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Abstract

This paper examines how important the occupational sorting of individuals in same-sex couples is in explaining the economic position of lesbians and gays beyond controlling for occupation in the estimation of their respective wage gaps. The analysis reveals that the distribution of partnered gay men across occupations brings them a remarkable positive earning gap (11% of the average wage of partnered workers), whereas the occupational sorting of partnered lesbian women only allows them to depart from the large losses that straight partnered women have since their earning gap, although positive, is close to zero. The results show that if gay men had the same educational achievements, immigration profile, racial composition, and age structure as straight partnered men have, the advantages of this group associated with their occupational sorting would disappear completely. Likewise, if lesbian women had the same characteristics, other than sex and gender orientation, as straight partnered men have, the small advantage that these women derive from their occupational sorting would not only vanish but would turn into disadvantages, leaving them with a loss with respect to the average wage of coupled workers similar to the one straight partnered women have after their corresponding homogenization. It is their higher educational attainments and, to a lower extent, their lower immigration profile, that prevents workers living in same-sex couples from having a disadvantaged occupational sorting, since neither do gay men seem to enjoy the privilege of being partnered men nor do lesbian women appear to be free from the mark of gender.

Keywords: Sexual orientation, gender, occupational segregation, wages, well-being.

JEL Classification: D63, I31, J15, J16.

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1. Introduction

Since the pioneering work of Badgett (1995), there has been an increasing economic literature dealing with the empirical relationship between sexual orientation and position in the U.S. labor market (Allegretto and Arthur, 2001; Black et al., 2003; Blandford, 2003; Carpenter, 2007a; Antecol et al., 2008; Daneshvary et al., 2008; Leppel, 2009; Schneebaum, 2013; Klawitter, 2015). Most of these works focus attention on wages, exploring the penalty or premium for gay and lesbian workers as compared to their straight counterparts.

There are also a few studies that document a high concentration of homosexuals in certain occupations, although the reasons behind that concentration are not easy to determine since many factors, including psychological ones, seem to be involved (Badgett and King, 1997; Baumle et al., 2009). Some scholars argue that the timing of the first same-sex sexual experience may affect individuals' cognitive skills and, therefore, their occupational attainments, although there are disparities among studies with respect to the sign of those effects (Baumle et al., 2009; Ueno et al., 2013). The mechanisms that may explain the relationship between timing of same-sex contact and occupational achievements are various, sometimes gender biased, and even conflicting, with some factors pushing in one direction and others in the opposite.

On the one hand, the heteronormative world that dominates society may lead some individuals of this sexual minority to emotional distress and, therefore, school difficulties at an early age, which may undermine their future prospects. However, sexual experiences at adolescence may also foster the development of resilience against social stigma due to longer exposure, and the development of specific skills arising from individuals' adaptation to a hostile environment. This is the case, for example, of social perceptiveness, which is particularly useful for some kinds of occupations—such as teachers, psychologists, and jobs that require frequent interaction with customers in general—which could cause this minority to have a higher representation there (Tilcsik, et al., 2015). On the other hand, young individuals may perceive some occupations as more suitable for their sexual orientation—perhaps because they are more tolerant than others (Badgett and King, 1997; Plug et al., 2014) or because they entail a higher level of task independence (Tilcsik, et al., 2015)—and this may also have an effect on the skills they develop. In addition, the need for economic independence, which may be

higher for homosexuals than for heterosexuals, may fuel the former to higher educational attainments. Notwithstanding the above, we should be aware of the fact that the age at which people become aware of their sexual orientation may be late enough to have had no influence on their skills and educational achievements and, therefore, on the occupation they enter. But even if sexual orientation has not had any influence on individuals' cognitive and non-cognitive skills, gay people could have a larger representation in some occupations due to stronger discrimination in others or because they are attempting to avoid greater penalties in case of sexual orientation disclosure. Nevertheless, we have to keep in mind that discrimination against homosexuals is difficult to detect because, as opposed to sex or race, sexual orientation can be more easily hidden from employers and coworkers.

Whatever the reasons for the concentration of this sexual minority in some occupations, some studies show that lesbians in the U.S. are more likely to be found in male-dominated occupations than their straight counterparts, while gay men tend to be less concentrated in highly masculinized occupations than straight men (Antecol et al., 2008). Baumle et al. (2009) also document that the crossing of gender boundaries is more likely for homosexuals, although their analysis comprises a short list of occupations, as did that of Antecol et al., (2008). However, the role that occupational segregation may play in explaining the wage differential between homosexual and heterosexual workers is still unclear. Moreover, as far as we know, the extent of segregation by sexual orientation has not yet been quantified.

The literature does emphasize the role played by occupations in generating social stratification and inequalities. Thus, for example, Mouw and Kalleberg (2010) state that a large proportion of the wage inequality intensification experienced in the U.S. in the last two decades arose from polarization between occupations. Given that some demographic groups tend to concentrate in low-paid occupations while other groups are overrepresented in highly paid ones, this polarization is likely to have had a negative impact on the earnings of groups with weaker positions in the labor market.

There is a wide body of research on occupational segregation by gender, and to a lesser extent by race/ethnicity, in the U.S. (Bianchi and Rytina, 1986; Reskin et al. 2004; Levanon et al., 2009; Blau et al., 2013; Alonso-Villar and Del Río, 2017). Moreover, the evidence supports that occupational segregation explains a large part of the gender

pay gap (Petersen and Morgan, 1995; Cotter et al., 1997). However, with respect to sexual orientation, little is known about the extent of segregation and its economic consequences. As Tilcsik et al. (2015, p. 2) point out "the occupational segregation of gay and lesbian workers—'one of the largest, but least studied minority groups in the workforce' (Ragins, 2004:35)—presents an unresolved puzzle for researchers."

The aim of this paper is to explore occupational segregation by sexual orientation and gender in the U.S. so as to: a) determine whether the extent of segregation for individuals in same-sex couples is larger than that of individuals in different-sex couples using a detailed classification of occupations; b) find out whether with this fine classification the mark of gender for homosexual and heterosexual workers differs; c) quantify the gains or losses that each group derives from its occupational sorting; d) explore whether occupational segregation plays an important role in the gross earnings of these groups; and e) analyze how these gains or losses change when groups are homogenized in terms of educational achievements, racial composition, migration profile, and age structure, quantifying the role that each of these factors play as well. Our approach allows for examining how important the occupational sorting of gay men and lesbian women is in explaining their economic position beyond controlling for occupation in the estimation of their respective wage gaps.

To answer these questions, we use novel tools that have been recently proposed in the literature. Thus, the indices proposed by Alonso-Villar and Del Río (2010) allow us to calculate the segregation of a group in a multigroup context without making pairwise comparisons. If we used instead the popular index of dissimilarity to explore occupational segregation by sexual orientation and gender, we would have to compare the occupational sorting of gay men, for example, with that of lesbian women, straight women, and straight men. In each comparison the index would give us a different value, and it would be difficult to determine the situation of the group because there could be large differences between some groups and small ones between others. The strategy we follow here to quantify the occupational segregation of a group is to compare its occupational sorting with the occupational structure of the benchmark economy. This benchmark could be total employment in the economy but also the employment of individuals living with a partner. The second benchmark was chosen because our target groups are women and men living in either same-sex or different-sex couples, and the characteristics of single people may differ from those of partnered individuals. This

paper explores both scenarios to check whether our findings vary by changing the benchmark economy.

But to analyze segregation by sexual orientation (and gender), this paper takes a step further by exploring how "good" or "bad" for each target group its occupational sorting is depending on the "quality" of the occupations that that group tends to fill or, on the contrary, not to fill. For that purpose, we use the measures developed by Del Río and Alonso-Villar (2015) and Alonso-Villar and Del Río (2016), with which we can quantify the economic consequences of segregation for each target group—both in monetary terms and in terms of (objective) well-being— and also determine whether occupational sorting explains a large part of the economic position of that group in the labor market. To homogenize the groups by the main characteristics mentioned above, we follow DiNardo et al. (1996) and Gradín (2013). The contribution of each explanatory factor is obtained using the Shapley decomposition (Sastre and Trannoy, 2002; Shorrocks, 2013).

For undertaking the analysis, this paper uses the 2010-2014 5-year sample of the Integrated Public Use Microdata Series (IPUMS), which is drawn from the American Community Survey (Ruggles et al., 2015). This survey includes occupation, using a detailed classification that accounts for more than 450 titles, and provides a wide range of economic and demographic information of individuals and households. Although this large survey does not offer information about individuals' sexual orientation, it does allow identifying individuals living in same-sex couples. There are more than 53,000 of such workers in the sample, which is a higher number than is offered by alternative datasets that provide more information about sexual orientation, including different definitions.

2. Methodology

In this section, we present the measures that we use in subsequent sections to explore occupational segregation in the U.S. by sexual orientation and gender. We have classified these tools in three classes: a) the measures that allow us to calculate the segregation level of a demographic group (labeled local segregation measures); b) the measures that allow us to quantify the economic consequences of the occupational sorting of the group, both in monetary terms and in terms of (objective) well-being; and c) the measures with which to explore the advantages or disadvantages of the group

within occupations, which allows displaying the other component of the total gains or losses of a group due to its situation in the labor market. Once we determine the total loss or gain of a group and the two components, we can find out whether segregation plays an important role in that total.

2.1 Local segregation measures

This paper follows the approach developed by Alonso-Villar and Del Río (2010), according to which a group is said to be segregated so long as it is overrepresented in some occupations and underrepresented in others, as compared to the employment distribution of the economy across occupations (the benchmark). In other words, a group is said to be segregated insofar as it is unevenly distributed across occupations. There are different ways of measuring the extent to which the occupational sorting of a group departs from the occupational structure of the economy and, therefore, quantifying the segregation of that group. In what follows, we present the indices that we use in Section 3 to measure the segregation of each group *g*:

$$D^{g} = \frac{1}{2}\sum_{j}\left|\frac{c_j^g}{C^g} - \frac{t_j}{T}\right| , \tag{1}$$

$$G^{g} = \frac{\sum_{i,j}\frac{t_i}{T}\frac{t_j}{T}\left|\frac{c_i^g}{t_i} - \frac{c_j^g}{t_j}\right|}{2\frac{C^g}{T}} \tag{2}$$

$$\Phi_{\alpha}^{g} = \begin{cases} \sum_{j}\frac{c_j^g}{C^g}\ln\left(\frac{c_j^g/C^g}{t_j/T}\right) & \alpha=1 \\ \frac{1}{\alpha(\alpha-1)}\sum_{j}\frac{t_j}{T}\left[\left(\frac{c_j^g/C^g}{t_j/T}\right)^{\alpha}-1\right] & \alpha\neq 0,1 \end{cases} \tag{3}$$

where c_j^g stands for the number of workers of group g in occupation j, $C^g = \sum_j c_j^g$ is the total number of workers of group g in the economy, t_j is the total number of workers in occupation j, and $T = \sum_j t_j$ is total employment.

Index D^g, which is a variant of the dissimilarity index, ranges from 0 (no segregation) to 1 (complete segregation). An advantage of this index is its clear economic interpretation: a value of 0.2 means that 20% of workers of the group would have to shift occupations to have no segregation (without altering the occupational structure of the benchmark economy; see Alonso-Villar and Del Río, 2016). Index G^g, adapted from the popular Gini index, is also bounded between 0 and 1 (although in this case, the value of 1 is never reached). Φ_α^g is a family of unbounded indices, also adapted from the literature on income distribution, which depends on a parameter, α, that denotes aversion toward segregation. Loosely speaking, the lower the value of this parameter, the more the index is affected by the underrepresentation of the group in some occupations. In our empirical analysis, we use four values of this parameter: 0.1, 0.5, 1, and 2, which are quite standard in the literature on economic inequality.

