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The Enumeration of Same-Sex Couples in Population Censuses: Three Essays on the Statistical Visibility and Spatial Segregation of Same-Sex Couples Across Societies

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Preface

Same-sex couples (SSCs) are challenging to count, which also makes them difficult to research from a demographic perspective. Population census and register data offer manifold information on SSCs, yet, due to the methods of enumeration, this data is far from perfect. This thesis focuses on the topic of enumeration and spatial segregation of SSCs across the world. The first chapter lays the groundwork for the two chapters that follow it by analyzing data sources that can potentially serve to enumerate SSCs. Chapters two and three specifically analyze such data sources with regard to the countries of Brazil and Germany, respectively. The three parts of this thesis answer five main questions: (i) How and to what extent can SSCs become statistically visible?; (ii) Does this visibility change over time?; (iii) To what extent are SSCs subject to spatial segregation?; (iv) Does spatial segregation of SSCs vary with regard to gender?; (v) Are there specific neighborhood characteristics that explain spatial patterns of settlement by SSCs?

The first essay examines the statistical visibility of SSCs in various data sources: censuses, registers and surveys. It investigates data sources from four European, four American and two Oceanic countries that are used to make SSCs visible and enumerate them, and evaluates the different ways in which these data sources allow for this. It sheds light on countries which, on the one hand, provide a certain level of legal recognition to LGBTIQ*[1] people, and, on the other, maintain data sources that contain adequate detail about LGBTIQ* people, and SSCs in particular, for the purposes of statistical analysis.

The second essay, "Spatial Segregation of Same-Sex Couples: The Example of Brazil" was created together with Dr. Albert Esteve and Dr. Antonio López as part of the WORLDFAM[2] project. It examines the spatial segregation patterns in Brazil in general as well as in detail, down to the subdistrict-level of the country's two largest municipalities, Rio de Janeiro and São Paulo. Brazil was chosen for this research because of the availability of its census data. These analyses use Brazil's 2010 census, which was the first to refer explicitly to same-sex partnerships in its questionnaire. The public-use microdata from this census information contains a high level of geographical detail, which enabled an effective examination of spatial patterns with regard to SSCs, even for small geographical areas. The analysis ranges from the country level (at the

[1] LGBTIQ* stands for lesbian, gay, bisexual, transgender, intersexual, queer. This abbreviation appears in various forms in media and scientific literature; i.e., it sometimes contains a second "T" to distinguish between transgender and transsexual people; other times, it appears only as "LGBT."

[2] WORLDFAM (Towards a Unified Analysis of World Population: Family Patterns in Multilevel Perspective; ERC-2009-StG-240978), PI: Dr. Albert Esteve

broadest level) to gradually smaller territories down to the subdistrict level (i.e., administrative units comparable to neighborhoods) for the municipalities of Rio de Janeiro and São Paulo. For these neighborhoods, a multilevel logistic regression was applied; however, this failed to yield unequivocal results for a number of predictors or for some categories within a predictor (cf. Table 2.3). Notably, unlike in most other countries that provide data on SSCs, the data for Brazil reveals that female SSCs outnumber male SSCs by a ratio of 54% to 46%. This essay is also indebted to the rich insider input that I received from scholars like Dr. Edward Telles and Dr. Ana Maria Goldani of Princeton University, both former residents of Brazil, and Dr. Joice Vieira from the University Campinas in Brazil.

The third part of this thesis analyses the statistical visibility and spatial segregation issues of SSCs in Germany, based on the scientific use files (SUF) of the annual microcensus data. The microcensus depicts 1% of the German population, while its SUF covers 70% of those surveyed in the microcensus (i.e., 0.7% of the German population) (GESIS Leibniz Institute for the Social Sciences, 2020). Since 1996, the microcensus has included questions that enable SSCs to identify themselves as such. For the purposes of this thesis, the microcensus data has been compiled into a panel analysis using the years from 1996 to 2012. Due to the relatively low quantity of individuals identified as living in SSCs (e.g., 1996: < 400; 2012: < 800), no multilevel logistic regression was undertaken during the analyses. Furthermore, the generally low level of geographical detail in the German data (i.e., only 16 units/federal states) made it more useful for this chapter to incorporate a specific analysis of spatial segregation patterns among SSCs living in civil unions in Berlin. Therefore, for Berlin, data from the 2011 German full census was used.

For the chapter on Germany and Berlin, I had the opportunity to take part in two guest research residencies at the GESIS Leibniz Institute for the Social Sciences in Mannheim, Germany. This helped me to streamline my work under the supervision of Dr. Andrea Lengerer, who has continually been a source of valuable input to me and who has motivated me towards deeper reflection on my work.

I have long been concerned with the topic of same-sex couples' statistical visibility in combination with their lifeworlds and the basic question of why gay and lesbian couples seem to live in greater numbers in some areas as opposed to others. Is this merely a subjective observation on my part, or is there scientific evidence that accounts for this phenomenon? Whilst participating in the preparatory program of the European Doctoral School of Demography in 2012 in Barcelona, a city known for its liberal attitude towards its sizable LGBTIQ* community, I realized that it was not merely a subjective observation. My enthusiasm at this realization led me to explore this topic in-depth by writing this thesis. Creating this thesis started with my own general interest in this topic which I increasingly channeled towards an analysis of the sociodemography of SSCs

along with potential determinants that influence their spatial segregation across societies. It had often occurred to me that SSCs face more stressors in terms of acceptance by family and their surroundings, and, accordingly, they establish their own families in the form of communities within a city, in an attempt to transcend heteronormative societal expectations. While this thesis is unable to fully address all of the intrinsic questions that this line of thinking suggests, it does intend to bring clarity to this topic and open avenues for further investigation. I am thankful to have had this opportunity to study spatial segregation of SSCs, which has set me on a path towards locating sources for enumerating same-sex couples, analyzing them in general and recognizing them as a family form.

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LIST OF ABBREVIATIONS

ACHESS	Australian Study of Child Health in Same-Sex Families
ACS	American Community Survey
CAPI	Computer-Assisted Personal Interviews
CED	Center for Demographic Studies (Centre d'Estudis Demogràfics)
CU	Civil Union
EFL	French Family and Housing Survey (Enquéte famille et logement)
ESS	European Social Survey
FCVR	Female Civil Union Rate
GGP	Gender and Generations Program
GGS	Generations and Gender Survey
GPR	Gay Partnered Rate
GRS	Gender reassignment surgery
HILDA	The Household, Income and Labor Dynamics in Australia survey
IBGE	Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística)
IPUMS	Integrated Public Use Microdata Series International
ISSP	International Social Survey Program
LAD	Longitudinal Administrative Databank
LFS	Labor Force Survey
LGBTIQ*	Lesbian, Gay, Bisexual, Trans, Inter, Queer, Others (*)
LOA	Lifeworld Oriented Areas
LPR	Lesbian Partnered Rate
MCVR	Male Civil Union Rate
MSC	Municipal Size Class
MSM	Men who have sex with men
NHS	National Household Survey
NHSLS	National Health and Social Life Survey
NZHS	New Zealand Health Survey
OSC	Opposite-Sex Couple
PNS	National Survey of Health (Brazil) (Pesquisa Nacional de Saúde)
RdJ	Rio de Janeiro
SOEP	Socioeconomic Panel Study
SP	São Paulo
SSC	Same-Sex Couple
SUF	Scientific Use File
T1FF	T1 Family File
WORLDFAM	Towards a Unified Analysis of World Population: Family Patterns in Multilevel Perspective

INTRODUCTION: ENUMERATION OF SAME-SEX COUPLES

Over the past three decades, the non-traditional family form of same-sex couples (SSCs) has increasingly come to light as a quantitatively growing type of living arrangement in modern societies. Accordingly, the statistical visibility of SSCs has gained in significance as a topic of academic investigation. Nonetheless, a knowledge gap continues to exist with regard to the living conditions and sociodemographic characteristics of SSCs. Despite efforts to study this topic in depth in various countries, it remains a relatively unexplored field in most of the world's 200+ nation states. Bringing visibility to SSCs (i.e., producing data on SSCs by means of various sources) is potentially associated with the progressivity, liberality and modernity of a nation. As such, sources that enumerate SSCs are far likelier to be available in countries that afford a certain level of equal rights to those who live in such non-traditional couples, as opposed to countries that do not ensure such legal protections. Determining reliable data sources is fundamental to this thesis, because the topic of focus is SSCs rather than individuals; LGBTIQ* individuals can only be identified statistically when data on sexual orientation is available. Yet, this concept of identifying sexual orientation is problematic because, firstly, it touches on a highly private topic; social stigma and heteronormative societal attitudes affect responses to questions on self-identification (Goldani et al., 2013). Second, the question is open to doubt by definition, because the concept of sexual orientation must be defined in advance, as individuals' own perception of sexual orientation can differ.[3]

Understanding common minority stresses that SSCs face, as well as characteristics of their sociodemography and potentially typical areas where they live, poses numerous significant implications in areas such as public policy (activating awareness and motivating initiatives, such as enacting antidiscrimination legislation) and employee rights (granting gay and lesbian couples equal partnership-related employee benefits and other incentives). Empirical analysis of SSCs also enables social scientists to answer questions related to topics such as labor market choices, division of labor within a household and locational choices (Black et al., 2000). Furthermore, awareness of SSC hotspots within a city/region allows for focused marketing campaigns that

[3] To name just a few of the difficulties of generating data on sexual orientation, some surveys, for example, ask about the respondents' sexual behavior over the past 12 months to assess sexual orientation; others ask about general same-sex desire (Laumann et al., 1994). Another challenge is to determine the existence of unambiguous homosexuality; for example, the Kinsey scale attempts to taxonomize sexuality on a seven-stage model, starting with "exclusively heterosexual," and gradually increasing from lesser to greater degrees of homosexuality, ranging to "exclusively homosexual." These gradations are based on information related to the individual's sexual behavior, mental perceptions and other factors (Kinsey et al., 1948; 1953).

target SSCs as a significant consumer base. Besides exploring the sociodemographic profiles and prevalence of SSCs, another important pattern is to examine their strategies for coping with minority stresses (e.g., discrimination, hostilities, violence), which might also shape their decisions to reside in a specific location.

This thesis sheds further light on the enumeration of SSCs and the extent to which governmental and semigovernmental datasets grant them statistical visibility. The first chapter focuses on various sources that potentially serve to enumerate SSCs and render them statistically visible. It also describes the methodology used for detecting couples in these databases (as opposed to single LGBTIQ* individuals) in countries in Europe, the Americas and Oceania. In addition to reviewing common sources used in researching SSCs, it also examines relevant revisions made in the run-up to the 2020 censuses in Brazil and the United States.

Building on the groundwork established in the first chapter, the second chapter draws from the example of using Brazilian census data to enumerate SSCs. Unlike most sources, the data from Brazil includes a high level of geographical detail along with descriptive statistics. A multilevel-regression allows for spatial analysis of the presence of SSCs down to the subdistrict-level for the municipalities of Rio de Janeiro and São Paulo.

Chapter three consists two parts: the first concentrates on the statistical visibility of SSCs in an entire country, Germany (divided geographically into federal states), based on the country's annual microcensus; the second focuses on a comprehensive spatial segregation analysis of SSCs in the city-state of Berlin, based on Germany's full census conducted in 2011. This provides a high level of geographical detail and, in contrast to the nationwide analysis, it benefits from the availability of data on civil unions as a legal institution.

In the literature, many different terms are used to refer to the people who are the focus of this study. In some cases, the term "same-sex couple(s)" alone is used; other times, a distinction is made between gay and lesbian SSCs, if relevant for the content. The terms "gay couple" or "gay union" are used synonymously for only male SSCs. Occasionally, the term "homosexual" is used. The term "gay," whenever it is used, always refers to gay males and never to homosexuals in general or specifically to women (although the term "being gay" may be used synonymously with "being homosexual," whether describing men and women). In this thesis, the term same-sex couple (SSC) refers to those who profess to feel sexually attracted to people of the same sex and/or engage in sexual behavior and/or identify themselves as being gay or lesbian. This work does not question these facts, though it acknowledges that measuring and/or operationalizing sexual orientation is a difficult and often ambiguous construct (Heath, 2004).

WHY STUDY SPATIAL SEGREGATION OF SAME-SEX COUPLES?

The concept of segregation generally refers to the degree to which at least two groups live in separation from one other within a defined space (Massey & Denton, 1988). Others define segregation as "the differentiation of two or more population groups among subunits of a given social space" (Acevedo-Garcia & Lochner, 2003, p. 265). While generally not limited to that, the "social space" in this thesis is primarily defined as a geographical space, such as a metropolitan region or part of a neighborhood. Segregation can also be described as a sociospatial concentration of some social groups within a city or geographical area (Alisch, 2018).

Studying residential segregation enhances the notion of a neighborhood and/or specific geographical aggregate, offering insights into that location's characteristics and specificities, while also revealing the potential spatial inequalities that inhabit it (Spring, 2013). Understanding the mechanisms that shape spatial segregation patterns poses implications for public policy, public health and other overarching topics. When studying spatial segregation, multiple aspects must be taken into account, including specific aspects as they relate to SSCs. If segregation or concentration is present, such a finding can be used positivistically; for example, to enable retailers to tap into the economic strength of SSCs through targeted marketing activities, or to allow for the establishment of an "arts scene" and the range of businesses and nightlife typically associated with this). Another positivistic outcome is that healthcare service providers that cater to SSCs (who may have different needs than other population groups) can also settle in these high-concentration areas where more members of their target group are located.

When analyzing segregation, care must be taken to address its causes, including examining whether the segregation is voluntary or forced. The answers to these questions are currently unclear with regard to SSCs in general, and even more so when differentiating between male and female SSCs. Follow-up research should examine whether segregation patterns appear because SSCs voluntarily seek to retreat into a "micro-lifeworld" which allows them to evade still prevalent discrimination in the "macro-lifeworld" (e.g., work, family, broader society), or whether it is forced, because LGBTIQ* people feel marginalized by heteronormative society. Living among like-minded people is a commonly desirable goal for SSCs, which raises the question of whether they still deem spatial segregation necessary in response to potential minority stresses.

In its current state, research into spatial segregation of SSCs remains equivocal. A frequent observation is that SSC-concentrated neighborhoods are becoming increasingly popular among the non-gay population as a destination for tourism and entertainment, but also for establishing residence (Rushbrook, 2002). Hayslett and Kane (2011) view the geographic clustering of gays

and lesbians as a means of protection against homophobia. Building on more recent insights, research on this topic should examine whether the phenomenon of the partially disappearing LGBTIQ* neighborhoods is a positive sociodemographic development in the sense that protection and seeking the shelter of like-minded people is becoming less necessary within the context of growing societal acceptance of LGBTIQ* people. Is it also conceivable that SSCs wish to exclude non-gays from "their" neighborhoods as their protective majority status dissipates and they face growing threats? Researchers view the decline of gayborhoods as a sign of improved social equality, on the one hand, (Ghaziani, 2014), but, on the other hand, as a looming identity crisis for LGBTIQ* neighborhoods (Buchanan, 2007). Within the scope of this thesis, it is impossible to address this important question. However, this work contributes to measuring the degree to which SSCs are segregated. Chapters two and three focus on the statistical visibility of SSCs while also examining spatial segregation issues and addressing various differences between male and female SSCs. This could provide impulses for follow-up studies that explore the complex reasons behind these residential patterns.

MAIN TOPICS

The three chapters of this thesis are each dedicated to examining one of three key themes concerning the non-traditional family form of same-sex couples (SSCs):

- statistical visibility of SSCs;
- spatial segregation of SSCs;
- different settlement patterns among gay men and lesbians in SSCs.

Each of these topics is explained in the sections below.

STATISTICAL VISIBILITY OF SAME-SEX COUPLES

SSCs are becoming increasingly visible from a statistical perspective in data sources from various countries. However, given the small number of countries around the world who currently collect and provide such data, the field of statistically researching SSCs is currently at a very early stage. The availability of data on SSCs allows for studying economic and social issues (Black et al., 2000) and consequently brings recognition to this non-traditional family form within progressive societies. Statistical visibility in quantitative data sources is found primarily in countries that afford some degree of legal recognition to LGBTIQ* individuals, such as antidiscrimination

legislation and the right to marry. These countries are primarily, though by no means exclusively, located in Europe and the Americas. A comparison of various countries on different continents reveals some association between attitudes towards homosexuality and the presence of data sources containing information on SSCs. Data from the World Values Survey on the question of the justifiability of homosexuality gives an impression of why, for example, African countries are significantly less attentive towards detecting the prevalence of SSCs compared to many countries in Europe and the Americas. Participants in this survey are asked to rank the justifiability of homosexuality on a ten-point scale ranging from "low justifiability" (scores 1–5) to high justifiability (scores 6–10). In a selection of African countries (Nigeria, Rwanda, Ghana), more than 90% of respondents give homosexuality a "low justifiability" score, in contrast to respondents in European countries like the Netherlands (19% low justifiability score), Spain (29%) and Germany (47%) (Inglehart et al., 2014; own calculations). These findings may also explain why conducting research and generating data on SSCs is a phenomenon that (with few exceptions) is limited to European and American countries.

Census data is the source used most frequently to enumerate SSCs, because census datasets are usually large enough to be suitable for deriving insights into this minority group. By contrast, sample size is often an obstacle in using survey data, as surveys usually cover far fewer people than censuses, though they offer the advantage of collecting information on specific topics, such as labor-force participation. Though varying by country, it has been possible to collect data on SSCs in censuses for around the past three decades; for example, the United States started collecting such data in its 1990 census (Gates, 2015); the German microcensus has acknowledged SSCs since 1996 (Lengerer & Bohr, 2019). Methodologies for mining such data are not standardized. Some countries, such as Uruguay in 2011, refer explicitly to SSCs in census questionnaires, while others enumerate them using indirect labeling based on the interviewee's relationship status and gender (e.g., the German microcensus). The methodology can also change over time in some countries, such as when adapting to changes in jurisdiction to refer explicitly to SSCs, thus eliminating the need to label them indirectly (e.g., New Zealand made this change between its 2013 and 2018 census cycles). Another difference often seen among countries is how they count relationships in general. Most countries analyzed in this thesis only count relationships that involve the head of the household, though other countries (e.g., Spain, Uruguay, New Zealand) count all relationships occurring within a single household. It is plausible that the first approach results in undercounting of SSCs. A final point of observation on the statistical visibility of SSCs is the ever-present challenge of accounting for various errors in the data. These include errors that occur when a census respondent indicates the wrong gender or provides incorrect information about the type of relationship they are in. Even if one member of the couple makes a mistake like this, it results in the SSC being misidentified as an opposite-sex couple. In some

cases, the couples may intentionally falsify their gender or other information, because they are reluctant to "come out" in the census, in fear of possible repercussions, such as discrimination.

SPATIAL SEGREGATION OF SAME-SEX COUPLES

From a basic, subjective point of view, most residents of a country or city recognize that there are areas in which gay and lesbian couples conglomerate in higher concentrations than elsewhere and in which LGBTIQ*-community establishments are more prevalent. Such an area is commonly referred to as a "gay area," "gay district," "gay neighborhood" or, to use a neologism coined by Ghaziani in his book *There Goes the Gayborhood?* (2014), a "gayborhood." Notably, these common names almost always contain the word "gay" and do not refer to lesbians. Many such neighborhoods exist throughout the world, such as Boystown in Chicago (Ghaziani, 2014), the Castro in San Francisco (Gates & Ost, 2004) and Eixample in Barcelona, often referred to as "Gayxample."

In light of such basic, subjective observations, this thesis examines whether and to what extent spatial segregation of SSCs exists, while also exploring potential drivers behind the process of such segregation. The findings are evaluated in terms of their potential implications for SSCs. Understanding spatial segregation of SSCs can affect positive changes within SSC-prevalent communities; for example, by improving the local healthcare offering, as a high correlation exists between HIV prevalence and concentration of SSCs (Lieb et al., 2003). It can also promote economic prosperity, as researchers have observed that a higher degree of tolerance and diversity among SSC-prevalent populations results in simplified entry to the labor market for LGBTIQ* jobseekers, and gives employers access to a broader range of potentially skilled employees; furthermore, SSCs are viewed as a significant and often affluent market, which attracts the attention of retailers (Florida & Gates, 2002).

First, in chapters two and three, various geographical aggregates within Brazil and Germany (respectively) will be examined in terms of spatial segregation of SSCs. In addition to identifying whether such segregation exists, a second but equally important goal is to compare the existence and degree of segregation across multiple geographical aggregates. In which locations is segregation occurring, and where it is stronger? Lastly, if segregation or clustering of SSCs does in fact exist, what are the drivers behind this phenomenon? To what extent do the sociodemographics of the population and specific characteristics of an area influence the prevalence of SSCs there?

When analyzing spatial patterns of settlement among SSCs, their segregation must be quantified in comparison to opposite-sex couples (OSC) to provide social scientists and researchers a better understanding of the differences between these two subpopulations (Spring, 2013). A primary function of "gay neighborhoods" is (or, at least, has been) to provide a place of refuge in which LGBTIQ* people feel relatively sheltered from the threat of violence against them, which exists within the greater population (Hayslett & Kane, 2011).

More recently, demographic discussions have turned with some ambiguity to the question of how these traditionally LGBTIQ*-prevalent neighborhoods are undergoing changes in composition related to decreasing segregation as non-gay people increasingly settle within them and LGBTIQ* people and their symbols gradually decline in prominence (Spring, 2013). Researchers have not yet arrived at a consistent evaluation of the increasing disappearance of gay neighborhoods. On the one hand, if so-called gay areas attract non-gay people, it could suggest that greater equality or assimilation has been achieved. Among researchers who take this view, Ghaziani (2014) points to a "post-gay" era in which especially gay men assimilate to heteronormative society. On the other hand, Buchanan (2007) decries the loss of gay neighborhoods' identities, as does Rushbrook (2002), who describes how the rise of non-gay tourism to gay areas disrupts these neighborhoods' homogeneity.

In addition to country-level analyses of Brazil and German in chapters two and three, respectively, detailed analysis of the municipalities of Rio de Janeiro and São Paulo (chapter two) and Berlin (chapter three) shed further light on the spatial segregation of SSCs and seek explanations for these locational patterns.

