹⁷

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). The corresponding poverty lines are also included (\$12,261 in the absolute case and \$20,000 in the relative one).¹⁸

We see that with the two approaches the density functions seem 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.

4.2 Incidence, intensity, and inequality

The density functions shown above provide an initial picture of the size of the population experience poverty 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 individuals in poverty (as, for example, with the indices FGT_2 and FGT_3). Figure 2 provides the corresponding estimates (together with the 95% confidence intervals) in the absolute and the relative case (see also Table A1).¹⁹ The FGT_3 index, which involves an extreme inequality aversion, is included in the chart to provide a more complete view of the patterns detected with the FGT_2 .

¹⁷ 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).

¹⁸ Single person-families have two official poverty lines depending on individual's age. We use the smallest line for 2019.

¹⁹ The chart barely changes if we conduct the analysis only for primary families, as shown in the Online Appendix (Figure OA1).

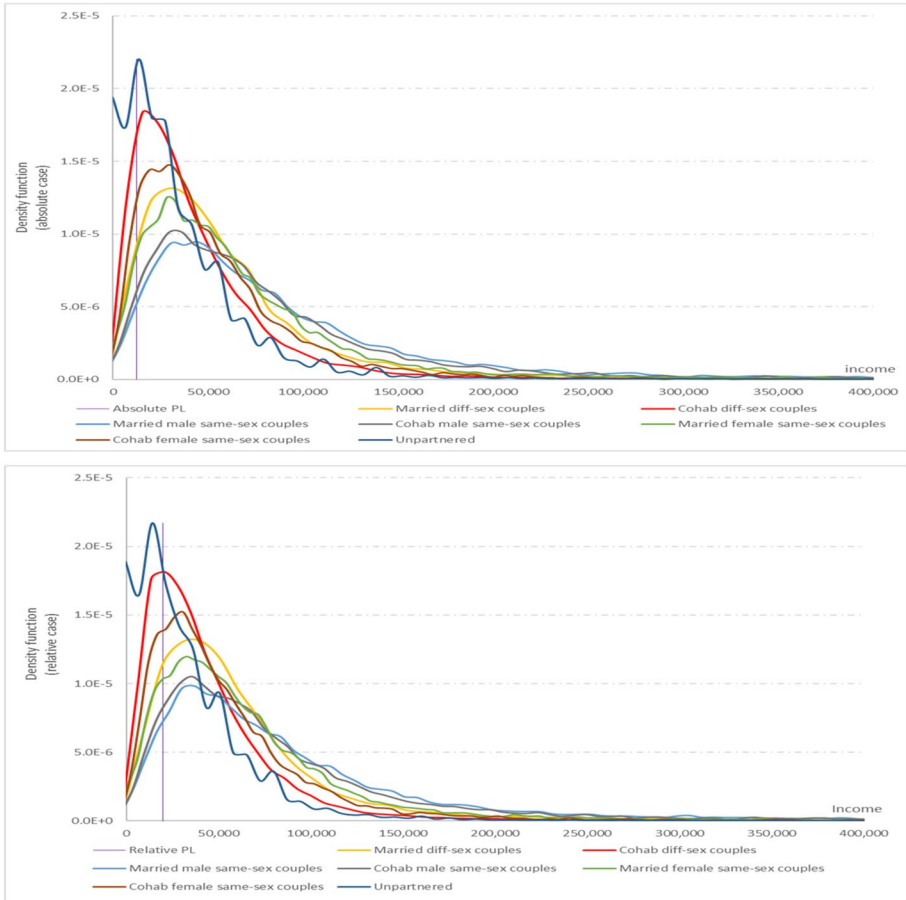


Fig. 1 Density function of the adjusted income distribution for different families based on absolute poverty (top) and relative poverty (bottom)

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 or a relative approach.²⁰ For example, the ranking with the absolute FGT_0 index (in ascending order) is: families headed by married male same-sex couples (4.24% of this population experiences poverty), followed by families headed by cohabiting male same-sex couples (4.65%), married different-sex couples (6.38%), married female same-sex couples (6.97%), cohabiting female same-sex 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 male same-sex couples, 1.89% for cohabiting male same-sex couples, 2.39% for married different-sex couples, 3.07% for married

²⁰ The ranking is similar 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, except that with the FGT_0 index, married different-sex couples have a slightly higher poverty than married female same-sex couples have (see the Online Appendix, Figure OA2).