Apart from calculating these indices, to measure the segregation of a group, we also use the local segregation curve, S^g, defined by Alonso-Villar and Del Río (2010). To build this curve, firstly, we have to rank occupations from those where the group has the lowest representation to those with the highest (the representation is given by $\frac{c_j^g}{t_j}$). By denoting by $\tau_j \equiv \sum_{i \leq j} \frac{t_i}{T}$ the proportion of employment accounted for by the first j occupations, the value of the curve at this point is the share of group g working in those occupations. Namely,

$$S^g(\tau_j) = \sum_{i \leq j} \frac{c_i^g}{C^g}. \tag{4}$$

This curve shows the underrepresentation of the group with respect to the cumulative proportion of the employment that occupations, ranked according to the criterion mentioned above, account for (Figure 1). For example, the value of this curve at point 0.1 is the share of the group that works in the occupations where it has the lowest representation and that accumulate 10% of the employment of the benchmark economy. The curve at point 0.2 shows the proportion of the group that works in occupations that jointly represent 20% of employment and in which the group has the lowest representation, and so on. The closer the curve is to the 45º line, the lower the

segregation of the group. There are different ways of measuring how far the curve is from that line. As Figure 1 shows, D^g represents the highest vertical distance between them. G^g is twice the area between the curve and the line. The indices Φ_α do not have an easy interpretation, although the lower the value of α, the more affected the index is by the shape of the curve at values close to zero, which is where the group has the lowest representation.

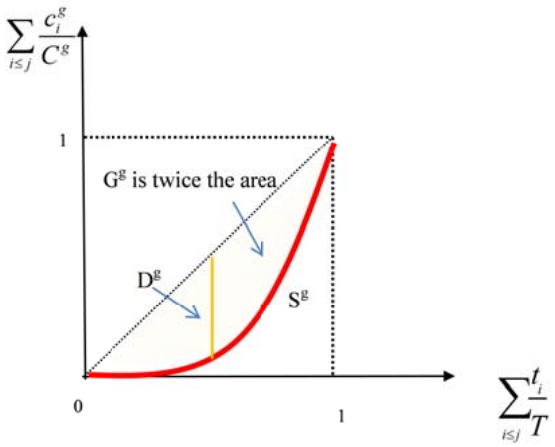

Figure 1. Example of a local segregation curve and its relationship with D^g and G^g.

An advantage of using these curves, rather than the indices, is that if the curve of a group is never below that of another group and is above it at some points, then many indices satisfying good properties would lead to the same conclusion: segregation is lower for the group who is closer to the 45º line, and it is not necessary to calculate those indices. In particular, all the indices shown above, except D^g, behave that way. In other words, they are consistent with the conclusions given by the ranking of the curves. If the curves cross, however, we cannot conclude which group has higher segregation, and in those cases, the use of indices becomes absolutely necessary.

The use of the different indices in the analysis will allow us to check the robustness of our results against changes in the way the differences between the occupational sorting of a group and the occupational structure of the benchmark economy are formulated.

2.2 Measuring the Economic Consequences of Segregation for each Group

So far, we have shown simple tools with which to quantify how unevenly a group is distributed across occupations. However, unevenness is not necessarily something bad for a group. Consider, for example, the case where the group under study is fully

concentrated in the best occupation of the economy. That situation is completely different from that where the group is concentrated in the worst occupation.

In this section, we present several indicators developed in Del Río and Alonso-Villar (2015) and Alonso-Villar and Del Río (2016) with which to assess the occupational sorting of a group according to occupations' "quality," which is measured by the ratio between the average wage in an occupation and the average wage of the benchmark economy. We use the following indices:

$$\Gamma^g = \sum_j \left(\frac{c_j^g}{C^g} - \frac{t_j}{T} \right) \frac{w_j}{\overline{w}}, \tag{5}$$

$$\Psi_\varepsilon^g = \begin{cases} \sum_j \left(\frac{c_j^g}{C^g} - \frac{t_j}{T} \right) \ln \frac{w_j}{\overline{w}} & \varepsilon = 1 \\ \sum_j \left(\frac{c_j^g}{C^g} - \frac{t_j}{T} \right) \frac{\left(\frac{w_j}{\overline{w}} \right)^{-1} - 1}{1 - \varepsilon} & \varepsilon \neq 1 \end{cases} \tag{6}$$

where w_j denotes the average hourly wage of occupation j and $\overline{w} = \sum_j \frac{t_j w_j}{T}$ is the average hourly wage of the benchmark economy.

As Del Río and Alonso-Villar (2015) prove, Γ^g measures the per capita monetary loss or gain that group g derives from its occupational sorting. The indices Ψ_ε^g instead quantify the per capita well-being loss or gain of the group (Alonso-Villar and Del Río, 2016). This family is parameterized by a parameter, ε, that denotes aversion toward inequality within the group, which arises from the fact that the individuals of the group work in occupations of different "quality." The higher the value of parameter ε, the more attention the index pays to differences among individuals of the group. All members of this family have something in common: the underrepresentation of the group in an occupation contributes negatively to the index only if that occupation is highly paid, while overrepresentation does so when it takes place in low-paid jobs. Index Γ^g can be obtained from the above family when the inequality aversion tends to zero.

The indices Γ^g and Ψ_ε^g share some properties and differ in others. They are equal to zero when either the group has no segregation or all occupations have the same wage, and they increase when some individuals of the group move from one occupation to another that has a higher wage. The main difference between Γ^g and Ψ_ε^g is that the former does not show inequality aversion while the latter does. In particular, when an individual of the group moves to another occupation, the Ψ_ε^g indices increase more, the lower the wage of the occupation left behind, while for Γ^g the effect does not depend on the starting point.

These measures allow us to move beyond the mere measurement of unevenness to focus attention on its economic consequences, either monetary or in terms of (objective) well-being, which is where the main problem lies. We use both types of measures in our empirical analysis to check the robustness of the results against changes in inequality aversion within the group.

2.3 Measuring the Losses or Gains of each Group within Occupations

Apart from the advantages or disadvantages that a group has due to its occupational sorting, in each occupation the group may face higher or lower wages than other groups. The whole earning differential that group g has as a consequence of both factors can be written as $C^g \sum_j \frac{c_j^g}{C^g} w_j^g - C^g \sum_j \frac{t_j}{T} w_j$, where w_j^g denotes the average wage that group g receives in occupation j (which may differ from the average wage of that occupation, denoted by w_j). Following Del Río and Alonso-Villar (2015), if we divide this differential by $C^g \overline{w}$—which represents the total wage revenues that the group would have if it had no segregation and no wage disparities within occupations with respect to other groups—we obtain the per capita earning gap ratio of the group (denoted by $EGap^g$). This ratio can be decomposed in two terms, one denoting the monetary loss or gain of the group due to segregation, Γ^g, and the other standing for its loss or gain within occupations, Δ^g:

$$\text{EGap}^g = \left(C^g \sum_j \frac{c_j^g}{C^g} w_j^g - C^g \sum_j \frac{t_j}{T} w_j \right) \frac{1}{C^g \overline{w}} =$$

$$= \underbrace{\sum_j \left(\frac{c_j^g}{C^g} - \frac{t_j}{T} \right) \frac{w_j}{\overline{w}}}_{\Gamma^g} + \underbrace{\left[\sum_j c_j^g \left(w_j^g - w_j \right) \right] \frac{1}{C^g \overline{w}}}_{\Delta^g}. \tag{7}$$

Note that this per capita earning gap ratio is nothing but the differential between the average wage of the group and the average wage of the economy, expressed as a proportion of the latter.

Following Alonso-Villar and Del Río (2016), analogous expressions can be used to quantify the total well-being losses or gains of a group rather than the monetary ones. Thus, the total well-being advantage or disadvantage (WAD_ε^g) that group g faces in the labor market as the result of both occupational segregation and within-occupation wage disparities with respect to other groups can be decomposed as follows:

$$WAD_\varepsilon^g = \begin{cases} \Psi_\varepsilon^g + \underbrace{\sum_j \frac{c_j^g}{C^g} \left[\ln \frac{w_j^g}{\overline{w}} - \ln \frac{w_j}{\overline{w}} \right]}_{\Omega_\varepsilon^g} & \varepsilon = 1 \\ \Psi_\varepsilon^g + \underbrace{\sum_j \frac{c_j^g}{C^g} \left[\frac{\left(\frac{w_j^g}{\overline{w}} \right)^{1-\varepsilon} - 1}{1-\varepsilon} - \frac{\left(\frac{w_j}{\overline{w}} \right)^{1-\varepsilon} - 1}{1-\varepsilon} \right]}_{\Omega_\varepsilon^g} & \varepsilon \neq 1 \end{cases} \tag{8}$$

where Ω_ε^g represents the welfare loss or gain of the group within occupations.

By using decompositions (7) and (8), one can determine whether segregation is an important component of the total earning gap and the well-being loss or gain of the group, respectively.

3. The Extent of Occupational Segregation

In this section, we explore if our target groups are evenly or unevenly distributed across occupations in terms of sexual orientation. For that purpose, we use the indices

described in Section 2.1. Later on, in Section 4, we explore whether this unevenness is good or bad for the group, which depends on the "quality" of the occupations that the group tends to fill or not to fill.

3.1 The data

Our data come from the 2010-2014 5-year sample of the IPUMS (Ruggles et al., 2015). The list of occupations has 453 titles, and the wage of each is proxied by the hourly average wage.[1] To obtain this wage, we compute the trimmed average in each occupation, eliminating all workers whose wage is zero, missing, or situated below the first or above the 99th percentile of positive values in that occupation, which prevents data contamination from outliers.

In this dataset, sexual orientation can be identified based on the sex of individuals living in couple households.[2] For simplicity, we labeled women and men who live in same-sex couple households as lesbians and gays, respectively, although we are aware of the fact that these couples we do not cover the whole population of homosexual workers in the economy. Likewise, straight or heterosexual workers are those in different-sex couples. Individuals who are not identified in the IPUMS as living in a couple are labeled as unpartnered workers and this group includes both homosexuals and heterosexuals. The sample consists of nearly 7 million workers: 53,032 individuals living in same-sex couples (25,874 gays and 27,158 lesbians), 4,235,209 individuals in different-sex couples, and 2,661,913 unpartnered workers. Once we use the sample weights, these groups represent, respectively, 0.7%, 56.5%, and 42.9% of total workers.

Some basic characteristics of these groups are shown in the Appendix (Table A1). Partnered homosexual workers have higher educational achievement than heterosexuals, the educational achievements of gay men being only slightly above those of lesbian women. In addition, homosexuals in couple relationships tend to be younger that heterosexuals but older than unpartnered individuals. The differences between partnered homosexuals and heterosexuals based on race are small except that Asian women and black men have a larger presence among heterosexuals.

[1] The total list includes 458 occupations but in 5 of them there is no employment during this period.
[2] We can identify the sex of the householder and that of the householder's partner.

3.2 Occupational Segregation by Sexual Orientation

We start our analysis by looking at the distributions of partnered homosexual and heterosexual workers, apart from unpartnered workers, across occupations. Figure 2 shows the local segregation curves for each of these three groups (the benchmark against which we compare the occupational sorting of each group here is the distribution of total employment across occupations).