DIFFERENT SETTLEMENT PATTERNS AMONG GAY MEN AND LESBIANS IN SAME-SEX COUPLES

Settlement patterns often differ between gays and lesbians living in SSCs. These differences are expressed in the availability of data and the presence of gay and lesbian SSCs in specific areas. Many analyses have revealed that male SSCs show stronger urban concentration patterns than female SSCs (Gates & Ost, 2004; Goldani et al., 2013). However, it must also be considered that, based on the available data, gay men generally live more often in SSCs than lesbians. One country in which female SSCs are more prevalent than male is New Zealand, which is also examined in chapter one (Statistics New Zealand, 2010). In another country examined in this thesis, Brazil, the 2010 census also revealed a higher number of female SSCs than male (a ratio of 54 to 46% of all SSCs in the country). Yet, even in these countries, an examination of smaller geographical

areas within them reveals that male SSCs outnumber female SSCs on the local level (e.g., in both Rio de Janeiro and São Paulo, 55% of SSCs are male and 45% female). In Germany, male SSCs totaled 58% and female 42% during the period examined in this essay. Within the city-state of Berlin, male couples accounted for 68% of all SSCs, compared to female couples, 32%, indicating a significant increase in spatial segregation among male SSCs in Berlin compared with the rest of the country.

A review of sociodemographic literature focusing on LGBTIQ* people reveals that gay men living in couples are far more often a topic of research than lesbians. As a result, detailed explanations for why there are differences in visibility between these two groups remain scarce. Theoretically, these differences may in part simply be a function of natural differences in population size. However, another partial explanation could be that female SSCs more often adhere to certain heteronormative conventions of what constitutes family life, such as having children (mostly from former heterosexual partnerships). As such, findings from quantitative data sources become biased if lesbian couples feel less urgency about "coming out" in census data, because they may feel more fully integrated into heteronormative society compared with male SSCs. Full answers to these questions, however, are beyond the scope of this thesis.

SCOPE OF THE DATA

Chapter one provides a synopsis of how ten countries around the world collect statistical data on SSCs and/or identify them based on various data sources; these ten countries are Germany, Spain, France, Sweden, Canada, the United States, Brazil, Uruguay, Australia and New Zealand. Population census data is the main data source. This data represents a broad enough fraction of the population to provide a statistical view of minority groups such as SSCs. In contrast to censuses, surveys generally involve smaller sample sizes, but can bring visibility to SSCs on the specific topics that they address, such as labor force and health. A few countries, such as Sweden, do not conduct population censuses, but use population registers, in which all data is collected in a standardized way, to enumerate SSCs.

The second chapter, which focuses on Brazil, explores public-use microdata samples from that country's 2010 census, which covered 10% of the Brazilian population; i.e., a representative fraction. These 10% amount to around 20 million people. A particular advantage of this database is that it provides extensive geographical detail, which allows for the analysis of small geographical aggregates such as subdistricts (i.e., an administrative unit) of Rio de Janeiro and São Paulo. Brazil's census questionnaire refers explicitly to SSCs. The respondent can tick a box which directly indicates that he or she is a "partner of a person of the same sex." This method of

direct inquiry also decreases the risk of errors, such as indicating the incorrect gender, which can skew data when SSCs have to be labeled indirectly (based on the relationship status and gender they indicate) (Festy, 2007). Same-sex marriage was not legalized in Brazil until 2013, which is why it does not yet appear as an option for respondents to identify themselves in the 2010 census.

During the first part of the final chapter, which focuses on Germany, information is derived from the scientific use files of the German microcensus, which covers 0.7% of the German population annually.[4] The analysis is based on the microcensus data from 1996 to 2012,[5] which contains a high degree of geographical detail and uses Germany's 16 federal states as a regional variable. Using this microcensus data within the context of this thesis requires for SSCs to be identified indirectly based on the information they provide about their gender and relationship to the person who is the head of the household (only relationships involving the head of the household are recorded in the data). The second part of the final chapter, which focuses exclusively on the city-state Berlin, uses the 2011 German census, which contains a full sample of the country's population and provides extensive geographical detail on the prevalence of civil unions, a legal institution which, in Germany, is available only to same-sex couples.

BACKGROUND

SSCs are a growing component of family diversification within societies today, yet they lack statistical visibility due to the relative unavailability of data about them. This results in a major knowledge gap with regard to their living conditions and other sociodemographic characteristics. Gathering data on same-sex-oriented people provides insights into their lives and locational preferences, which can, in turn, inform decision-making in various aspects of social life, from political awareness (including the struggle for greater equality of LGBTIQ* people under the law), better access to healthcare, focused marketing campaigns and potential economic prosperity.

To date, the mechanisms shaping spatial segregation patterns of SSCs are largely unclear. Bringing greater clarity to this topic poses significant benefits, as mentioned above. Segregation firstly refers to the unequal distribution of subpopulations within an (urban) area (Massey & Denton, 1988). This term encompasses various dimensions (e.g., social segregation, poverty segregation, etc.). Across a broader geographical area (e.g., on the country level), possible sectoral patterns differ between rural and urban areas (Glebe, 2002). For an urban area, segregation could

[4] The microcensus depicts 1% of the German population, and the scientific use file focuses on 70% of microcensus respondents; i.e., 0.7% of the German population.
[5] Microcensus data for 2007 is excluded from this work, because one central variable was captured inaccurately by the Federal Office of Statistics and could not be corrected.

refer to an unequal distribution between particular neighborhoods. Another aspect of segregation is whether it occurs voluntarily or by force.

Segregation has always occurred within cities[6] among social groups, such as those from different occupational groups or social classes (Häußermann, 2012). Further affiliation with particular subpopulations can lead individuals to spatially segregate themselves within a city (e.g., ethnicity, country of origin, age). Poverty, for example, results in a pattern of segregation in which people live in neighborhoods where housing is inexpensive, while the most affluent people within the society live in areas of a city where housing prices are high. This example shows that for people living in poverty, spatial segregation generally occurs by force, whereas for affluent people, spatial segregation is voluntary. Spatial segregation is often unproblematic when it occurs voluntarily (for example, when residents choose to live in student districts, artist districts or "family-friendly" districts, etc., based on their affiliations with the subpopulations who live there). This "good" segregation helps establish social support networks among peers. However, segregation can also be problematic, as in the example of forced segregation of people living in poverty, which results in a lack of social integration within a certain area. Because these people lack the financial freedom to choose to live elsewhere, they are forced to segregate spatially, making them prone to further forms of discrimination. The consequence can be unintentional social isolation and ghettoization (German Institute of Urban Affairs, 2006). The following section reviews literature on segregation patterns among SSCs, identifying potential drivers behind it.

The literature depicts a relatively typical sociodemographic profile for SSCs, often characterizing them as being more highly educated on average than they probably are. One explanation for this is that highly educated SSCs are statistically overrepresented, because they may be more inclined than less educated SSCs to participate fully in census-taking and accurately disclose their sexual identity, understanding that greater statistical visibility can lead to better living conditions in terms of alleviating minority stresses. The importance of a tolerant environment for the physical and mental health of LGBTIQ* people after coming out is underscored by the negative example discussed by Cochran & Mays (2008) who noted that in the United States, coming out is also linked to a greater propensity for risky behavior, such as smoking and alcohol abuse.

The Gay & Lesbian Atlas by Gates and Ost maps gay and lesbian distributions according to various regional aggregates (e.g., state, city) as well as other characteristics (e.g., age of same-sex unmarried partners, ethnicity, ranking of gay/lesbian index[7] in comparison to all

[6] Segregation can also occur in lower-level aggregates (e.g., on the country level), but research generally concentrates on municipal segregation patterns.
[7] An index score of 1 means that the likelihood of living in this zip code is as high for an SSC as it is for the average American household.

areas/states/cities). An analysis of these results reveals that younger unmarried SSCs are overrepresented in areas with a higher index ranking (Gates & Ost, 2004). This contrasts with Hayslett and Kane (2011), whose analysis of the 2000 U.S. census data revealed no such overrepresentation of younger SSCs in Columbus, Ohio.

Many studies of spatial segregation of SSCs often proceed from a view that this segregation serves to protect SSCs from the threat of danger within broader society. Hayslett and Kane (2011) suggest that the clustering of SSCs in Columbus, Ohio indicates a desire for a safe living space in response to societal hostility. Similarly, Ghaziani (2014), who argues that a main focus of investigating segregation must be to understand its underlying mechanisms, also finds that a fundamental driver behind the segregation of SSCs is the feeling of safety that a gay neighborhood (or, as Ghaziani writes, "gayborhood") affords them. Another study, focusing on Swedish landlords, finds that male SSCs are more often subjected to housing discrimination than female SSCs; this might also help explain how concentration patterns serve as a protective mechanism among male SSCs (Ahmed et al., 2008).

The research also reveals insights into the housing conditions of SSCs living in spatially segregated areas. SSCs are significantly less likely to have children than OSCs. As a result, they show greater flexibility in terms of choosing a home location; i.e., greater geographical mobility. This makes them likelier to rent their home than to buy it, as the latter involves a longer-term commitment, and owning a home is an obstacle to establishing a gay space, as has been documented in cities in the United States (Anacker & Morrow-Jones, 2005). Another study on urban areas in the United States has also confirmed that neighborhoods with high concentrations of gay residents contain more rental properties than owner-occupied properties (Bailey, 1999).

The literature suggests that locations with a high population density harbor the potential for greater sociodemographic diversity and tolerance, as these areas are home to people of many different backgrounds. The literature also reveals a correlation between tolerant, diverse populations and economic prosperity. Referring to "the rise of the creative class," Florida clearly links diversity with economic prosperity (Florida & Gates, 2002). In American cities, the concentration of members of this "creative class" in an area is more likely to coincide with a higher concentration of male SSCs than female (Florida, 2002). Such a creative class can be found in regions where opportunities to develop talent, technology and tolerance exist. Florida (2002) argues that this segment of the population should be viewed as an economic class, as it promotes the affluence of a region through technological, economic and artistic creativity; the combination of these three types of creativity is a major driver for economies: The creative class is innovative and creative professionals apply their know-how in an ever-expanding range of contexts, while Bohemians within the class assure openness and social diversity. Further studies identify diversity

as the most highly determining factor for locational preferences among SSCs (e.g., Gates & Ost, 2004). Mapping and numeric data in *The Gay & Lesbian Atlas* also reveals that there are a few areas in which the concentration of gay males exceeds the concentration of lesbian by far, while there are also areas in which the concentration of lesbians exceeds that of the gay men, but only by a narrow margin (Gates & Ost, 2004). This might explain why the male-inflected neologism "gayborhood" has become idiomatic in SSC spatial segregation research, while no equivalent lesbian-specific term exists. Moreover, Hayslett and Kane (2011) conclude that urban growth can be culturally explained and as such is a relevant factor for the concentration of gays but not lesbians in Columbus, Ohio. Numerous researchers have explicitly posited a potential connection between economic well-being and diversity when explaining the spatial segregation of SSCs. Their findings indicate the importance of economic conditions as a factor for spatial segregation, as SSCs tend to locate in high-amenity areas. This correlates to SSCs' attraction towards diverse neighborhoods that offer relatively low barriers for entry; e.g., abundant job opportunities, ample affordable housing (e.g., Hayslett & Kane, 2011; Black et al., 2002).

Furthermore, Black et al. (2002) find that gay men in the United States prefer to settle in high-amenity areas and tend to live in metropolitan areas with a high cost of living; San Francisco's Castro neighborhood is an example of such an area (Ghaziani, 2014). Regression analyses show "that measures of local amenities predict gay location more strongly than does gay-friendliness" (Black et al., 2002, p. 54). The authors suggest that one reason for this is that, considering the high living expenses associated with having children, the (involuntary) renunciation of parenthood often frees resources for SSCs to allocate elsewhere (Black et al., 2002). In their geospatial analysis of Columbus, Ohio, Hayslett and Kane (2011) find that locational choices among gay people favor proximity to other gay people and that SSCs tend to seek areas that offer a high standard of living. On the other hand, gentrification studies of San Francisco (Castells, 1983) and New Orleans (Knopp, 1997) have shown that gay people do not necessarily move to high-amenity areas, but rather convert their chosen neighborhoods into such areas.

Numerous case studies on the spatial distribution of SSCs focus on only one specific geographical area. Black et al. (2002), for example, analyze settlement choices among the gay male population in San Francisco, but also offer an index for ranking gay population concentrations in other American cities, revealing that gay populations are increasingly concentrated in coastal cities with a mild climate. New York City, Washington and Austin are also home to high concentrations of gay households (Black et al., 2002). In a similar study, Andersson et al. (2006) examine the extent of gay and lesbian population concentration in Sweden and Norway, revealing particularly strong concentration within the metropolitan areas of Oslo and Stockholm, with gay men in Norway tending more strongly to live in the city than those in Sweden.

Ghaziani (2014) characterizes gayborhoods as centering around a "focal point," usually defined by one or two specific streets, such as North Halsted Street in the Boystown neighborhood of Chicago. This description applies to many cities with high LGBTIQ* populations. In San Francisco, for example, the Castro neighborhood (which *The Gay & Lesbian Atlas* ranks as the U.S. zip code area with the highest index score[8] for gay men, 32.41, and seventh-highest for lesbians, 7.40) centers around Folsom Street (Gates & Ost, 2004). Another example is the Barcelona neighborhood of Eixample, whose gay district concentrates around the street Consell de Cent. Such gayborhoods are home to establishments such as bars, saunas and clubs that cater to a gay and (to a lesser extent) lesbian market (Ghaziani, 2014). However representative these examples may be, this is by no means a universal description for patterns of LGBTIQ* settlement. In their study of Columbus, Ohio, for example, Hayslett and Kane (2011) found no significant correlation between the availability of gay-focused establishments such as bars and the preference among gay people to live in a particular area, determining rather that such clustering is far likelier to be driven by the desire to live in proximity to other SSC households.

Unlike the studies described above, which focus specifically on SSCs, Wimark and Östh (2014) examine gay and lesbian geographical concentration in Sweden, also taking single gay men and lesbians into account. They found a consistent correlation between highly educated areas and higher proportions of gays and lesbians; population size also increases the chance of concentration of gays and lesbians. Patterns of concentration differ between gay men and lesbians; the former primarily concentrate in heavily populated urban areas. Comparing concentration patterns of SSCs with those of the entire gay and lesbian population reveals that single gays and lesbians are more concentrated than SSCs in terms of where they live, regardless of population size (Wimark & Östh, 2014). One explanation for this could be that, considering gay- and lesbian-focused establishments are likely to be seen as venues for meeting a potential partner, living in proximity to these establishments becomes less of a priority to gay men and lesbians who have already formed a household. Wimark and Östh also point out that gay men and lesbians probably exhibit more complex migration patterns than just a "simple rural-urban one-way ticket" (2014, p. 749). They urge caution in analyzing the data they collected on single gay men and lesbians, as it was collected anonymously online through dating apps, and users may have more than one account. Nevertheless, this study reveals parallels with spatial segregation patterns among SSCs (e.g., concentration in urban areas) and provides insights into the spatial preferences of single gay men and lesbians.

Based on a thorough review of the literature, it can be concluded that a majority of studies concentrate on the United States, with only scarce examples of studies being conducted on

[8] These index scores mean that gay men and lesbians are, respectively, 32.41 and 7.40 times more likely to live in this zip code area than the average American household.

localities elsewhere. Spatial segregation of SSCs in Brazil and Germany, countries which are each the subject of a chapter in this thesis, has previously only rarely been a topic of academic investigation. One example (Parker, 1999) focuses on gay men, the structure of their identities and the formation of gay communities in Brazil, analyzing the urban geography of Rio de Janeiro and describing the spatial patterns of gay settlement there as typical for the formation of gay communities in the country as a whole. More generally, Parker (1999) portrays a segregated urban gay world growing in tandem with the culture industry as well as gay consumerism and sociopolitical activism, and finds that gay identities and communities depend on structural factors, such as the level of urbanization of the area and availability of housing for single men. According to Parker (1999), gay men live near the beach areas of Rio de Janeiro, which attract people of diverse economic statuses who meet there to socialize and gain a sense of community; these areas are characterized by a high concentration of bars and restaurants in proximity to residential areas. Like Parker, Green (1999) examines the expansion of gay male communities in Rio de Janeiro, but also focuses equally on Brazil's largest city, São Paulo, in one of the first book-length studies on the topic. He attributes the framework for building such communities to patriarchal family constellations, linking this to the urge among gay men to build their own new families and withstand the frequent disapproval of their biological relatives. According to Green (1999), gay men in Rio de Janeiro and São Paulo settled in areas in which they could meet other gay men and find hotels, boarding houses or cinemas where sexual encounters could take place. Another study (Goldani et al., 2013) reviews Brazilian 2010 census data on gays and lesbians in specific areas of Brazil, revealing that nearly half of Brazilian SSCs live in two states, Rio de Janeiro and São Paulo. This is highly indicative of the extent of spatial segregation of SSCs in Brazil, considering that these two states account for only one-third of the country's population.

With regard to Germany, Lengerer and Bohr (2019) find that 2013 microcensus data reveals that the ratio of SSCs to OSCs is lower in the federal states belonging to former East Germany than in the states belonging to former West Germany and that the country's highest proportions of SSCs occur in cities with populations above 500,000. Lengerer and Bohr (2019) conclude that living as an SSC in Germany is primarily an urban phenomenon, with 36% of German SSCs living in major cities, compared to just 22% of German OSCs. Along with other German cities, Berlin, which is home to a well-established LGBTIQ* community, exemplifies the tendency of German SSCs to concentrate in urban areas. It also has one of the highest numbers of registered SSC partnerships (i.e., civil unions) in the country (Kroh et al., 2019). Based on Germany's 2011 census data, Humpert (2015) found that SSCs living in civil unions in Germany clearly segregate themselves to urban areas, with the city-states of Berlin and Hamburg, as well as the federal state of North Rhine-Westphalia (home to the metropolis of Cologne) showing the highest proportion of SSCs living in civil unions compared with married opposite-sex couples, whereas in more rural

federal states, such as Bavaria and Mecklenburg-Western Pomerania SSCs account for a smaller portion of the married/unionized population. Like Florida (2002), Fritsch and Stützer (2009) find a parallel between the spatial segregation of SSCs and the presence of a creative class; based on social insurance statistics, they plot the locations in Germany where the creative class is concentrated and explore the possibility of applying a gay index. They found that freelance creative professionals are concentrated in highly urbanized areas like Berlin, Hamburg, Cologne and Munich, with significant concentrations also living in high-amenity suburban areas, such as the region immediately south of Munich (Fritsch & Stützer, 2009). As Germany's largest city with a population of 3.8 million, Berlin is home to a large and highly concentrated LGBTIQ* community, with the district of Schöneberg being a focal point for the primarily gay male community, including a wide range of gay-focused businesses and highly visible gay symbolism, such as the rainbow flag (Braun, 2011).

A review of these various studies reveals multiple aspects that characterize the spatial segregation patterns of SSCs. Summarizing the potential significance of what it means to live in a gayborhood, Ghaziani (2014) examines various points of view, ranging from those who consider LGBTIQ* spatial segregation as a defining feature of gay community formation to those who consider it no longer necessary in an age of greater societal acceptance towards LGBTIQ* people. While gay and lesbian neighborhoods have clearly changed over time, often becoming increasingly heterogeneous, their identities remain intact in ways that emphasize how the question in Ghaziani's (2014) title very much remains an open one: *There Goes the Gayborhood?*

CHAPTER 1: STATISTICAL VISIBILITY OF SAME-SEX COUPLES IN CENSUSES, REGISTERS, AND SURVEYS

1.1 INTRODUCTION

Non-traditional family forms are increasingly a feature of modern societies. One such group within the composition of any population are LGBTIQ* people, who increasingly establish households as same-sex couples (SSCs). Same-sex relationships have gradually become more visible in many societies, as they continue to gain social acceptance and experience improved legal recognition. The growing shift among LGBTIQ* people towards living together in domestic relationships has also sparked research interest in them with regard to analyzing their lifeworlds and making them statistically visible in ways that they have previously not been. While past studies of SSCs have generally relied on qualitative approaches (Fischer, 2016), researchers are increasingly applying quantitative methods towards analyzing this topic.

Over the past two decades, a growing number of studies on enumerating SSCs have used data mainly from censuses, but also from registers and surveys. Unlike opposite-sex couples (OSCs), SSCs are a minority group which means that only vast data sources can potentially deliver sufficient quantity to make statistical analyses robust; as Festy has pointed out: "surveys are not adequate tools" (2007, p. 364). Although it is the only reliable source for drawing statistical conclusions, census data at the same time often fails to cover specific topics that are relevant to understanding SSCs (Fischer, 2016). For specific topics, survey data can offer more detailed insight, yet it remains disadvantageous due to the relatively low coverage of SSCs in surveys. Because of these challenges, pioneering datamining work is needed to enumerate and ensure the statistical visibility of this group, while providing quantitative insights into their lifeworlds and revealing differences, but also what are likely to be many similarities in comparison to the heteronormative majority population.

Another obstacle in analyzing SSCs is that the concept of sexual orientation is difficult to operationalize (e.g., Heath, 2004). One study describes that sexual orientation entered "the field of demography primarily through its connections to sexual behavior (rather than identity or desire)" (Baumle et al., 2009, pp. 3, 4). Furthermore, exhaustive databases, such as a census data,

face two major difficulties in identifying SSCs: First, individuals living in SSCs may experience difficulties in choosing the right option among the possible responses to express their partnership status, or they intentionally choose an inaccurate option. The latter may be attributable to a desire on the part of SSCs to avoid "outing themselves" in a census or survey, because being identified as gay may still lead to minority stresses due to a lack of social acceptance (e.g., Gates, 2010; Cortina & Festy, 2014). Second, some couples identified in the data as SSCs might actually be OSCs, because "one of the partners is sex-miscoded" (Banens & Le Penven, 2016, p. 1), which is especially relevant if SSCs are identified based on how they respond to census questions about their partnership status and gender. This obstacle is also reported by other studies (Festy, 2007; Lengerer & Bohr, 2019).

This thesis focuses on countries that provide a certain level of legal recognition to LGBTIQ* individuals and SSCs as an essential prerequisite for doing this research. Legal recognition of LGBTIQ* people within a country (i.e., the extent to which it exists) is closely linked to the availability of quantitative data sources on these people. The sections that follow provide an overview of four countries located in Europa, four in the Americas and two in Oceania, in terms of their methods for enumerating SSCs by means of registers, censuses and surveys.

The purpose of this chapter is to address the need for an overview of the methodological approaches taken by countries around the world to enumerate SSCs, as well as the approaches taken by a few countries that will begin collecting data on this subpopulation in the near future (i.e., where at least experimental questionnaires already exist). Therefore, this thesis also provides a brief comparison of past and future ways of quantifying SSCs. In addition to describing the methods and data sources, critical attention will also be directed towards common challenges that have impeded the statistical visibility of SSCs.

