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Same-sex marriage and neighbourhood landscape overlap—A revised understanding of the spatial distribution of gay men and lesbians

Thomas Wimark^{1,2}  | Fernanda Fortes De Lena^{2,3} 

¹Department of Social and Economic Geography, Uppsala University, Uppsala, Sweden

²Department of Human Geography, Stockholm University, Stockholm, Sweden

³Department of Demography, University of Campinas, São Paulo, Brazil

Correspondence

Thomas Wimark, Department of Social and Economic Geography, Uppsala University, Box 513, SE-75120, Uppsala, Sweden.
Email: thomas.wimark@kultgeog.uu.se

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Abstract

Obstacles to family formation have been removed in many countries outside of the Anglophone world for quite some time. Conventional knowledge suggests that this phenomenon should make gay men and lesbians more similar to the general population. In this study, however, we show that differences linger. By classifying Swedish neighbourhoods into multiscalar neighbourhood landscapes, we show that same-sex married individuals differ from both married individuals and the general population. Same-sex married individuals are concentrated in cores in metropolitan cities characterised by the ownership tenure form and apartment buildings. In general, same-sex individuals avoid remote rural areas, but same-sex females are quite present in rural towns. Same-sex males are concentrated to areas that border deprived areas but not to deprived areas. These results suggest that there is a need to move beyond legal agendas and consider what drives the residential mobility of the gay and lesbian population.

KEYWORDS

gay and lesbian, internal migration, marriage, neighbourhood sorting, queer, residential mobility

1 | INTRODUCTION

It is now more or less common knowledge that the family is key to understanding residential moves over the life course, as shown by Rossi (1955). Marriage and family formation are significant life course events that often induce a lessened tendency to move to urban areas and a simultaneously increased tendency for those already living in urban areas to move to rural or suburban areas (Courgeau, 1985, 1989). For gay men and lesbians, however, marriage and nuclear family formation have historically been unavailable or nearly impossible to achieve within the legal and social frameworks, limiting them to creating alternative families of choice (Valentine, 2008). Much

research has, instead, turned to sexual development and sexual identity as reasons for geographic concentration and argued that urban areas offer exceptional spaces for this concentration (Knopp, 2004; Weston, 1995). It is therefore unsurprising that a wide range of studies have shown that gay men and lesbians are concentrated in urban areas (Lee et al., 2018).

The understanding of the concentration patterns of gay men and lesbians through a rural–urban dichotomy often reflects a sexual imaginary in which cities are equated with sexual liberty and rural areas with a more conservative way of life (Hubbard, 2011; Weston, 1995). Many scholars have been interested in interrogating how gay men and lesbians are drawn to urban spaces and

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subsequently have shown that gay men and lesbians are in fact overrepresented in larger cities (Black et al., 2000; Cooke & Rapino, 2007; Wimark & Östh, 2014). A main concern of contemporary studies has been to problematize and destabilise this rural–urban dichotomy (Gorman-Murray et al., 2008, 2012; Waitt & Gorman-Murray, 2011). Although these latter studies have demonstrated the diversity of gay and lesbian concentration, the social and legal inclusion of gay men and lesbians into the overall society has made this imaginary more abundant (Spring, 2013). Without denying the importance of a sexual imaginary in the lives of sexual minority individuals, changes in legislation in many countries have been in place for quite some time. Thus, a shift from the rural–urban dichotomy to exploring how other aspects of life affect the spatial distribution of gay men and lesbians, such as housing needs (Black et al., 2002), family formation (Wimark & Östh, 2014), and employment opportunities (Anacker & Morrow-Jones, 2005), would create additional breadth to the field.

Census data that allow for analyses of same-sex couples since the 1990s (primarily in the United States) have enabled a new range of studies on the spatial concentration of same-sex couples. These studies were among the first to move beyond the rural–urban dichotomy and provide a more nuanced view of the spatial concentration of gay men and lesbians (Gates & Ost, 2004). However, relying on census data has been shown to have limitations, such as problems with miscoding and misidentification of relationships and gender variables, which can lead to the over-enumeration of this type of couple in the population (Banens & Le Penven, 2016; Cortina & Festy, 2014; Festy, 2007). Above all, census data have allowed for the analysis of the spatial patterning of gay men and lesbians on the census tract level (Lee et al., 2018), but choosing census tracts is not always preferred. As Brown and Knopp (2006) have shown, the chosen scale is vital for drawing conclusions about gay men and lesbians. Another well-known issue with administrative areas such as census tracts is the Modifiable Area Unit Problem (MAUP), which can lead to misinterpretation of the results (Openshaw, 1984). In recent years, with the legalisation of same-sex marriage, register data have become available that enable more detailed and robust analysis of same-sex couples (e.g., see Andersson et al., 2006; Kolk & Andersson, 2020). Importantly, register data allow for detailed geographical analysis on different scales with individual-level data that circumvent the abovementioned MAUP (Östh et al., 2014). With these data at hand, this article aims to contribute to the question of gay men and lesbians' geographical concentration.

This paper is divided into four parts. First, we review studies that focus on the spatial distribution of gay men and lesbians in different countries. Then, we assess the main theories and insights of where gay men and lesbians should be concentrated and discuss the limitations of previous studies. We subsequently describe the nature of our data and the methods used in this study, highlighting the creation of individualised neighbourhoods. Finally, we analyse the spatial distribution of same-sex and different-sex married couples.