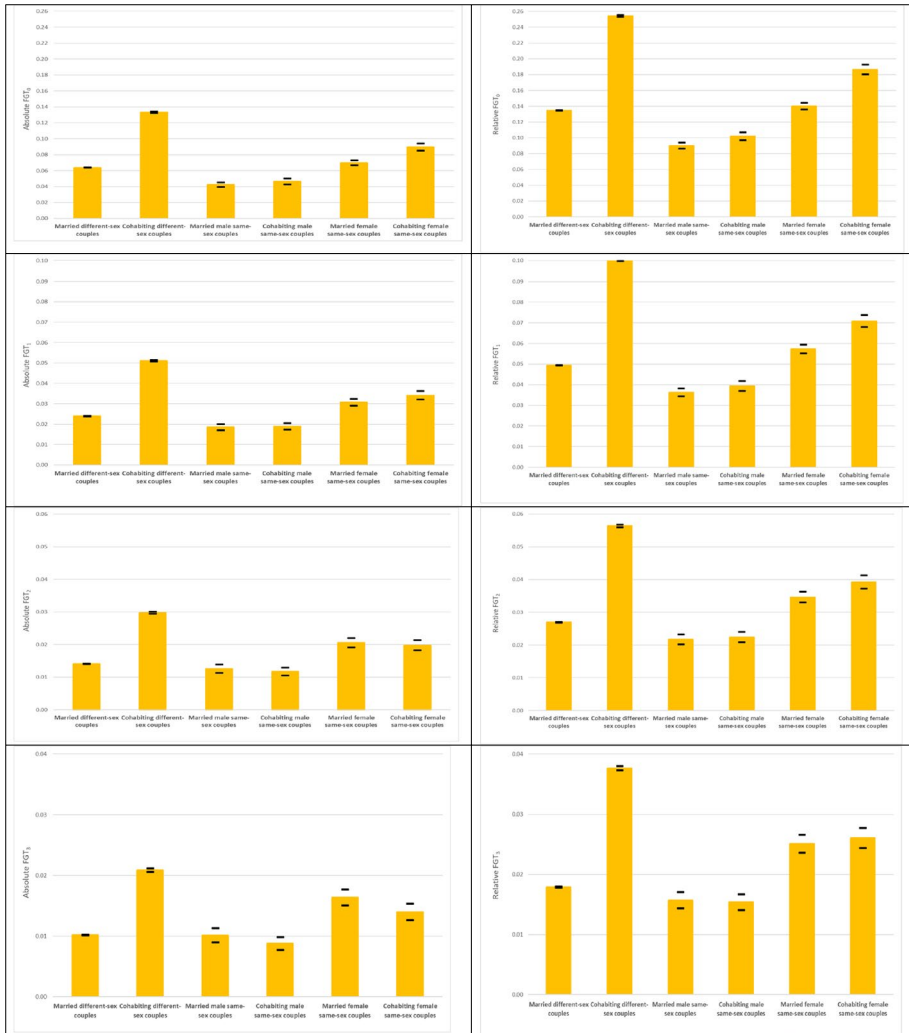


Fig. 2 Poverty indices for different family types (values and 95% confidence intervals), actual distribution

female same-sex couples, 3.42% for cohabiting female same-sex couples, and 5.11% for cohabiting different-sex couples.

Married and cohabiting male same-sex 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.²¹ However, married male same-sex couples do not always have lower poverty than their cohabiting peers.²² In fact, the former have more poverty than the latter with the absolute FGT_2 and FGT_3 indices (and with the relative

²¹ The differences are also significant with the FGT_3 index, except between married different-sex couples and married male same-sex couples with the absolute FGT_3 index.

²² When the confidence intervals of two groups intersect, we undertake additional tests using DASP.

FGT₃). In any case, the differences between these two groups are not statistically significant in the absolute case with the FGT₀, FGT₁, FGT₂, and FGT₃ indices, whereas in the relative case, they are significant with FGT₀ and FGT₁ (with less poverty among married male same-sex couples), but not with FGT₂ and FGT₃.

The advantage of married female same-sex couples regarding their cohabiting peers also diminishes, or even disappears, when accounting for the inequality among those in poverty (especially with the absolute approach, which captures more extreme poverty). In fact, the differentials between married and cohabiting female same-sex couples regarding FGT₀ and FGT₁ are statistically significant in both the absolute case and the relative one. However, they are not statistically significant with the absolute FGT₂ index, and with the absolute FGT₃ index, married female same-sex couples even have more poverty than cohabiting female same-sex couples do. With the relative FGT₃ index, their differences are not statistically significant either.

This suggests there may be more heterogeneity among married same-sex couples in poverty 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.

The above patterns remain when the analysis is conducted only for primary families, and they are also robust to alternative relative approaches (see the Online Appendix).

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 male same-sex couples, married/cohabiting female same-sex 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, 2023) and parametric (DiNardo et al. 1996; Gradín, 2013).

5.1 Control variables and counterfactual methods

The mentioned methods require, first, partitioning each family type in several cells or subgroups, which are the result of 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 combination will be also very likely for each of the other family types. In this way, we remove the differences among family types that arise from differences in characteristics.

If we denote by z the vector of covariates describing the cell and Fam is a dummy variable indicating family type, the income density function of type 1 families (e.g., married female same-sex couples) can be written as: $f_{Fam=1}(\text{income}) = \int_z f(\text{income}|z, Fam = 1)f(z|Fam = 1)dz$,

where $f(\text{income}|z, Fam = 1)$ is the income distribution of type 1 families with attributes z and $f(z|Fam = 1)$ is the distribution of characteristics of type 1 families. Assuming that these two distributions are independent, the counterfactual income distribution of type 1 families is defined

as $f_{Fam=1}^c(\text{income}) = \int_z f(\text{income}|z, Fam = 1)f(z|Fam = 0)dz$, where $f(z|Fam = 0)$ is the distribution of characteristics of the reference group (i.e., married different-sex couples). If we define a general re-weighting scheme for type 1 families as $\Phi_z = \frac{f(z|Fam=0)}{f(z|Fam=1)}$, the above counterfactual can be expressed as: $f_{Fam=1}^c(\text{income}) = \int_z f(\text{income}, z|Fam = 1)\Phi_z dz$.