An overview of the legal recognition (or lack thereof) of SSCs around the world is provided in section two below, which serves as a general guide to the availability of statistical data captured on SSCs in the past and present. This is followed by an examination of how SSCs are enumerated in various countries in Europe and the Americas, as well as Australia and New Zealand in Oceania, which leads to a critical assessment of the various approaches each of these countries takes.

Section three analyzes the challenges in identifying SSCs using the data sources discussed, in terms of the association between statistical visibility and legal recognition of SSCs. Lastly, this chapter concludes with prospects for future research on this topic.

1.2 Statistical Identification of Same-Sex Couples in the Past and Today

Legal Recognition of Same-Sex Couples

As mentioned above, there is a strong association between the legal recognition of LGBTIQ* people/SSCs and their visibility in official data sources. Even though Western societies (factoring out differences between and within countries at this moment) have tendentially adopted more liberal attitudes towards minorities in general and afforded increasingly equal rights to LGBTIQ* people and SSCs, this is not the standard on the global level. To provide a comparative overview of the current state of LGBTIQ* rights around the world, Table 1.1 summarizes legal recognition of LGBTIQ* people by continent, with regard to eight categories.

Table 1.1: Legality of homosexual acts by continent

Continent	Number of countries	Completely legal	Completely illegal	Partially legal[a]	Share legal	Share illegal	Share partially legal	Potential death penalty
Europe	43	43	0	0	100.00	0.00	0.00	0
Americas	35	26	5	4	74.29	14.29	11.43	0
Oceania	14	8	2	4	57.14	14.29	28.57	0
Asia	47	24	17	6	51.06	36.17	12.77	4
Africa	54	22	25	7	40.74	46.30	12.96	1
Total	193	123	49	21	63.73	25.39	10.88	5

[a] Legality varies by gender and/or specific area of a country

Sources: Mendos (2019); Equaldex (2020)

Table 1.1 displays the legality of homosexual acts by continent, including the possibility that these acts are punishable by the death penalty. The total number of countries, 193, refers to member states of the United Nations, defined as "peace-loving States that accept the obligations contained in the United Nations Charter and, in the judgment of the Organization, are able to carry out these obligations" (United Nations, 2020).[9]

[9] This classification was used as a clear basis because otherwise the choice of which countries to include may be subject to debate (e.g., including all states, only sovereign states, only internationally recognized countries, etc.).

The overview reveals that there are no countries in Europe where homosexual acts are illegal; in the Americas and Oceania, homosexual acts are legal in most jurisdictions, whereas in Asia and Africa, a significant number of countries still penalize homosexual acts. In some 20 countries worldwide, there is also a legal distinction between male and female homosexuality (i.e., whereas female homosexuality is not considered illegal, acts of male homosexuality are punishable). In summary, the legal status of LGBTIQ* people varies between the continents, with Europe and the Americas offering greater tolerance than other continents. In almost one-third of countries in the world, homosexual acts are still illegal.

Statistical Sources

Censuses, registers and surveys are the main potential sources for enumerating SSCs. A census is a statistical method for collecting data on all units of a population (e.g., individuals, households) at a certain point in time. A microcensus represents a fraction (e.g., 1% in Germany) of these units, who answer questions on a wide range of topics. The findings can then be extrapolated to apply to the entire population. In many countries, the microcensus takes place regularly, while the full census is conducted less frequently (microcensuses are less time-consuming and less costly; e.g., in Germany the microcensus is conducted annually, while the full census takes place irregularly, approximately once every one or two decades). Both the microcensus and the census cover topics such as educational background, working life and relationships inside and outside the family. A second data source, population registers, are official records which are continually revised and contain data on individuals such as their name, gender, marital status and place of residence. Lastly, surveys are used to collect data on a specific topic (e.g., the Labor Force Survey) by interviewing subgroups within a population. Usually, their sample size is low compared to a census or microcensus.

There is growing interest in accumulating knowledge on SSCs as a non-traditional family form, at least in industrialized countries. Over time, “the number of social scientific studies on same-sex couples has augmented steadily” (Fischer, 2016, p. 50). Until almost the end of the twentieth century, research measuring SSCs was non-existent; in the vast majority of countries, homosexual acts were punishable by law, as they continue to be today in a sizeable number of countries. This situation has changed partially and an increasing number of countries now collect a considerable amount of data on SSCs.

A review of the literature shows that quantitative data for significant analyses on SSCs began in the 1990s in many countries (e.g., Gates, 2015; Lengerer & Bohr 2019). Numerous industrialized countries (e.g., Germany and Australia in 1996) started using primarily the responses from their census data to enumerate SSCs (e.g., Lengerer & Bohr, 2019; Qu et al., 2016). Usually this is

performed indirectly by identifying two people as an SSC if the data reveals two people living in one household who are in a relationship (usually involving the head of the household) and indicate the same gender in the questionnaire. The vast majority of census data available shows that the number of SSCs has increased over time. One significant reason for this statistical growth is that the legislation and societal attitudes have become more favorable towards LGBTIQ* people, and as the "reduction of social stigma along with education efforts" continues to expand, SSCs have become less reluctant to "out themselves" in the census, which is improving the quality of the data (Gates, 2010, p. 7). Although censuses have been enumerating SSCs in some form for around the past three decades, there are theoretically likely to be numerous data sources for manually assessing the existence of SSCs even in much earlier years through "analyzing ex post by using certain age and (non-)kinship constellations within the household"[10] (Lengerer, 2019, p. 16).

Other countries provide data on SSCs (i.e., marriage) solely through population registers, as is the case in all four Scandinavian countries (Denmark, Finland, Norway, Sweden) and the Netherlands, which has only been possible since the legalization of same-sex marriage. In addition, many surveys provide data on SSCs as well as on attitudes towards homosexual relationships. For instance, the International Social Survey Program (ISSP) established in 1984, is an often-cited cross-national sociological study encompassing 61 nations which has been publishing data for nearly four decades on attitudes towards homosexual relationships. As described above, there is a correlation between the level of societal acceptance of LGBTIQ* people, on the one hand, and interest in collecting data on SSCs and including more questions in censuses to help explicitly enumerate them, on the other. This is why gauging the social acceptance of LGBTIQ* people in data sources can influence decision-makers to explicitly include SSCs within the scope of quantitative data to be collected.

Another important survey source for enumerating SSCs is the Gender and Generations Program (GGP), a panel study among European countries that was launched in 2000 and maps demographic changes (Fischer, 2016). The GGP covers relatively large samples; for example, 9,000 respondents per country on average during its first iteration. Large sample size is particularly advantageous when enumerating a minority population group such as SSCs (Fischer, 2016). Because the availability of quantitative data on SSCs is limited to countries that have adopted a more inclusive mentality towards LGBTIQ* people, the scope of this thesis is limited to an analysis of countries in Europe and the Americas, as well as in Oceania.

[10] Own translation of sentence in German scientific paper.

1.2.1 ENUMERATION OF SAME-SEX COUPLES IN EUROPE

Legal Recognition

Currently, Europe is the only continent in which homosexual acts are legal in every country. While several countries provide civil unions as a legal framework for SSCs, an increasing number provides these couples with a legal foundation through marriage.

Many countries that have eventually legalized same-sex marriage had previously already granted the legal institution of civil union to SSCs in the run-up. The first among these were Northern European countries: Denmark (1989), Norway (1993), Sweden (1995), Iceland (1999) and the Netherlands (1998). The first countries worldwide to full legalize same-sex marriage were the Netherlands (2001), Belgium (2003) and Spain (2005). Since then, a growing number of European countries have legalized same-sex marriage, including Norway and Sweden (both in 2009), Iceland and Portugal (both in 2010), the United Kingdom (2014), Ireland (2015), Germany and Finland (both in 2017) and Austria (2019).

Furthermore, many countries have granted SSCs the right to adopt children, as is the case in Sweden (since 2003, if registered in a legal partnership) ("Sweden legalises gay adoption", 2002); Belgium (since 2006) ("Belgium passes gay adoption law", 2006), Norway (since 2009, if committed or married) (Nikel, 2020) and Denmark (since 2010, if in a civil partnership) (Pride Legal, 2020). In Spain, SSCs have the right to adopt, even if they are not married. Norway even provides financial aid to support married SSCs in the process of adopting. Additionally, laws prohibiting discrimination on the basis of sexual orientation exist in all European countries (Benecke, 2010).

Statistics on Same-Sex Couples

The quantitative statistics on SSCs offered by many European countries attests to the socially liberal mentality towards SSCs/LGBTIQ* people there, as well as the growing interest in understanding this subgroup and the way they live. Usually, SSCs are more identifiable statistically than single LGBTIQ* people, because individuals are often not asked to disclose their sexual orientation, but can be identified as gay or lesbian based on their response to questions about their partnership; this is a recurring topic in statistical research on LGBTIQ* people in general, as the examples of some of the countries discussed in this chapter underscore.

Germany, Spain, France and Sweden have been selected for further analysis below as representative examples of European countries. Even though other countries offer similar

possibilities for enumerating SSCs, these four countries cover all the options (each of which being associated with advantages and disadvantages) for making SSCs statistically visible.

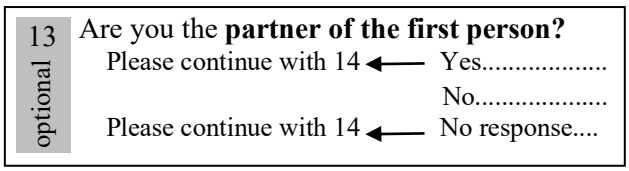
Germany

In Germany, the situation for LGBTIQ* people and SSCs is increasingly liberal. Homosexuality is no longer classified as a punishable act, and anti-discrimination laws have been enacted to protect people of all sexual orientations. SSCs in Germany have had the option of entering a civil union since 2001, and the full benefit of marriage since 2017. Without undergoing gender reassignment surgery (GRS), an individual can change their legal gender. Men who have sex with men (MSM) are allowed to donate blood after a one-year deferral period. Currently, stepchild adoption within married SSCs is the only form of adoption allowed (Equaldex, 2020).

Microcensus

One data source for enumerating SSCs in Germany is the annual microcensus, which covers 1% of the country's population. This data source has been used since 1996 to enumerate SSCs (e.g., Lengerer & Bohr, 2019; own analyses). The question shown in Figure 1.1 below is taken from the 1996 microcensus questionnaire.

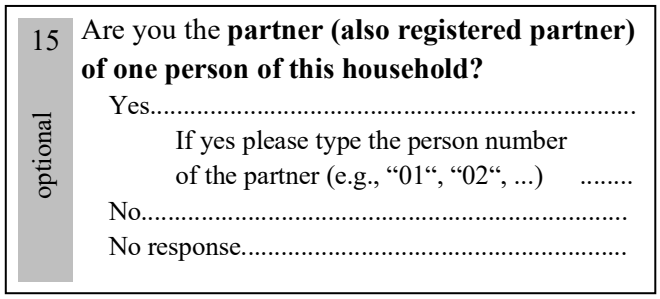
Figure 1.1: Partnership question (German microcensus questionnaire, 1996 to 2004)[11]



This question is optional for the respondent. Based on their gender, which they also state in response to the questionnaire, and the information known about "the first person" (i.e., the head of the household), it is possible to determine whether these two people are an SSC, if both stated the same gender and the head of the household's partner answered "Yes" to the question shown in Figure 1.1. This methodology was applied until the year 2004. Starting in 2005, this question was revised, because, in the meantime, (in 2001) the jurisdiction had granted the legal institution of civil unions to SSCs (see Figure 1.2 below).

[11] Own translation and rendering; the microcensus questionnaire is available only in German.

Figure 1.2: Revised partnership question (German microcensus questionnaire, since 2005)[12]


15 optional

Are you the **partner (also registered partner) of one person of this household?**

Yes.....

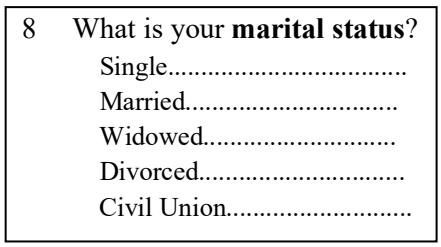
If yes please type the person number of the partner (e.g., "01", "02", ...) .....

No.....

No response.....

One year later, in 2006, another change was added, asking about the respondent's family status (see Figure 1.3 below). This primarily allows for the identification of a registered partnership by means of determining whether the person is in a civil union. The question shown in Figure 1.2 remained the same in 2006.

Figure 1.3: Marital status question (German microcensus, since 2006)[13]


8 What is your **marital status**?

Single.....

Married.....

Widowed.....

Divorced.....

Civil Union.....

The annual German microcensus has enabled researchers to enumerate SSCs since 1996, albeit indirectly: by labeling two people as an SSC if they state that they are partners and that they have the same gender. Since 2006, the variable in the questionnaire asking for the respondent's marital status includes the option of specifying a civil union, the legal institution that became available to SSCs in Germany starting in 2005. Thus, in addition to indirectly identifying unregistered partnerships, it is also possible to directly identify SSCs, i.e., civil unions. SSCs can also be identified by inference, based on how they respond to the microcensus question regarding their relationship to the head of the household: When enumerating potential SSCs based on their domestic situation, any two people of the same gender who are at least 16 years old and live together in one household may appear statistically as an SSC. This nearly triples the estimates derived from the microcensus variables. This estimate is excessive, because it misidentifies as SSCs, for example, two men or two women living together as roommates.

In terms of enumerating SSCs, the microcensus data presents various challenges: Firstly, the marital status variable only collects information on institutionalized SSCs (i.e., civil unions);

[12] As with Figure 1.1: own translation and rendering.
[13] As with Figures 1.1 and 1.2: own translation and rendering.

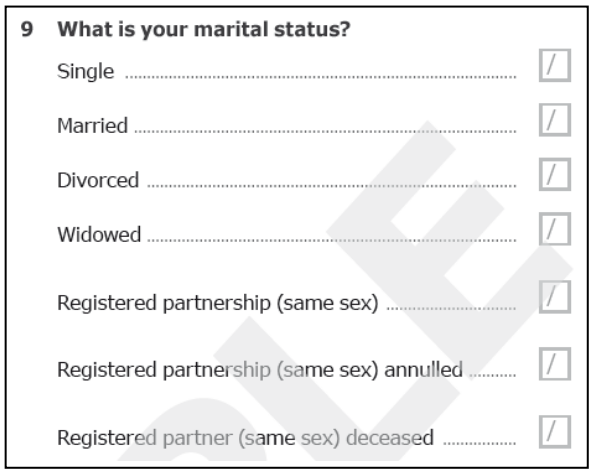
secondly, when asked about their domestic partner, the interviewee may provide no answer (this question is optional), answer inaccurately, state the wrong gender or possibly misunderstand the question in general.

Researchers, including academic scholars, use the German microcensus data in association with diverse contexts. The German Federal Statistical Office, for example, regularly monitors the prevalence of SSCs using the microcensus (Federal Statistical Office of Germany, 2012). Moreover, Eggen uses the German microcensus and specifically connects SSC data from 2006 with the presence or absence of children (Eggen, 2009). Taking a longer-term perspective, Lengerer and Klein (2007) have analyzed changes in partnership constellations over time. Furthermore, Festy (2007) uses the microcensus data to analyze opportunities for enumerating SSCs in full censuses and population registers. Lastly, Stauder (2002) uses the microcensus data as a means of conducting general analysis into new types of household and living arrangements.

Census

The German full census surveys the country's entire population, most recently in 2011. Before that, the most recent full census was conducted in 1987 and extended only to West Germany, as it was carried out prior to the reunification of West and East Germany. The next German full census will take place in 2021. The 2011 census was based on the country's population register; as a result, it is unproblematic that only one-third of the entire population was interviewed, because (according to the census testing in 2001) accurate register data such as home address and employment information was incorporated, accounting for the other two-thirds of the population (Zensus2011, 2020). The census data only reveals the presence of registered partnerships (Figure 1.4) and neglects to specify other SSCs living within one household.

Figure 1.4: Marital status question (German census, 2011)

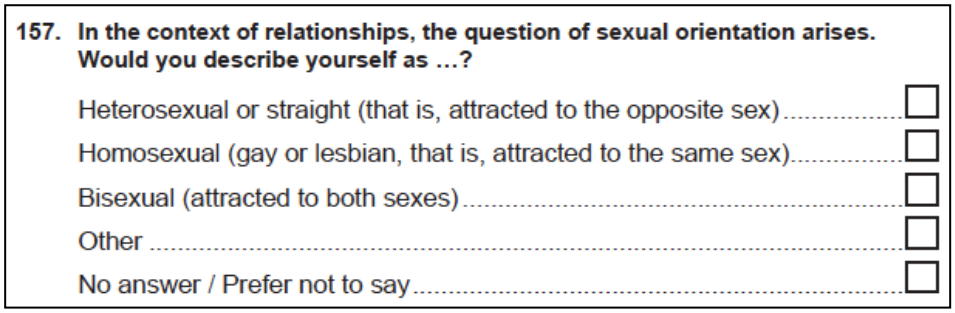


Among other researchers, Dorbritz et al. (2018), for example, used the 2011 German census data to conduct an analysis of forms of domestic partnership in Germany, enriched by an age-specific analysis.

Surveys

Various surveys can also be used to enumerate SSCs in Germany, but only the Socioeconomic Panel Study (SOEP) covers enough SSCs to allow for a reliable statistical analysis. The SOEP is a voluntary, annual social sciences survey, focusing on socioeconomic questions and covering approximately 30,000 respondents in almost 15,000 households. Its question about marital status includes the option to answer "Civil union living together." In the 2016 edition of the SOEP, the marital status question is also followed up by another question asking about the respondent's sexual orientation (Figure 1.5).

Figure 1.5: Sexual orientation question (SOEP, 2016)


157. In the context of relationships, the question of sexual orientation arises. Would you describe yourself as ...?

Heterosexual or straight (that is, attracted to the opposite sex) ☐

Homosexual (gay or lesbian, that is, attracted to the same sex) ☐

Bisexual (attracted to both sexes) ☐

Other ☐

No answer / Prefer not to say ☐

During the 2016 SOEP survey, 459 respondents self-identified as homosexual or bisexual (extrapolated to 2% of adults in Germany). Based on these findings, Kroh et al. (2017) project that SSCs in Germany account for only 1% of total couples in the country. The direct question about sexual orientation was included in 2016 to analyze whether people who self-identify bisexual may be living in a relationship with an opposite-sex partner, thus to avoid incorrectly characterizing these individuals as heterosexual. The question about sexual orientation also makes it possible to identify homosexual and bisexual people who are not in a relationship. Nevertheless, the question does pose some limitations; for example, 13% either did not answer it at all or chose the option "No answer/Prefer not to say" (Kroh et al. 2017).

For the sake of completeness, there are other sources that can be used to estimate the prevalence of SSCs in Germany. These include the European Social Survey (ESS) and the Generations and Gender Survey (GGS), both of which are cross-national surveys. Findings from the latter have been used, for example, by Fischer (2016) to conduct a cross-national comparison of ratios of

SSCs to OSCs, although Régnier-Loilier has pointed out that "the limited number of cases [in the GGS] does not allow statistical analyzes at the national level" (2018, p. 568).

Spain

A liberal Southern European country, Spain was the third country in the world to grant gays and lesbians the right to marry, as well as to adopt (married or not), starting in 2005 (Cortina et al., 2013). Homosexuality is no longer classified as a punishable act and anti-discrimination laws have been enacted there to protect people of all sexual orientations. People have the right to change their legal gender without undergoing GRS, and MSM are allowed to donate blood (Equaldex, 2020).

Census

The questionnaire used in the Spanish census (which covers a 10% sample of entire population) (Integrated Public Use Microdata Series International, 2020) differs from many other census questionnaires in that its question about the interviewee's domestic partner/type of current relation does not refer to the head of the household, but rather to whether the interviewee lives with someone else in the same household (a parent, partner or other family members) (Figure 1.6).

Figure 1.6: Household composition question (Spanish census, 2011)

6. Do the following family members of Person 1 live in this dwelling?
When you mark yes, write the number of this family member as it appears on the List of People on page 2.

Father	[] no [] yes, Person No. _ _
Mother	[] no [] yes, Person No. _ _
Spouse or partner	[] no [] yes, Person No. _ _
Other family members (children, siblings, etc.)	[] no [] yes, Person No. of one of them _ _

Figure 1.6 shows the interviewee's options for responding to the household composition question in the Spanish census (specifying the relationship(s) and number of people within the household). This question does not give the respondent any option to specify whether they are in a same-sex or opposite-sex relationship. Therefore, SSCs can only be indirectly enumerated by taking the stated gender of both individuals into account. Because marriage is available to SSCs as well as OSCs in Spain, "the marital status question is […] relevant" for determining whether the couple is an SSC or an OSC (Cortina & Festy, 2014, p. 11).

Even though SSCs in the census need to be labeled indirectly through a combination of variables and this creates a potential for errors (e.g., gender miscoding), one advantage is that the respondent can disclose a relationship to anyone in the household and not only to the head of the household. For example, Cortina (2016) used the Spanish census data to compile an overview of the demographics of SSCs in the country. Furthermore, Pichardo (2011) used this data to analyze the social and legal recognition of SSCs, enriching the topic by analyzing family constellations including gay and lesbian couples. As same-sex marriage is legal in Spain, data on SSCs can also be derived from marriage records in the Civil Register.

Surveys

The Labor Force Survey (LFS), which collects data on employment/unemployment statistics, wages and other labor-related topics, is at least one survey that can be used to enumerate SSCs in Spain, due to the significant number of SSCs it covers. As Cortina et al. (2014) describes, to arrive at a statistically viable sample using data from the LFS requires combining data from multiple years; for example, five consecutive rounds between the years 2006 and 2012 identifies around 900 people living in SSCs (around 70% male and 30% female), thus generating a sample of adequate size for statistical analysis.

France

France has adopted an open attitude towards LGBTIQ* people, characteristic of a liberal Western European country. It legalized marriage for SSCs in 2013. Homosexuality is no longer classified as a criminal offense, and France has enacted anti-discrimination laws to protect people of all sexual orientations. Married SSCs also have the right to adopt. Changing one's legal gender is only possible by undergoing GRS. MSM are allowed to donate blood after a one-year deferral period (Equaldex, 2020).

Census and Survey

France collects data by means of a census, which, in 2011, it enhanced with data collected under the simultaneously conducted *Enquéte famille et logement* (EFL), an extensive family and housing survey. This presented an opportunity for collecting vast amounts of self-reported statistical data, with the added advantage that both forms were collected personally by a census-taker. As a result, researchers are equipped with twin sources of information which can be cross-checked against each other to eliminate errors such as gender (Banens & Le Penven, 2016, p. 3).