1.1 | Moving beyond the urban meccas and diluted countryside dichotomy

Cities have long been equated with anonymity, sexual liberty and sexual opportunity, in contrast with rural areas, which have been associated with surveillance and more conservative family views (Hubbard, 2011). This sexual imaginary has long historical roots and is undoubtedly the reason that larger cities have become the foundation of prominent gay and lesbian communities and their identity formation (e.g., see Chauncey, 1994). In larger cities, gay men and lesbians have been able to create their own spaces, often in the form of what are referred to as gay and lesbian neighbourhoods, or gayborhoods (Brown, 2014). For many young gay men and lesbians who feel out of place, this sexual imaginary is an important motivation to move towards larger cities to explore their sexualities and identities (Knopp, 2004; Weston, 1995). As this rural-to-urban mobility has proven important in the lives of many individuals and has been a key assumption of many research studies (Gorman-Murray, 2007), one of the main concerns of critical geographers has been to problematize it. Qualitative studies by Gorman-Murray and others have been instrumental in this deconstruction by giving examples of more diverse and complex mobility patterns of gay men and lesbians (Gorman-Murray, 2009; Gorman-Murray et al., 2008, 2012; Waitt & Gorman-Murray, 2011).

Currently, there is a vast range of studies showing that gay men and lesbians are, in fact, concentrated in more populous areas (Black et al., 2000; Lee et al., 2018). However, we also know that the migration patterns of this population are complex, suggesting the need to move beyond the rural–urban discussion to a more nuanced and diverse investigation. As Lee et al. (2018) have shown, quantitative knowledge, to date, has mainly been concerned with larger scales that are optimal for answering questions related to a rural–urban binary. However, there is a lack of large-scale, systematic attempts that could answer more detailed and nuanced questions implied by the new range of qualitative studies. Such studies could add to the urban planning literature that explore smaller scales (e.g., neighbourhood scales) (Doan, 2011, 2015). For example, how are neighbourhood aspects, such as deprivation, affluence, ethnic diversity and tenure, associated with the concentration of gay men and lesbians?

A few studies have attempted to understand the spatial concentration of gay men and lesbians on the neighbourhood scale by analysing differences between same-sex couples and different-sex couples using census data. These studies show that same-sex couples are spatially segregated from different-sex couples (e.g., see Madden & Ruther, 2015; Spring, 2013), although less so for female same-sex couples (Anacker & Morrow-Jones, 2005). Furthermore, studies focusing on same-sex couples show that there is a relationship between their concentration patterns and neighbourhood characteristics based on some, but not all, socio-economic, demographic and physical variables (Anacker, 2011; Anacker & Morrow-Jones, 2005; Goldie, 2018). However, these studies provide reason to believe that there are relationships between the concentration of gay men and

lesbians and neighbourhood characteristics. Together with previous qualitative research, we discuss these locational propositions below.

Urbanity. The most well-studied relationship in gay men and lesbians' locational preferences is 'urbanity' (Lee et al., 2018). As outlined above, gay men and lesbians are expected to be concentrated in more populous cities due to intolerance in less populous areas and/or more anonymity in larger cities.

Diversity/ethnicity. In Florida's (2005) work on the creative class, he argues that gay men and lesbians are attracted to diverse/tolerant areas, measured as areas with a higher prevalence of non-whites. However, in some neighbourhoods dominated by specific ethnic compositions a more conservative view with regard to family might exist that makes gay men and lesbians feel less welcome in the neighbourhood, as indicated by an increased number of hate crimes towards gay men and lesbians in some areas (Green et al., 2001). It is important to stress that these contextual neighbourhood values should not be equalised to a specific racial or ethnical group as being more or less homophobic.

Deprivation. Early studies on gentrification argued that gay men (and lesbians) were often the first people to move into deprived areas (Knopp, 1990; Lauria & Knopp, 1985). More recent studies have similarly argued that there is a connection between urban regeneration and the gay and lesbian population (Collins, 2004; Madden & Ruther, 2015; Sibalís, 2004).

Affluence/education. The educational attainment of gay men and lesbians has been shown to be higher than that of the average population (Andersson et al., 2006; Black et al., 2000), which would suggest that they would be attracted to areas where other well-educated and affluent people live. Florida (2005) draws a connection between the highly educated population (the creative class) and gay men and lesbians.

Housing stock/tenure. The type of housing that dominates a neighbourhood has also been argued to affect whether gay men and lesbians find neighbourhoods attractive (Collins, 2004; Ruting, 2008). Black et al. (2002) argue that gay men disproportionately sort into the ownership tenure form since they can accumulate capital over the life course because they often choose or sometimes are unable to form families with offspring.

Amenities/downtown centred. Several studies claim that gay men and lesbians are attracted to more populous areas due to their increased variety of amenities, such as those related to the entertainment industry (Anacker & Morrow-Jones, 2005; Hayslett & Kane, 2011). Moreover, these places are expected to be located in the more central parts of cities, such as downtown areas (Madden & Ruther, 2015).

Queer concentration. Finally, a key finding in studies is that gay men and lesbians tend to be segregated from the overall population (Madden & Ruther, 2015), but gay men do not live in the same neighbourhoods as lesbians (Gates & Ost, 2004). However, gay men and lesbians tend to live close to each other in neighbouring areas (Goldie, 2018; Hayslett & Kane, 2011).