When using the parametric method (DiNardo et al. 1996), re-weighting requires logit estimations. In this case, $\Phi_z = \frac{Pr(Fam=1)}{Pr(Fam=0)} \frac{Pr(Fam=0|z)}{Pr(Fam=1|z)}$, where the first term is approximated by the ratio of type 1 families' population to type 0 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 type 0 family (rather than a type 1 family) using a logit model: $Pr(Fam = 0|z) = \frac{\exp(z\hat{\beta})}{1+\exp(z\hat{\beta})}$, where $\hat{\beta}$ is the associated vector of estimated coefficients. The parametric method allows us to determine 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.

When using instead the nonparametric method, the first term of Φ_z is the same as in DiNardo et al. (1996) whereas the second term is approximated by the quoting between the population of type 0 families with characteristics z and the population of type 1 families with the same characteristics in the sample. In some empirical cases, this method has been shown to be more appropriate than the parametric one to replicate the distribution of characteristics of the reference group (Alonso-Villar and Del Río, 2023). We use both methods to test the robustness of our results.

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 female same-sex 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 female same-sex couples, male same-sex 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. 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, 2023), 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 given that the probability of having children is not the same for different- and same-sex couples, we control for parenthood. Finally, geographical variables may also play a role in explaining differences across family types (Alonso-Villar and Del Río, 2020). The economic position of same-sex couples is not independent of their social environment's attitudes towards sexual minorities, which differ substantially across states and may have led same-sex couples to

locate in some states. The concentration of sexual minorities in urban areas, where the cost of living is higher, may also affect their poverty levels.

We use family-level covariates, most of which involve only the householder.²³ Our list of controls is as follows²⁴:

- 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),
- Presence of children in the household (two categories: at least one child below 18 years of age and none),
- Recognition of same-sex marriage (three categories: states that legalized it before 2014, states that legalized it in 2014, and remaining states)²⁵
- Urbanicity (two categories: living in a metropolitan area with a population greater than 1 million people and living elsewhere).

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 and geographic variables, 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.²⁶ The basic characteristics of the groups and the corresponding poverty rates are provided in the Appendix (Tables A2 and A3).

5.2 Our findings

Figure 3 depicts the FGT_0 , FGT_1 , and FGT_2 indices (estimates and 95% confidence intervals) 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,

²³ 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.

²⁴ 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.

²⁵ The states in Category 1 are Massachusetts, Connecticut, Iowa, New Hampshire, Vermont, the District of Columbia, New York, Maine, Maryland, Washington, California, Delaware, Hawaii, Minnesota, Rhode Island, New Jersey, and New Mexico. States in Category 2 are Indiana, Oklahoma, Utah, Virginia, Wisconsin, Oregon, Pennsylvania, Colorado, Nevada, Alaska, Idaho, Illinois, West Virginia, Arizona, North Carolina, South Carolina, Wyoming, and Montana. Florida is also included in this group, although it legalized same-sex marriage on January 1, 2015. In the remaining states, legalization came with the verdict of the US Supreme Court in 2015.

²⁶ 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. Being unemployed or a part-time worker also affect the chances individuals have to escape poverty. When controlling for all these factors, it is difficult for both married and cohabiting male same-sex couples to replicate the distribution of characteristics of married different-sex couples. For this reason, we do not include these variables in the analysis.

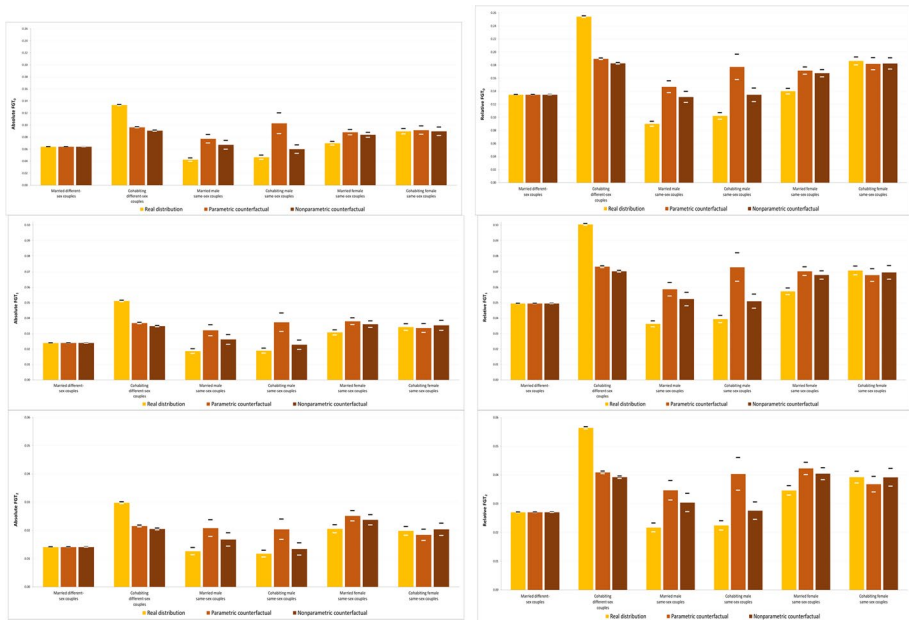


Fig. 3 Poverty indices for different family types in the actual income distribution and in the counterfactuals

whereas the poverty of families headed by either married/cohabiting male same-sex couples or married female same-sex couples increase. Unlike them, the poverty of cohabiting female same-sex 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. Our findings are also robust to the approach followed (absolute or relative) and the counterfactual method (parametric or nonparametric).