There are differences between these two data collection methods. While the census questionnaire gives respondents the option of specifying their gender, the EFL survey questionnaire is specific to the respondent's gender (i.e., a male-specific version is issued to male respondents and a female-specific version to female respondents) which is why it lacks explicit questioning on the gender of the respondent. These two data collection forms also differ in terms of the way they can be used to identify SSCs. The census presents the respondent with the question of whether they live with a partner; it is then only possible to distinguish them as living in an SSC if only two people (not three or more) of the same gender live together in their household. Conversely, the EFL survey contains direct questioning as to whether the respondent lives together with a partner in the same household and what their partner's gender is. The EFL survey generally produces a vast dataset; in 2011, for example, approximately 360,000 people participated in it. Banens and Le Penven (2016) have used combined data from the French census and EFL to enumerate SSCs. Furthermore, Trabut et al. (2015) have conducted an analysis of how the census reflects the diversity of families in France.

The French way of enumerating SSCs is particularly prone to underestimation, because there are likely to be many households that include a same-sex couple as well as other people, and since there are more than two people in the household, not all of these couples will be detected as an SSC. Furthermore, as in many other countries, the French data sources abide by the "household" principle; two respondents in a two-person household may not be a couple and may simply not live together in a same-sex household with their partner and therefore will not be identified and counted as an SSC. Comparing information from the EFL and census datasets gives researchers the opportunity to measure the extent of these errors.

Sweden

Sweden has a history of taking a progressive social view of LGBTIQ* people. Homosexual acts are not considered a criminal offense and the country has adopted anti-discrimination laws to protect people of all sexual orientations. Since 1995, Sweden has allowed SSCs to form a registered partnership, and in 2003, the right to adopt was extended to SSCs living in such a partnership. The right to marry was granted to Swedish SSCs in 2009. By undergoing GRS, people are allowed to change their legal gender. MSM may donate blood after a one-year deferral period (Equaldex, 2020).

Population Register

Sweden differs from the countries discussed above in terms of how SSCs are enumerated in its data sources; its primary data source is not census data, but rather its population register data. In particular, its civil status register contains information on changes in the marital status of all legal residents of Sweden; these changes in civil status can be linked to other sources, such as birth and migration histories (Kolk & Andersson, 2018). In 1995, the year Sweden granted civil unions to SSCs, the country's governmental statistics agency, Statistics Sweden, started collecting data on this new family form. All data is collected on the individual level, providing information on the marital status of all men and women, including any changes in this status. The only prerequisite for inclusion in this dataset is that the subject is a legal resident of Sweden (Kolk & Andersson, 2018). Besides Kolk and Andersson (2018), Kridahl and Kolk (2018) have used counts of same-sex married couples from the register data to compare retirement planning between SSCs and OSCs.

1.2.2 Enumeration of Same-Sex Couples in the Americas

Legal Recognition

As of 2019, Homosexual acts were completely legal in around two-thirds of countries in North and South America, although completely illegal in five countries (Antigua and Barbuda; Barbados; Dominica; St. Lucia; St. Vincent and the Grenadines) and only illegal for men in four countries (Guyana; Grenada; Jamaica; and St. Kitts and Nevis). The right to marry has been extended to SSCs in some countries;[14] e.g., in Canada in 2005 (the fourth country in the world to legalize same-sex marriage), followed by Argentina in 2010; Brazil and Uruguay in 2013; the United States and Mexico (partially) in 2015; Columbia in 2016; and Ecuador in 2019. In Costa Rica, same-sex marriage was legalized in 2020. Some of these countries also grant SSCs the right to adopt (Argentina; Brazil; Canada; Uruguay; and the United States) (Mendos, 2019; Equaldex, 2020). In sum, most countries in the Americas have adopted a progressive, tolerant stance towards LGBTIQ* people and SSCs, although this attitude is not held consistently throughout the region, from a legal point of view. While some countries, such as Canada, have demonstrated a tendency towards equality-driven legislation, others have refrained from granting legal protections of any kind to LGBTIQ* people and SSCs.

[14] This does not imply that a legal institution such as civil union existed previously. Only a few countries in the Americas provided this right to SSCs prior to legalizing same-sex marriage (e.g., Uruguay, Brazil).

Statistics on Same-Sex Couples

Considering the varying degrees of legal recognition outlined above for countries in North and South America, this chapter will focus on a selection of representative countries in which LGBTIQ* people and SSCs are granted full legal recognition, as well as protections in the form of anti-discrimination legislation. These are Canada, the United States, Brazil and Uruguay.

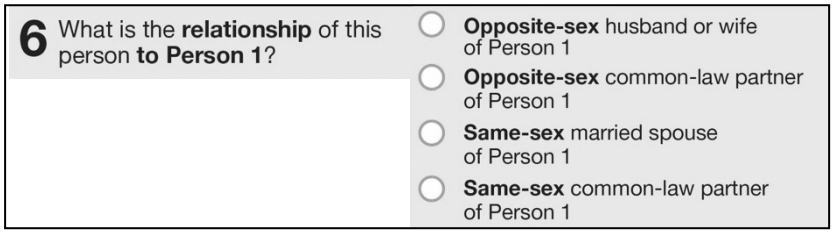
Canada

In Canada, homosexual acts are legal, anti-discrimination laws exist and SSCs have been afforded the right to marry since 2005. Since 1995, SSCs have had the right to adopt children. Employment discrimination on the basis of sexual identity is prohibited by law, and MSM are allowed to donate blood after a six-month deferral period. Canadians can legally change their gender without undergoing GRS (Equaldex, 2020).

Census

The population census of Canada is conducted quinquennially by the country's governmental statistics agency, Statistics Canada. The most recent Canadian census, held in 2016, counted a response rate of 98.4% of the entire population (approximately 35,152,000 people); the fraction used was 1% of all households (Statistics Canada, 2019). In 2016, the long-form version was reinstated after having been cancelled in 2010 and substituted in 2011 with the National Household Survey (which was not mandatory but optional). The Canadian census has enumerated SSCs since 2001, four years before the Civil Marriage Act granted SSCs the right to marry. All subsequent censuses (2006, 2011 and 2016) counted common-law as well as married SSCs.

Figure 1.7: Relationship to head of household question (Canadian census, 2016)



Canada's method for specifying possible relationships between the members of one household is currently viewed by researchers as the best practice for enumerating SSCs in the scientific world (e.g., Cortina & Festy, 2014; Waite & Denier, 2019). Unlike any other country in the world,

Canada gives census participants a choice of four categories, distinguishing between opposite-sex and same-sex partnerships and with either married or common-law status (see Figure 1.7). This method of enumeration offers the substantial advantage of strongly reducing sex-miscoding errors, which otherwise often lead to significant underestimation in the number of SSCs. For instance, Kreider and Lofquist (2015) compared gender statistics from the U.S. Social Security Administrative files with the findings of the 2010 U.S. census and found that 73% of respondents categorized as married SSCs were actually OSCs. Figure 1.7 shows an abbreviated form of the Canadian census question regarding relationships to the head of the household; there are also further options as well as empty fields through which the respondent can specify their relationship to "person 1" (i.e., the head of the household). Before answering this question, the respondent must also specify their gender, date of birth, marital status and whether they live with a common-law partner.

Surveys

While numerous Canadian surveys collect data on sexual orientation specifically,[15] only the National Household Survey (NHS) and the Longitudinal Administrative Databank (LAD) also provide data on SSCs (Waite & Denier, 2019).

The NHS was conducted in 2011 in response to the cancellation of the mandatory long-form census in 2010, and was repeated in 2016, despite the long-form census having been reinstated. This survey collected information similar to the long-form census on sociodemography, education and income of the respondents but, unlike the long-form census, it was voluntary and experienced a higher non-response rate (Waite & Denier, 2019). The 2011 NHS might overestimate the number of married SSCs due to biases particularly in the provinces of Alberta and Saskatchewan;[16] nevertheless, the maximum overestimation was defined as 4,500 married SSCs, and, excluding these biases, the number of 21,015 married SSCs found is adequate in size for the purposes of various analyses (Statistics Canada, 2012).

The LAD was first conducted in 1982 and covers a random sample of 20% of Canadians listed in the T1 Family File (T1FF), a nationwide database of personal tax returns filed by families. LAD responses are linked with the respondent's social insurance number in the T1FF by means of a unique identification number. In 2014, the T1FF contained 5.5 million people (Waite & Denier, 2019). Since 2000, the LAD includes a same-sex flag that can be used to identify people living in an SSC; this information is extrapolated by combining the respondent's relationship status

[15] These include the Canadian Community Health Service Survey, the General Social Survey and the Canadian National Health Survey.
[16] In these two provinces, employees likely counted same-sex roommates as married SSCs (Waite & Denier, 2019).

(married or common-law) and the stated gender of the household members. Since taxpayers listed in the T1FF do not indicate on their tax return forms whether they are living with a same-sex partner, this information is inferred in the LAD survey if both adults in the residence have the same gender and indicated that they are married or in a common-law partnership (Statistics Canada, 2012). The data likely underestimates the true number of SSCs (Statistics Canada, 2016). In addition, for this database, if the person does not specify their gender on their tax form, then a method is applied to impute their gender based on their first name. This method is likely to result in a disproportionate rate of gender miscoding for people of ethnic minority groups compared to those of European ancestry.

Though not the primary data source for enumerating SSCs, Canadian surveys are suitable for addressing specific research questions focusing on this non-traditional family form. Carpenter (2008) has used the Canadian Community Health Survey to analyze the association between sexual orientation, work and income. Régnier-Loilier (2018) has examined the suitability of the international Generations and Gender Survey (GGS) for studying SSCs, critically observing that despite its broad international scope, relevant cases per country in the GGS may be too few to serve the purpose of accurately analyzing this minority group. Commonly used are the same-sex couples' data from the census combined with the NHS data from the authors Waite and Denier are for example comparing self-employment between opposite- and same-sex couples or monitoring generally the LGBTIQ* data landscape of Canada (Waite & Denier, 2019; 2016).

United States

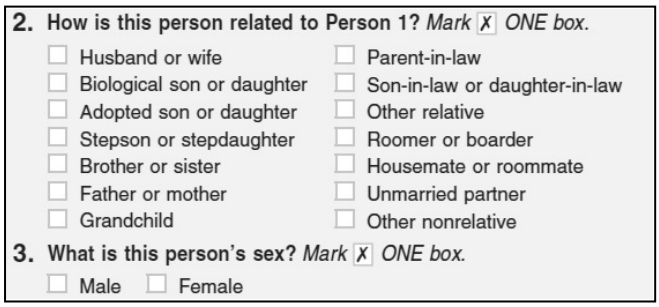
In the United States, nearly all decisions on equal rights and anti-discrimination protections for LGBTIQ* people are made on the state level. As a result, LGBTIQ* people across the country have been subject to inconsistent legal status in the past, until 2003 when homosexuality became legalized in all states, and 2015 when SSCs were granted the right to marry nationwide. Anti-discrimination laws do exist in some contexts, specifically employment discrimination, and adoption is allowed in every state. GRS is required for a person to change their legal gender, and MSM are allowed to donate blood after a one-year deferral period (Equaldex, 2020).

Census

Starting with its 1990 iteration, the decennial U.S. census identifies SSCs living together in a single household (Gates, 2015). In 1990, the census covered a sample of 5% of the U.S. population, compared with just 1% in the latest U.S. census data, collected in 2010 (Integrated Public Use Microdata Series International, 2020). Figure 1.8 shows the U.S. census question

pertaining to the respondent's relationship status; this is the only option for the respondent to disclose their relationship status and refers strictly to their relationship to "Person 1" (i.e., the head of the household). There is no option for disclosing relationships between two people that do not include Person 1.

Figure 1.8: Relationship to head of household question (U.S. census, 2010)



The U.S. census questionnaire does not give the respondent an option to indicate whether they are in an SSC or OSC. The relation-status question (Figure 1.8) is followed by a question about the respondent's sex, which allows for the partners to be identified by inference as an SSC.

The latest U.S. census is taking place in 2020 and is currently in progress (at the time of writing). Though its findings with regard to LGBTIQ* people and SSCs remain to be seen, the preliminary "informational copy" of the questionnaire suggests that it will count SSCs more with greater precision than in previous iterations.

Figure 1.9: Relationship to head of household question (U.S. census, 2020, informational copy)

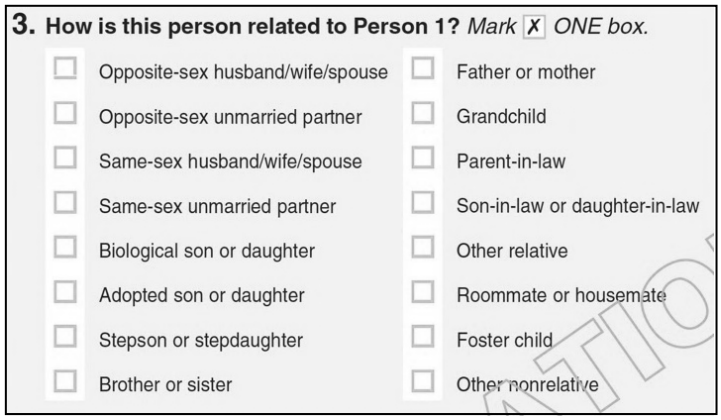


Figure 1.9 shows the revised relationship-status question that is being used in the 2020 U.S. census, revealing that the "head of household" principle has been maintained, and that the category of "Unmarried partner" has been eliminated (cf. Figure 1.8). The new structure of the

question enables respondents to specify whether they are married or in an unmarried partnership, with a choice of either an opposite-sex or a same-sex partner. This revision to the relationship-status question gives SSCs the possibility of directly identifying themselves, which eliminates the need on the part of researchers to infer the existence of SSCs based on their responses to census questions about their gender and relationship status (cf. Figure 1.8). The revision also results in fewer misunderstandings on the respondent's part, thus reducing the likelihood of intentional or inadvertent miscoding.

U.S. census data has been widely used as a source for academic inquiry into SSCs in the past: Black et al. (1998) studied links between sexual orientation and income; Jepsen and Jepsen (1999) analyzed the specialization of SSCs within the labor market in connection with assortative mating; Morales (2018) investigated the residential segregation of SSC-headed households in the United States (Morales, 2018); Boertien and Vignoli (2019) analyzed how the legalization of same-sex marriage relates to the subjective well-being of individuals within SSCs; Baumle and D'Lane (2020) studied heterogeneity in parent-child relationships within SSC-headed households.

Surveys

Data from numerous surveys conducted in the United States offer quantitative insights with regard to SSCs, though two in particular offer samples sizes that are adequate in size for the purposes of statistical research: the National Health and Social Life Survey (NHSLS) and the American Community Survey (ACS).

In addition to demographic and economic data, the NHSLS collects extensive information on sexual orientation and domestic partnerships. The NHSLS collects data on individuals over the course of their lifetime, which is advantageous to SSC studies, as an individual's sexual orientation is not necessarily inflexible over time. Despite effectively identifying SSCs, the survey's sample is relatively small (n = 3,400) and limited to people of 18–59 (Black et al., 2000). The NHSLS has been a source for academic research on SSCs, including Laumann et al. (1994) which critically analyzes the gap between the actual occurrence of homosexual desire throughout the population, on the one hand, and the much lower incidence of self-identification as gay or lesbian in the survey, on the other.

The ACS, conducted annually and encompassing more than 3.5 million households nationwide, provides data on SSCs, including demographic and social information. The survey's question about relationship status allows the respondent to explicitly specify that they are in a same-sex relationship, either married or unmarried. Badgett et al. (2013) used the ACS dataset as the basis for their study on poverty rates among SSCs in comparison to OSCs. Gates and Steinberger (2009)

analyzed the quality of SSC statistics from the ACS dataset by examining the role of misreporting, miscoding and misallocation.

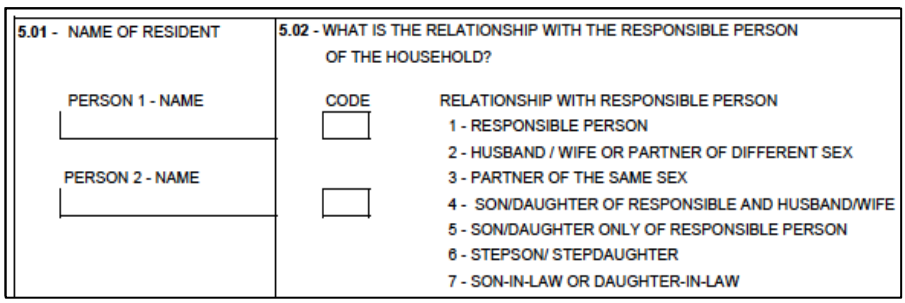
Brazil

In Brazil, homosexual acts have not been classified as a criminal offense since 1823. Same-sex marriage was legalized throughout the country in 2013, though it had already become legal in some federative units (states) during the two years before that. Brazilian SSCs also have the right to adopt. In terms of its legal recognition of LGBTIQ* people, Brazil is anomalous compared with other countries that offer similar levels of legal protection in that it takes a progressive legislative stance towards this minority group, despite generally low societal acceptance of LGBTIQ* people throughout the country, as evidenced by a high incidence of violence (i.e., hate crimes) committed against them (Equaldex, 2020). The 2000-2014 edition of World Value Survey, which reached a significant sample of Brazilians (n = 1,486), revealed that more than one-third (34.3%) of them believe that homosexuality is never justifiable, whereas only around 16% say that it is always justifiable (Inglehart et al., 2014).

Census

The questionnaire of the Brazilian census explicitly to SSCs. The latest census was conducted in 2010, covering 10% of the population (Integrated Public Use Microdata Series International, 2020); it is conducted decennially, and a new census is in progress as of 2020. Data is collected using the Computer-Assisted Personal Interviews (CAPI) method. The questionnaire is available in Portuguese, the official language of Brazil, as well as in English. Figure 1.10 shows how SSCs are enumerated in the English version. Advocacy groups working together with the Census Bureau in Brazil "carried out a specific public campaign to stimulate a correct public response to the Census question" about whether the respondent lives with a same-sex partner (Goldani et al., 2013, p. 9).

Figure 1.10: Relationship to head of household question (Brazilian census, 2010)



In response to this question, respondents may specify their relationship to the "the responsible person of the household [*sic*]" (i.e., the head of the household). There is no option to distinguish between a registered and married same-sex partnership, because the 2010 census predates the general legalization of same-sex marriage in Brazil by around three years. After this question, the respondent is asked to disclose their name and gender; the gender information disclosed by the respondent and the head of the household can be used to identify SSCs and determine whether they are male or female.

Figure 1.11 shows how the relationship status question has been changed in the preliminary 2020 short-form version of the Brazilian census.[17] In contrast to the 2010 version (cf. Figure 1.10), the wording of the possible answers has been augmented to include "Spouse/partner (same-sex)."[18]

Figure 1.11: Relationship to head of household question (Brazilian census, 2020, short form)

2.06 What is your relation to the household head?

01 - I am the household head	06 - Stepchild
02 - Spouse / partner (opposite-sex)	07 - Son in law or daughter in law
03 - Spouse/ partner (same-sex)	08 - Father, mother, stepfather, stepmother

In the 2020 census, the question asking the respondent to specify their gender occurs three questions before the question about their relationship status. Assuming this is the definitive version of the question, Figure 1.11 illustrates how the Brazilian census has shifted since 2010 to account for a new sociodemographic reality in which, since 2013, SSCs have the right to marry, even though the census questioning does not allow for a distinction between married and unmarried SSCs.

Goldani et al. (2013) have used Brazilian census data to profile Brazilian SSCs in terms of their spatial distribution, educational level, income, religious affiliations and parental status, while also warning of a potential under-enumeration of SSCs in the dataset, because some SSC respondents may be reluctant to answer the relationship-status question truthfully, due to factors such as internalized homophobia and the perceived fear that by "outing themselves" in the census, they may be subjected to minority stresses. Furthermore, Jacinto et al. (2017) used the 2010 census data in an examination of whether SSCs face discrimination in the labor market. De Freitas (2017) studied diversity and integration of minority groups within Brazilian society, drawing quantitative insights on SSCs from the census dataset.

[17] As of 2020, this questionnaire remains tentative, as the census was postponed to 2021 due to the coronavirus pandemic. As a result, the definitive version has still not been made publicly available.
[18] The original Portuguese wording "*Cônjuge/companheiro(a)*" translates to (gender neutral) "Spouse/partner" in English.

Survey

One important Brazilian national survey also serves as a data source for enumerating SSCs, the National Survey of Health (PNS), conducted in approximately five-year cycles. This national household-based survey is performed by the Brazilian Institute of Geography and Statistics (IBGE) in cooperation with the Brazilian Ministry of Health. The 2013 edition reached a sample of around 80,000 households (with interviewees 18 years old and older), which makes it sizeable enough to serve as a source for mining quantitative data on SSCs (Szwarcwald et al., 2014). Like the 2020 Brazilian census, the responses to the relationship-status question also allow the respondent to distinguish between "Spouse/partner (opposite-sex)" and "Spouse/partner (same-sex)" (cf. Figure 1.11) (Brazilian Institute of Geography and Statistics, 2013b).

Uruguay

From a sociopolitical perspective, Uruguay is among the most progressive countries in South America. Laws prohibiting homosexual acts were abolished in 1934, and the country has adopted anti-discrimination legislation to protect people of all sexual orientations. In 2008, it granted SSCs the right to form civil unions, which was followed by the legalization of same-sex marriage in 2013. SSCs in Uruguay also have the right to adopt (2009). Uruguayans may change their legal gender without undergoing GRS, and MSM may donate blood without any deferrals (Equaldex, 2020).