In this study, we diverge from previous studies in three ways. First, as noted by Lee et al. (2018), knowledge production tends to be

based on evidence from the Anglophone world, with a few exceptions. The focus here is Sweden. Although gay men and lesbians in Sweden undoubtedly experience many similarities to those in the Anglophone world, the Swedish context differs in both history and geography. For example, while family formation (partnership/marriage, adoption and insemination) has only recently become available in the Anglophone world, the Scandinavian countries have been forerunners in these issues (Andersson & Noack, 2010). If we assume that the absence of family formation possibilities creates an alternative residential mobility, this would suggest that the concentration of gay men and lesbians and the general population in Sweden is more similar, at least if they choose a path of family formation. Moreover, the history of neighbourhood developments in Sweden is vastly different from the Anglophone world in that tenure and socially mixed neighbourhoods have been the ideal (Bergsten & Holmqvist, 2013). The geography of Swedish cities is also vastly different, with only three major metropolitan cities and a larger number of smaller cities/towns, while the US, for example, has a plethora of cities. For example, the second largest city in Sweden by population, Gothenburg, could be compared to Sacramento in the US or Manchester in the UK. The remaining cities in Sweden are more similar to small or medium-sized towns than cities. This adds to the already existing work that highlights the limits of the evidence from the Anglophone world (e.g., see Kulpa & Mizielinska, 2016).

Second, the spatial distribution of gay men and lesbians has usually been explored on larger scales, most often between cities or regions (Lee et al., 2018) or, in some cases, at lower neighbourhood scales. In general, one scale is used. However, recent segregation studies argue that multiscale neighbourhoods are preferred because they more accurately capture the lives of individuals who are not confined to the most immediate residential bloc or tract (Clark et al., 2015; Östh et al., 2014). Instead of neighbourhoods, we use neighbourhood 'landscapes' created on geo-gridded individual data (Wimark et al., 2020). These neighbourhoods are created on a range of scales defined by the number of surrounding neighbours. Since these neighbourhoods are based on individual data and not on predefined administrative borders, this also allows us to overcome issues of MAUP. The choice of referring to these neighbourhoods as landscapes follows the work of Wimark et al. (2020), in which they are understood as a tool and should not be confused with the understanding of landscape in the field of cultural geography. In our understanding, we simply refer to the fact that neighbourhoods expand over one simple scale and the composition of surrounding neighbourhoods is equally important in the lives of individuals. As an individual wanders from the residential home, the individual becomes subject to the surrounding neighbourhoods and neighbourhood landscapes as a tool that can capture these changes.

Third, we make use of register data, in contrast to previous studies that primarily used census data. This approach allows us to circumvent issues of miscoding or misidentification of same-sex couples that could potentially bias the results. Moreover, it gives us access to detailed data that can be used to control for underlying factors, such as individual characteristics. In the following, we establish a

methodological strategy to explore the geographical concentration of gay men and lesbians using same-sex married couples.

2 | METHODS

Our analytical strategy for analysing the geographical concentration of same-sex married couples is conducted in three steps. First, we categorise all Swedish neighbourhoods into multiscale neighbourhood landscapes using individual geo-gridded data. Second, we analyse the distribution of same-sex and different-sex married couples over neighbourhood landscapes using a segregation index. Third, we analyse how robust these results are using a multinomial regression model that controls for individual characteristics. All data used in this study are drawn from longitudinal register data provided by Statistics Sweden, which gathers data on the population of Sweden on a yearly basis.

2.1 | Individualised neighbourhood landscapes

The neighbourhood landscapes used in this study build on base data created in two previous studies (Malmberg et al., 2018; Wimark et al., 2020). In both studies, individualised neighbourhoods were computed (see Östh et al., 2014) using data on the total population from 1990 to 2012. The process involves using a grid system to calculate neighbourhoods based on the number of closest neighbours on certain variables of interest. The grid system consists of $250 \times 250 \text{ m}^2$ (for densely populated areas) or $1000 \times 1000 \text{ m}^2$ (for less densely populated areas). Thirteen different scales were used to calculate the neighbourhoods (k -levels of 50, 100, 200, 400, 800, 1600, 3200, 6400, 12,800, 25,600, 51,200, 102,400 and 204,800 individuals). From the two studies, we chose seven variables to build our neighbourhood landscapes. This means that we had base data in which each grid cell of Sweden had 91 multiscale neighbourhood characteristic values.

The variables were chosen to capture the dimensions described in the previous section. *Housing stock/tenure* are based on data about household tenure forms. The tenure form was calculated by combining the building type with the property owner type (see Wimark et al., 2020). We opted to use only three of the five forms of tenure that house the majority of Swedes: cooperative, public rental and owner-occupied tenure. The cooperative tenure form variable mainly consists of tenant cooperative-owned apartments in apartment buildings. However, it is important to note that this tenure form in essence resembles individual ownership because the rights to the individual apartments are sold on the housing market. The public rental tenure form variable consists of rental apartments that are owned by municipal companies. The owner-occupied tenure form variable mainly consists of detached housing or townhouses with a single owner. *Diversity/ethnicity* is based on data on the share of the population (aged 25–64) who are foreign born, the migrant variable. The *deprivation* variable is based on the share of the population (aged

25 and above) who have personal disposable income below 60% of the median income. The *affluence* variable shows the share of the population (aged 25–64) who have a level of taxable earned income in the highest decile; these are the individuals on the high end of the spectrum of wealth. The *high education* variable indicates the share of the population (aged 25–64) who have completed tertiary education. The geographical variables (*downtown centred/urbanity*) described in the previous section are not operationalised as variables but will be explored through geographical analysis.¹

To create neighbourhood landscapes for this large number of variables, we used the K-means cluster method. This method reduces the number of variables using Euclidian distances as the similarity measure among the variables. In the K-means method, the number of clusters is pre-chosen, which is somewhat arbitrary. Therefore, we explored different numbers of clusters to find a number of clusters that made sense and could be easily analysed and explained. Twelve clusters proved to be manageable and the best fit. In the remainder of the paper, we refer to these clusters as neighbourhood landscapes.