We also see that for male same-sex couples (whether married or not), the estimated poverty in the parametric counterfactual is higher than in the nonparametric one. For male same-sex couples, the parametric counterfactual cannot replicate the distribution of characteristics of the reference (married different-sex couples) as well as the nonparametric counterfactual does. When using the logit estimations, the poverty of male same-sex couples tends to be overestimated because the procedure assigns this group a higher presence of children and less education (especially to those who are unmarried) than it should according to the weight these characteristics have for 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.

In the nonparametric counterfactual (see also Table A4),²⁷ the poverty levels of married/cohabiting male same-sex couples do not differ much from those of married different-sex couples, although married male same-sex couples tend to have more poverty than their different-sex peers do when we move beyond poverty incidence. This may indicate more extreme poverty

²⁷ The chart barely changes if we only work with primary families (see Online Appendix, Figure OA3).

among married male same-sex couples than among married different-sex couples. In contrast, the poverty levels of married/cohabiting female same-sex couples are quite similar to those of cohabiting different-sex couples. Moreover, the poverty level of married/cohabiting female same-sex couples and that of cohabiting different-sex couples is higher than that of either married different-sex couples or married/cohabiting male same-sex couples, and the differences are statistically significant. This happens with various relative and absolute poverty indicators.

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 male same-sex couples.²⁸ The poverty level of cohabiting male same-sex 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 values of the FGT_0 , FGT_1 , and FGT_2 indices for the two groups are not statistically different.) We also do not find a marriage premium for female same-sex couples. The absolute FGT_0 and FGT_1 indices for cohabiting female same-sex 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, and the FGT_1 and the FGT_2 do not depend on marital status).

Therefore, 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 higher proportion of individuals with very low earnings among married same-sex couples. This is especially the case of married female same-sex couples, who have not only higher levels of poverty but also extreme poverty. In fact, if we set the poverty threshold at 50% of the absolute and relative poverty lines used so far, this is the group with the highest conditional poverty according to most indices (see Online Appendix, Table OA1).²⁹

Several reasons may explain why we do not find a marriage premium for same-sex couples as we do for different-sex couples. Marriage may not mean the same for different- and same-sex couples because the legalization of same-sex marriage occurred quite recently, which makes it unlikely to find same-sex couples who have been married for many years, and it still has many detractors. When considering the decision to get married, perhaps income is a more important factor for different-sex couples than it is for same-sex couples, whose choice may be shaped by other factors. Some same-sex couples may decide to marry to vindicate a legal right denied to them so far, whereas others may be reluctant to marry because of the visibility and potential discrimination that marriage brings.

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; see Online Appendix, Figure OA4). The existence of a higher percentage of families not having children is the most important factor explaining the lower poverty of male same-sex couples in the actual economy, followed by their higher educational achievements (the younger age of cohabiting male same-sex couples penalizes them). However, that married female same-sex couples have higher poverty than married different-sex couples do does not seem to arise from their characteristics (except

²⁸ Note that this paper does not explore the advantages that marriage can bring associated with health insurance coverage and access to public benefit programs, *inter alia*.

²⁹ The indices that consider poverty intensity, as is the case of FGT_1 and FGT_2 , are highly sensitive to the existence of very low incomes, which implies that errors in the estimation of income may have a larger effect on these indices than they have on the poverty rate.