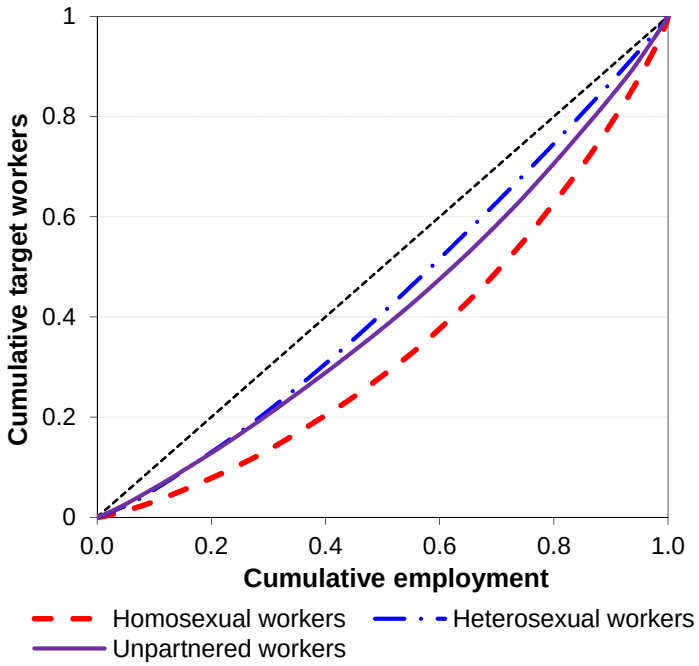

Figure 2. Local segregation curves of sexual-orientation groups (benchmark: total employment)

The chart reveals that the three groups are underrepresented in some occupations and overrepresented in others, although this pattern is of a larger magnitude in the case of partnered homosexuals. The curve of partnered homosexual workers is clearly below the other curves. This implies that this demographic group has a higher segregation level not only with the local segregation curve but also with all the indices consistent with the dominance criterion given by the curves (no matter what additional value judgement each of these indices incorporates). As shown in Table 1, the values of the six local segregation indices unanimously reveal higher segregation for homosexuals. For simplicity, the superindex g, which stands for group g, has been removed from all the indices.

Using the interpretation of index *D*, we can say that at least 22.5% of partnered homosexuals would have to switch occupations in order to have an occupational sorting identical to the occupational structure of the U.S. economy. In other words, almost one out of four workers living in same-sex couples would have to change occupations to ensure that in each of the 453 occupations into which the economy is classified, partnered homosexuals account for 0.7% of the employment of the corresponding occupation (i.e., the weight of the group in the economy).

	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D	G
Homosexual workers	0.161	0.150	0.147	0.158	0.225	0.303
Heterosexual workers	0.032	0.030	0.028	0.026	0.094	0.128
Unpartnered workers	0.045	0.045	0.045	0.046	0.125	0.170

Table 1. Segregation levels of sexual-orientation groups using several local segregation indices (benchmark: total employment)

Regarding the relationship between partnered heterosexual workers and unpartnered workers, we see that the curve of the former is closer to the 45º line in almost all the points at which it has been estimated, with the exception of the first two deciles (there is a crossing between these two curves when the cumulative employment is around 0.2). Table 1 shows that although in theory there may exist some indices for which unpartnered workers have lower segregation, according to all the indices employed in this study, the occupational sorting of heterosexuals in couple relationships is more even. Thus, for example, index *D* reveals that only 9.4% of these workers would have to change occupations to ensure the group has no segregation, while in the case of unpartnered workers this rate rises to 12.5%.

We can therefore conclude that despite the fact that the curve of partnered heterosexual workers does not dominate the other two curves, for a wide set of value judgements—those underlying the definition of this set of indices—these workers have a more even distribution across occupations, with less overrepresentation and underrepresentation than the other two groups have.

However, these findings hide something that is well-known in labor markets all over the world: the remarkable discrepancies that exist between the occupations filled mainly by

men and women. For this reason, from now on, we study women and men separately so that sexual orientation is crossed with sex.

3.3 Occupational Segregation by Sexual Orientation and Gender

We now focus on the occupational distributions of lesbian women, straight women, gay men, and straight men in couple households, although we also include in the study unpartnered women and men whatever their sexual orientation (who are the remaining workers of the economy). The aim is not only to identify the differences that exist in the occupational sorting of these six groups, but also to explore whether individuals' sex affects homosexual and heterosexual workers in the same way.

The first analysis compares the distribution of each of these six groups with the occupational structure of the economy, as we did earlier. Table 2 shows the values of the segregation indices for all groups whereas, for the sake of graphical clarity, Figure 3 only shows the segregation curves for the four groups of partnered individuals. At first glance, we see that, as one would expect, the segregation levels of heterosexual workers increase notably when women and men are considered separately—the values of index *D* reach 0.28 and 0.29 respectively, while before it was 0.09.[3] However, homosexual women and men have segregation levels (0.21 and 0.27, respectively, according to index *D*) that are similar to those shown before when there was no distinction by sex (0.23).

This suggests that the overrepresentation/underrepresentation of lesbian and gay workers in occupations is less correlated with the degree of feminization/masculinization of occupations than it is for heterosexual workers (and also for unpartnered). In other words, the mark of gender affects the occupational sorting of partnered homosexual workers to a lower extent than it does heterosexuals.

On the other hand, although no curve dominates any of the others, we can see that lesbian women are the group with the lowest level of segregation according to all the indices we have calculated, while heterosexual women are among the most segregated groups,[4] closely followed by heterosexual men. If we focus on index *D*, we see that

[3] Something similar happens to unpartnered workers. The value of index *D* is 0.13 when women and men are jointly considered and 0.28 for women and 0.24 for men, when they are taken separately.
[4] Only with ϕ_2 and *D* this is not the most unevenly distributed group.

there are nearly 7 percentage points of difference between lesbian and straight women, whereas the differences between gay and straight men are much lower. Notwithstanding this, in general, heterosexual men are more unevenly distributed across occupations than homosexual men (the exception is ϕ_2). It is also noticeable that the segregation level of gay men varies a lot depending on the index used. In some cases, it has an intermediate level, while in others it reaches the highest level. These changes can be explained by looking at the segregation curve of this group, which is the closest to the 45º line in the first deciles but the most distant in the last deciles, the latter pattern implying an outstanding concentration of the group in some occupations.

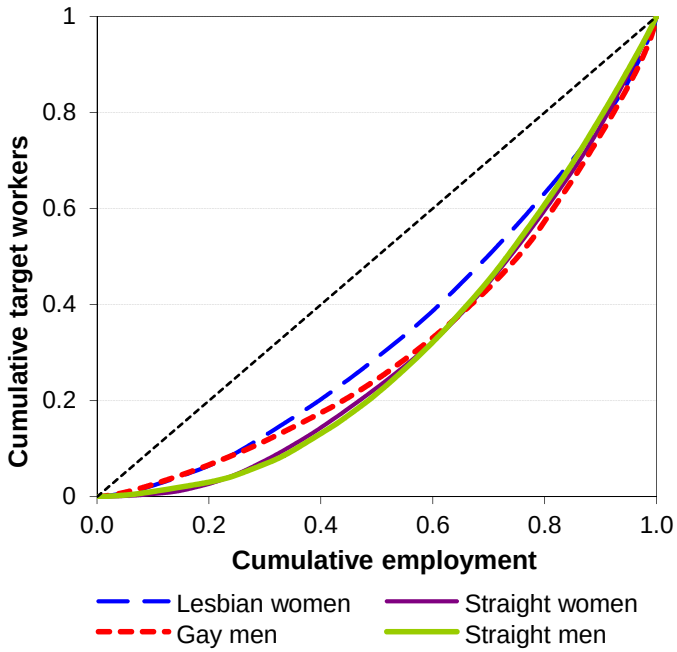

Figure 3. Local segregation curves of sex-sexual-orientation groups (benchmark: total employment)

	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D	G
Lesbian women	0.201	0.166	0.158	0.171	0.214	0.304
Straight women	0.372	0.296	0.249	0.225	0.279	0.381
Unpartnered women	0.352	0.285	0.244	0.224	0.275	0.379
Gay men	0.244	0.217	0.217	0.258	0.270	0.362
Straight men	0.333	0.280	0.243	0.217	0.286	0.379
Unpartnered men	0.220	0.199	0.184	0.181	0.244	0.338

Table 2. Segregation levels of sex-sexual-orientation groups using several local segregation indices (benchmark: total employment)

Additionally, we observe that the curves of heterosexual women and men are quite similar—thus explaining the similarity that exists between the corresponding indices—

whereas the curves of lesbian and gay workers are similar only in the first deciles, where they are above the curves of their straight counterparts. In other words, the underrepresentation of lesbians and gays in the occupations in which each of these groups has the lowest presence is less intense than the corresponding underrepresentation in the case of their straight counterparts. This could be another indication that the mark of gender is lower for homosexuals, so long as the occupations coincide with those with the highest levels of masculinization/feminization, as we explore next.

To test this hypothesis, we proceed as follows. First, we rank occupations from lower to higher feminization rates. Second, keeping that ranking, we split female employment into 5 quintiles, each of them accounting for 20% of women's employment. Figure 4 displays the employment share of each of our demographic groups, together with that of the entire economy, in each of these quintiles (Figure A1 in the Appendix shows the corresponding graph in the case of men). Thus, the first quintile represents the most masculinized occupations of the economy while accounting for 20% of employed women. These occupations represent 46% of total employment (see the height of the first quintile of "Total Employment") and employ 20% of either straight or unpartnered women, 34% of lesbian women, 44% of gay men, 66% of unpartnered men, and 73% of straight men (see the other columns of Figure 3).

At first glance, we see that the distributions of partnered lesbian and gay workers across these quintiles are more similar to each other (and also to that of the economy as a whole) than the distributions of partnered heterosexual workers (and also those of unpartnered workers). Moreover, the differences between the distributions of heterosexual women and men are really remarkable. These patterns are also shown in Tables A2 and A3 in the Appendix, which offer examples of occupations in which lesbian and gay workers, respectively, have representations remarkably higher than their demographic weights and also higher than those of their heterosexual counterparts.[5] Thus, the share of lesbian workers is more than twice the employment share of the occupation in: education administrators, social and community service managers, counselors, social workers, and postsecondary teachers. In these occupations, straight

[5] These occupations have been grouped according to their employment shares. Thus, Tables A2a and A3a include those occupations with higher employment rates while Tables A2b and A3b include those with lower rates.

women are overrepresented as well, but to a lower extent. Lesbians also have a major presence in other occupations in which heterosexual women are clearly underrepresented, as is the case of computer scientists and system analysts, network systems analysts, and web developers; lawyers, judges, magistrates, and other judicial workers; physicians and surgeons; police officers and detectives; security guards; sheriffs, bailiffs, correctional officers, and jailers; actors, producers, and directors, inter alia (see Tables A2a and A2b in the Appendix).[6] Although not shown in the tables, there is also a wide set of highly masculinized occupations in which both lesbian and straight women are clearly underrepresented, especially the latter.