Census

The latest census in Uruguay took place in 2011, covering 10% of the population (Integrated Public Use Microdata Series International, 2020). Like in Brazil, the Uruguayan census refers explicitly to SSCs. A notable feature of the Uruguayan census is that it provides respondents the opportunity to specify a relationship not only to the head of the household, but to any other person living within the household (see Figure 1.12). If the respondent answers "yes" to question 8, which asks whether they have a spouse or partner within the household,[19] then they are directed to the following question, which allows them to state the numeric identifier of their partner. After that, they are asked to specify the type of relationship, with a choice of "Married"; "Partner of opposite sex"; and "Partner of same sex."[20]

[19] Original Spanish wording: "*Tiene ... cónyuge o pareja en el hogar*?"; own translation and rendering
[20] Original Spanish wording: "*Casamiento civil*"; "*Unión libre con pareja de otro sexo*"; "*Unión libre con pareja del mismo sexo*"

Figure 1.12: Relationship within household question (Uruguayan census, 2011)

Relationship status

For persons with the age of 12 and older:

8. Do you have a spouse or partner in this household?

Yes.....1

No.....2 (Continue with question 11)

9. Who is it?

|_|_| **(person number)**

10. What is the type of union?

Married.....1

Partner of opposite sex.....2 (finalizing module)

Partner of same sex.....3

The wording of the Uruguayan census question on relationships within the household is consistent with the country's broad social acceptance of homosexuality,[21] and reduces the likelihood of SSCs being misidentified in the dataset. Like in Brazil, public campaigns were launched by advocacy groups in Uruguay in the run-up to the census to encourage gay and lesbian respondents to answer these questions accurately (Goldani et al., 2013). Academic studies of SSCs based on the Uruguayan census data includes Brown et al. (2019), which examines the relationship between labor force participation and sexual orientation and, particularly, being part of an SSC.

Research failed to identify any datasets other than the census (such as surveys) for enumerating Uruguayan same-sex couples. This may owe (partially) to the high quality of the census data itself, which uses explicit, unequivocal questioning that renders other datasets superfluous for the purposes of identifying SSCs.

1.2.3 Enumeration of Same-Sex Couples in Australia and New Zealand

Legal Recognition and Statistical Visibility of Same-Sex Couples

The legal recognition of SSCs worldwide varies significantly by region: Whereas all European countries and most countries in the Americas afford far-reaching rights to SSCs, the situation in Asia and Africa is less equal. To introduce a broader geographical scope, this chapter also covers two countries outside of Europe and the Americas in which SSCs have gained a degree of legal recognition and statistical visibility: Australia and New Zealand.

[21] According to the World Value Survey (2010-2014 wave), among Uruguayans interviewed on the justifiability of homosexuality (n = 1,000), 27.8% responded that homosexuality is "Always justifiable"; in contrast, 17.6% responded that it is "Never justifiable."

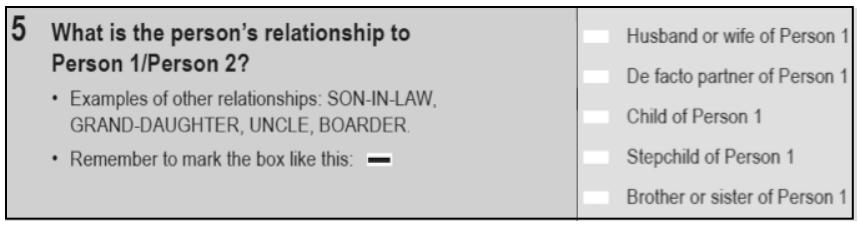
Australia

Australia officially abolished legislation outlawing homosexual acts in 1994 and had already passed anti-discrimination laws in 1986 to protect people of all sexual orientations. Between 2008 and 2011, the individual states and territories of Australia gradually granted SSCs the right to enter civil unions. Same-sex marriage was explicitly prohibited by law in 2004, before eventually being legalized in 2018. Since that year, Australian SSCs have also been granted the right to adopt children. Australians can change their legal gender without undergoing GRS, and MSM may donate blood after a one-year deferral period (Equaldex, 2020).

Census

Australia has compiled data on SSCs since 1996. Its latest census took place in 2016, and the next is scheduled for 2021. Starting in 2011, the Australian census collects data on SSCs who describe themselves as husband or wife, in addition to enumerating unwed SSCs. Information on SSCs is inferred from the answers to the questions about the respondent's gender and their relationship to the head of the household (Figure 1.13).

Figure 1.13: Relationship to head of the household question (Australian census, 2016)



This source is subject to various limitations: it only allows for the disclosure of relationships to the head of the household; respondents may be reluctant to disclose information accurately, as is often the case among SSCs fearing minority stresses (Goldani et al., 2013; Cortina & Festy 2014).

Australian census data has been widely used by researchers; e.g., Gorman-Murray et al. (2010a) use it to study the geographical scope of same-sex families; Qu et al. (2016) uses the data to examine topics including child welfare among SSC-headed families; similarly, Crouch et al. (2012) refers to the data to examine pediatric health within SSC-headed families; Whitton (2015) draws on the data for an analysis of relationship education (e.g., stigma management) amongst Australian SSCs.

Surveys

The Household, Income and Labor Dynamics in Australia (HILDA) survey is a panel study, following the lives of approximately 17,000 Australians every year (Melbourne Institute, 2020). This survey allows for the enumeration of SSCs, even though it does not explicitly distinguish them from OSCs. Like with many other data sources, SSCs can be inferred based on their responses to questions about their gender and relationship status.

Qu et al. (2016) draw on the HILDA survey data in their aforementioned analysis of child welfare among SSC-headed families. The aforementioned study by Crouch et al. (2012) combines HILDA data with census statistics and findings from the Australian Study of Child Health in Same-Sex Families (ACHESS) to examine pediatric health within SSC-headed families. Perlesz et al. (2010) used another sample of SSCs from the Work, Love and Play study to investigate the division of household labor within SSCs in comparison with OSCs.

New Zealand

In 1986, New Zealand officially abolished legislation that criminalized homosexual acts.[22] Anti-discrimination laws protecting people of all sexual orientations have been in place since 1993. Civil unions were granted to New Zealand SSCs starting in 2004, and the country legalized same-sex marriage in 2013, making it the world's 15th nation to do so. Married SSCs were granted the right to adopt in 2013. New Zealanders may change their legal gender by undergoing GRS, and MSMs may donate blood after a one-year deferral (Equaldex, 2020).

Census

New Zealand's most recent census report was published in 2018. For that year's census, the country's governmental statistics agency Statistics New Zealand revised the questions regarding relationships within the respondent's household compared with the previous census (held in 2013), because respondents reported that the list of relationship types was difficult to read and overly complex (Statistics New Zealand, 2018).

Figures 1.14 and 1.15 show the relationship status questions from the 2018 and 2013 New Zealand censuses, respectively. The revised question no longer distinguishes between opposite-sex marriages ("legal husband or wife") and same-sex "registered civil unions," because same-sex

[22] In the Cook Islands, an autonomous territory that is freely associated with New Zealand, homosexuality is illegal.

marriage was legalized in the interim between the two census cycles (Statistics New Zealand, 2018).

Figure 1.14: Household composition question (New Zealand census, 2018)

Figure 1.15: Household composition question (New Zealand census, 2013)

Past New Zealand censuses offered the respondent more flexibility in disclosing partnerships, as they did not limit disclosures to relationships involving the head of the household/reference person, but also allowed for the disclosure of a relationship with another member of the household.

Statistics New Zealand provides reporting on the sociodemographic characteristics of SSCs, including information such as education level and income (Statistics New Zealand, 2010).

Surveys

Surveys conducted in New Zealand that offer an adequate sample size for the purposes of quantitative analysis of SSCs are scarce. One possible data source is the New Zealand Health Survey (NZHS), which collects data continuously and issues an annual report. The 2019 NZHS report covers 13,000 adults in addition to a group of more than 4,000 children. The survey does not explicitly reference SSCs, but these can be inferred through indirect measurement by combining respondents' responses to the questions about their gender and their relationship status with any other individual (not limited to the head of the household) (New Zealand Ministry of Health, 2020).

The Work, Love and Play study conducted by Perlesz et al. (2010) also covers New Zealand families, analyzing the distribution of labor within households and comparing between SSC- and OSC-headed families.

1.3 Challenges in Enumerating Same-Sex Couples

Data collection methods in each of the countries described in Section 1.2 present researchers with challenges with regard to enumerating SSCs: Firstly, as a minority group, SSCs are prone to experiencing minority stress which may make them reluctant to self-disclose their sexual orientation; i.e., to "out themselves" through their census responses. Lack of social acceptance may exacerbate such concerns among SSCs, whereas a higher degree of legal protection may alleviate them (e.g., Black et al., 2000; Goldani et al., 2013; Cortina & Festy, 2014). Non-response to relevant census and survey questioning results in continued statistical invisibility among SSCs (Banens & Le Penven, 2016). Secondly, due to gender miscoding (intentionally or inadvertently disclosing the wrong gender in census or survey responses), SSCs are misidentified as OSCs and vice versa. Within a small subpopulation such as SSCs, such miscoding results in significantly skewed datasets, as past studies have shown (e.g., Banens & Le Penven, 2016; Festy, 2007).

Figure 1.16: Fictitious example of the significance of gender miscoding

True value	Collected value (Assumption that in 1% of the couples one partner states the wrong sex)	
300 ssc	297 ssc	= 447 ssc
	3 osc	
15.000 osc	14.850 osc	= 14.853 osc
	150 ssc	

ssc = same-sex couples; osc = opposite-sex couples
Source: Own fictitious example and calculations

Figure 1.16 illustrates that a gender miscoding rate of 1% skews the number of SSCs by 49% (inflating the number of supposed SSCs from 300 to 447). The wording of relevant questions in census and survey questionnaires may also pose challenges; ideally, questions and optional answers must be worded with clarity, concision, precision, and intuitiveness (Cortina & Festy, 2014).

When considering possible data sources for inclusion in this thesis, evaluation revealed that many which purport to identify SSCs actually did so in numbers that are far from adequate for the

purposes of potential statistical analysis (cf. Fischer, 2016). Censuses and population registers are the databases that usually record adequate samples of SSCs, with the exception of a few surveys (e.g., the French Family and Housing Survey/EFL). Various cross-national surveys effectively identify SSCs across national borders, such as the Labor Force Survey, the European Social Survey and the Generations and Gender Survey. While these datasets provide valuable insights for many analytical applications, their samples are generally too small to provide a basis for statistical analysis on the national level or country-to-country comparisons (Cortina & Festy, 2014). One possible solution is to mine data from a series of consecutive years or iterations of these surveys to yield a significant number of SSCs for further analysis.

Availability of data on SSCs also presents challenges: First, access may be restricted to individuals who are affiliated with a scientific institution or can otherwise prove that they are a research scientist. This is often accompanied by the need to disclose a description of the envisioned research project for which the data is to be applied. The individual may be required to select only specific variables that are relevant to their research, so they will not be given access to the entire dataset. In other cases, the researcher may receive an example dataset with which to conduct syntax testing; the syntax test is then sent to the data provider and is applied to the entire real dataset before the results are provided. Some institutions also charge a fee for the data access (e.g., both of these conditions apply when accessing the German microcensus data). Another common practice is that after fulfilling the various requirements, the researcher only receives a public use file of the data source (e.g., with regard to the German microcensus, researchers receive a subsample of 70% of the entire data set). These organizational difficulties notwithstanding, it is generally possible to access the data in some form once the requirements are met, and these obstacles can be seen as a testament to the extreme caution with which statistical offices and other dataset suppliers handle this data.

1.4 CONCLUSION

Though not exhaustive,[23] the overview in Section 1.2 introduces primary data sources that are used to enumerate SSCs in representative countries for the purposes of quantitative research and that have been investigated throughout this thesis. Table 1.2 summarizes these data sources by

[23] In some of the countries listed in Table 1.2, there are possible data sources for enumerating SSCs other than the ones listed; other data sources listed in the table might be used to enumerate SSCs based on their datasets for years other than the ones listed; for some of the data sources (e.g., HILDA, Swedish PR), there are no single year-based publications, as these are datasets that are continually updated.

country and in terms of whether they directly or indirectly identify SSCs, whether married or unmarried.

Table 1.2: Data sources for enumerating SSCs, listed by country

Country	Identification of SSCs (unmarried)		Identification of SSCs (married)	
	direct	indirect	direct	indirect
Germany	C 2011; MC 2006; SOEP	MC since 1996	-	-
Spain		C 2011; LFS 2006 - 2012		marriage records
France	EFL 2011	C 2011		
Sweden	PR		PR	
Canada	C 2016; NHS 2011	LAD S since 2000	C 2016; NHS 2011	LAD S since 2000
USA	C 2020; ACS	C 2010; NHSLS	C 2020; ACS	
Brazil	C 2010; C 2020; NSH 2013		C 2020; NSH 2013	
Uruguay	C 2011			
Australia		C 2016; HILDA S		
New Zealand	C 2013	C 2018; NZHS 2019		C 2018

C = census; MC = microcensus; PR = population register; S = survey; LFS = Labour Force Survey; EFL = Extensive Family and Housing Survey; NHS = National Household Survey; LAD = Longitudinal Administrative Databank; ACS = American Community Survey; NHSLS = National Health and Social Live Survey; NSH = National Survey of Health; HILDA = The Household, Income and Labour Dynamics in Australia; NZHS = New Zealand Health Survey

Table 1.2 reveals that unmarried SSCs (left side of the table) are identified in more data sources than married SSCs (right side of the table). Married SSCs are identified only in census data in Canada (directly) and New Zealand (indirectly), although the United States and Brazil will directly identify SSCs in their ongoing 2020 censuses. Data on married SSCs is also available in Sweden in the population register (directly) and marriage records in Spain (indirectly), as well as in the datasets of various surveys in other countries. One reason for the lack of data collection on married SSCs in the past is that the legal institution of same-sex marriage did not exist in most countries until recently. In general, censuses and surveys, and, to a lesser extent, population registers, are used to identify SSCs (married or unmarried) in the countries described above. Census data serves as the primary source because it offers much larger sample sizes, thus averting the major challenge of enumerating a relatively small subpopulation such as SSCs. Surveys offer the advantage of analyzing specific topics, such as labor force participation or health, but generally focus on relatively small sample, rendering them less effective for the purposes of making a minority group like SSCs statistically visible (cf. Régnier-Loilier, 2018).

In addition to analyzing data sources that are currently available for enumerating SSCs, this analysis looks to the future by comparing the revised questioning from the ongoing 2020 censuses in Brazil and the United States with previous versions. Unfortunately, the informational copy of the upcoming 2021 German census questionnaire is yet to be released and could not be included in this examination. For both Brazil and the United States, the relationship-status question has been revised and expanded to include more inclusive, explicit wording with reference to SSCs, which is expected to result in greater statistical visibility for this group going forward. For the first time, the United States census offers respondents the possibility of characterizing their domestic partnership as either an opposite- or same-sex relationship with the head of the household. Although the Brazilian census already referred specifically to unmarried SSCs in its relationship-status question in 2010 (i.e., prior to the legalization of marriage there), this question has been expanded in the 2020 census so that the respondent may specify whether they are married to their same-sex partner. These improvements in the United States and Brazil can set an example for other countries to follow, contributing to greater quantitative understanding of SSCs as a minority group while addressing heteronormative biases in census-taking that have resulted in systematic misidentifying of SSCs in the past.

A review of viable data sources for enumerating SSCs also reveals a trend: the more recent the source, the more it has adapted to a diversity of lived experiences, particularly SSCs. This is seen in the growing number of sources that refer explicitly to SSCs, including, increasingly, married SSCs. As a result, it is conceivable that SSCs may gradually abandon the feeling that census forms and similar sociodemographic instruments do not truly reflect their existence. However, despite improvements, the fear of minority stress as exemplified in an SSC's reluctance to "out themselves" in census data must still be considered as a possible threat to producing a genuinely accurate statistical view. Numerous census results (e.g., in Australia and Germany) show that the number of SSCs has increased over time, which should be understood not as an effective increase in this type of union, but rather a growing willingness among SSCs to come out.

A second significant challenge in enumerating SSCs is the method of indirectly inferring their existence when two people in one household (usually including the head of the household) state that they are the same gender and that they are in a relationship, which presents a substantial potential for errors (i.e., gender miscoding). Briefly setting aside the debate over the ideal wording to relevant questions, there is another distinguishing factor between the countries analyzed above that likely affects the extent to which they undercount SSCs: In most of these countries (Germany, France, Canada, United States, Brazil, Australia), only the relationship to the head of the household is captured by the census, while in others (Spain, Uruguay, New Zealand), the respondent can specify their relationships to any member of the household. As a result, the first

group of countries has no means by which to account for any SSC aside from those involving the head of a household.

Increasingly, quantitative data sources allow for the enumeration of SSCs. Despite some variety, all of the countries profiled in Section 1.2 afford a relatively high standard of legal protection to them. Furthermore, data is generally accessible to academic researchers, subject to specific prerequisites.

Discussion

Goldani et al. have asserted that "new methods of research to better assess sexual orientation and gender identity" are necessary (2013, p. 18). Self-reported surveys represent one option for achieving this. Additionally, and in light of the problematic underrepresentation of SSCs in official governmental and semigovernmental datasets, particularly in regions of the world in which such underrepresentation coincides with lacking legal recognition of SSCs, researchers should explore innovative alternative methodologies for estimating the prevalence of this subpopulation. The online "search listening" tool Answer the Public (2020) presents one possible opportunity for adopting such an alternative enumeration approach. This tool enables users to search from a vast database of online search queries which can be filtered by country and, in some cases, by region. The user enters a term into a search field on the website (for example, "same-sex couples marry"), and retrieves a list of questions which online users of search engines, such as Google, have searched for in the past and which include the search term or phrases related to it (e.g., "Can same-sex couples marry in Germany?"). The technology behind this tool uses a search term suggestion algorithm (i.e. autocorrect or autofill), which is created by search engines themselves and measures the popularity of the search terms. All these terms are quantifiable on the basis of region and time series. There is a theoretical association between the incidence of specific search terms and the prevalence of SSCs within a country/region. This novel method of enumeration could present a new possibility for measuring SSC populations: To test this, census data from countries that have collected high-quality quantitative information about SSCs can be compared with data from Answer the Public to determine the degree to which specific online searches coincide with the prevalence of SSCs within a specific country/region. Once this association has been verified based on a comparison with high-quality census data or other valid data sources, data from Answer the Public alone can be used to provide a general indication of the prevalence of SSCs in countries or regions that lack reliable or available census data. Moreover, search analyses are based on unbiased internet user behavior instead of claimed behavior in traditional data collection methods, which can either close blind spots in the existing data landscape or enrich geospatial and time-series analysis.

Taking a longer-term view of data collection in relation to SSCs, there are grounds for cautious optimism, in light of the gradual increase in the number of data sources that allow for SSCs to be counted. As more countries shift towards a more accepting sociopolitical attitude towards LGBTIQ* people and SSCs, their tools for collecting sociodemographic data have generally evolved to varying degrees to provide opportunities for identifying SSCs with greater precision. As some of the examples described above reveal, over time, various data sources have adapted to an increasingly diverse sociodemographic reality by including explicit references to SSCs, thus eliminating the need for researchers to identify this subpopulation indirectly through a process of inference. Considering that the data sources that currently serve as a valid basis for enumerating SSCs exist solely within countries that grant a relatively advanced level of legal protection granted to LGBTIQ* people and SSCs, further research, including novel methodologies for sketching the prevalence of SSCs in the absence of precise data, is required to begin making this subgroup quantifiable and to further examine the correlation between social acceptance[24] of SSCs and their statistical visibility around the world.

[24] Social acceptance is measured, for example, in the European Social Survey (ESS) and World Value Survey (WVS); the latter asks respondents for their view of whether homosexuality is justifiable.

CHAPTER 2: SPATIAL SEGREGATION OF SAME-SEX COUPLES: THE EXAMPLE OF BRAZIL

2.1 INTRODUCTION

Brazil is one of the Latin American countries in which same-sex civil unions have been legalized; the Brazilian government enacted legislation to that effect in 2004 (Lodola & Corral, 2010). Public opinion surveys on support for the right of SSCs to marry reveals that Brazil ranks fifth among all North and South American countries, with an average support rating of almost 40%, which varies between urban and rural areas, but tends to be much higher in larger cities; furthermore, researchers have identified a negative association between religiosity (i.e., characterized by people who participate in religious services) and support for granting SSCs the right to marry (Lodola & Corral, 2010). A survey conducted in 2017 among more than 9,000 citizens of Brazil in 341 municipalities revealed that 74% of respondents think that homosexuality in general should be accepted by society (Globo, 2017). Considering, on the one hand, Brazil's expressed social acceptance towards allowing SSCs to marry, which might generally be equated to a degree of sociopolitical liberalism, and, on the other hand, the association between such approval/disapproval and religiosity, this chapter examines the spatial distribution of same-sex couples in Brazil using newly released microdata from the 2010 Brazilian census. This data file allows for the sociodemographic profile of SSCs to be compared with that of OSCs, providing sufficient geographical information to examine the spatial distribution of SSCs for various aggregates, down to the subdistrict level, while retaining the individual characteristics of SSCs residing in those areas. Individual microdata with geographic detail allows for an examination of the influence of individual and contextual variables on spatial patterns of settlement among SSCs.

This chapter begins with a descriptive overview of the entire country of Brazil, distinguishing between its five major regions, before turning to an analysis of smaller geographical aggregates, down to the subdistrict level for the country's two largest municipalities, Rio de Janeiro and São Paulo. Moreover, the level of dissimilarity is measured as an indicator of concentration/segregation patterns among SSCs. The descriptive sections are followed by a multilevel regression focusing on factors that influence the likelihood of living in an SSC, and characteristics of a subdistrict that influence the prevalence of SSCs there. This chapter closes with an overview of typical characteristics of subdistricts in Rio de Janeiro and São Paulo based on the level of their gay/lesbian partnered rate (low, medium or high). The gay/lesbian partnered

rate refers to the number of gay males/lesbians living in partnerships per 1,000 total males/females living in any form of domestic partnership.

2.2 Statistical and Spatial Patterns in Brazil

With its 2010 census questionnaire, Brazil became one of the first countries in the world to explicitly collect data on SSCs.[25] This is a major step towards improving the statistical visibility of SSCs who live there (Goldani et al., 2013), and it sets an example for other countries as development towards acceptance of LGBTIQ* minority groups continues. The public-use microdata from the Brazil's 2010 10% census allows for a comparison of the sociodemographic characteristics of SSCs with those of OSCs, also providing an opportunity for exploring the locational and spatial segregation preferences of this minority group. This is innovative, as past research largely overlooked the topic of SSCs and a review of the literature confirms the existence of a major gap in terms of quantitative studies on their spatial segregation patterns. The few studies that have broached this topic have focused on male SSCs, concluding that they concentrate and establish communities primarily in urban areas in proximity to gay-focused establishments, such as bars and restaurants (Parker, 1999; Green, 1999). The goal of this chapter is to widen the knowledge on those residential preferences, not only among male SSCs, but also among the subpopulation of female SSCs.