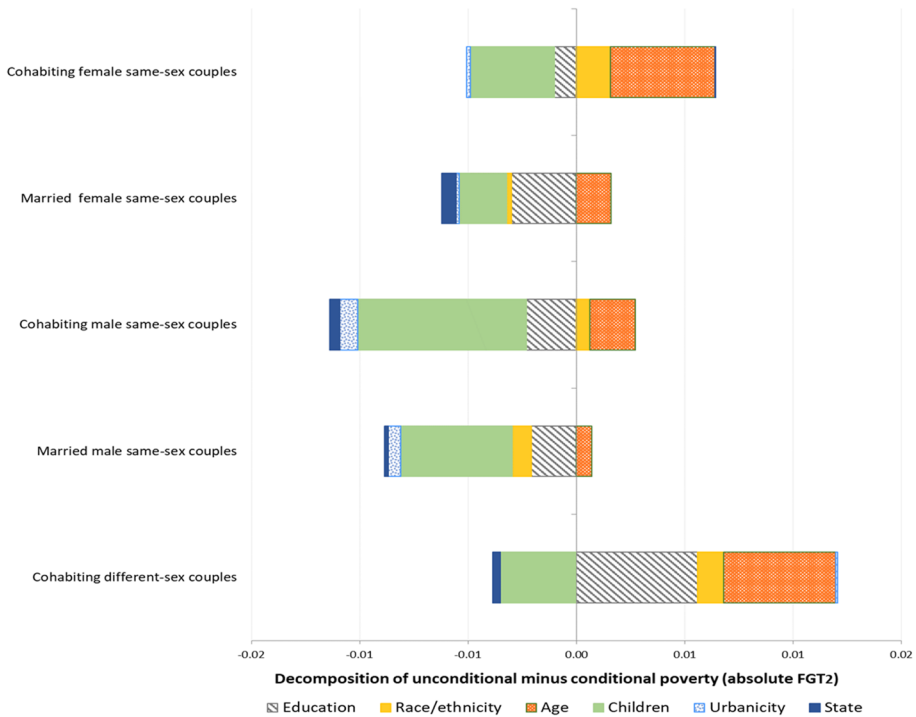


Fig. 4 FGT₂ in the actual distribution minus FGT₂ in the parametric counterfactual distribution and factors' contribution (absolute poverty)

that their younger age does penalize them slightly). If more families headed by married female same-sex couples 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 female same-sex couples' economic vulnerability. The pattern for cohabiting female same-sex couples is a bit different. An important part of their poverty 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 female same-sex couples barely change in the counterfactual.³⁰ In addition, we find that geographic variables play a minor role for same-sex couples. This

³⁰ We explored the role that employment status plays when including it together with the remaining variables (see Appendix, Figure 5). We consider four categories: householder and partner working full time, householder working full time and partner either working part time or not working, householder working part time, and householder not working. We find that employment status barely explains the poverty differential between the actual and counterfactual distribution for both married and cohabiting female same-sex couples beyond the effect that education has. Unlike for female same-sex couples, this factor seems to play a role for male same-sex couples, although this finding is less reliable given that as already mentioned, when including many control variables for this group, we cannot sufficiently replicate the characteristics of married different-sex couples.

does not mean that location does not affect their poverty levels but that it does not explain the poverty differentials among family types. 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.

To compare our findings (in the nonparametric counterfactual) with those of previous studies, we also estimate the FGT indices when aggregating married and cohabiting same-sex couples. As opposed to previous studies, we do not find systematic higher conditional poverty for male same-sex couples than for married different-sex couples. With the absolute and relative FGT_0 and FGT_1 indices, the poverty level of male same-sex couples is not statistically different from that of married different-sex couples, although with the absolute and relative FGT_2 indices, male same-sex couples have a higher level of poverty (Table A5). The reasons for the discrepancy with respect to previous works may involve the period (2015–2019 vs. 2010–2014) and the estimation method.

To further explore this issue, we also estimate the poverty level using the 2010–2014 five-year sample of the ACS provided the IPUMS (Ruggles et al. 2023). In line with previous works, when using this sample, we drop families in which the sex or marital status of any of the two members of the couple has been imputed.³¹ For comparisons with previous works, we also reduce the sample to first families. Focusing on the absolute FGT_0 index, which is the one used in prior studies, we find that the differences between male same-sex couples and married different-sex couples are not statistically significant in the nonparametric counterfactual. However, in the parametric counterfactual, male same-sex couples have a higher level of poverty than their married different-sex peers (Figure 6 in the Appendix and Table OA2 in the Online Appendix). In other words, male same-sex couples have a poverty rate that is either higher than or equal to that of comparable married different-sex couples depending on the estimation method. Our analysis suggests that binary-choice regression models may overestimate the probability of experiencing poverty (as well as other poverty measures) for same-sex couples, especially those headed by a male.

With respect to how the absolute poverty rates have changed over time after controlling for characteristics (in the nonparametric counterfactual), we find that they decreased for all family types. In 2010–2014, the conditional poverty rates for families headed by female and male same-sex couples were 10.1% and 7.4%, respectively (Table OA2). In 2015–2019, these rates were 8.7% and 6.5%, respectively (Table A5).

6 Final comments

Drawing on the official (absolute) poverty thresholds and using the poverty rate, previous literature has shown how families headed by male and female same-sex couples rank compared to those headed by married and 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

³¹ Misclassification errors involving the ACS seem to have been an important issue to identify same-sex couples up to 2012, although since 2008 several improvements have been introduced (Gates and Steinberg 2009; Goodnature and Ferreira Neto 2021).

relative poverty, and (c) distinguishing between married and cohabiting same-sex couples to determine whether 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 accounting for incidence, intensity, and inequality among those in poverty using the FGT_2 . Moreover, both married and cohabiting male same-sex couples have lower unconditional poverty levels than married different-sex couples do. We also document the higher (respectively, lower) unconditional poverty levels of married and cohabiting female same-sex couples compared to married (respectively, cohabiting) different-sex couples. All these intergroup differences are statistically significant and robust to the poverty approach used.

Using a reweighting procedure to account for differences in basic characteristics, we have shown that married and cohabiting male same-sex couples have conditional poverty levels similar to those of married different-sex couples with some indicators, although with others, they have a higher level of poverty. The disadvantage of married male same-sex couples with respect to married different-sex couples with the same characteristics seems to increase when moving beyond poverty incidence, which previous studies did not explore. This may indicate more extreme poverty among the former. Unlike male same-sex couples, female same-sex couples, both married and cohabiting, have higher levels of conditional poverty than married different-sex couples have, independently of whether we use an absolute or a relative approach. Therefore, the vulnerability of female same-sex couples to poverty, detected in previous studies using the absolute poverty rate, is a finding robust to the poverty measure and marital status of a couple. This suggests that the widely documented pay premium of women in same-sex couples, with respect to women in different-sex couples, is not enough to compensate the gender penalty these women (and their families) pay, which makes them more exposed to poverty.