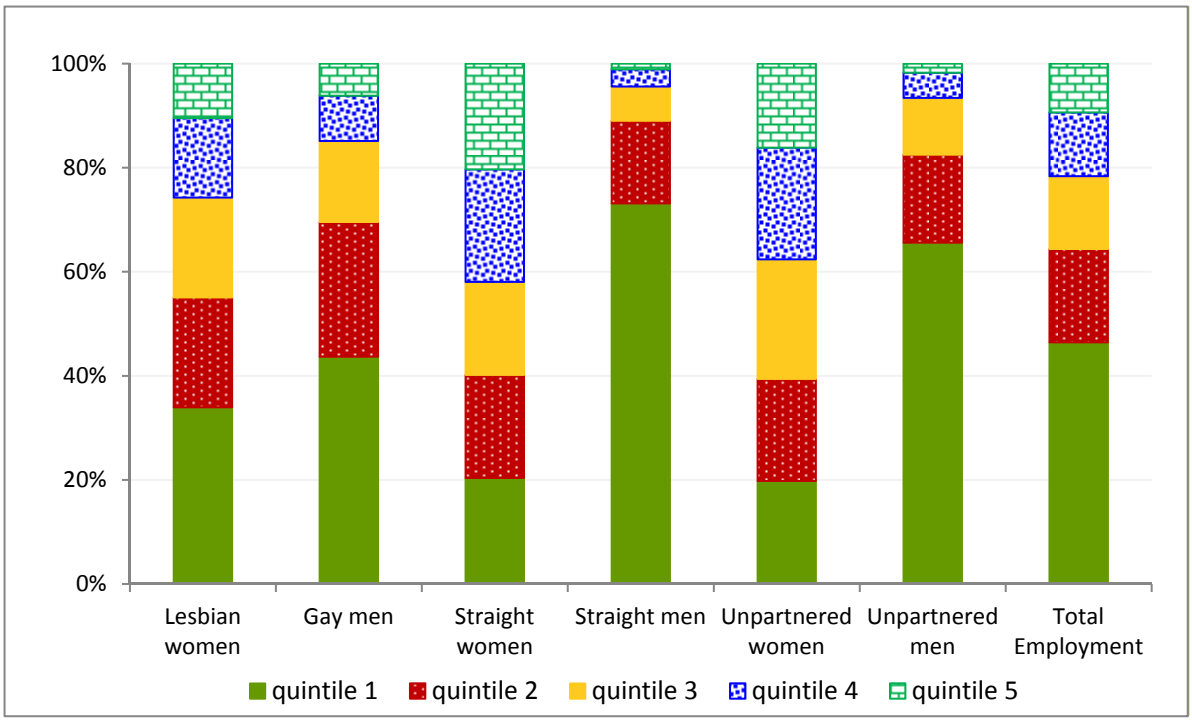

Figure 4. Employment share of each sex-sexual-orientation group in each quintile of female employment (employment ranked by feminization rates of occupations)

The analysis suggests that the lower segregation level of partnered lesbian women, as compared to their straight counterparts, is not the result of a high representation of the former in masculinized occupations but a lower underrepresentation in many of them. The analysis for partnered gay men leads to similar conclusions: they are not highly concentrated in strongly feminized occupations (despite some exceptions), although

[6] Occupations in which gay workers are overrepresented whereas straight men are underrepresented are: education administrators; social and community service managers; human resources, training, and labor relations specialists; social workers; designers; waiters and waitresses; hairdressers, hairstylists, and cosmetologists; meeting and convention planners; psychologists; social scientists; archivists, curators, and museum technicians; public relations specialists; massage therapists; bartenders; travel agents; and flight attendants and transportation workers and attendants, among others (see Tables A3a and A3b in the Appendix).

they do have a higher presence in this kind of occupations than their straight counterparts.[7] On the other hand, gay men have an outstanding underrepresentation in many of the most masculinized occupations.

With respect to unpartnered workers, Table 2 shows that men have low segregation while women tend to have high segregation (similar to that of straight women). It is important to highlight that unpartnered workers have a demographic composition that is clearly different from that of partnered workers, either heterosexuals or homosexuals. They have a lower average educational level (higher proportion of workers with less than a high school diploma and lower proportion of workers with bachelor's degrees), a high percentage of individuals below 30 years of age, and a higher presence of minorities, especially Black women and Hispanic men (see Table A1 in the Appendix). These differences in demographic characteristics are likely to explain some of the discrepancies that exist between the occupational sorting of this group and that of the other groups.

In order to keep a certain level of homogeneity in the population under study, let us consider now that in our economy we only have workers living with a partner—thus removing the effect of uncoupled workers—so that the benchmark against which we compare the distribution of each group is now the occupational structure of workers living in partnership (see Figure 5 and Table 3).

This second analysis also reveals that partnered lesbian women have less segregation than straight women—the difference between them is huge in many cases—making the latter the most segregated group according to all the indices. The ranking between partnered gay and straight men depends again on the index used (the curves intersect), but now with some indices, the values of these two groups are barely different. In fact, the segregation curves of both groups are closer than before. On the contrary, the curves of partnered heterosexual men and women are not as similar as they were when the economy consisted of all workers since now the segregation of men falls and that of women rises.

[7] Occupations related to education are a good example of this.

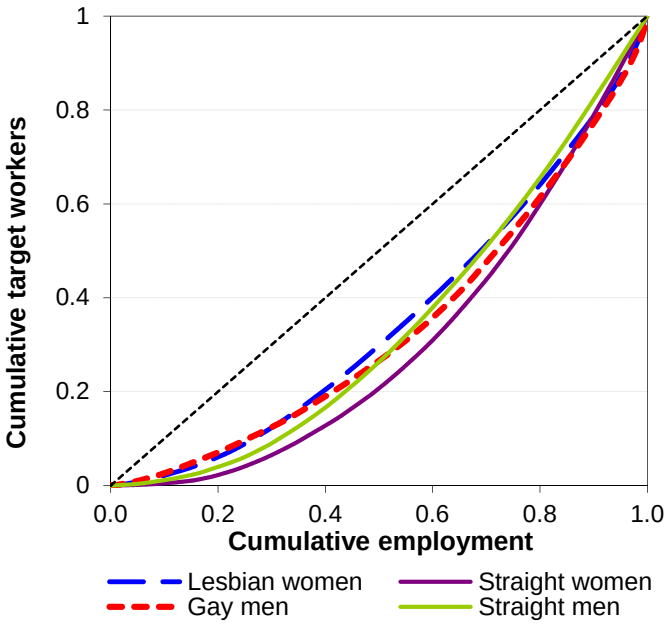

Figure 5. Local segregation curves for sex-sexual-orientation groups (benchmark: employment of couples)

	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D	G
Lesbian women	0.201	0.163	0.152	0.158	0.202	0.296
Straight women	0.409	0.320	0.266	0.232	0.294	0.391
Gay men	0.210	0.182	0.181	0.218	0.243	0.327
Straight men	0.255	0.211	0.179	0.151	0.238	0.316

Table 3. Segregation levels of sex-sexual-orientation groups using several local segregation indices (benchmark: employment of couples)

4. Quantifying the Economic Consequences of Segregation

The next step is to explore whether the unevenness just shown brings the groups advantages or disadvantages. Table 4 reveals that workers in same-sex couple households have monetary and well-being gains associated with their distribution across occupations. Thus, according to index Γ, their monetary gains are almost 15% of the average wage of the economy. Note that these workers have advantages due not only to their distribution across occupations but also because within occupations they earn higher hourly wages than other workers do, as Δ shows in Table 4. When joining the two gains, we have the per capita earning gap ratio of the group (*EGap*), which is almost 25%. In other words, homosexual workers have a per capita earnings gain of

25% of the average hourly wage of the economy because they are more concentrated than other groups in highly paid occupations and also because within occupations they earn higher wages (per hour) than other groups, the former factor being more important than the second (see also Figure A2 in the Appendix). We obtain the same findings for this demographic group when we calculate the well-being gain, rather than the monetary gain.[8]

	Γ	Δ	EGap	Ψ_1	Ω_1	WAD_1	Ψ_2	Ω_2	WAD_2
Homosexual workers	14.5	10.4	24.9	13.8	8.8	22.6	15.2	8.9	24.1
Heterosexual workers	8.5	7.3	15.8	8.5	6.9	15.4	10.1	7.8	17.8
Unpartnered workers	-11.4	-9.7	-21.0	-11.4	-10.1	-21.5	-13.5	-12.6	-26.1

Table 4. Monetary and well-being losses/gains of the sexual-orientation groups due to segregation, discrepancies within occupations, and total losses/gains (all values are multiplied by 100). Benchmark: total employment.

Similar outcomes, although of a lower magnitude, are also obtained for workers in different-sex couple households, for whom the per capita earning gap gain almost reach 16%, 54% of it arising from their occupational sorting. The other side of the coin is the situation of unpartnered workers, whose per capita hourly earnings are 21% lower than the average hourly wage of the economy. These losses come from both their distribution across occupations and the lower wages that they receive within occupations as compared to other groups.

Let us continue our analysis by crossing sexual orientation and sex while still keeping total employment as the benchmark economy. Figure 6 plainly reveals that both unpartnered women and men have important monetary losses associated with their occupational sorting (and also losses within occupations). The same happens when using the well-being measures (Table 5). The chart also reveals that all groups of women are always worse off than their male counterparts. In any case, it is important to note that lesbians—who have lower gains than gay and straight men—are the only group of women who enjoys a remarkable gain associated with their occupational

[8] See Table 4, where Ψ_1 and Ψ_2 are the well-being gains due to the occupational sorting of the group, Ω_1 and Ω_2 are the well-being gains arising within occupations, and WAD_1 and WAD_2 are the total well-being gains, for $\varepsilon = 1$ and 2.

sorting (they even have gains within occupations). It seems that the low segregation level of this group that we showed above goes hand- in- hand with an occupational sorting that is relatively advantageous for them as compared to that of either unpartnered women or women in different-sex couple households. On the other hand, gay men stand out as the group with the largest gains. The per capita monetary gain of this group associated with their occupational sorting is nearly 20% of the average hourly wage of the economy and its *Egap* is over 37%, surpassing by almost 7 percentage points that of men in different-sex couple households.

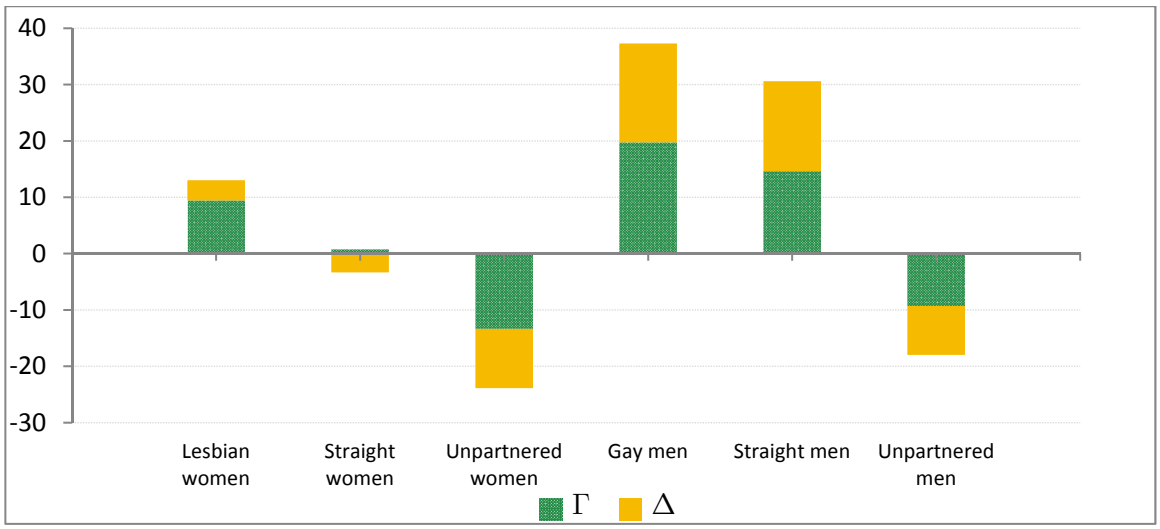

Figure 6. Monetary losses/gains of the sex-sexual-orientation groups due to segregation and to discrepancies within occupations (the values for Γ and Δ are multiplied by 100). Benchmark: total employment

	Γ	Δ	EGap	Ψ_1	Ω_1	WAD_1	Ψ_2	Ω_2	WAD_2
Lesbian women	9.4	3.6	13.0	9.7	3.6	13.3	11.2	4.0	15.2
Straight women	0.8	-3.3	-2.6	1.5	-1.9	-0.3	2.3	-0.7	1.5
Unpartnered women	-13.4	-10.5	-23.9	-13.8	-11.3	-25.1	-16.9	-14.8	-31.7
Gay men	19.8	17.5	37.3	18.1	13.5	31.6	19.5	12.5	32.0
Straight men	14.6	16.0	30.6	14.1	13.1	27.2	16.3	13.1	29.4
Unpartnered men	-9.3	-8.7	-18.0	-8.9	-8.9	-17.9	-9.9	-10.8	-20.7

Table 5. Monetary and well-being losses/gains of the sex- sexual-orientation groups due to segregation, discrepancies within occupations, and total losses/gains (all values are multiplied by 100). Benchmark: total employment

To obtain a clearer image of the effect of sexual orientation on the position of a group in the labor market, in what follows we restrict our population to workers living in couple households. This means that the benchmark against which we compare the occupational sorting of our target groups is now the occupational structure of individuals living with a partner rather than total employment (Figure 7 and Table 6).