Legal Framework in Brazil

Homosexual acts have been considered legal in Brazil since 1823 (Orvis & Drogus, 2017), and, in 1989, the country enacted legislation prohibiting any form of discrimination on the basis of sexual orientation (Carrara, 2012). In 2004, the right to establish civil unions was granted to SSCs (Rohter, 2004). In 2011, the Brazilian Supreme Court extended to SSCs living in civil unions the same rights as OSCs living in civil unions (Moreira, 2012). Between 2012 and 2013, each federative unit (state) throughout the country separately adopted legislation legalizing same-sex marriage (Püschel, 2019). In 2010, Brazil's Superior Court of Justice ruled that marriage status and sexual orientation are not prerequisites for the right to adopt children, effectively legalizing adoption for SSCs, although many Brazilian SSCs had successfully adopted even prior to that ruling (Pereira, 2010).

[25] As of 2020, only a few countries refer explicitly to SSCs in their census data, including the United States (since 1990); Germany and Australia (since 1996); and Canada, Spain and the Netherlands (since 2001).

RESEARCH OBJECTIVE

The analyses performed in this chapter are based on microdata on SSCs derived from Brazil's 2010 census data which grants a degree of statistical visibility to this subpopulation. These include a description of the various geographical aggregates of Brazil, often visualized using choropleth maps, along with a multilevel regression on the individual and contextual level. As such, this chapter seeks to answer these questions: (i) To what extent are SSCs spatially segregated?; (ii) What are the predictors for spatial segregation of SSCs within a given geographical aggregate?; (iii) Are there differences in segregation patterns between male and female SSCs in a given geographical aggregate?; (iv) What is the sociodemographic profile of individuals who are most likely to live in an SSC?; (v) Are there specific neighborhood (i.e., subdistrict) characteristics that correlate with spatial segregation patterns of SSCs?

Individual microdata with geographic detail allows for an examination of the influence of individual and contextual variables on spatial segregation patterns among SSCs. Based on the literature review, which includes previous studies focusing on Brazil, further research questions on the individual level are: (vi) Do age and education level influence the likelihood that an individual will live in an SSC?; (vii) How do religious affiliation, ethnicity and economic conditions factor into the regression of influences on whether an individual chooses to live in an SSC? Further research questions on the contextual level are: (viii) How do population density, mean age and mean income correlate with concentrations of SSCs in subdistricts in Rio de Janeiro and São Paulo?; (ix) How do the prevalence of religious affiliates, Whites and single-person households correlate with the prevalence of SSCs in these subdistricts?; (x) How do the degree of income inequality and the proportion of home rentership correlate with the prevalence of SSCs?

2.3 DATA AND METHODS

The public-use microdata covering 10% of households from the Brazilian 2010 census is collected through computer-assisted personal interviews (CAPI), meaning that census enumerators personally visit the households, interview the individuals there and fill in the questionnaire on a computer.

This census is innovative in that it provides individual data along with a high degree of geographical information, which allows for detailed spatial analyses to be conducted. This is the first year in which Brazil's census questionnaire refers explicitly to SSCs. In past censuses, individuals could be inferred to be living as part of an SSC based on how they responded to questions about their gender and whether they are in a relationship with the head of the household;

this method of indirect identification of SSCs, however, is associated with a higher risk of errors (including gender miscoding) than direct identification (Festy, 2007).

The data analysis focuses on the prevalence of individuals living in couples, whether heterosexual (OSC) or homosexual (SSC). In keeping with the definition introduced in Goldani et al. (2013) with regard to Brazil, homosexuals are understood as individuals who show sexual desire for individuals of same sex, engage in sexual behavior and/or identify as someone with sexual desire for an individual of the same sex.

In terms of sampling, Brazil's census follows the household principle. The dependent binary variable indicates whether two individuals live in an OSC ("0") or SSC ("1"). The multilevel analysis applied uses predictor variables on the individual level which describe sociodemographic conditions (specifically, age group, education, religion, income and ethnicity). Except for income (continuous variable) all predictors are constructed categorically. Four age groups are used: two open groups (*under 30* [reference group] and *50+*); and two ten-year age groups (*30–39* and *40–49*). The education variable is constructed in a common way, divided into four groups: *Less than primary education* (reference group); *primary school completed*; *secondary school completed*; and *tertiary school completed*. The religion variable contains six groups: *Catholics* (reference group), *Evangelicals*, *Spiritualists*, *Afro-Brazilians*, *others* and *non-religious*. Income is used as a continuous variable, expressed in Brazilian reals (R$).[26] Finally, for ethnicity, the generated variable implies the groups *White* (reference group), *Black*, *Brown* and *other*.

The second part of the multilevel analysis explores determinants that influence SSCs' choice to live in a particular area. A number of predictors are incorporated into these logistic models. Based on previous investigations the contextual predictors *White share* and *Catholic share* are generally used to operationalize diversity. Past studies' findings also serve as the basis for constructing the contextual variables *mean income* and *population density*. Furthermore, the regressands *mean age* and *single household share* within a subdistrict are implemented in the analyses. Finally, the contextual predictors *income inequality* and *renter share* are incorporated into the models. For measuring income inequality, the 90/10 decile ratio was calculated by dividing the income of the 90% decile by the 10% one; the higher the ratio, the greater the income inequality.

All contextual variables are used in relative terms, which means that no particular quantity of subdistricts is used as the highest/medium/lowest group, but rather each is implemented more flexibly into the modeling. After applying a technique similar to bootstrapping, it was then decided to trisection all subdistricts into the upper 25%, the medium 50% and the lower 25% percentiles. A zero model (i.e., empty model) is prepended to both parts of the multilevel

[26] The exchange rate on June 30, 2010 was 1 R$ = 0.56 US$ (Oanda, 2020).

regression (individual and contextual) to examine whether variance exists in the dependent variable.

The dissimilarity index is used here to measure the concentration of SSCs by gender. This indicator ranges from 0 to 1, where 0 means maximum evenness between the compared social groups and 1 means maximum disparity. "The dissimilarity index can be derived from the Lorenz curve, which plots the cumulative proportion of minority group *x* against the cumulative proportion of majority group *y* across areal units, which are ordered from smallest to largest minority proportion" (Massey & Denton, 1988, p. 284). The formula is:

$$ID = \frac{1}{2}\sum_{i=1}^{n}|x_i - y_i| \quad (1)$$

where *x* and *y* are the different social groups, *i* is the areal unit and *n* the number of units. The dissimilarity index multiplied by 100 represents the proportion of the minority group members that needs to be redistributed to reach evenness; it is expressed as the proportion of the number of minority group members who would have to move into the area in order for maximum segregation to occur (*ID* = 1) (Massey & Denton, 1988).

The dissimilarity index is calculated for gay men and lesbians separately referring to all males or females living in an SSC. Calculations are done for various spatial aggregates of different granularities, as one approach of this essay is to observe trends in the concentration of SSCs from larger to smaller geographical aggregates (i.e., areal units). The geographical aggregates used are: country, region, mesoregion, metropolitan region, microregion, municipality and (for the municipalities of Rio de Janeiro and São Paulo) subdistrict.

A second analytical method, multilevel regression, is applied to the municipalities of Rio de Janeiro and São Paulo. The first part of this analysis constructs a sociodemographic profile based on characteristics that positively correlate with an individual's likelihood of living in an SSC. This is performed separately for both male and female individuals living in SSCs. The next step in the multilevel regression focuses on the contextual level. Descriptive variables for the subdistricts are analyzed in an attempt to determine which subdistrict characteristics correlate with SSC prevalence and explain SSC-population variations between the subdistricts. Three models are applied for each municipality and gender: an empty one; an individual one; and a saturated model including all variables from the individual and contextual level.

Finally, this chapter applies a further calculation method to explore these descriptive profiles of subdistricts of Rio de Janeiro and São Paulo in association with their gay/lesbian partnered rates. First, a low, medium and high gay/lesbian partnered rate was defined: < 4‰ (low); ≥ 4 < 8‰ (medium); and ≥ 8‰ (high). Then, the total average of all subdistricts in both municipalities is calculated for each contextual variable. Next, group averages are calculated for each of the three

subdistrict groups (low, medium and high gay/lesbian partnered rates). After preparing these preliminary results for each of the group averages (three per contextual variable), deviation from the total average for the specific contextual variable is calculated. The results show the relative differences between the total average (set as baseline) and the group averages for subdistricts with a low, medium or high gay/lesbian partnered rate.

2.4 RESULTS

2.4.1 DESCRIPTIVE STATISTICS

Overview: Brazil

Brazil's 2010 census data (Brazilian Institute for Geography and Statistics, 2013a) identifies 10,618 individuals living in 5,309 SSCs (scaled to the whole population by census weights: 134,988 and 67,494, respectively), 46% of which are male and 54% female.

The country level (federative republic) is the highest level of the administrative structure, further subdivided into five regions (North, North East, South East, South, Central Western), followed by 26+1 states;[27] 136+1 mesoregions; 557+1 microregions;[28] and, finally, 5,564+1 municipalities. Brazil is also home to 42 metropolitan regions.[29]

Tables 2.1 shows a comparison of both male and female SSC populations in relation to the OSC population in Brazil Compared with the numbers of SSCs in Brazil mentioned above, the 2010 census captured around 8,200,000 individuals living in OSCs (scaled to 75,200,000 for the entire population).

[27] The "+1" refers to the federal district surrounding Brazil's capital city, Brasilia.
[28] "Mesoregions" and "microregions" are defined by the Brazilian Institute for Geography and Statistics (2011) and do not constitute administrative areas but are used for statistical purposes.
[29] Not all of the country's land area is partitioned into metropolitan regions.

Table 2.1: Distribution of individuals living in SSCs in Brazil by region/municipality (scaled to the total population of each region/municipality)

Region/ *municipality*	Number of individuals living in: SSC	male SSC	female SSC	OSC	Entire population	Gay partnered rate	Lesbian partnered rate	% of Brazilian SSCs	% of Brazilian OSCs
North	646 (7,984)	238 (2,944)	408 (5,040)	604,310 (5,477,931)	1,723,249 (15,864,489)	0.79 (1.07)	1.35 (1.84)	6.08 (5.91)	7.33(7.29)
North East	2,246 (27,103)	900 (11,605)	1,346 (15,498)	2,294,088 (19,619,476)	6,170,511 (53,081,944)	0.78 (1.18)	1.17 (1.58)	21.15 (20.08)	27.82 (26.10)
South East	5,222 (70,987)	2,408 (34,428)	2,814 (36,559)	3,121,184 (32,285,059)	7,701,226 (80,364,373)	1.54 (2.13)	1.80 (2.26)	49.18 (52.59)	37.84 (42.95)
Rio de Janeiro	*586 (12,003)*	*330 (6,606)*	*256 (5,397)*	*117,160 (2,413,913)*	*308,818 (6,284,829)*	*5.60 (5.44)*	*4.35 (4.45)*	*5.52 (8.89)*	*1.42 (3.21)*
São Paulo	*682 (14,226)*	*370 (7,787)*	*312 (6,439)*	*210,306 (4,324,142)*	*544,000 (11,061,783)*	*3.51 (3.59)*	*2.96 (2.97)*	*6.42 (10.54)*	*2.55 (5.75)*
South	1,592 (17,607)	662 (7,863)	930 (9,744)	1,607,418 (12,110.159)	3,553,719 (27,386,878)	0.82 (1.30)	1.16 (1.61)	14.99 (13.04)	19.49 (16.11)
Central Western	912 (11,307)	462 (5,460)	450 (5,847)	620,432 (5,682,993)	1,486,752 (14,058,088)	1.49 (1.92)	1.45 (2.05)	8.59 (8.38)	7.52 (7.56)
Brazil	10,618 (134,988)	4,670 (62,300)	5,948 (72,688)	8,247,432 (75,175,619)	20,635,457 (190,755,815)	1.13 (1.65)	1.44 (1.93)	100.00	100.00

Source: 2010 Brazilian census data, Brazilian Institute for Geography and Statistics (2013a)

Interpretation (values scaled to total population): Of Brazil's SSC population, 52.59% live in the South East region, compared to 42.95% of the country's OSCs (the greatest disparity between SSCs and OSCs in any of the regions). Male and female SSCs account for 2.13‰ and 2.26‰ of all couples, respectively.

Figure 2.1 presents absolute regional settlement concentrations of Brazilian SSCs on the country and regional level, along with concentrations for the country's two largest cities. SSCs are most concentrated in Brazil's South East region (home to 34,428 males and 36,559 females living in SSCs), which is also home to the highest number of individuals living in OSCs (32,285,060). There is slightly less disparity between SSC and OSC population concentrations in the North East and South regions, and far less in the North and Central Western regions.

Figure 2.1: Absolute distribution of male SSCs (Panel A) and female SSCs (Panel B) in Brazil, by region (N = 5) and mesoregion (N = 136+1)

Panel A: Male SSCs

Panel B: Female SSCs

each dot = one individual living in an SSC

Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a)

Rio de Janeiro (*RdJ*) and São Paulo (*SP*) are located. In Brazil's South East region. The statistics cited in Table 2.1 reveal that more than half of all individuals in SSCs in Brazil live here. The census data also shows that female SSCs outnumber male SSCs in all large geographical aggregates (e.g. regional level, country level) except for the South East region and, by a narrow margin, the Central Western region. This contrasts with studies of data from other countries, such as the United States (Gates & Ost, 2004) and Uruguay (Goldani et al., 2013), which have found that males SSCs outnumber female SSCs there.

The 10% census sample for Rio de Janeiro identified 586 individuals living in SSCs (scaled to the total Rio de Janeiro population based on census weights: 12,003); of them, 330 were male and 256 female (scaled to 6,606 and 5,397, respectively). In São Paulo, there were 682 individuals living in SSCs (scaled to 14,226; of which 370 were male and 312 female (scaled to 7,787 and 6,439, respectively. The same dataset shows that in Rio de Janeiro, there were 117,160 individuals living in OSCs (scaled to 2,413,913) out of a total population of 308,818 (scaled to 6,284,829); and, in São Paulo, 210,306 individuals (scaled to 4,324,142) of a total population of 544,000 (scaled to 11,061,783)(see Table 2.1).

Distribution of SSCs on the municipality level

In addition to the characteristics described above, there are notable differences in spatial distribution patterns between male and female SSCs in Brazil. In most cases, only one female SSC was recorded to have been living in a single municipality, accounting for the entire SSC population there; in contrast, when male SSCs are present in a municipality they are often present in significantly higher numbers. As such, female SSCs outnumber male SSCs in Brazil, not because they exist in higher concentrations, but because they are distributed more widely throughout the country. Several indicators account for these patterns of settlement among SSCs. In Figure 2.2, the number of Brazilian municipalities in which male and female SSCs live are divided into percentiles, based on the percentage of the total share of male and female SSCs they account for (for example, 50% of all Brazilian female SSCs live in 63 municipalities). This reveals that, for smaller geographical aggregates (e.g., the municipality level), male SSCs outnumber female SSCs, meaning that, in Brazil, male SSCs are more spatially concentrated than female SSCs.

Table 2.2: Number of municipalities accounting for male/female SSC population shares in Brazil

	Male	Female	Share
Number of municipalities	8	21	25%
	63	115	50%
	250	400	75%
	808	1,135	100%
Share of SSCs living in the top five and top ten municipalities in terms of SSC population	21.60%	14.20%	Top 5
	27.60%	18.90%	Top 10

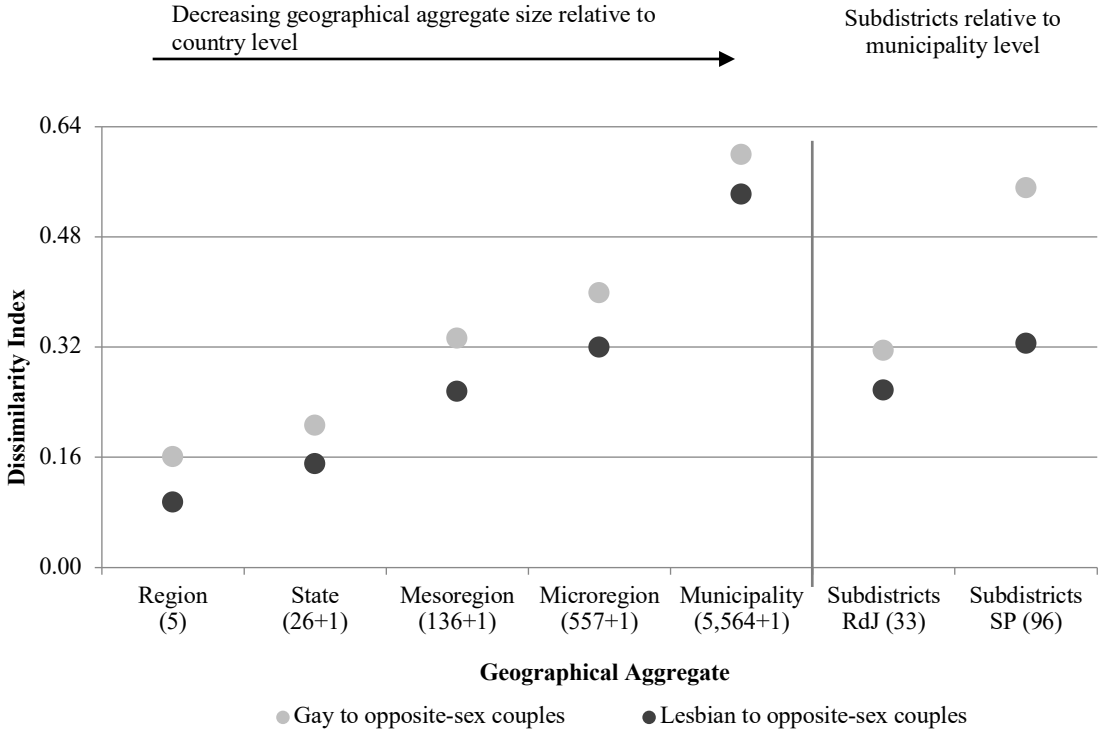
Source: 2010 Brazilian census, Brazilian Institute of Geography and Statistics (2013a)

Estimating the dissimilarity index

This section focuses on the estimation of the dissimilarity index (Figure 2.2). The visualization clarifies that with increasing granularity (smaller territorial units and higher urbanization) the concentration swings up for gays and lesbians, and for gays it is on a higher level (horizontal axis from *Region* to *Municipality*).

The first five measures (separately for gays and lesbians) show the concentration within the entire country of Brazil, the following two do that within the municipalities of Rio de Janeiro and São Paulo. For these municipalities it again appears that the dissimilarity estimate is higher for males than for females, while this difference is comparatively very high for São Paulo.

Figure 2.2: Dissimilarity index for various aggregates in Brazil and Rio de Janeiro/São Paulo



Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a)

The dissimilarity indices reveal that the larger the geographical aggregate, the lesser the degree of segregation for both male and female SSCs, with males always showing a higher coefficient. Starting at the country level based on regions, the coefficient is smallest (0.161 for males SSCs and 0.095 for female), increasing relatively consistently across all smaller geographical aggregates down to the highest granularity (municipalities), in which coefficient values = 0.600 (male SSCs) and 0.542 (female SSCs).

Rio de Janeiro and São Paulo are further analyzed on the subdistrict level (containing 33 and 96 subdistricts respectively). The coefficients vary widely between the two municipalities, ranging from 0.316 (RdJ) to 0.552 (SP) for male SSCs and 0.258 and 0.326 for female SSCs. For Rio de Janeiro, the highest gay partnered rates[30] are found in the subdistricts of Centro (35 gay males in SSCs per 1,000 males in couples), Copacabana (31) and Botafogo (21); and the highest lesbian partnered rate is found in Botafogo (11). In São Paulo, the highest gay partnered rate is found in the city's geographical center, in the subdistricts of República (112), Consolação and Bela Vista (60 each); lesbian partnered rates in São Paulo are also highest in the subdistricts of República (28) and Bela Vista (24).

Figures 2.1, 2.2, 2.3, 2.4 in Appendix A illustrate, on the one hand, the relative and absolute conditions for all municipalities within the metropolitan regions of Rio de Janeiro and São Paulo and, on the other, those same conditions for the subdistricts within the municipalities of Rio de Janeiro and São Paulo.

Individual variables distribution for Rio de Janeiro and São Paulo

Table 2.1 in Appendix A summarizes the distribution within individual variables for both municipalities and genders as well as the averages for the 25%, 50% and 75% quartiles (as used in the multilevel analysis) of the contextual variables. On the individual level, numerous clear results are discernible: generally, individuals living in OSCs are older; the shares in the highest age group (50+) are multiple times greater than those for same-sex individuals living in SSCs. Additionally (scaled to the full populations in each city), the results also reveal a strong divergence in education levels. While the share of OSCs with less than primary education is invariably higher than it is for SSCs, the opposite is true for secondary and tertiary education. As expected, Catholics and Evangelicals account for a significantly higher share of OSCs than SSCs. Religious affiliation is distributed more equally among SSCS, including a relatively large group who indicate having no religious affiliation. In terms of ethnicity within the sample, Whites and Browns are the largest ethnic groups among both OSCs and SSCs.

[30] To ensure the validity of these results, only subdistricts with at least 10 individuals in an SSC are mentioned.

With regard to contextual variables, it is not useful to calculate shares distinguished by sexual identity, because often only a limited number of SSCs live within a subdistrict; therefore, quartile averages are calculated, as specified above. The bottom of Table 2.1 in Appendix A shows various differences in the individual percentiles between Rio de Janeiro and São Paulo.

2.4.2 MULTILEVEL REGRESSION

The first part of the multilevel regression (an individual logistic one, summarized in Table 2.3) (after the zero model), reveals the following sociodemographic profile of individuals living in SSCs by analyzing which determinants correlate most strongly to being present in an SSC. The results reveal that for Rio de Janeiro and São Paulo generally people living in SSCs are most likely to be under the age of 30 and least likely to be aged 50+. Gay men with the tertiary-level education are clearly the most likely to live in an SSC, while among lesbians, secondary-level education is the strongest determinant for living in an SSC. In terms of religious affiliation, individuals living in SSCs are most likely to be adherents of Afro-Brazilian religions. On balance, people living in SSCs are most likely to be supporters of non-Catholic and non-Evangelical religions or to profess no religion. The odds ratios for income are only significant and interpretable for women in both municipalities, and reveal that with increasing income, the chances of living in an SSC increase, even though this increase is infinitesimal. In terms of ethnicity, there is some variation: These analyses show that among women in São Paulo, Black individuals have the highest chances of living in an SSC; for males and females in São Paulo, the highest chances exist for people in the ethnic category “Others” (which is the only significant value); in Rio de Janeiro and São Paulo, male individuals in SSCs are most likely to be foreign-born.