Regarding the marriage premium, we have documented that 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 higher levels of 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. The fact that same-sex marriage was not legal nationwide until 2015 and that it still has many detractors, in contrast to the social pressure that pushes different-sex couples to marry, may explain these different patterns. Far from the stereotype that married same-sex couples are well off, our results suggest that married female same-sex couples have higher levels of extreme poverty than other couple-headed families with similar characteristics.

Beyond the important role played by antidiscrimination policies specifically designed for LGBTQ+ people (e.g., in the labor market), some scholars have underlined the importance of designing antipoverty policies that allow sexual minorities to be incorporated on equal terms. Perhaps public assistance programs do not account for the circumstances of LGBTQ+ populations or the staff in the corresponding agencies is not adequately trained for that purpose, making it difficult for some of them to receive the benefits they need (Burwick et al. 2014; Schneebaum and Badgett 2019). Thus, as has been recently documented, sexual minorities are less likely to receive public assistance from the child tax credit (after adjusting for presence of children in the household), perhaps because the circumstances for why a child may live in a household different from that of their parents, as is the case of adolescents who are rejected by their families due to their sexual orientation or gender identity, are not accounted for (Deal et al. 2023). This paper does not provide an answer to these questions, but our findings show the importance of addressing them to understand why extreme poverty affects some of these subgroups with special intensity.

A limitation of our study is that it does not address causality, although it accounts for basic characteristics associated with poverty that differ among same-sex and different-sex couples. Neither does this study assess the dynamics of marriage on poverty because our data set, although convenient for our analysis due to its large size, does not provide individual longitudinal data. Another limitation of our data set is that among second and subsequent families, which usually share the dwelling with the householder because of economic reasons, we cannot identify unmarried couples. This implies that we underestimate the poverty level of unmarried couples. Nevertheless, we document that the groups' ranking remains unaltered when we conduct the analysis only for primary families.

In dealing with the effect of sexual orientation on poverty, this paper has focused on same-sex couples, whereas the analysis for bisexual or transgender individuals goes beyond its scope. Future research should delve deeper into the extent of poverty among unpartnered individuals and address how inequality within the household affects sexual minorities (Brown et al. 2022). It would also be interesting to explore whether our findings remain when using alternative data sets because the poverty indices that consider poverty intensity are highly sensitive to the quality of income data, especially for very low incomes.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10888-023-09587-5>.

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Data availability The dataset used can be accessed at <https://usa.ipums.org/usa/>.

Declarations

Ethical approval Not applicable.

Competing interests The authors have no financial or non-financial interests to disclose.

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References

- Albelda, R., Badgett, L., Schneebaum, A., Gates, G.: Poverty in the Lesbian, Gay, and Bisexual Community. The Williams Institute at UCLA School of Law. <https://www.jstor.org/stable/resrep35577> (2009)
- Alonso-Villar, O., Del Río, C.: The Welfare Effects of Occupational Segregation by Gender and Race: Differences Across US Regions. *Pap. Reg. Sci.* **99**(6), 1773–1797 (2020)