Figure 7. Monetary losses/gains of the sex-sexual-orientation groups due to segregation and discrepancies within occupations (the values for Γ and Δ are multiplied by 100). Benchmark: employment of couples

	Γ	Δ	EGap	Ψ_1	Ω_1	WAD_1	Ψ_2	Ω_2	WAD_2
Lesbian women	0.9	-3.3	-2.4	1.2	-3.4	-2.2	1.3	-4.5	-3.2
Straight women	-7.6	-8.3	-15.9	-7.6	-8.2	-15.8	-9.3	-9.7	-19.0
Gay men	10.8	7.7	18.5	10.1	6.1	16.2	10.7	5.6	16.3
Straight men	5.9	6.8	12.7	6.0	5.8	11.7	7.3	6.1	13.3

Table 6. Monetary and well-being losses/gains of the sex- sexual-orientation groups due to segregation, discrepancies within occupations, and total losses/gains (all values are multiplied by 100). Benchmark: employment of couples

As expected, the positions of the four groups living in couple households worsen since we have dropped from the sample the two groups having the worst situations in the labor market. In any case, note that Figure 7 clearly shows that, in this new scenario, partnered gay men still face more gains associated with their occupational sorting than straight men, and this happens using either monetary or well-being measures (although

the gap decreases with the inequality aversion parameter). The former have a monetary gain of almost 11% of the average wage of coupled individuals while the gain for the latter is almost 6%.

However, the situation of women in same-sex couple households shows remarkable differences with respect to our previous analysis. Although they still have advantages associated with their distribution across occupations—which remain much lower than those of men—those benefits are now almost negligible: their monetary gain is below 1% of the average wage of the benchmark economy. On the other hand, consistent with the segregation levels shown in the previous section, we find that women in different-sex couples now have important losses associated with their sorting, a disadvantage with respect to other coupled workers that the inclusion of unpartnered workers in our previous analysis did not allow us to detect in all its magnitude. The monetary loss of these women due to segregation is above 7% of the average wage of the benchmark economy. Their losses are even higher when using the well-being measure Ψ_2, which is more averse to inequality among the individuals of the group than Ψ_1 is (Table 6).

When exploring what happens within occupations, we find that partnered heterosexual women have disadvantages with respect to men, a pattern that is also shared by homosexual women. This means lesbian women have total earning losses of above 2% of the average wage of the benchmark economy because their small advantage due to their occupational sorting is more than offset by the losses that they face within occupations (with respect to men living in couple households). The losses of heterosexual women associated with their situation within occupations are even greater (above 8% of the average wage of the benchmark economy), which means this group has a total earning loss of nearly 16%. These findings are consistent with the earning advantage of lesbian workers as compared to straight women that has been shown in previous studies (Black et al., 2001; Antecol et al., 2008). Consequently, segregation explains about half of the monetary losses of straight women living with a partner, while the disadvantage of lesbians living with a partner arises from their lower wages within occupations. For gay men, the advantage due to their occupational sorting is much greater than their advantage within occupations, while for straight men the two components have a similar weight.

5. Conditional Losses (Gains) of the Groups and Main Explanatory Factors

In this section, we explore whether the advantages or disadvantages of the four groups of partnered individuals arise from differences among them in their main characteristics (educational achievements, race/ethnicity composition, immigration profile, English proficiency, and age) or are due to other reasons. For that purpose, we built counterfactual distributions of occupations in which the group under consideration has the same attributes as the group of reference, the latter being that of straight men.[9] If we calculate the loss (gain) of the target group in this new framework, labeled conditional loss (gain), and we find it to barely change, then the characteristics mentioned above are not the cause of the different situation of the target group as compared to that of straight men. If, on the contrary, the conditional loss (gain) of the group varies a lot, we can say that a large part of that variation comes from differences in characteristics between the two demographic groups. To undertake this conditional analysis we follow the propensity score method proposed by DiNardo et al. (1996) in the case of wage discrimination and adapted by Gradín (2013) to explore occupational segregation. Following the latter author, the contribution of each explanatory factor is obtained using the Shapley decomposition (Sastre and Trannoy, 2002; Shorrocks, 2013).[10]

In order to build a counterfactual distribution of occupations, we may follow two different strategies. The first entails calculating a different counterfactual for each group, taken separately, that results from making that group have the same characteristics as straight men. For that to be the case, we cross the explanatory variables mentioned above and make each of those "cells" for the target group have the same relative size as it has in the reference group. In the case of lesbian women, for example, this means that we "force" lesbian women of a certain age, who possess bachelor's degrees and were born in the U.S., etc., to be the same relative size as their straight male counterparts. However, we keep the occupational sorting of lesbians with those attributes unaltered. This homogenization in characteristics involves both a

[9] To isolate the effect of changes in the distribution of a group across occupations derived from making the group have the same characteristics as the reference group, we keep the wage of each occupation unaltered. In other words, occupational wages are assumed to be exogenous.

[10] The Shapley decomposition, widely used in the literature on income distribution, is path independent (i.e., the contribution of each factor does not depend on the intermediate steps, or path, we follow to obtain it) and it sums up the total change in the losses (gains).

change in the occupational sorting of the whole group of lesbians (due to changes in the size of each subgroup of lesbians defined by the crossing of the mentioned variables) and also in the occupational structure of the economy. We label the loss (gain) of the target group in this framework as conditional loss (gain) using a partial counterfactual distribution since we only homogenize the attributes of the group under consideration (in our example, that of lesbian women).

But, we could also follow a different strategy by homogenizing all target groups at the same time, i.e., making lesbian women, straight women, and gay men have the same characteristics as those of straight men. We label the occupational distribution in this conditional analysis as the total counterfactual distribution since we include the changes that are involved in the joint homogenization of all target groups. In our empirical analysis, we calculate the losses or gains of the groups in these two scenarios.

5.1 Propensity Score Procedure

For the sake of clarity, we explain this method to calculate the conditional loss or gain of a group when only that group is homogenized, although the process is analogous when all the groups are homogenized simultaneously.

Let us consider that we focus on lesbian women. The first step to take to homogenize this target group is to divide it into the mutually exclusive subgroups or "cells" resulting from the crossing of the main attributes mentioned above. Next, we have to obtain the counterfactual density function that lesbian women would have if they had the same attributes as the reference group, straight men, while keeping unchanged the distribution of every subgroup of lesbians across occupations. For that purpose, the original observations of lesbians in the sample have to be reweighted by the probability, predicted by a logit model, that each person—who has specific attributes in terms of education, race/ethnicity, immigration profile, English proficiency, and age—belongs to the group of straight men rather than to the group of lesbian women.

Let us denote by $z \equiv (z_1,...,z_k)$ the vector of the k covariates describing the attributes of each subgroup and by W a dummy variable standing for gender-sexual orientation membership, where the variable is equal to 1 in the case of straight men and 0 in the case of lesbian women. The weighting scheme, Ψ_z, that we have to use to make lesbian

women have the same characteristics (other than sex and sexual orientation) as straight men can be easily estimated from the data. Thus,

$$\Psi_z = \frac{\frac{\Pr(W=1|z)}{\Pr(W=1)}}{\frac{\Pr(W=0|z)}{\Pr(W=0)}} = \frac{\Pr(W=0)}{\Pr(W=1)}\frac{\Pr(W=1|z)}{\Pr(W=0|z)},$$

where the first term can be approximated by the ratio between the population samples of both demographic groups and the second term can be obtained by estimating the probability of an individual with attributes z belonging to the group of straight men (rather than to the group of lesbian women) using a logit model over the pool sample with observations from both groups:

$$\Pr(W=1|z) = \frac{\exp(z\hat{\beta})}{1+\exp(z\hat{\beta})},$$

where $\hat{\beta}$ is the associated vector of estimated coefficients.

This method allows us to construct a counterfactual distribution for lesbian women (and also a counterfactual occupational structure for the economy resulting from including the corresponding employment adjustments of this group). The loss/gain obtained using this counterfactual is labeled conditional loss/gain. The difference between unconditional and conditional losses/gains provides a measure of the losses/gains that are actually explained by our covariates z. As mentioned above, this explained term can be additionally disaggregated into the detailed contribution of each factor by using the Shapley decomposition.[11]

[11] To obtain the contribution of education, for example, we use the logit coefficients as follows: First, we calculate the prediction of $\Pr(W=1|z)$ by assuming that all coefficients except those of education dummies are zero, and then we compare the conditional loss/gain resulting from this new counterfactual to the unconditional loss/gain of lesbian women. Next, we calculate the prediction of the aforementioned probability, assuming that the coefficients of all covariates, except education and another covariate (e.g., immigration profile), are zero. The resulting counterfactuals are then compared to obtain the marginal contribution of education when immigration has been taken into account. Similarly, the analysis should be repeated when English proficiency, rather than immigration, is the first factor to change and so on. Following the same procedure, we have to consider all possible sequences where education is the third rather than the second factor to change. Averaging over all possible marginal contributions of education, we compute the contribution of this covariate to explain the difference between unconditional and conditional losses/gains of lesbian women.

5.2 Do Differences in Characteristics Explain the Disparities among Gender-Sexual Orientation Groups?

We homogenize our four groups according to five key characteristics: educational achievements (4 levels: less than high school, high school diploma, some college, and bachelor's degree), race/ethnicity (5 groups: non-Hispanic whites, blacks, and Asians, Hispanics of any race, and others),[12] years of residence in the U.S. (3 classes: born in the country, up to 10 years, and more than 10 years), English proficiency (4 classes: speaking only English, speaking English very well, well, and not well or not at all), and age (3 groups: between 16 and 29, between 30 and 54, and above 54). As Table A4 in the Appendix reveals, the results of the logit regressions yield reasonable findings. Thus, lesbian and gay workers show the expected signs and levels in the coefficients of the variables that tend to differentiate each of these groups from straight men (reference group), see Table A1. Mainly, these are the dummies related to, on the one hand, the high educational achievements of homosexuals and, on the other hand, their lower shares of immigrants and people with low English level (especially in the case of lesbians), and also their lower proportion of people above 54 years of age.

The numbers shown in Figure 8, which report the gains/losses that women and men living in either same-sex or different-sex couples have due to their occupational sorting, speak for themselves. The advantages of gay and lesbian workers would disappear if they had the same basic attributes (other than sexual orientation and sex) as straight men do. Thus, when we homogenize each group separately and use the employment of couples as the benchmark economy, Γ plunges in the case of gay men from almost 11% to 0.2% (a percentage far from the 6% that straight men have), and in the case of lesbian women, from 0.9% to -8.3% (a figure close to that of straight women, -9.1%).[13] If we homogenized the three groups simultaneously, the difference between lesbian and

[12] Due to their small group size, Native Americans have been joined with the group of individuals from other races.

[13] If we instead use total employment as the benchmark economy (including, therefore, unpartnered workers), the basic findings remain although there are some small differences. Women in same-sex couples keep having a slight advantage as compared to women in different-sex couples and both groups have negative Γ values, but now those values are closer to zero (-0.8% and -1.5%, respectively). Men in same-sex couples continue to be the group in second position in the ranking according to index Γ, with a value of 8%, 6.6 percentage points below the value for men in different-sex couples (see Figure A3 and Table A6 in the Appendix).

straight women would be slightly greater, Γ being almost 2 percentage points higher for the former, but the findings mentioned above would remain almost unaltered.