2.2 | Distribution and segregation index

To illustrate the distribution of same-sex and different-sex married populations, we use a conventional segregation ratio index:

$$S_a = \frac{\sum x_{ka}}{\sum y_{ka}}$$

The index S for population a shows the overrepresentation or underrepresentation in neighbourhood landscape k , where X is the population studied and Y is the total population 18 years and above. An index value of one for a neighbourhood landscape illustrates an equal distribution between the studied population a and the general population above the age of 18. Index values above one mean that the studied population a is overrepresented in the neighbourhood landscape compared to the general population. By contrast, index values below one indicate that the studied population a is underrepresented in the neighbourhood landscape.

2.3 | Model and variables

In the final step of the analysis, we test whether the segregation analysis is robust using a multinomial logistic regression model. The model examines the likelihood of an individual residing in a certain neighbourhood landscape compared to a reference neighbourhood landscape, depending on a number of individual characteristics. The model is run for the total population above 18 years of age. In this model, we include common individual characteristics that are known to affect individuals' residential mobility.

An overview of the variables used in the model is given in Table 1. *Same-sex males* and *same-sex females* indicate whether the

TABLE 1 Descriptive statistics of independent variables (percent)

			Year
SAME-SEX PARTNER	No	99.83	1998–2016
	SAME-SEX MALE	0.07	
	SAME-SEX FEMALE	0.10	
Ever married	No	81.15	1998–2016
	Yes	18.85	
Visible minority (born in Asia, Africa or South America)	No	91.13	2016
	Yes	8.87	
Educational level (highest)	Primary	19.91	2015
	Secondary	43.71	
	Tertiary	34.48	
	Missing	1.90	
Child	No	70.78	2016
	Yes	29.22	
Social benefits	No	95.84	2015
	Yes	4.16	
Ln income	Mean	8.40	2015
	Standard deviation	5.70	
Age (year 2016)	Mean	49.42	2016
	Standard deviation	19.14	
Unemployment days	Mean	8.77	2015
	Standard deviation	40.86	
<i>n</i>		7,786,166	

Note: Source: Statistics Sweden, authors' calculations.

individual ever married or registered a partnership with a person of the same gender during 1998–2016 and the individual's gender. *Ever married* indicates whether the individual ever married during 1998–2016. The variable *visible minority* is based on whether the individual was born in Africa, Asia or South America. The *educational level* variable indicates the individual's highest completed level of education. *Child* indicates whether the individual has any children under 18 living in the same household. *Social benefits* means that the individual received income from social assistance. The income variable *ln income* indicates the logarithm of the taxed income from work and self-employment. The *age* variable indicates the age of the individual. *Unemployment days* indicates the number of days that the individual was registered as unemployed and received unemployed benefits. It should be mentioned that an individual claiming social assistance is required to sell property before being granted assistance, making it different from unemployment benefits.

The data from Statistics Sweden represent one of the richest population data registers in the world that has geocoded locational data. Despite this advantage, there are some disadvantages with the data. One of these limitations is the inability to identify people who married an individual who was not a registered resident of Sweden at the time of marriage. Therefore, we excluded these from our dataset and only included married couples we could identify as same-sex. The analysis is also based on the assumption that an unequal distribution

between same-sex and different-sex married individuals can be explained by sexuality. However, we acknowledge the potential of other variables that affect these patterns, such as the possibility of individuals being more prone to explore their sexuality in some places rather than others, as implied by Scheitle and Guthrie (2019).

3 | RESULTS

In the following, we present the results from the analysis. First, we begin by illustrating and explaining the neighbourhood landscapes we created. Second, we discuss how the concentration of same-sex married couples differs from the overall population and from different-sex married couples using the segregation index. Finally, we test how robust the differences are when controlled for individual characteristics.

3.1 | Sweden explained in 12 neighbourhood landscapes

Building on previous work, we present a neighbourhood landscape classification in Figure 1. In this figure, 12 neighbourhood landscapes are presented in panels that show the proportion of the studied



FIGURE 1 Sweden classified in 12 neighbourhood landscapes. Source: Statistics Sweden, authors' calculations

variables at different neighbourhood scales. The panels are organised in three columns and four rows. The first two rows represent the neighbourhood landscapes that are mainly found in small and medium-sized towns, and the last two rows represent the neighbourhood landscapes that are mainly or only found in metropolitan areas. The geographic pattern of the neighbourhood landscapes across Sweden as well as for the three metropolitan areas can be found in Figure A1.

The variables in each panel are standardised around the mean of each variable for the entire population. This means that all the variables are in the same distribution, and it is easily discernable what distinguishes the neighbourhood landscapes. For example, in the panel in the first row, column one, the variables are more or less stable

around zero across scales. This means that for the neighbourhood landscape *rural large scale*, all variables are more or less similar to the average of the general population. What distinguishes this landscape is the geography, in that it is located far from urban cores. The panel in the second row, column one, however, has larger variability both in terms of what variables demarcate the neighbourhood landscape and the scale of these variables. What distinguishes this *migrant cooperative* landscape is that a higher number of foreign-born individuals reside in this landscape than the average for the general population. The scale is also of importance. The variable *migrant* has a high value that remains high across scales, and it is only at very large scales that this drops. This means that individuals living in these neighbourhood landscapes will have to travel far from their centre to be exposed to

environments that have the population average of migrants. This landscape also shows a higher level of households living in the cooperative tenure form than the average for all households in Sweden. This variable remains relatively high across scales. This means that each graph has three different dimensions based on

geography, the variables and scale. To simplify the interpretation of the neighbourhood landscapes, we include a descriptive table explicating the three different dimensions. Note also that the naming of the neighbourhood landscapes signifies the main characteristics of each landscape (Table 2).