- Alonso-Villar, O., Del Río, C.: Privilege and Hindrance on the U.S. Earnings Distribution by Gender and Race/Ethnicity: An Intersectional Framework with 12 Groups. *Int. J. Manpow.* **44**(4), 635–652 (2023)
- Araar, A., Duclos, J.Y.: DASP: Distributive Analysis Stata Package. User Manual. Version 3.02. http://dasp.ecn.ulaval.ca/dasp3/manual/DASP_MANUAL_V302.pdf (2021)
- Badgett, L.: The Economic Value of Marriage for Same-Sex Couples. *Drake Law Rev.* **102**(58), 101–135 (2010)
- Badgett, L.: Left Out? Lesbian, Gay, and Bisexual Poverty in the U.S. *Popul. Res. Policy Rev.* **37**, 667–702 (2018)
- Badgett, L., Carpenter, C., Sansone, D.: LGBTQ Economics. *J. Econ. Perspect.* **35**(2), 141–170 (2021)
- Badgett, L., Durso, L., Schneebaum, A.: New Patterns of Poverty in the Lesbian, Gay, and Bisexual Community. The Williams Institute at UCLA School of Law. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/Poverty-LGB-Jun-2013.pdf> (2013)
- Badgett, L., Choi, S.K., Wilson, B.: LGBT Poverty in the United States “A study of differences between sexual orientation and gender identity groups”. The Williams Institute at UCLA School of Law. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/National-LGBT-Poverty-Oct-2019.pdf> (2019)
- Blackorby, C., Donaldson, D.: Ethical Indices for the Measurement of Poverty. *Econometrica* **48**(4), 1053–1060 (1980)
- Brady, D., Kall, D.: Nearly Universal, but Somewhat Distinct: The Feminization of Poverty in Affluent Western Democracies, 1969–2000. *Soc. Sci. Res.* **37**, 976–1007 (2008)
- Brown, S., Manning, W., Payne, K.: Family Structure and Children’s Economic Well-Being: Incorporating Same-Sex Cohabiting Mother Families. *Popul. Res. Policy Rev.* **35**(1), 1–21 (2016)
- Brown, C., Calvi, R., Penglase, J., Tommasi, D.: Measuring Poverty Within the Household. *IZA World of Labor* 492. <https://doi.org/10.15185/izawol.492> (2022)
- Burwick, A., Gates, G., Baumgartner, S., Friend, D.: Human Services for Low-Income and At-Risk LGBT Populations: An Assessment of the Knowledge Base and Research Needs. OPRE Report 2014–79. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services (2014)
- Carpenter, C., Eppink, S., Gonzales, G.: Transgender Status, Gender Identity, and Socioeconomic Outcomes in the United States. *Ind. Labor Relat. Rev.* **73**(3), 573–599 (2020)
- Carpenter, C., Eppink, S., Gonzales, G., McKay, T.: Effects of Access to Legal Same-Sex Marriage on Marriage and Health. *J. Policy Anal. Manage.* **40**(2), 376–411 (2021)
- Census Bureau: LGBT Community Harder Hit by Economic Impact of Pandemic. <https://www.census.gov/library/stories/2021/08/lgbt-community-harder-hit-by-economic-impact-of-pandemic.html> (accessed April 29, 2022) (2021)
- Deal, C., Greenberg, S., Gonzales, G.: Sexual Identity, Poverty, and Utilization of Government Services. Working Paper. https://cameron-deal.github.io/files/gov_assistance_wp.pdf (2023)
- Del Río, C., Alonso-Villar, O.: Occupational Segregation by Sexual Orientation in the U.S.: Exploring its Economic Effects on Same-Sex Couples. *Rev. Econ. Household* **17**(2), 439–467 (2019a)
- Del Río, C., Alonso-Villar, O.: Occupational Achievements of Same-Sex Couples in the U.S. by Gender and Race. *Ind. Relat.* **58**(4), 704–731 (2019b)
- DiNardo, J., Fortin, N., Lemieux, T.: Labor Market Institutions and the Distribution of Wages, 1973–1992: A Semiparametric Approach. *Econometrica* **64**(5), 1001–1044 (1996)
- Duclos, J.Y., Grégoire, P.: Absolute and Relative Deprivation and the Measurement of Poverty. *Rev. Income. Wealth.* **48**(4), 471–492 (2002)
- Findlay, J., Wright, R.: Gender, Poverty and the Intra-Household Distribution of Resources. *Rev. Income. Wealth.* **42**(3), 335–351 (1996)
- Fisher, J., Johnson, D., Smeeding, T.: Measuring the Trends in Inequality of Individuals and Families: Income and Consumption. *Am. Econ. Rev.* **103**(3), 184–188 (2013)
- Foster, J.: Absolute versus Relative Poverty. *Am. Econ. Rev.* **88**(2), 335–341 (1998)
- Foster, J., Greer, J., Thorbecke, E.: “A Class of Decomposable Poverty Measures. *Econometrica* **52**, 761–776 (1984)
- Foster, J., Greer, J., Thorbecke, E.: The Foster-Greer-Thorbecke (FGT) Poverty Measures: 25 Years Later. *J. Econ. Inequal.* **8**, 491–524 (2010)
- Friedberg, L. and Isaac, E.: Same-Sex Marriage Recognition and Taxes: New Evidence About the Impact of Household Taxation. *Review of Economics and Statistics*, forthcoming. https://doi.org/10.1162/rest_a_01176 (2022)
- Gates, G., Steinberg, M.: Same-Sex Unmarried Partner Couples in the American Community Survey: The Role of Misreporting, Miscoding and Misallocation. Paper presented at Annual Meetings of the Population Association of America, Detroit. http://economics-files.pomona.edu/steinberger/research/gates_steinberger_acs_miscode_may2010.pdf (2009)
- Goldberg, N., Schneebaum, A., Durso, L., Badgett, L.: LGBTQ-Parent Families in the United States and Economic Well-Being, in Abbie Goldberg and Katherine Allen (eds.), *LGBTQ-Parent Families. Innovations in Research and Implications for Practice*. Cham, Switzerland: Springer. Second Edition (2020)
- Goodnature, M., Ferreira Neto, A.B.: Same-Sex Unmarried Partners in the Census. *J. Reg. Anal. Pol.* **51**(1), 43–66 (2021)
- Gradín, C.: Conditional Occupational Segregation of Minorities in the US. *J. Econ. Inequal.* **11**(4), 473–493 (2013)