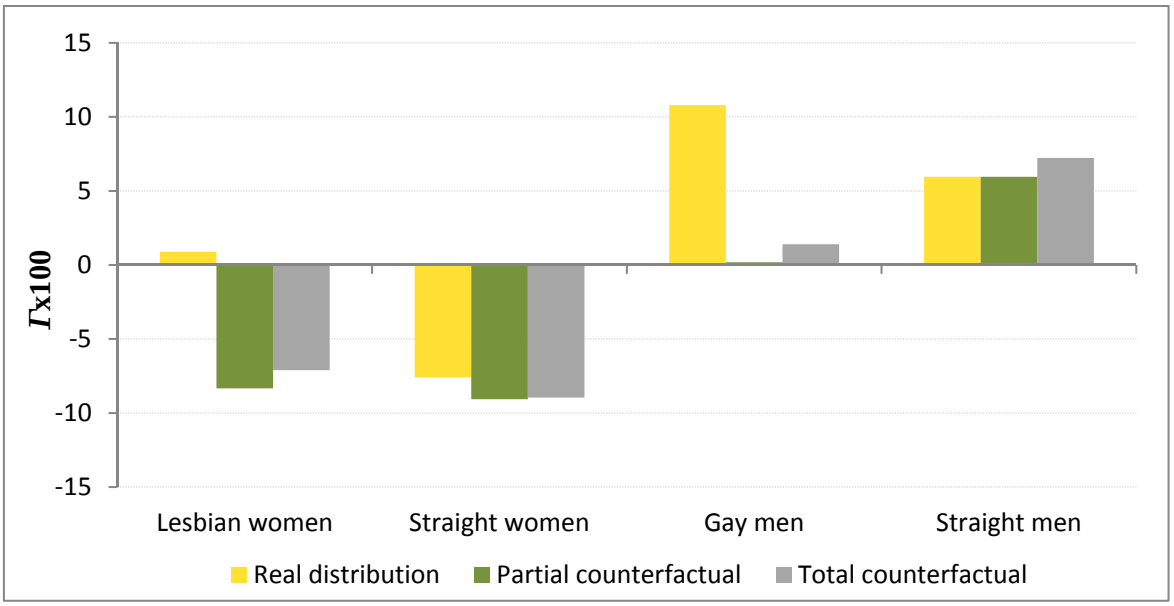

Figure 8. Monetary losses/gains of the sex-sexual-orientation groups due to segregation (Γ x100) in the real and counterfactual distributions. Benchmark: employment of couples

As Figure 9 displays, the reduction in the relative earnings of gays and lesbians after controlling for characteristics arises mainly from the decrease in the educational achievements and the rise in the proportion of the immigrant population with a low English proficiency that these two groups would have in their counterfactual distributions. The first factor accounts for 86% and 76% of the fall for gays and lesbians, respectively, while the second factor represents 16% and 24%, respectively (see Table A7 in the Appendix). The age structure is of a much lower magnitude. It is astounding the positive effect that increasing the share of racial minorities, resulting from the homogenization process, would have for gays and lesbians, which suggests the existence of a substantial discrepancy in terms of position in the labor market between non-white population living in different-sex couples and the population that we identify in our dataset as living in same-sex couples.

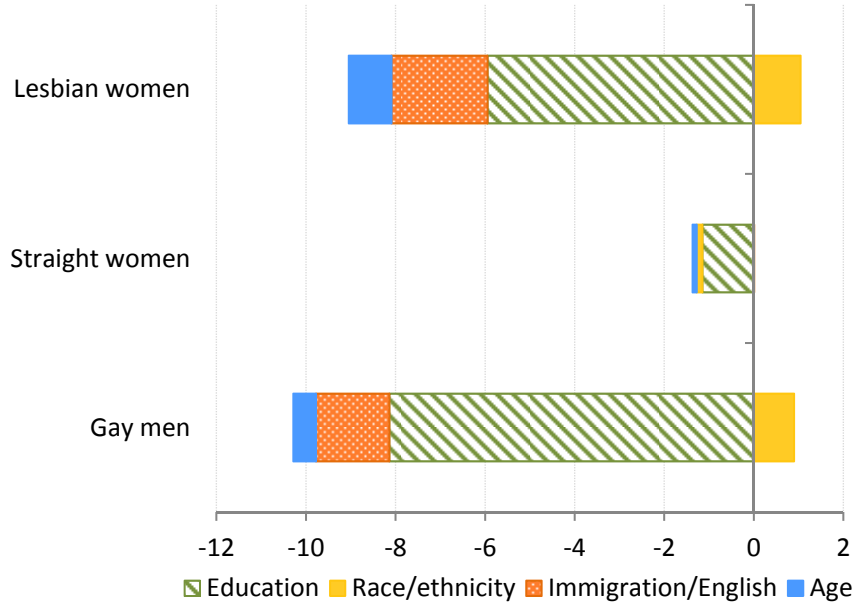

Figure 9. Monetary losses (gains) minus conditional monetary losses (gains) of each group (values multiplied by 100) using the total counterfactual. Factors' contributions are measured using the Shapley decomposition (benchmark: employment of couples)

This simple counterfactual analysis has allowed us to show the extent to which the economic position that partnered gays and lesbians occupy associated with their occupational sorting comes from their higher educational levels. Once that effect is taken into account, gay men do not seem to benefit from the privileges that men in different-sex couples enjoy, while partnered lesbian women do share their lower position in the labor market with their straight counterparts.

6. Final comments

The myth of gay affluence has been debated in the economics literature at least since the publication of Lee Badgett's (2001) book "Money, Myths, and Change: The Economic Lives of Lesbians and Gay Men," where the author refutes the widespread belief that homosexuals enjoy an advantageous position in U.S. society. The portrait of a gay population with lower family responsibilities, more hedonic attitudes, and in a well-to-do situation, mainly associated with a privileged position in the labor market, has created social narratives that include both the alleged existence of a "pink mafia," consisting of gay men in economic and political centers of power helping each other, and a "queer conspicuous consumer" whom various industries/business want to attract.

Along with these stories, others have also been built from experiences of legal and/or social discrimination that the homosexual population has faced. In this context, it seems

convenient to wonder to what extent gay men and lesbian women are nowadays discriminated against in areas as diverse as health care, education, welfare protection, work setting, or economic benefits linked to marriage, among others. With respect to the labor market, the literature offers interesting empirical findings (Badgett, 2007). On the one hand, several studies give evidence of a negative wage gap for gay men after controlling for human capital and other relevant attributes, although this gap seems to arise not only from sexual orientation but also from the "married premium" that straight, married men enjoy (Carpenter, 2007b). In the case of lesbian women, the results are less conclusive. While many studies show a positive (although not always statistically significant) wage gap for lesbian woman as compared to straight women with "similar" characteristics, there is an ongoing debate about how the traditional gender division of labor affects straight and lesbian women (Black et al., 2003).[14]

In both cases, however, the higher educational achievements of gays and lesbians have been pointed out as the main explanatory factor of the raw wage gap between homosexuals and heterosexuals (although the reasons for those differences in education are still unclear). On the other hand, the role played by the distributions of these two groups across occupations in explaining their wage gaps has been considered to be small (Antecol et al., 2008).

This paper offers an approach that complements the one followed in the studies mentioned. Our aim is not to explain the wage gap by sexual orientation but to assess the occupational sorting of partnered gays and lesbians, exploring how their distributions differ from those of different-sex couples, and also to quantify the extent to which differences in their distributions across occupations are reflected in the earnings of gays and lesbians and, therefore, in their economic positions within society. In this vein, and despite the evident methodological differences, our approach shares important

[14] The lesbian wage advantage seems to strongly depend not only on the indicator used for sexual orientation but also on how labor intensity and experience are accounted for, whether the analyses take into account that lesbians previously married to men may have different experiences than other lesbians (Daneshvary et al., 2009), or even the household division of labor within same-sex female couples, with a "primary" earner and a "secondary" one (Scheneebaum, 2013). In any case, there are also recent works that show situations where lesbian women get lower wages than straight women and also lower economic outcomes when other dimensions are taken into consideration (harassment at work, difficulty in finding a job, stress, etc.), as is the case of young lesbians in Australia (Carpenter, 2008). Conducting an experiment based on job applications for clerical jobs in Austria, Weichselbaumer (2003) finds that there exists discrimination against lesbians. Using a similar methodology, Drydakis (2011) also shows that low-qualified lesbians in Greece have a lower probability to receive an invitation for an interview, and if they are hired, their wages are lower than those of straight women.

similarities with those studies focused on the poverty of gay people since the reference we use to appraise the labor situation of this group is the economy, as is usually done in the literature on distributive issues, and not only their straight counterparts.

Our detailed analysis corroborates that the distribution of gay people across occupations is less influenced by the traditional mark of gender than that of different-sex couples. Given that the former are more highly represented where their heterosexual counterparts are clearly underrepresented, the occupational sorting of gay people is more similar to the occupational structure of the economy. This is especially the case of lesbian women, who are the group with the lowest occupational segregation level when the benchmark economy is either total employment or the employment of partnered individuals. In this last case, only 20% of them would have to switch occupations to be evenly distributed across occupations while this percentage is almost 30% for straight women. The occupational sorting of gay men is not as even as that of lesbian women since although they have a higher representation in highly feminized occupations than straight men do, this effect is partially offset by their high concentration in other occupations. In any case, the occupational distribution of gay men brings them a remarkable positive earning gap, 11% of the average wage of partnered workers, whereas the occupational sorting of lesbian women only allows them to depart from the losses that straight partnered women have (almost 8%) since their earning gap, although positive, is close to zero (below 1%).

This advantageous position of workers in same-sex couples has likely fueled the myth of gay affluence in the collective thinking, especially in the case of men. However, the truth is that the gay men and lesbian women identified as such using the ACS have some characteristics that may explain those raw earning advantages.[15] In fact, our results show that if gay men had the same educational achievements, immigration profile, racial composition, and age structure as straight partnered men have, the advantages of this group associated with their occupational sorting would disappear completely. If there were no wage differences by sexual orientation within occupations, the wage of gay men would equal the average wage of coupled workers, which is 6

[15] The characteristics of gay people in the ACS may be influenced by the fact that some individuals in same-sex households may not report the true information about their relationship with the householder (Berg and Lien, 2009). This may cause some bias if individuals hiding a same-sex couple relationship are those whose attributes make them more vulnerable in case of disclosure. Other differences may arise from how their sexual orientation shapes some of their decisions before entering the labor market.

percentage points below that of men in different-sex couples. Likewise, if lesbian women had the same characteristics, other than sex and gender orientation, as straight partnered men have, the small advantage that these women derive from their occupational sorting would not only vanish but would turn into disadvantages, leaving them with a loss with respect to the average wage of coupled workers similar to the one straight partnered women have after their corresponding homogenization.

It is their higher educational attainments and, to a lower extent, their lower immigration profile, that prevents workers living in same-sex couples from having a disadvantaged occupational sorting, since neither do gay men seem to enjoy the privilege of being partnered men nor do lesbian women appear to be free from the mark of gender. All this may help to explain why same-sex couples are more likely to be poor than married different-sex couples, even after controlling for family characteristics that affect poverty (Albelda et al., 2009; Scheneebaum, 2013). In any case, further research is called for to delve deeper into the heterogeneity issues within same-sex couples and also on the composition of those households in order to have a better understanding about how the position of homosexuals in the labor market is reflected in the economic status reached by the households to which they belong.