In conclusion, and in response to the research objectives in Section 2.2, the chances of individuals living in an SSC are increased for people who are younger, more highly educated and non-Catholic. In both Rio de Janeiro and São Paulo, higher income increases this chance only for lesbians.

Table 2.3: Estimated odds ratios from a multilevel logistic regression of SSCs by individual and contextual characteristics, Rio de Janeiro and São Paulo

	Rio de Janeiro						São Paulo					
		Male			Female			Male			Female	
Individual variables	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
Age group												
Under 30 (ref)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
30–39		0.56***	0.56***		1.11	1.11		0.49***	0.49***		0.52***	0.52***
40–49		0.52***	0.52***		0.96	0.96		0.54***	0.54***		0.47***	0.47***
50+		0.15***	0.15***		0.60**	0.60**		0.13***	0.13***		0.19***	0.19***
Education												
Primary compl. (ref)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
Less than Primary		1.15	1.15		0.63	0.63		0.58*	0.58*		1.02	1.03
Secondary compl.		3.90***	3.90***		1.86**	1.86***		1.94***	1.94***		1.48*	1.48*
Tertiary compl.		4.05***	4.04***		1.41	1.41		2.54***	2.54***		0.96	0.96
Religion												
Catholic (ref)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
Evangelical		0.79	0.79		0.62*	0.62*		0.93	0.93		0.48***	0.48***
Spiritualists		3.93***	3.93***		5.20***	5.20***		5.16***	5.16***		4.05***	4.05***
Afro-Brazilian		18.84***	18.86***		21.55***	21.55***		30.65***	30.65***		14.21***	14.22***
Other		0.64	0.64		5.10***	5.10***		2.24	2.24		3.64***	3.64***
No religion		2.52***	2.52***		4.62***	4.62***		2.93***	2.93***		3.06***	3.06***
Income												
(continuous)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
Income		1.00	1.00		1.02***	1.02***		1.00	1.00		1.01***	1.01***
Ethnicity												
White (ref)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
Black		1.30	1.30		1.38	1.38*		0.70	0.70		1.58*	1.58**
Brown		0.96	0.96		0.87	0.87		0.95	0.95		0.61***	0.61***
Other		1.33	1.33		0.40	0.40		0.23**	0.23**		0.15**	0.15**
Foreign-born												
No (ref)		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*
Yes		1.86***	1.86***		0.92	0.92		1.85***	1.85***		1.06	1.06

Table 2.3 (cont'd):

		Rio de Janeiro						São Paulo					
			Male			Female			Male			Female	
Contextual variables		M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
White share	low			0.12*			72.36			5.89			1.15
	medium			0.43			46.00			0.96			5.06***
	high (ref)			*1*			*1*			*1*			*1*
Mean income	low			0.97			0.18			1.26			2.30
	medium			1.07			0.05			0.55			0.18
	high (ref)			*1*			*1*			*1*			*1*
Catholic share	low			4.30			0.08			0.64			0.67
	medium			1.33			0.30			0.71			0.37*
	high (ref)			*1*			*1*			*1*			*1*
Mean age	low			0.61			34.40			0.47			0.36
	medium			0.72			13.56			1.09			0.19*
	high (ref)			*1*			*1*			*1*			*1*
Single	low			1.31			0.09			0.15**			0.49*
Household share	medium			0.32			0.19			0.31			0.48*
	high (ref)			*1*			*1*			*1*			*1*
Population density	low			11.73*			0.37			0.08**			0.40
	medium			4.78			0.86			0.37			0.48
	high (ref)			*1*			*1*			*1*			*1*
Income inequality	low			8.24			0.01			0.12			2.31
	medium			0.62			0.15			0.60			3.70
	high (ref)			*1*			*1*			*1*			*1*
Renter share	low			0.03**			12.51*			0.71			0.21**
	medium			0.13**			1.69			1.27			0.46**
	high (ref)			*1*			*1*			*1*			*1*
Intercept		0.004***	0.002***	0.006***	0.003***	0.002***	0.004***	0.001***	0.000***	0.001***	0.001	0.002***	0.026***
Variance		1.76	2.07	2.55	1.63	2.04	3.40	7.02	6.63	6.72	3.96	4.43	4.29

Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a) [a]contextual variables are divided into three relative groups: 25% lowest, 50% medium, 25% highest, values show chance for "Yes." $p < 0.01$=***; $p < 0.05$=**, $p < 0.1$=*

Interpretation: The chances of an SSC living in a subdistrict with a medium renter share are 0.13 times greater than the chances of an SSC living in a subdistrict with a high renter share.

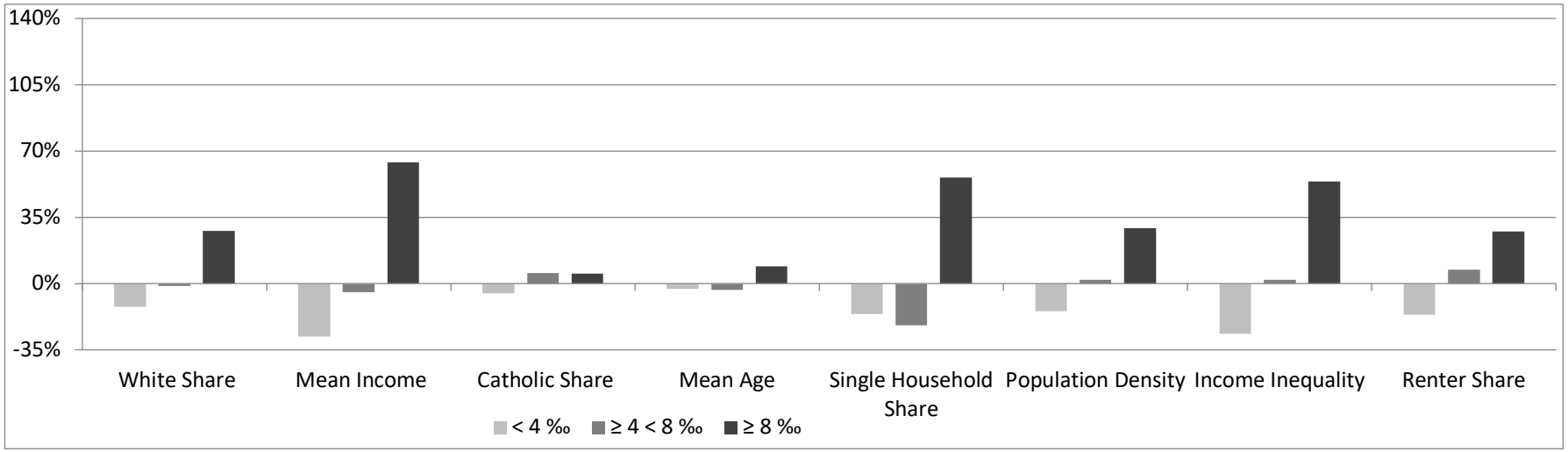
The second part of the multilevel regression involves the regression of the contextual variables for the subdistricts of Rio de Janeiro and São Paulo described in Section 2.3. The analysis reveals hardly any clear determinants that affect the locational preferences of SSCs. The outcomes of the multilevel regression reveal that the variance hardly ever decreased by the inclusion of various contextual variables. This indicates that the variables chosen for the description of subdistricts are hardly capable of explaining spatial preferences among SSCs, which means that the questions on contextual-level variables cannot be adequately answered. Therefore, an overview of characteristics of subdistricts in which the gay/lesbian prevalence is low, medium or high is presented. The results reflect the deviance from the average value, measured from the individual average values of each contextual variable for the low, medium and high gay/lesbian partnered rates (Figures 2.3 and 2.4).

These findings show that subdistricts in Rio de Janeiro (Figure 2.3) with a high presence of male SSCs have a considerably higher share of single households, higher mean income, relatively greater income inequality (>50% above average), higher population density, a higher share of renters and a significantly higher share of Whites (almost 30% above average). For women in the same place the picture is quite different: mean income, single household share and income inequality are clearly above average for both high and medium lesbian partnered rates. Furthermore, the percentages are on a much lower scale (between around 15 and 20%) than is the case for gay couples.

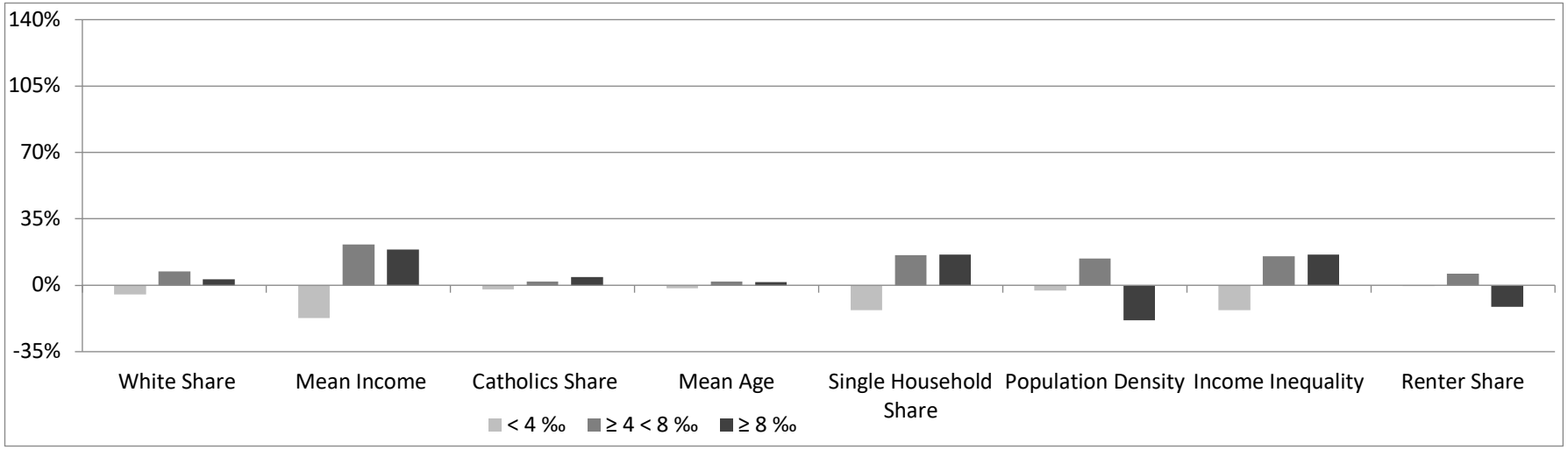
For São Paulo's subdistricts with a high gay partnered rate, the contextual variables of mean income and single households share are more than 100% above average; income inequality is more than 50% above average in this group. Similarly, subdistricts with a high lesbian partnered rate, the single household share is around 130% above average, mean income is about 80% above average and income inequality is almost 50% above average (see Figure 2.4).

Figure 2.3: Deviation of Rio de Janeiro's gay (Panel A)/lesbian (Panel B) partnered rate (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average in terms of selected characteristics[31] (0% = average)

Panel A: Gay couples



Panel A: Lesbian couples

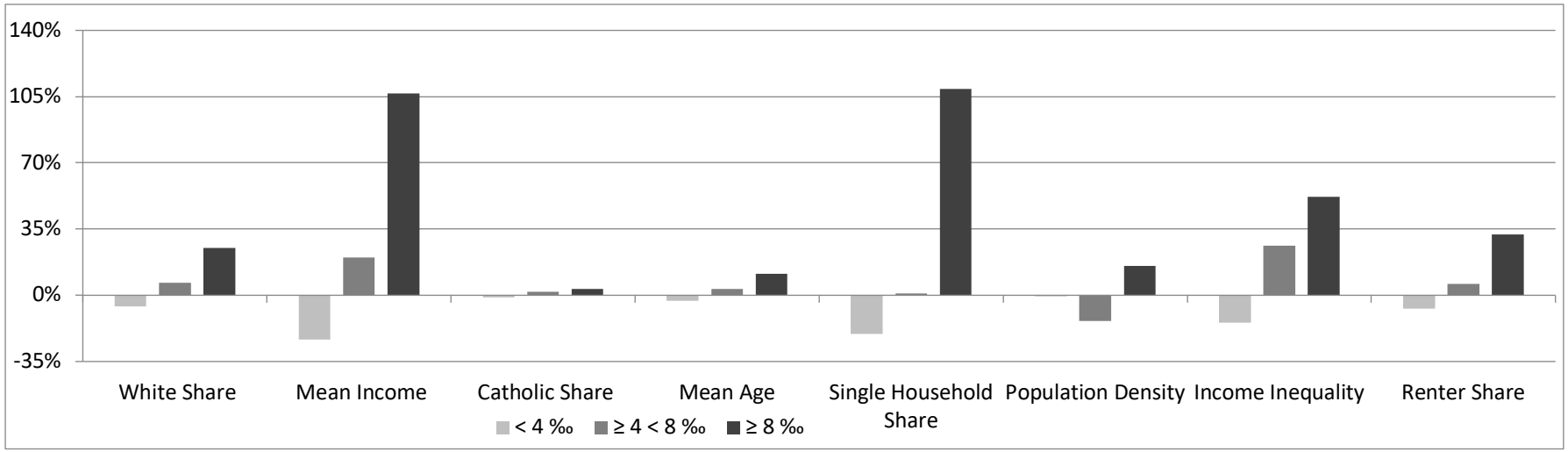


Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a)

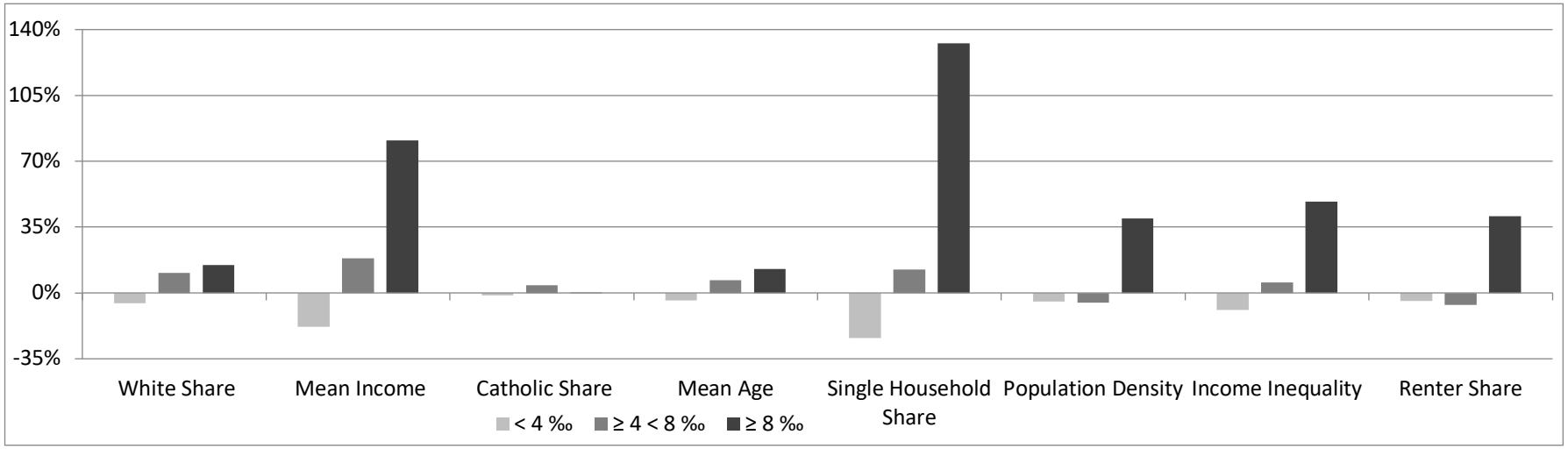
[31] See corresponding estimates in Tables 2.2 and 2.3 in Appendix A.

Figure 2.4: Deviation of São Paulo's gay (Panel A)/lesbian (Panel B) partnered rate (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average in terms of selected characteristics[32] (0% = average)

Panel A: Gay couples



Panel B: Lesbian couples



Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a)

[32] See corresponding estimates in Tables 2.4 and 2.5 in Appendix A.

2.5 CONCLUSION

The availability of a large microdata set containing extensive geographical detail made it possible to conduct the analyses summarized below. The Brazilian census (10% census microdata) records almost 135,000 individuals living in SSCs; 46% of them male, 54% female. The highest number of SSCs (52.6%) live in Brazil's South East region, which is also the region with the highest population, containing the metropoles of Rio de Janeiro and São Paulo. These cities are home to Brazil's largest gay and lesbian populations, which is consistent with findings from other research suggesting that gays and lesbians prefer to settle in locations that are heavily populated and amenity rich, as well as diverse, which is generally linked with greater social liberalism and tolerance, thus enabling minority groups thrive while being faced with less societal pressure to conform (e.g., Suchy, 2007).

The results of the analyses indicate that SSCs tend to concentrate in specific geographical areas. Results sometimes show relatively significant differences between gays and lesbians in union as well as between various geographical aggregates. As the concentration of female SSCs is always lower than among male SSCs, the dissimilarity indices on the country level are consistently higher for smaller geographical aggregates than for larger ones, thus indicating segregation clustering, and making the findings consistent with findings from previous studies conducted on other places in the world (e.g., Florida, 2002; Hayslett & Kane, 2011). Whereas regression allows for the construction of a clear sociodemographic profile for Brazilian gay men and lesbians who live in SSCs, findings for the contextual variables are more equivocal. As such, contextual characteristics of precisely those subdistricts with high prevalence of SSCs were of interest. These subdistricts share many common contextual characteristics (cf. Figures 2.3 and 2.4), but it should be noted that similar characteristics may exist among subdistricts regardless of the prevalence of SSCs there.

Another finding was the variation in distribution between male and female SSCs: While female SSCs can be found in a larger number of Brazilian municipalities (1,135) than male SSCs (808), the analysis revealed that when male SSCs are present in a given municipality, they are usually present in much higher numbers.

The five main findings of this analysis are: (1) in Brazil, most SSCs live in the South East region; (2) though lesbians significantly outnumber gay men in Brazil on the whole, gay men outnumber lesbians when focusing on smaller geographical aggregates; (3) male SSCs are much more highly concentrated spatially, while female SSCs spatially segregate to a much lesser extent (i.e., the term "gayborhoods" is more accurate than "lesbianhoods")(cf. Ghaziani, 2014); (4) higher geographical resolution strongly correlates positively with higher concentration of SSCs; (5) In

Rio de Janeiro, male SSCs primarily concentrate in the eastern subdistricts, whereas in São Paulo, they tend to concentrate in central subdistricts.

Discussion

While capturing census data on SSCs represents a significant step towards improving the statistical visibility and enhancing researchers' sociodemographic understanding of this minority group, one shortcoming is that only couples are made visible, which impedes a detailed qualitative analysis of single LGBTIQ* people. This deficiency has also been pointed out by a recent study, in which the authors argue that results based on "couples" data cannot be generalized to include single people (Wimark & Östh, 2014). Capturing data on single LGBTIQ* people would significantly expand the dataset and allow for analyses that are more detailed and more reliable; furthermore, it would allow for comparisons between single and partnered LGBTIQ* people, which could reveal differences and similarities between these two distinct subpopulations in terms of their sociodemographic profiles, spatial segregation patterns and other characteristics. It is plausible that single LGBTIQ* people may be more inclined to live in neighborhoods that offer them proximity to LGBTIQ*-focused social venues (e.g. nightlife establishments), where they can socialize and meet potential partners, whereas LQBTIQ* people already living in a partnership may have less interest in living in such areas, or feel less need for such a social infrastructure. This may also suggest that single LGBTIQ* people are more drawn to urban areas than those living in SSCs.

Another shortcoming of the explicit-reference method used by the Brazilian census to enumerate SSCs is that it captures only couples who cohabitate. As SSCs are less likely to have children, they may also be less likely to cohabitate than OSCs on average. This may also apply disproportionately to male SSCs compared with females. These considerations suggest that SSCs are likely to be significantly underreported in the Brazilian census data. Another possible cause for underrepresentation of SSCs within the Brazilian enumeration method could be reluctance on the part of people living in SSCs to accurately disclose their gender or the nature of their relationship with the head of the household (e.g., due to internalized homophobia or reluctance to "out themselves" to the census-taker).

Despite these limitations, the availability of relatively high-quality data on cohabitating SSCs in Brazil constitutes a major advance for sociodemographic studies focusing on this minority group. The Brazilian census microdata is currently the only dataset with a scope that is adequate to facilitate such research with any degree of precision.

This chapter's analysis concludes that gay men in Brazil tend to concentrate in a few urban areas, while lesbians urbanize to a lesser extent (see Table 2.2). This echoes previous studies; for example, in the United States, Gates and Ost (2004) have concluded that male SSCs concentrate in a small number of urban areas, where they considerably outnumber female SSCs. A possible explanation is that female SSCs are likelier than males to have children (Rupp, 2009) which could hypothetically make them more attracted to settling in rural areas, where they have access to a greener environment, whereas male SSCs are less likely to be concerned with childrearing and may be more attracted to a city's gay-focused social infrastructure (e.g., nightlife, events).

The choice of variables/categories for analysis is a topic of constant debate (e.g., the age groups have been defined quite broadly). As SSCs have been relatively underrepresented up to now (even in most high-quality datasets), it is necessary to use relatively large age groups to produce meaningful results. The age groups used in this analysis were defined broadly enough so that each contains statistically significant numbers. Furthermore, focusing on the rural-urban divide when describing locational preference is a common approach, but some researchers argue that this narrative is overly generalized, as other forms of residential shift may also be significant, noting, for example, that gay man as well as lesbians differ from the normative urban-to-urban migration process (Waitt & Gorman-Murray, 2011).

Selecting contextual variables poses significant challenges, because relatively little is known about the spatial preferences of SSCs. Though the literature includes contextual studies focusing on specific countries, regressands used in those studies do not necessarily transfer to other countries. There may be contextual characteristics that influence an SSC's decision-making on where to live, but the model used in this study could not unequivocally identify these. Further research is needed to determine whether contextual predictors adequately explain variance between subdistricts. The focus should be on confirming whether selecting certain contextual variables could produce less ambiguous results, or whether a Brazilian SSC's choice to cohabitate is based simply on a desire to live together rather than on the mean income, age structure or ethnicity in a subdistrict they choose.

When calculating the dissimilarity index, this coefficient may contain wide-ranging quantities of individual values; for example, dissimilarity for the entire country can be calculated based on only five areas (regions), or based on more than 5,500 areas (municipalities). A geographical aggregate containing more areas (i.e., more values) almost always produces a more accurate dissimilarity index. Calculating with fewer areas, the real inequality is probably a bit higher than the value shows, due to the lack of evaluation of inequality, due to a rough measuring resolution that is taken into account more in calculations with more areas.