- Horn, W.: Wedding Bell Blues: Marriage and Welfare Reform. *Brook. Rev.* **19**(3), 39–42 (2001)
- Jenkins, S., Lambert, P.: Three 'I's of Poverty Curves, with an Analysis of UK Poverty Trends. *Oxf. Econ. Pap.* **49**, 317–327 (1997)
- Jepsen, C., Jepsen, L.: Labor-Market Specialization within Same-Sex and Difference-Sex Couples. *Ind. Relat.* **54**(1), 109–130 (2015)
- Jepsen, C., Jepsen, L.: Convergence Over Time or Not? U.S. Wages by Sexual Orientation, 2000–2019. *Labour Econ.* **74**, 1–13 (2022)
- Jolliffe, D., Margitich, J., Ravallion, M.: Food Stamps and America's Poorest. NBER Working Paper 26025. <https://www.nber.org/papers/w26025> (2019)
- Klawitter, M.: Meta-Analysis of the Effects of Sexual Orientation on Earnings. *Ind. Relat.* **54**(1), 4–32 (2015)
- Leppel, K.: Labour Force Status and Sexual Orientation. *Economica* **76**, 197–207 (2009)
- Martell, M., Nash, P.: For Love and Money? Earnings and Marriage Among Same-Sex Couples. *J. Lab. Res.* **41**, 260–294 (2020)
- Martell, M., Roncolato, L.: Economic Vulnerability of Sexual Minorities: Evidence from the US Household Pulse Survey. *Popul. Res. Policy Rev.* **42**, 28 (2023)
- Meyer, B., Sullivan, J.: Identifying the Disadvantaged: Official Poverty, Consumption Poverty, and the New Supplemental Poverty Measure. *J. Econ. Perspect.* **26**(3), 111–136 (2012)
- Michael, R., Atkinson, A., Betson, D., Blank, R., Bobo, L., Brooks-Gunn, J., Cogan, J., Danziger, S., Deaton, A., Ellwood, D., Gueron, J., Hauser, R., Wilson, F., Citro, C.: Measuring Poverty: A New Approach. *Adv. Consum. Interest.* **9**(1), 18–23 (1997)
- Paul, M., Zaw, K., Darity, W.: Returns in the Labor Market: A Nuanced View of Penalties at the Intersection of Race and Gender in the US. *Fem. Econ.* **28**(2), 1–31 (2022)
- Prokos, A., Keene, J.: Poverty Among Cohabiting Gay and Lesbian, and Married and Cohabiting Heterosexual Families. *J. Fam. Issues* **31**(7), 934–959 (2010)
- Rodgers, J., Rodgers, J.: Measuring the Intensity of Poverty among Subpopulations: Applications to the United States. *J. Hum. Resour.* **26**(2), 338–361 (1991)
- Ruggles, S., Flood, S., Goeken, R., Grover, J., Meyer, E., Pacas, J., Sobek, M.: IPUMS USA: Version 10.0. IPUMS, Minneapolis, MN (2020)
- Ruggles, S., Flood, S., Sobek, M., Brockman, D., Cooper, G., Richards, S., Schouweiler, M.: IPUMS USA: Version 13.0. IPUMS, Minneapolis, MN (2023)
- Sandoval, H., Urzúa, C.: Negative Net Incomes and the Measurement of Poverty: A Note. *J. Manag. Finance Econ.* **3**(1), 29–36 (2009)
- Sansone, D.: Pink Work: Same-Sex Marriage, Employment and Discrimination. *J. Public Econ.* **180** (2019)
- Schneebaum, A., Schubert, N.: Marriage (In)equality: Does the Sexual Orientation Wage Gap Persist Across Marital Status? WU Vienna University of Economics and Business. Department of Economics Working Paper Series 254. <https://research.wu.ac.at/en/publications/marriage-inequality-does-the-sexual-orientation-wage-gap-persist-3> (2017)
- Schneebaum, A., Badgett, L.: Poverty in US Lesbian and Gay Couple Households. *Fem. Econ.* **25**(1), 1–30 (2019)
- Sen, A.: Issues in the Measurement of Poverty. *Scand. J. Econ.* **81**(2), 285–307 (1979)
- Slesnick, D.: The Standard of Living in the United States. *Rev. Income. Wealth.* **37**(4), 363–386 (1991)
- Slesnick, D.: Gaining Ground: Poverty in the Postwar United States. *J. Polit. Econ.* **101**(1), 1–38 (1993)
- Smeeding, T.: Poverty Measurement. In: Brady, David, Burton, Linda (eds.) *The Oxford Handbook of Poverty and Society*, pp. 21–46. Oxford University Press, Oxford, UK (2016)
- Tebaldi, E., Elmslie, B.: Sexual Orientation and Labour Supply. *Appl. Econ.* **38**, 549–562 (2006)
- Tilcsik, A., Anteiga, M., Knight, C.: Concealable Stigma and Occupational Segregation: Toward a Theory of Gay and Lesbian Occupations. *Adm. Sci. q.* **60**(3), 446–481 (2015)
- Urzúa, C., Macías, A., Sandoval, H.: TIPs for the Analysis of Poverty in Mexico, 1992–2005. Working Paper EGAP-2007–08 (2007)
- Whittington, C., Hadfield, K., Calderón, C. (2020): The Lives & Livelihoods of Many in the LGBTQ Community Are at Risk amidst Covid-19 Crisis. Human Rights Campaign Foundation brief (available at <https://www.hrc.org/resources/the-lives-and-livelihoods-of-many-in-the-lgbtq-community-are-at-risk-amidst-covid-19-crisis>, last accessed 12/15/2022)
- Wimer, C., Smeeding, T.: USA Child Poverty: The Impact of the Great Recession. In: Cantillon, Bea, Chzhen, Yekaterina, Handa, Sudhanshu, Nolan, Brian (eds.) *Children of Austerity: Impact of the Great Recession on Child Poverty in Rich Countries*, pp. 297–319. Oxford University Press, Oxford, UK (2017)