TABLE 2 The 12 neighbourhood landscapes explicated in words for the three dimensions stemming from geography, the selected variables and the scale of the variables

Name	Geography	Tenure composition and scale	Socio-economic/ethnic composition and scale
Rural large scale	Rural areas that cover most of Sweden at a large distance from urban areas.	Does not diverge from averages with scale.	Low levels of high education, affluence, and migrants that are maintained with increasing scale.
Owner-occupied suburbia	Surrounding the urban cores in the whole of Sweden.	Dominated by the owner-occupied tenure form, which decreases with scale.	High levels of high education and affluence. Few migrants, but increases with higher scales. Low deprivation.
Cooperative few migrants	Dispersedly located around urban areas at a distance from the urban core in the whole of Sweden.	Strongly dominate the cooperative tenure form. Sharp drop in domination as the neighbourhood becomes larger.	Average levels of high education, affluence and migrants across scales. Low levels of deprivation across scales.
Migrant cooperative	Surrounding <i>migrant public rental</i> urban areas in the whole of Sweden.	Dominated by the cooperative tenure form, but public rental tenure form increases with higher scale.	High levels of migrants and deprivation.
Public rental few migrants	Dispersedly scattered around urban areas in the whole of Sweden at a distance from the urban core.	Strongly dominated by the public rental tenure form. Sharp drop in domination as the neighbourhood becomes larger.	Presence of migrants and some deprivation that decrease at larger scales. Low levels of affluence and high education that increase with larger scales.
Public rental with migrants	Dispersedly scattered around urban areas in the whole of Sweden at a distance from the urban core.	Strongly dominated by the public rental tenure form. Domination drops as the neighbourhood becomes larger. Very low levels of the owner-occupied tenure form.	Very high levels of migrants and high levels of deprivation that drop once the scales become larger.
Metropolitan migrant deprived large-scale	Concentrated in a few areas around the major cities at a distance from the urban core.	Strongly dominated by the public rental tenure form across scales.	High levels of migrants and deprivation that only drop at very large scales. Low levels of high education and affluence.
Metropolitan migrant deprived Borders	Surrounding <i>metropolitan migrant deprived large scale</i> areas in the major cities.	Dominated by the cooperative tenure form.	High levels of migrants and deprivation that increase with higher scales. Low levels of high education and affluence.
Owner-occupied metropolitan suburbia	Surrounding the urban cores of the major cities.	Dominated by the owner-occupied tenure form that decreases with higher scale. Cooperative tenure form increases with higher scale.	Very high levels of high education and affluence. Few migrants, but increases with higher scales. Low deprivation.
Cooperative metropolitan large scale	Dispersedly surrounding the major cities at a distance from the urban core.	Strongly dominated by the cooperative tenure form. Domination drops as the neighbourhood becomes larger.	High levels of migrants but low levels of deprivation. Some level of high education across scales.
Cooperative Stockholm	Mainly located in the core of Stockholm.	Dominated by the cooperative tenure form across scales.	High levels of high education and affluence that increase with larger scales. Presence of migrants. Low deprivation across scales.
Cooperative metropolitan	In the urban core of major cities.	Dominated by the cooperative and (to some extent) public rental tenure forms.	High levels of high education that grow at larger scales. Presence of migrants across scales. Average levels of affluence that increase with larger scales.

3.2 | Same-sex married couples' concentration in Sweden

In the above analysis, we classified Sweden into 12 neighbourhood landscapes. In Table 3, we present the distribution of the population over the 12 neighbourhood landscapes. The first three rows indicate the segregation index for different-sex married individuals, same-sex married females and same-sex married males, respectively. The rows are organised around the concentration pattern of different-sex married individuals, ranging from the neighbourhood landscape with the largest overrepresentation of different-sex married individuals (the first row) to the neighbourhood landscape with the largest underrepresentation of different-sex married individuals (the last row). The last column shows how the general population over 18 years of age is distributed over the 12 neighbourhood landscapes. As evidenced in the last column of the table, the most common neighbourhood landscape is *rural large scale*, in which 27% of the population resides, and the least common neighbourhood landscape is *migrant deprived metropolitan large scale*, in which 1.4% of the population resides. From this table, we draw the following three conclusions.

3.2.1 | Home owners but rarely detached house owners

The first main result concerns the overrepresentation of same-sex individuals in the cooperative tenure form. This is in stark contrast to different-sex married individuals, who do not show the same pattern. Different-sex married individuals are clearly overrepresented in the two neighbourhood landscapes that are dominated by the owner-occupied tenure form. The latter neighbourhood landscapes are mainly located in suburbia and consist of villas or semi-detached

houses. By contrast, same-sex men and same-sex women are clearly overrepresented in the three clusters that are dominated by the cooperative tenure form: *cooperative Stockholm*, *cooperative metropolitan* and *cooperative metropolitan large scale*. These are mainly located in urban centers and consist of tenant owned apartment buildings. We conclude that married individuals in general are preoccupied with the type of neighbourhood landscape in which they live based on tenure form: they all tend to be concentrated in landscapes that are dominated by ownership tenure forms. Same-sex married individuals, however, differ in that they *are home owners but rarely detached house owners*. They are also clearly underrepresented in suburban areas.