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Appendix

	Lesbian women	Straight women	Unpartnered women	Gay men	Straight men	Unpartnered men	Total
Education							
Less than High School	4.0	5.9	10.3	4.2	9.8	14.1	9.8
High School	15.8	22.4	23.8	14.6	25.2	30.1	25.1
Some College	31.8	32.9	37.9	29.5	29.1	32.8	32.8
Bachelor's Degree	48.4	38.9	28.1	51.7	36.0	23.1	32.4
Race/ethnicity							
White	75.8	72.6	57.8	75.5	70.9	59.4	66.1
Black	7.7	7.4	17.9	5.1	7.3	12.2	10.7
Asian	2.6	6.0	5.1	4.1	5.4	5.4	5.5
Hispanic	11.1	12.1	16.4	13.0	14.5	20.5	15.5
Other	2.9	1.9	2.8	2.3	1.8	2.6	2.2
Years of residence							
Born in the US	91.1	83.1	84.1	86.3	80.3	80.7	82.0
Immigrant <=10 years	1.5	3.5	4.2	2.6	3.9	6.9	4.5
Immigrant > 10 years	7.3	13.4	11.7	11.1	15.8	12.4	13.5
English							
Only English	88.3	81.4	79.0	84.3	78.9	75.2	78.8
Very well	8.9	11.0	13.4	11.5	11.3	14.0	12.2
Well	1.7	3.9	3.7	2.4	5.2	4.7	4.4
Not well or not at all	1.1	3.7	4.0	1.8	4.6	6.2	4.5
Age							
Young (16-29)	16.4	12.9	37.8	12.6	10.0	43.9	23.9
Middle-aged (30-54)	64.7	64.4	43.6	68.1	63.9	43.6	55.4
Older adults (>=55)	19.0	22.7	18.7	19.4	26.1	12.5	20.7

Table A1. Demographics of sex-sexual-orientation groups

Panel A: Large Occupations					
Occupation	Employment (%)	**Lesbian women**	Straight women	Gay men	Straight men
Education Administrators	0.59	**2.09**	1.35	1.50	0.70
Social and Community Service Managers	0.24	**2.98**	1.36	2.34	0.68
Computer Scientists and Systems Analysts/Network systems Analysts/Web Developers	0.86	**1.10**	0.59	1.70	1.32
Counselors	0.49	**2.75**	1.55	1.06	0.54
Social Workers	0.71	**2.71**	1.69	1.31	0.43
Lawyers, and judges, magistrates, and other judicial workers	0.75	**1.32**	0.68	1.46	1.25
Postsecondary Teachers	0.99	**2.14**	1.03	1.90	0.95
Physicians and Surgeons	0.62	**1.03**	0.70	1.58	1.23
Sheriffs, Bailiffs, Correctional Officers, and Jailers	0.30	**1.36**	0.43	0.24	1.46
Police Officers and Detectives	0.58	**1.11**	0.24	0.46	1.61
Security Guards and Gaming Surveillance Officers	0.68	**1.18**	0.35	0.68	1.52

Panel B: Other Occupations					
Occupation	Employment (%)	**Lesbian women**	Straight women	Gay men	Straight men
Agents and Business Managers of Artists, Performers, and Athletes	0.03	**2.09**	0.95	3.97	1.00
Financial Examiners	0.01	**3.27**	0.93	1.28	1.03
Mathematical science occupations, nec	0.03	**2.28**	1.05	1.96	0.94
Psychologists	0.13	**4.28**	1.46	2.56	0.58
Social Scientists, nec	0.04	**2.83**	1.15	2.97	0.84
Community and Social Service Specialists, nec	0.07	**2.64**	1.42	1.71	0.64
Archivists, Curators, and Museum Technicians	0.03	**2.18**	1.30	3.29	0.72
Librarians	0.12	**2.17**	1.92	1.59	0.24
Actors, Producers, and Directors	0.13	**2.26**	0.77	3.81	1.14
Editors, News Analysts, Reporters, and Correspondents	0.17	**2.35**	1.08	2.37	0.91
Writers and Authors	0.14	**3.00**	1.26	2.03	0.76
Media and Communication Workers, nec	0.07	**2.39**	1.58	1.10	0.52
Physician Assistants	0.08	**2.35**	1.45	0.99	0.62
Occupational Therapists	0.07	**2.39**	2.01	0.38	0.18
Respiratory Therapists	0.07	**2.07**	1.39	1.18	0.67
Therapists, nec	0.11	**3.29**	1.72	1.41	0.39
Veterinarians	0.05	**2.57**	1.10	0.85	0.90
Health Diagnosing and Treating Practitioners, nec	0.02	**5.04**	1.39	2.02	0.63
Physical Therapist Assistants and Aides	0.05	**2.50**	1.67	0.61	0.45

Massage Therapists	0.11	**3.60**	1.81	2.08	0.31
Animal Control	0.01	**6.38**	0.82	0.95	1.09
First-Line Supervisors of Personal Service Workers	0.10	**2.21**	1.35	1.65	0.70
Animal Trainers	0.03	**1.98**	1.09	2.27	0.91
Nonfarm Animal Caretakers	0.14	**2.94**	1.58	1.57	0.51
Residential Advisors	0.06	**3.94**	1.42	1.13	0.63
Personal Care and Service Workers, All Other	0.07	**3.03**	0.94	0.63	1.03
Telemarketers	0.07	**2.16**	1.48	1.08	0.61
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	0.01	**2.73**	0.52	1.15	1.36
Food Cooking Machine Operators and Tenders	0.01	**2.03**	0.90	0.00	1.08
Model Makers and Patternmakers, Metal and Plastic	0.00	**6.44**	0.17	0.00	1.61
Shoe Machine Operators and Tenders	0.00	**17.40**	1.30	0.00	0.59
Conveyor operators and tenders, and hoist and winch operators	0.01	**2.94**	0.10	1.35	1.70

Table A2. Examples of occupations in which partnered lesbian workers have a high representation

Note. First column: employment share of each occupation (benchmark: total employment). Other columns: employment share of the group divided by employment share of the occupation (benchmark: employment of couples).

Panel A: Large Occupations					
Occupations	Employment (%)	Lesbian women	Straight women	**Gay men**	Straight men
Managers in Marketing, Advertising, and Public Relations	0.65	1.20	0.91	**1.71**	1.06
Financial Managers	0.75	0.84	1.12	**1.59**	0.90
Education Administrators	0.59	2.09	1.35	**1.50**	0.70
Food Service and Lodging Managers	0.73	1.43	0.99	**1.97**	0.99
Social and Community Service Managers	0.24	2.98	1.36	**2.34**	0.68
Human Resources, Training, and Labor Relations Specialists	0.60	1.44	1.48	**1.29**	0.60
Social Workers	0.71	2.71	1.69	**1.31**	0.43
Postsecondary Teachers	0.99	2.14	1.03	**1.90**	0.95
Designers	0.53	1.22	1.18	**3.84**	0.82
Waiters and Waitresses	1.49	1.44	1.74	**1.60**	0.39
Hairdressers, Hairstylists, and Cosmetologists	0.57	1.18	2.10	**2.78**	0.10
Real Estate Brokers and Sales Agents	0.52	0.87	1.20	**2.18**	0.83
Elementary and Middle School Teachers	2.40	1.11	1.78	**0.71**	0.38
Registered Nurses	2.06	1.39	2.03	**0.78**	0.17
Personal Care Aides	0.80	1.57	1.92	**0.83**	0.26

Panel B: Other Occupations					
Occupations	Employment (%)	Lesbian women	Straight women	**Gay men**	Straight men
Natural Science Managers	0.01	1.34	0.89	**3.34**	1.06
Agents and Business Managers of Artists, Performers, and Athletes	0.03	2.09	0.95	**3.97**	1.00
Meeting and Convention Planners	0.14	1.44	1.70	**2.69**	0.42
Financial Analysts	0.07	0.70	0.78	**2.19**	1.17
Financial Specialists, nec	0.05	1.71	1.17	**2.45**	0.84
Architects, Except Naval	0.12	0.99	0.49	**2.88**	1.39
Economists and market researchers	0.02	0.32	0.65	**2.56**	1.27
Psychologists	0.13	4.28	1.46	**2.56**	0.58
Urban and Regional Planners	0.01	1.65	0.86	**3.08**	1.09
Social Scientists, nec	0.04	2.83	1.15	**2.97**	0.84
Biological Technicians	0.02	0.62	0.92	**3.50**	1.04
Archivists, Curators, and Museum Technicians	0.03	2.18	1.30	**3.29**	0.72
Artists and Related Workers	0.13	1.40	0.95	**3.04**	1.02
Actors, Producers, and Directors	0.13	2.26	0.77	**3.81**	1.14
Musicians, Singers, and Related Workers	0.13	1.02	0.83	**3.40**	1.11
Entertainers and Performers, Sports and Related Workers, All Other	0.03	1.74	0.92	**3.99**	1.02
Editors, News Analysts, Reporters, and Correspondents	0.17	2.35	1.08	**2.37**	0.91
Public Relations Specialists	0.09	1.03	1.34	**2.06**	0.71

Writers and Authors	0.14	3.00	1.26	**2.03**	0.76
Health Diagnosing and Treating Practitioners, nec	0.02	5.04	1.39	**2.02**	0.63
Massage Therapists	0.11	3.60	1.81	**2.08**	0.31
Bartenders	0.29	1.55	1.37	**2.46**	0.69
Animal Trainers	0.03	1.98	1.09	**2.27**	0.91
Baggage Porters, Bellhops, and Concierges	0.06	0.79	0.46	**3.11**	1.41
Travel Agents	0.05	1.64	1.83	**3.40**	0.30
Credit Authorizers, Checkers, and Clerks	0.03	0.93	1.64	**2.36**	0.48
Hotel, Motel, and Resort Desk Clerks	0.10	1.27	1.59	**2.92**	0.51
Reservation and Transportation Ticket Agents and Travel Clerks	0.08	1.02	1.35	**3.14**	0.70
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	0.01	0.12	1.39	**4.04**	0.67
Furniture Finishers	0.01	0.38	0.51	**2.48**	1.38
Flight Attendants and Transportation Workers and Attendants	0.08	1.00	1.72	**10.95**	0.32

Table A3. Examples of occupations in which partnered gay workers have a high representation

Note. First column: employment share of each occupation (benchmark: total employment). Other columns: employment share of the group divided by employment share of the occupation (benchmark: employment of couples).

	Lesbian women	Straight women	Unpartnered women	Gay men	Unpartnered men
Education					
Less than High School	--	--	--	--	--
High School	-0.133 (0.045)	-0.367 (0.006)	0.042 (0.006)	-0.178 (0.048)	0.108 (0.006)
Some College	-0.646 (0.042)	-0.594 (0.006)	-0.204 (0.006)	-0.713 (0.045)	0.232 (0.006)
Bachelor's Degree	-0.965 (0.042)	-0.556 (0.006)	0.089 (0.006)	-1.122 (0.045)	0.547 (0.006)
Race/ethnicity					
White	--	--	--	--	--
Black	-0.110 (0.032)	-0.020 (0.005)	-1.167 (0.005)	0.303 (0.038)	-0.658 (0.006)
Asian	0.238 (0.056)	-0.197 (0.007)	-0.426 (0.008)	0.132 (0.047)	-0.377 (0.008)
Hispanic	-0.373 (0.032)	0.036 (0.005)	-0.367 (0.006)	-0.390 (0.033)	-0.314 (0.006)
Other	-0.500 (0.050)	-0.046 (0.010)	-0.581 (0.010)	-0.255 (0.053)	-0.396 (0.011)
Years of residence					
Born in th US	--	--	--	--	--
Immigrant <=10 years	0.800 (0.069)	0.182 (0.009)	0.386 (0.010)	0.317 (0.062)	0.017 (0.010)
Immigrant > 10 years	0.546 (0.040)	0.127 (0.005)	0.359 (0.006)	0.181 (0.037)	0.330 (0.007)
English					
Only English	--	--	--	--	--
Very well	0.199 (0.038)	0.007 (0.006)	-0.128 (0.006)	0.121 (0.038)	-0.108 (0.007)
Well	0.660 (0.067)	0.111 (0.008)	0.104 (0.010)	0.623 (0.064)	0.076 (0.010)
Not well or not at all	0.819 (0.087)	-0.174 (0.009)	-0.185 (0.011)	0.571 (0.079)	-0.232 (0.011)
Age					
Young (16-29)	--	--	--	--	--
Middle-aged (30-54)	0.483 (0.022)	0.244 (0.004)	1.694 (0.004)	0.199 (0.025)	1.803 (0.004)
Older adults (>=55)	0.869 (0.025)	0.401 (0.005)	1.582 (0.004)	0.601 (0.028)	2.099 (0.005)
Intercept	4.543 (0.045)	0.434 (0.007)	-0.728 (0.006)	4.970 (0.049)	-1.162 (0.006)
Number of observations	2,348,697	4,235,209	3,725,545	2,347,413	3,579,446
Pseudo-R2	0.025	0.008	0.108	0.020	0.132
Wald chi2(14)	4,218.5	27,655.4	247,155.6	3,346.8	291,417.8

Table A4. Logit regressions for the probability of being of each demographic group vs. straight men: estimated coefficients (standard errors below).