These results are in contrast to previous research. In a study of the two largest cities in Australia, Goldie (2018) found that same-sex couples tend to be concentrated in suburban areas. There could be a number of reasons for this, but it seems plausible to suggest that the settlement structure differences between Sweden and Australia matter. For the US context, Anacker and Morrow-Jones (2005) suggested that same-sex couples avoid areas with high home ownership rates. Although this is also contrary to our results, differences in settlement structure could underlie these differences. Heterosexual nuclear families might favour home ownership in suburbia in the US, which is similar to suburbia in Sweden with (semi) detached housing. However, in Sweden, there are also apartments in home ownership in urban cores that same-sex individuals favour, suggesting a differentiation between same-sex and different-sex married couples with regard to tenure form and type of building.

3.2.2 | Hardly remote rural living but along the rural–urban scale

The second main result concerns the overrepresentation of same-sex individuals in metropolitan areas. This is in stark contrast

TABLE 3 The distribution of the general populations over the neighbourhood landscapes and the segregation index for the selected populations

Neighbourhood landscape	Different-sex	Same-sex Female	Same-sex Male	General population
Owner-occupied metropolitan suburbia	1.61	0.81	0.79	7.0%
Owner-occupied suburbia	1.40	0.86	0.54	15.3%
Cooperative Stockholm	1.01	2.04	4.40	7.7%
Rural large scale	0.99	0.66	0.49	27.3%
Cooperative metropolitan	0.87	2.04	1.80	6.2%
Cooperative metropolitan large scale	0.86	1.52	1.41	4.6%
Cooperative with migrants	0.78	0.95	0.82	4.6%
Cooperative few migrants	0.77	0.90	0.58	12.4%
Public rental few migrants	0.71	0.90	0.46	7.6%
Migrant deprived metropolitan borders	0.67	0.70	1.23	2.0%
Public rental with migrants	0.62	0.97	0.78	3.9%
Migrant deprived metropolitan large scale	0.58	0.34	0.78	1.4%
Sum	1,418,979	7714	5303	7,550,886

Note: Source: Statistics Sweden, authors' calculations.

TABLE 4 The results of the multinomial logistic regression

	Owner-occupied metropolitan suburbia	Owner-occupied suburbia	Cooperative Stockholm	Cooperative metropolitan	Cooperative metropolitan large scale	Cooperative with migrants	Cooperative no migrants	Public rental no migrants	Migrant deprived metropolitan Borders	Public rental with migrants	Migrant deprived metropolitan large scale
Same-sex partner (ref. not same-sex partner)											
SameSex male	1.40***	0.97	6.61***	3.18***	2.64***	1.90***	1.14**	1.09	3.27***	2.19***	2.55***
SameSex female	0.76***	0.93*	2.27***	2.54***	2.25***	1.71***	1.45***	1.71***	1.54***	2.26***	1.00
Ever married (vs. never married)	1.19***	1.16***	0.95***	0.84***	0.89***	0.84***	0.83***	0.81***	0.73***	0.72***	0.69***
Child in household (vs. no child)	1.73***	1.38***	0.50***	0.50***	0.60***	0.75***	0.55***	0.70***	0.74***	0.70***	0.84***
Educational level (ref. primary)											
Secondary	2.12***	1.06***	2.93***	1.94***	1.47***	1.61***	0.93***	1.13***	2.09***	1.37***	1.62***
Tertiary	1.31***	1.23***	1.46***	1.34***	1.18***	1.00	1.22***	0.99	0.94***	0.90***	0.78***
Missing	4.11***	2.26***	6.22***	5.34***	2.39***	1.41***	2.02***	1.24***	1.50***	1.35***	0.91***
Visible minority (vs. not visible minority)	1.35***	1.02*	2.40***	2.78***	4.42***	6.39***	1.79***	3.58***	11.53***	11.10***	19.73***
Social welfare receiver (vs. non-receiver)	0.32***	0.47***	0.44***	0.95***	0.76***	1.53***	0.87***	1.98***	1.38***	2.15***	2.06***
Age	1.00***	1.00***	0.98***	0.97***	0.99***	0.98***	0.99***	0.99***	0.98***	0.98***	0.98***
Ln_Income	1.01***	1.01***	1.00	0.98***	0.98***	0.97***	0.98***	0.96***	0.96***	0.95***	0.96***
Unemployment (number of days)	1.00***	1.00***	1.00***	1.00***	1.00*	1.00***	1.00***	1.00***	1.00***	1.00***	1.00***
Nagelkerke R ²	0.202										
N	7,550,886										

Note: The reference category is RURAL LARGE SCALE. Odds ratios that are significant are marked in bold. Source: Statistics Sweden, authors' calculations.

*P < 0.05.

**P < 0.01.

***P < 0.001.

to different-sex married individuals, who are overrepresented in suburban areas in both small/medium-sized towns and metropolitan areas. Different-sex individuals also do not differ from the general population in the neighbourhood landscape *rural large scale*. This neighbourhood landscape more or less represents the average Swedish population and does not stand out in terms of neighbourhood characteristics other than being located at far distances from the urban cores of small- and medium-sized towns. Same-sex men and same-sex women are clearly underrepresented in this neighbourhood landscape, giving support to the long-standing conclusion that gay men and lesbians are concentrated in urban areas (Lee et al., 2018).

However, as we argued in the theoretical section, equating rurality with this neighbourhood landscape alone would be inaccurate. When considering neighbourhood landscapes outside of metropolitan areas as more or less rural, another pattern is visible that differs between same-sex females and same-sex males. Although same-sex females are underrepresented in neighbourhoods in small- and medium-sized towns compared to the general population, they are much less underrepresented than both different-sex and same-sex male individuals. This is especially true for the four neighbourhood landscapes, that is, *migrant cooperative*, *cooperative few migrants*, *public rental with migrants*, and *public rental few migrants*. We conclude that same-sex individuals *rarely live in remote rural areas*, but same-sex females do not seem to shun rural areas to the same extent as same-sex males. This could potentially signify residential sorting in rural areas of same-sex females rather than a rural–urban divide. This finding echoes previous studies suggesting differences between gay men and lesbians (Wimark & Östh, 2014).

3.2.3 | Same-sex males as metropolitan gentrifiers?

The third main result concerns the overrepresentation of same-sex males in the neighbourhood landscape that borders migrant deprived landscapes in metropolitan areas. Neither same-sex females nor different-sex individuals show the same pattern. As shown in the map in the Figure A1, these neighbourhoods surround the most deprived neighbourhood landscape, *migrant deprived metropolitan large scale* areas, like rings. However, they differ in scale and the domination of the tenure form. The areas in which same-sex males are overrepresented show high levels of deprivation and migrants, but in contrast to the neighbourhood landscape that they surround, these levels increase with the scale of the neighbourhood and then drop again at a higher scale. They are also dominated by the ownership tenure form rather than the public rental tenure form that dominates the neighbourhood landscapes that they surround. This result suggests that they sort into neighbourhoods that are dominated by apartments in the ownership tenure form. This result is also in line with previous research arguing that gay men take an active part in the gentrification of neighbourhoods by acquiring affordable apartments that are located in undervalued areas (Caulfield, 1989; Collins, 2004; Sibalís, 2004).

3.3 | Robustness test using individual characteristics

In the above analysis, we concluded that there are indeed large differences between the concentration of same-sex and different-sex married individuals. In the final step of the analysis, we present the results from the robustness test of these conclusions. Here, we can conclude that the results from the segregation analysis are robust.

In Table 4, we show the results from the multinomial logistic regression model in odds ratios. The model examines the likelihood of an individual residing in a certain neighbourhood landscape compared to the reference neighbourhood landscape *rural large scale* (the largest category for the general population). This makes a simple reading of the table somewhat complicated because it must be interpreted in relation to the reference category. For example, in the first row, column one, we find an odds ratio of 1.4. Because the odds ratio exceeds 1, it can be interpreted as 1.4 times more likely that same-sex males live in *owner-occupied metropolitan suburbia* compared to living in *rural large scale* neighbourhoods. However, a comparison between different-sex and same-sex married individuals in this table is not possible. From the table, we can conclude that, in essence, all of the included common individual characteristics that are known to affect individuals' residential mobility are significant.

Three results should be highlighted from the analysis. First, there is no significant difference between same-sex males and the general population with regard to residing in *owner-occupied suburbia* or *public rental few migrants* compared to living in *rural large scale* areas. We concluded that same-sex males are clearly underrepresented in these neighbourhood landscapes. Second, there is no significant difference between same-sex females and the general population with regard to living in *migrant deprived metropolitan large scales* compared to living in *rural large scales*. Neither of these results are in stark contrast to the three main conclusions from the segregation analysis. This model sheds new light on previous studies. Black et al. (2002), for example, suggested that the concentration of gay men in high-amenity cities can be explained by the absence of children in the life course. Furthermore, Wimark & Östh (2014) suggested that the differences between gay men and lesbians could be explained by the higher rates of children among lesbians. When the variable *child* is added to our model, the concentration tendencies of same-sex men and women remain unchanged.

4 | CONCLUSIONS

For quite some time, obstacles to family formation have been removed for the gay and lesbian minority in countries outside of the Anglophone world. Marriage, adoption and IVF practices are now increasingly within reach for gay men and lesbians. Conventional knowledge that suggests that the (nuclear) family is the key reason for individuals to change residential location can therefore be assumed to have made the differences between sexual minorities and the overall

population apparent. In this article, however, we show that differences between same-sex married and different-sex married individuals persist, although legal hindrances are alleviated.

We argue that previous knowledge from Anglophone countries is not sufficient to understand these differences. Furthermore, we show that the creation of multiscale neighbourhoods that encompass dimensions of scale, geography and settlement structure has the potential to move beyond previous understandings. First, our results suggest that tenure form and tenure type are essential for the gay and lesbian community: Same-sex married individuals are overrepresented in ownership but not in detached housing. This finding goes hand in hand with the geography of settlements, which is generally away from suburbia and located towards the urban cores. Second, we show that the widely recognised understanding of gay men and lesbians' locational preferences as avoiding rural areas and directed towards urban areas needs to be explicated. The rural areas discussed in previous literature should be considered what we call remote rural areas. When the scale of these neighbourhoods increases, the neighbourhood landscapes remain isolated and homogeneous, and gay men and lesbians are clearly underrepresented. For smaller settlements and towns, however, same-sex females do not seem to differ much from the general population. As suggested elsewhere (Wimark & Östh, 2014), the rural-urban divide should perhaps better be considered a matter of gay men. Third, our results suggest that gay men in metropolitan areas are concentrated in fringe areas to migrant deprived neighbourhoods. Same-sex married males are clearly overrepresented in areas that border the deeply deprived metropolitan areas that different-sex married individuals reject. One potential interpretation of this is that same-sex married males prefer diverse areas and perhaps are agents of gentrification.