	Γ x100		
	Real distribution	Partial counterfactual	Total counterfactual
Lesbian women	0.9	-8.3	-7.1
Straight women	-7.6	-9.1	-9.0
Gay men	10.8	0.2	1.4
Straight men	5.9	5.9	7.2

Table A5. Monetary losses (gains) of the sex-sexual-orientation groups due to segregation (Γx100) in the real and counterfactual distributions (benchmark: employment of couples)

	Γ x100		
	Real distribution	Partial counterfactual	Total counterfactual
Lesbian women	9.4	-0.8	-1.4
Straight women	0.8	-1.5	-2.8
Unpartnered women	-13.4	-12.0	-12.1
Gay men	19.8	8.0	7.5
Straight men	14.6	14.6	14.1
Unpartnered men	-9.3	-5.6	-5.2

Table A6. Monetary losses (gains) of the sex-sexual-orientation groups due to segregation (Γx100) in the real and counterfactual distributions (benchmark: total employment)

	Partial counterfactual				Total counterfactual			
	Educ	Race	Immig	Age	Educ	Race	Immig	Age
Lesbian women	75.6	-10.4	23.5	11.2	74.3	-13.0	26.8	11.9
Straight women	83.9	7.9	1.3	6.9	84.1	9.4	-0.2	6.7
Gay men	86.3	-7.6	15.7	5.6	86.7	-9.5	17.5	5.4

Table A7. The contribution (%) of each characteristic to explain the difference between the monetary loss/gain (Γ) and the conditional monetary loss/gain of each group using the partial and the total counterfactual (benchmark: employment of couples)

	Partial counterfactual				Total counterfactual			
	Educ	Race	Immig	Age	Educ	Race	Immig	Age
Lesbian women	75.8	-10.4	23.4	11.2	77.0	-6.0	21.6	7.4
Straight women	83.6	7.7	1.6	7.2	86.3	18.5	-0.6	-4.2
Unpartnered women	67.3	63.5	-9.9	-20.9	52.5	56.6	-8.6	-0.6
Gay men	86.4	-7.6	15.7	5.6	87.0	-3.9	14.4	2.4
Unpartnered men	99.4	23.5	-0.4	-22.6	99.2	16.3	1.2	-16.7

Table A8. The contribution (%) of each characteristic to explain the difference between the monetary loss/gain (Γ) and the conditional monetary loss/gain of each group using the partial and the total counterfactual (benchmark: total employment)

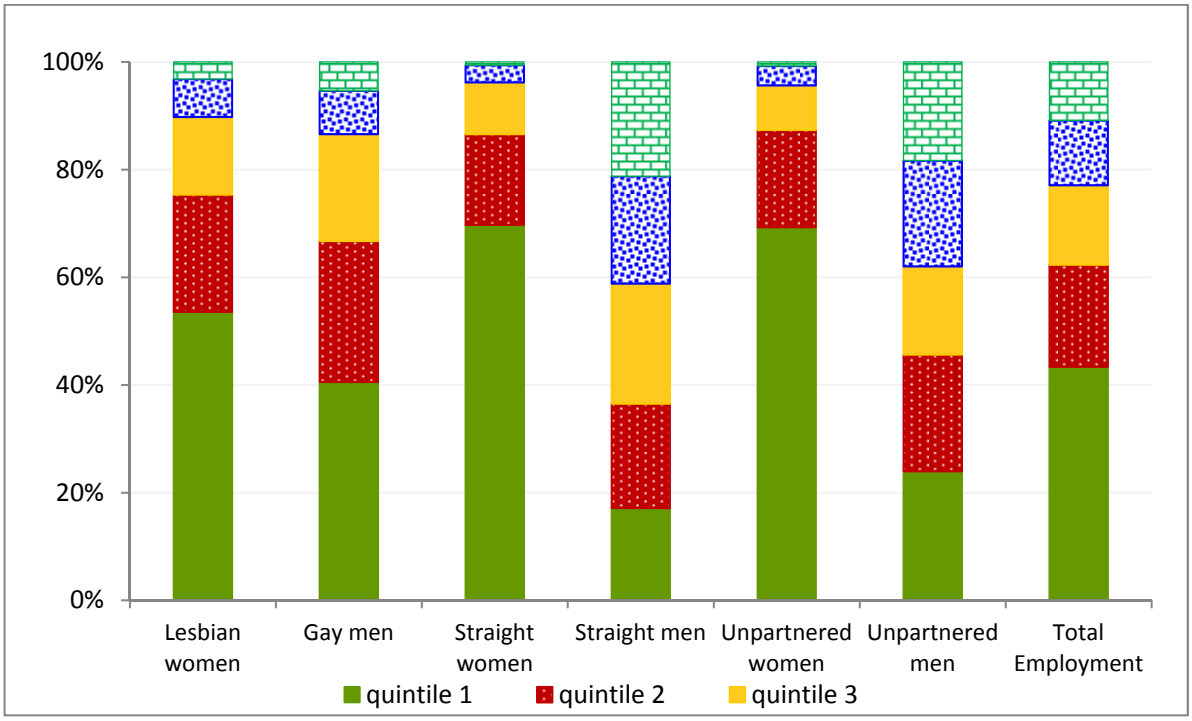

Figure A1. Employment share of each sex-sexual-orientation group in each quintile of male employment (employment ranked by masculinization rates of occupations)

Figure A2. The losses (gains) of the sexual-orientation groups due to their occupational sorting (Γx100) and wage differences within occupations (Δx100). Benchmark: total employment

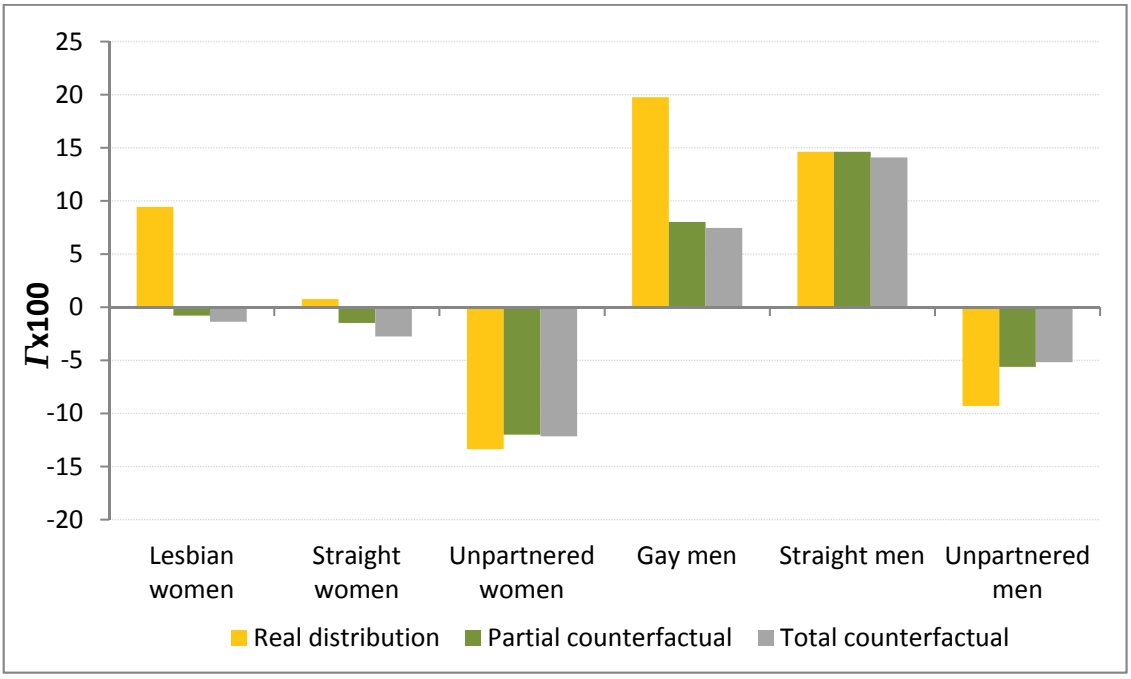

Figure A3. Monetary losses (gains) of the sex-sexual-orientation groups due to segregation (Γx100) in the real and counterfactual distributions (benchmark: total employment)

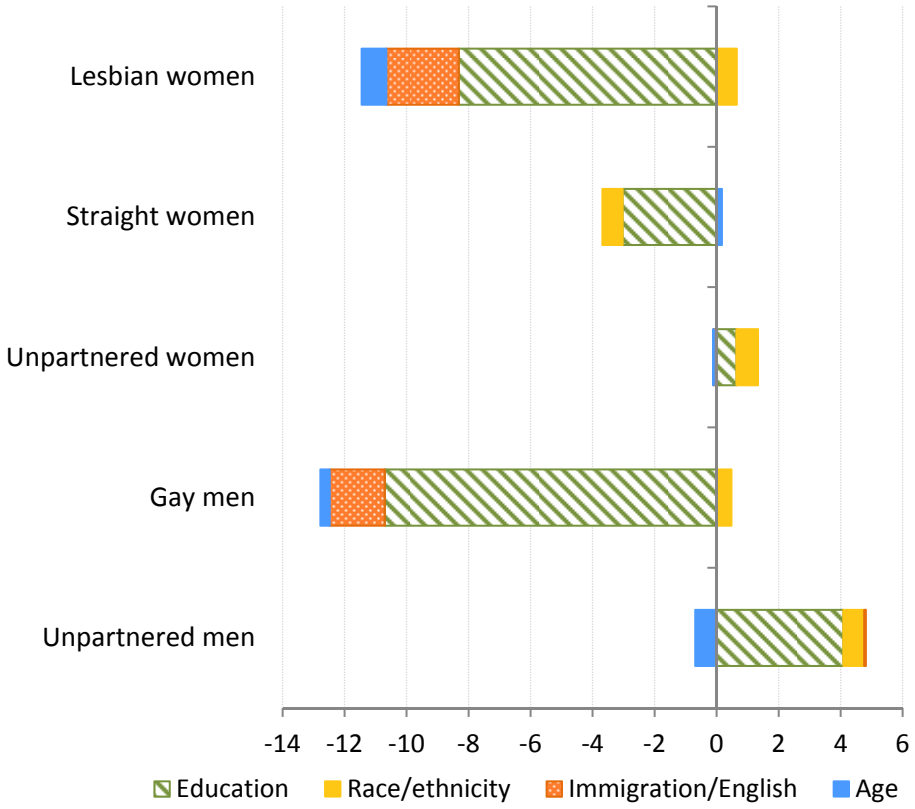

Figure A4. Monetary losses (gains) minus conditional monetary losses (gains) of each group (Γx100 index) using the total counterfactual. Factors' contributions are measured using the Shapley decomposition (benchmark: total employment)