These results suggest that we need to move beyond a focus on legal practices to observe how and what differences remain after obstacles are removed. It is necessary to conduct more studies in countries that are forerunners in human rights agendas and avert our attention from Anglophone countries. Certainly, there is a need to replicate the wider Anglophone knowledge to determine whether there are universal trends, but it is equally important to examine how gay men and lesbians worldwide differ between countries and contexts. There is a wider issue that this study has been unable to answer and that remains for future research to expound (but see, Cooke, 2005): how residential sorting and internal migration lead to these patterns.

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CONFLICT OF INTEREST

We confirm that we have agreed to the submission of the article and that the article is not currently being considered for publication by any other print or electronic journal.

AUTHOR CONTRIBUTION

Thomas Wimark is the first and corresponding author for this article. The second author, Fernanda Fortes de Lena, has agreed to the byline order and to submission of the article in this form. Both authors have

1. made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data;
2. been involved in drafting the article or revising it critically for important intellectual content;
3. given final approval of the version to be published. Each author has participated sufficiently in the work to take public responsibility for appropriate portions of the content; and
4. agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ENDNOTE

- ¹ Note that in this paper, we do not have a measure for queer concentration.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not publicly available due to privacy and ethical restrictions. The data are available from Statistics Sweden. Restrictions apply to the availability of these data, which were used under ethical approval from the Swedish Ethical Review Authority for this study.

ORCID

Thomas Wimark  <https://orcid.org/0000-0001-7272-1729>

Fernanda Fortes De Lena  <https://orcid.org/0000-0001-6325-6685>

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APPENDIX A: Neighbourhood landscapes in Sweden

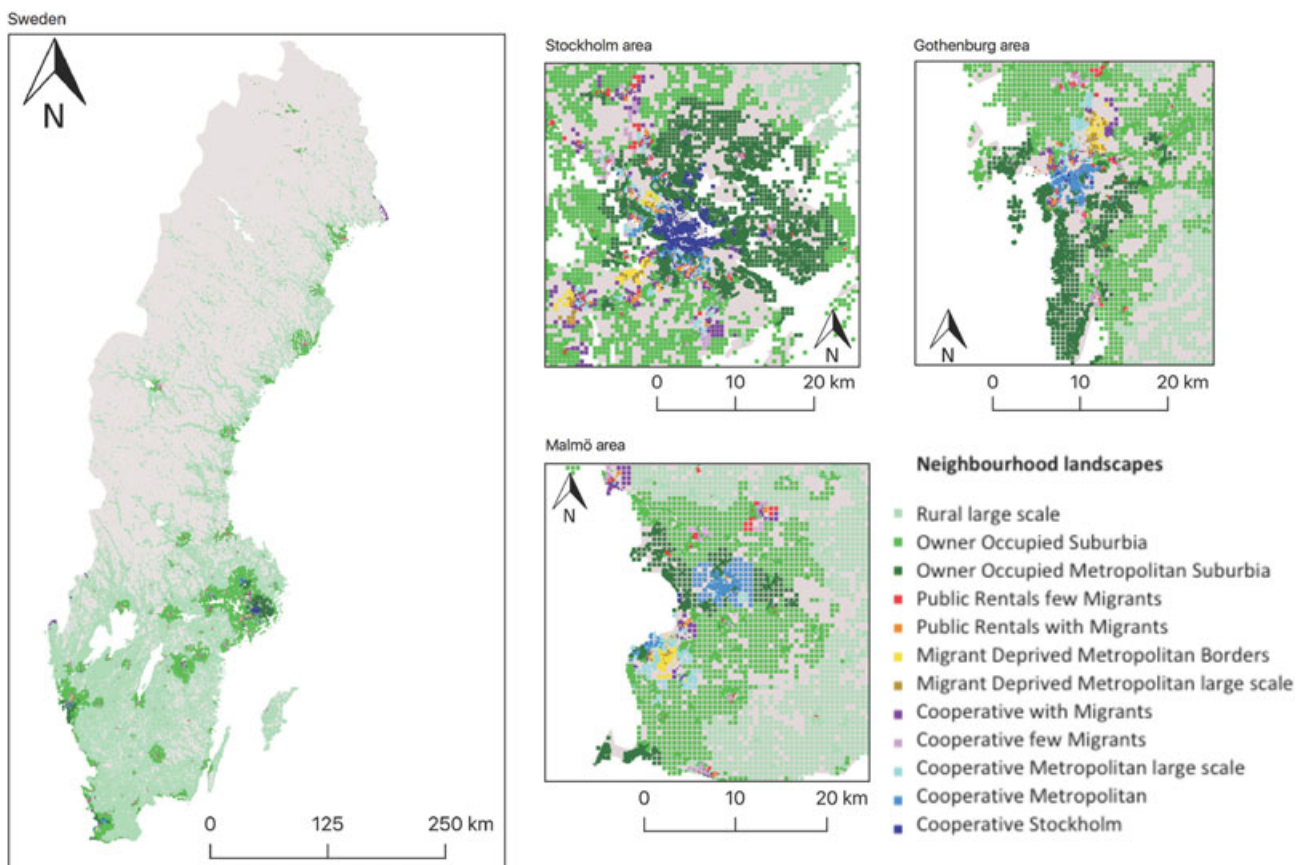


FIGURE A1 Sweden classified in 12 neighbourhood landscapes with enlargements for the three metropolitan areas. Source: Statistics Sweden, map production by Fernanda Fortes De Lena