Some researchers have criticized the overemphasis in academic studies on areas with particularly high proportions of SSCs (e.g., Hayslett & Kane, 2011), because these areas are relatively rare, and SSCs also distribute elsewhere. However, the South East region of Brazil was found to be home to more than 50% of Brazilian SSCs. Although Rio de Janeiro and São Paulo combined account for around 20% of Brazilian SSCs, the intercity analysis conducted in this research presented specific advantages; i.e., exploring the distribution of SSCs on the subdistrict level. This level of analysis requires extensive datasets, which, in the 2010 Brazilian census microdata, only exist with regard to a small number of municipalities, including Rio de Janeiro and São Paulo.

Further research should focus on generating higher-quality data, which would ideally allow for comparative studies between LGBTIQ* couples and singles as distinct subpopulations. Another question for further investigation is how segregation might change with further growth/increasing statistical visibility of the gay and lesbian community; e.g., will future generations be more or less clustered?

CHAPTER 3: SAME-SEX COUPLES IN GERMANY AND BERLIN: WHERE AND HOW ARE THEY CONCENTRATED?

3.1 INTRODUCTION

Variations in how individuals occupy space has been a key topic of human geographical science for decades (Johnston et al., 2000). In the 1990s, interest in general spatial patterns expanded to encompass social differences, such as age and minority sexual orientation (Valentine, 2001; Johnston & Sidaway, 2004). This chapter explores the spatial segregation of same-sex couples (SSCs), focusing in the first part (Sections 3.3 and 3.4) on the entire country of Germany by federal state and across the period 1996 to 2012. Germany consists of 16 federal states: 13 territorial states and three city-states; ten of which made up the former territory of the Federal Republic of Germany (West Germany), five of which are the re-established states that made up the former German Democratic Republic (East Germany) from 1949 to 1989, and one of which is the city-state of Berlin, which was formed in 1989 by the merging of former East and West Berlin. Besides Berlin, Germany's other city-states are Bremen and Hamburg, both located in former West Germany. Findings reveal that for all points in time there are clear residential patterns. Various results are plotted on choropleth maps.

The territorial states, which account for the majority of Germany's land mass, contain both rural and urban areas, which means that they will only be subject to a broad overview of residential patterns in this chapter; this analysis is expanded to include the municipal size class (MSC) variable, which allows for some federal states' gay/lesbian partnered rates to be localized based on the size of their municipalities. When applying this variable to multiple states, it should be noted that the highest gay/lesbian partnered rates within a state occur in the higher municipal size classes. As such, spatial segregation of SSCs in Germany can be viewed as an urban phenomenon. The nationwide analysis focuses solely on SSCs who cohabitate.

The second part of this chapter (Sections 3.5 and 3.6) focuses exclusively on the German capital, the city-state of Berlin. A sizeable number of individuals in Berlin live in civil unions,[33] resulting in the availability of a significant dataset with information about them, which is combined in this

[33] See Section 3.2 for an explanation of the difference between civil unions and SSCs.

analysis with data from the local statistical office that includes extensive great geographical detail. Unlike the longitudinal analysis presented for all of Germany in part one of this chapter, the Berlin-specific analysis in part two is based on data from the year 2011 alone; that year, Germany conducted a full census, the dataset of which serves as the basis for this analysis along with records on civil unions, which is divided first into the city's districts (n = 12) and into gradually smaller levels, of which the city's urban planning areas (n = 447), represent the smallest subdivision in terms geographical scope. Combining these datasets allows for a comprehensive and geographically specific investigation of spatial preferences among people living in civil unions in Berlin. In this section, logistic regression is used to determine meaningful predictors for the increased likelihood of high male/female civil union rates within a particular area. Furthermore, mapping civil union rates in relation to the total number of males and females living in unions (including civil unions and all domestic partnerships as well as married couples) reveals potential segregation patterns within the city, which are then tested using spatial regression methods.

3.2 Statistical and Spatial Patterns in Germany and Berlin

Over the past two decades in Germany and various other Western societies, an ongoing transition is taking place in terms of the ways in which people live in partnerships. This change encompasses not only the extent to which people engage in such partnerships and the degree of legal recognition afforded to them, but also a growing abandonment of traditionally held views in which legally recognized relationships have been defined in strictly heterosexual terms. Now, two men or two women are increasingly free to establish long-term, legally binding unions; nevertheless, data sources that capture the prevalence of SSCs remain relatively scarce (Lengerer & Bohr, 2019), which jeopardizes the statistical visibility of people of minority sexual orientations who choose to enter formal and semiformal domestic partnerships. Currently, data sources for gauging the prevalence of SSCs in Germany include the most recent German full census (2011), the Statistical Federal Office (2017) and the German Socioeconomic Panel (SOEP) survey (Kroh et al., 2017). Another source for enumerating German SSCs, which is used in this chapter, is the German microcensus, which is performed annually and reaches a 1%[34] sample of the German population. The microcensus has directly identified SSCs since 1996 and was revised in 2002 to account for the legal institution of civil unions among them. A further revision in 2006 added an explicit reference to SSCs in the census question about the respondent's marital/civil union status. This

[34] The scientific use file covers 0.7% of the German Population (i.e., 70% of the 1% population sample covered in the microcensus).

question provides statistical visibility to German SSCs which, in combination with the geographical information contained in the microcensus data, serves as the basis for the following analyses of spatial segregation patterns among this minority group. The second part of this chapter focuses on such segregation patterns in Berlin, using data from the 2011 full census, which includes geographical details relating to SSCs, including civil unions. This chapter seeks to widen the landscape of studies on the residential patterns of SSCs in Germany and Berlin, adding depth to the existing body of academic literature on this topic, which has indicated that SSCs prefer to concentrate in urban rather than rural areas.

3.2.1 LEGAL FRAMEWORK IN GERMANY

Civil unions were introduced in Germany in 2001 to enable SSCs to establish legally binding partnerships. This legal institution affords partners nearly all of the same legal protections and benefits of marriage, with only slight differences apart from one major distinction: people living in civil unions do not have the right to adopt children, a right which is also universally denied to SSCs in Germany, regardless of their partnership/marital status.[35] In 2017, Germany legalized same-sex marriage. According to a study conducted by the German Federal Antidiscrimination Agency (2017) shortly before the legalization of same-sex marriage,[36] around 83% of the German population were in favor of extending the right to marry to SSCs; furthermore, 95% expressed support for legally prohibiting discrimination on the basis of sexual identity. Although these numbers reflect the high degree of societal acceptance of sexual minorities in Germany, the same survey found that around 44% of Germans believe that homosexuals should not make a public display of their sexuality, and 26% felt that the topic of sexual minorities had been granted excessive media attention; another 28% indicated that they do not wish to see two women kissing in public, while this value increased to 38% with regard to two men; only 10% expressed the same disdain for the sight of an opposite-sex couple kissing in public (Küpper et al., 2017).

[35] Under § 1741 of the German Civil Code, single individuals have the right to adopt, though this right is relatively rarely exercised (Maciej [Youth Welfare Officer, Rostock, Germany], personal communication, August, 2016).
[36] Telephone interviews with a representative sample of the German population (n = 2,000), conducted October-November 2016; findings published in January 2017.

3.2.2 RESEARCH OBJECTIVE

The first part of this chapter (Sections 3.3 and 3.4) offers a descriptive overview of the prevalence of SSCs in Germany, both on the federal state level, as well as in terms of municipal size class. In the second part (Sections 3.5 and 3.6), an analysis of a single German federal state, the city-state of Berlin, including a specific geographical analysis that extends to small spatial aggregates. Due to the specific level of geographical detail in the analysis of Berlin, both logistic regression and spatial regression models are applied to identify significant determinants predicting spatial distribution choices among SSCs who live in civil unions in the city.

These analyses seek to address the following research questions as they relate to Germany: (i) In which regions are SSCs prevalent and which regions show less prevalence of SSCs?; (ii) Which municipal size classes do SSCs prefer to settle in?; (iii) Are there differences between urban and rural areas in terms of the prevalence of SSCs?; (iv) Is there significant regional variation with regard to the prevalence of SSCs?; (v) Has the prevalence of SSCs (among one gender or within specific regions) changed over time?; (vi) Does the extent of change over time vary between male and female SSCs?

Furthermore, the analysis focusing on Berlin seeks to answer these research questions: (i) In which districts are same-sex civil unions more prevalent, and in which are they relatively less prevalent?; (ii) If only analyzing an urban area, do concentration differences still exist between male and female SSCs?; (iii) Do contiguous geographical aggregates show spatial dependence when comparing the civil union share with other contextual predictors?

3.3 DATA AND METHODS: GERMANY

To address research questions (i) through (vi), an analysis is conducted for the entire country of Germany based on scientific use files (SUF) (which encompass 70% of the microcensus data) from the annual German microcensus data for the years 1996 through 2012.[37] This is the only available dataset that records a sample of SSCs large enough to be adequate for the purposes of statistical research. After various adjustments for the analyses of the entire country (e.g., deletion of invalid cases), each year records around 500,000 people. The individuals selected to take part

[37] Microcensus data for 2007 is excluded from this work, because one central variable was captured inaccurately by the Federal Office of Statistics and could not be corrected.

in the microcensus remain part of the sample for four years; each year, 25% of the participants are replaced with new ones. The microcensus collects information on individuals aged 16 and above. Like many censuses used worldwide, it adheres to the "household" principle, which means that couples are only recorded if they live together in the same household. It indirectly asks whether two individuals in a household are living in an SSC: If the respondent states that they are the partner of the head of the household and both individuals indicate that they are of the same gender, they are identified as an SSC. The comparison group is opposite-sex couples (OSCs), including all domestic partnerships as well as married couples.

Because the data for each year captures only a relatively low number of individuals living in SSCs, the analyses and comparisons used in this chapter concentrate on blocks of four years (1996–1999; 2000–2003; 2004–2008 (excluding 2007); 2009–2012), and distinguish between males and females. Furthermore, descriptive statistics, such as population shares and distributions, are applied. To enable a basic sociodemographic comparison between SSCs and OSCs, the analysis also incorporates information on mean age and education level (measured in terms of the rate of highly educated people within each subgroup, relative to the entire population) (see Table 3.1). These values are presented by federal state and in four-year periods. According to the International Standard Classification of Education (ISCED) system, "high" education (ISCED levels 5 and higher) means having a university-level or specialized vocational education; "medium" education (ISCED levels 3 and 4) means having an upper secondary-level general education, post-secondary education or general vocational education; and "low" education (ISCED levels 1 and 2) means basic education (e.g., primary school, special schools) or lower secondary education (Federal Statistical Office of Germany, 2015). The mean age of SSCs and OSCs by state was calculated based on the data received, which contains the ages of individuals. One contextual variable is presented: population density (measured in 1,000 individuals per km^2). Choropleth maps are used to visualize spatial segregation patterns among German SSCs. Municipal size class (MSC) is included as an auxiliary variable to add greater detail to the analysis, as the number of geographical aggregates (the 16 states of Germany) is otherwise relatively small. The combination of both variables (MSC and federal state) allows for a more detailed view of spatial segregation patterns.[38] For pragmatic reasons, due to the high data requirements, the gay and lesbian partnered rates were calculated for the federal states by MSC (small, medium, high) as one value for each cell, using the averages of four years (1996, 2001, 2006, 2011) within the entire time span analyzed for Germany.

[38] For example, if there is only one municipality of a certain municipal size class in a federal state, then the double-variable approach makes clear that the SSC share for cities in this class applies only to this one city; if there are multiple cities within a specific size class, however, it is unclear whether the share is an average of all these cities, or whether the share is in fact the same in all the cities (which is unlikely); see Section 3.4.

3.4 RESULTS: GERMANY

When analyzing sociodemographic characteristics of a specific group, it is common to distinguish between ages/age groups; however, the analysis presented in this section refrains from making such a distinction, because, for many age groups, the small sample size would have made it problematic to do so (older age groups, for example, are significantly underrepresented in the data compared with younger groups).

Table 3.1 shows that (with some fluctuations) the mean age of Germans living in SSCs increased significantly from the first period (1996–1999) to the fourth period (2009–2012); the positive slope lies between 1.5 (Lower Saxony) and 7.2 years (Baden-Württemberg). Only two (Eastern) states experienced a slight decrease in mean age among SSCs: Thuringia (-2.1) and Saxony (-2.5). By contrast, among Germans in opposite-sex couples (OSCs), mean ages were significantly higher (by ten years or more) for the periods 1996–1999 and 2009–2012. The slope is positive and relatively even in all states, ranging between 3.3 and 5.7 years.

In terms of education level, the data reveals that a much higher percentage of Germans who live in SSCs are in the highest education category than the percentage of OSCs who are in that category. In 1996–1999, the percentage of SSCs in the highest education category varied from 21.2% (Thuringia) to 56.0% (Hamburg), compared to 2009–2012, in which this percentage ranged from 25.0% (Saxony-Anhalt) to 64.3% (Bremen). For German OSCs, the 1996–1999 values range from 12.6% (Saxony-Anhalt) to 27.6% (Berlin), and for 2009–2012, from 19.1% (Saxony-Anhalt) to 40.0% (Hamburg).

A comparison of mean age and education levels between German SSCs and OSCs reveals significant differences between the two groups. Mean age among German SSCs was much lower, and the share of those who obtained higher education is significantly larger. This is consistent with the literature reviewed (e.g., Gates & Ost, 2004), which also notes that people living in SSCs are likelier to be younger. This phenomenon may be attributable to a greater willingness on the part of younger people to "come out" to microcensus-takers and is not necessarily reflective of real age conditions among the SSC population. One possible explanation for the education gap may be that SSCs remain in the educational system longer, because their options for establishing a family are limited compared to those of OSCs. Furthermore, the decision to "come out" to the microcensus-taker may itself be determined in part by the respondent's education level, as more highly educated individuals are likelier to be aware of the sociopolitical advantages of establishing greater statistical visibility; consequently, this results in an inflated view of education levels among SSCs, as the more highly educated the individual is, the more likely he or she is to

be included in the sample. With regard to population density, the most densely populated of Germany's federal states are the three city-states, with Berlin ranking first by far, followed by Hamburg and Bremen. The least densely populated federal states are Brandenburg and Mecklenburg-Western Pomerania.

Table 3.1: Distributions for individual and contextual predictors for Germany, by couple type, period and state

State	Individual variables																Contextual variable
	Individuals in SSCs								Individuals in OSCs								
	Mean age				Share of highly educated				Mean age				Share of highly educated				Population density
	1996 – 1999	2000 – 2003	2004 – 2008	2009 – 2012	1996 – 1999	2000 – 2003	2004 – 2008	2009 – 2012	1996 – 1999	2000 – 2003	2004 – 2008	2009 – 2012	1996 – 1999	2000 – 2003	2004 – 2008	2009 – 2012	
Schleswig-Holstein	39.8	37.9	43.4	44.3	33.3	28.2	44.0	26.9	48.8	50.0	51.7	53.5	18.9	21.0	23.7	26.6	177.14
Hamburg	35.5	41.6	41.7	41.6	56.0	60.3	47.9	55.9	48.3	48.8	50.1	51.6	26.1	31.0	35.3	40.0	2,286.37
Lower Saxony	40.0	36.2	39.2	41.5	30.2	43.6	35.1	44.9	49.1	50.0	51.7	52.9	15.9	18.3	20.8	24.2	165.52
Bremen		37.8		53.7		42.1		64.3	49.7	50.7	52.4	53.1	18.0	22.5	24.9	29.8	1,626.64
North Rhine-Westphalia	39.8	38.1	40.4	42.6	38.4	44.5	44.6	45.8	49.0	49.8	51.4	52.8	18.1	21.2	24.6	28.1	524.95
Hesse	39.5	38.6	41.6	41.8	37.5	44.4	46.2	48.5	48.6	49.5	51.4	52.5	21.1	23.9	26.4	29.7	286.23
Rhineland Palatinate	39.0	36.7	40.2	42.3	30.0	37.9	40.3	42.0	49.0	50.0	51.6	53.3	14.9	18.0	20.9	23.6	202.67
Baden-Württemberg	37.9	40.5	40.7	45.1	33.3	32.7	36.8	38.4	48.6	49.4	51.1	52.5	18.1	20.7	22.9	26.3	295.28
Bavaria	39.2	39.9	39.8	41.8	34.3	33.8	38.1	39.1	48.3	49.3	50.9	52.3	16.5	18.1	20.7	24.3	174.73
Saarland	45.5	45.7	42.9	47.6			31.0	42.1	49.9	51.2	52.9	54.4	14.7	16.3	18.7	22.3	407.91
Berlin	37.6	42.2	42.6	43.4	39.9	47.7	61.8	61.6	47.8	49.2	50.9	52.2	27.6	29.1	34.1	38.8	3,808.10
Brandenburg	39.4	42.2	42.0	45.8		17.0	47.2	38.7	48.3	49.7	52.1	54.0	14.9	17.3	21.6	24.9	86.07
Mecklenburg-Western Pomerania	44.2	35.5	38.9	46.5		17.5	18.8	64.3	48.3	50.0	51.7	53.3	13.4	15.3	18.9	20.3	74.18
Saxony	38.1	42.2	36.7	35.6	33.3	30.5	48.8	51.7	49.6	50.9	52.7	54.8	17.3	18.7	20.8	23.2	233.96
Saxony-Anhalt	40.3	42.4	41.8	44.3	21.7	20.5	30.4	25.0	49.1	50.8	52.7	54.4	12.6	14.6	17.1	19.1	122.54
Thuringia	40.7	35.3	37.9	38.6	21.2	50.0	16.1	28.6	48.8	50.5	52.7	53.9	14.1	15.1	18.6	20.7	145.24

Sources: Federal Statistical Office of Germany (1996-2012); Statistical Offices of the federal states, statistics portal (2020); empty fields mean that data on individuals in SSCs is omitted, because the sample contains fewer than five individuals.

3.4.1 Regional Distribution of Individuals in Same-Sex Couples by Federal State

Annual microcensus data in Germany has shown a continual increase each year in the number of individuals living in SSCs from 1996 (fewer than 500) through 2012 (nearly 800). Scaled to the entire German population, this means around 70,000 Germans were living in SSCs in 1996, and around 115,000 in 2012. As researchers are aware that individuals living in SSCs are statistically underrepresented for various reasons, the true number of these individuals is likely to be much higher. When enumerating SSCs, a distinction is made between an estimation-based approach (estimation concept) and a questions-based approach (question concept): the estimation concept counts as SSCs any households with at least two non-biologically related, unmarried people of the same gender, aged 16 or higher, whereas the question concept identifies SSCs based on their responses to census questions regarding their gender and relationship status; the estimation concept yields a number that is three times higher than the count produced by the question concept, although it must be understood as a less precise enumeration, as it likely misidentifies many non-partner relationships (i.e. roommates) as SSCs. Nevertheless, it sets an upper limit for the possible number of SSCs, and the true number likely lies between the estimation concept and question concept figures. The state level (encompassing 16 federal states) is used as the basis for examining spatial distribution among individuals living in SSCs in Germany.

Tables 3.1 and 3.2 in Appendix B give an overview of males and females living in SSCs in Germany by state, gender and four-year periods, relative to the number of all men and women living in couples, and in terms of each state's percentage of Germany's total SSC share.

These tables show that (i) the number of individuals identified by the microcensus data to be living in SSCs increased over time for both genders; (ii) the highest gay/lesbian partnered rates for all periods are found in the states of Berlin, Hamburg and North Rhine-Westphalia (with higher shares for men), meaning that two of the three geographical aggregates with the highest gay/lesbian partnered rates are city-states; and (iii) males account for a much larger percentage of individuals living in SSCs (60%) than females (40%).

Table 3.2 refines the Germany-wide statistics on individuals living in SSCs onto the state level, providing the total numbers of these individuals and a separate count for males only for each state and each four-year period from 1996 to 2012, as well as the average absolute number per year in each period. The fourth column in each period shows the ratio of male to female individuals living in SSCs. A value of 1 indicates that the number of males and females is equal; values below 1 indicate that females outnumber males, and values above 1 indicate the opposite.

The number of SSCs increases over time in each state. By subtracting the number of females from the number of males living in SSCs, the table reveals that males almost always outnumber females living in SSCs, with the clearest male majorities appearing in Hamburg (1.89) and Berlin (2.07),

meaning that these two city-states show a significantly higher male majority (gay-to-lesbian ratio) than other states in Germany. This is consistent with the literature, which has generally confirmed that gay men are more prevalent in urban areas than lesbians (this subject is discussed in greater detail with regard to Berlin in Sections 3.5 and 3.6). Throughout the entire period analyzed, Berlin is home to the largest share of Germany's SSCs, compared with all other states: 20.38% of all male SSCs and 13.82% of all female SSCs (see Tables 3.1 and 3.2 in Appendix B).

Table 3.2: Number of individuals living in SSCs in Germany, by four-year block, total, average per year, gender

State	1996–1999				2000–2003				2004–2008 (without 2007)				2009–2012				1996–2012 (without 2007)			
	Total	Males	Avg. total per year	Ratio male: female	Total	Males	Avg. total per year	Ratio male: female	Total	Males	Avg. total per year	Ratio male: female	Total	Males	Avg. total per year	Ratio male: female	Total	Males	Avg. total per year	Ratio male: female
Schleswig-Holstein	54	34	14	1.70	116	72	29	1.64	116	62	29	1.15	130	70	33	1.17	416	238	26	1.34
Hamburg	84	56	21	2.00	68	50	17	2.78	118	72	30	1.57	170	110	43	1.83	440	288	28	1.89
Lower Saxony	202	118	51	1.40	212	118	53	1.26	228	112	57	0.97	256	118	64	0.86	898	466	56	1.08
Bremen	2	0	1	-	18	16	5	8.00	6	2	2	0.50	28	14	7	1.00	54	32	3	1.45
North Rhine-Westphalia	644	334	161	1.08	708	398	177	1.28	776	464	194	1.49	**716**	**400**	**179**	**1.27**	2,844	1,596	178	1.28
Hesse	120	84	30	2.33	152	72	38	0.90	208	142	52	2.15	290	180	73	1.64	770	478	48	1.64
Rhineland-Palatinate	80	58	20	2.64	88	48	22	1.20	144	82	36	1.32	144	80	36	1.25	456	268	29	1.43
Baden- Württemberg	86	50	22	1.39	208	130	52	1.67	234	124	59	1.13	284	166	71	1.41	812	470	51	1.37
Bavaria	206	134	52	1.86	336	186	84	1.24	322	166	81	1.06	330	204	83	1.62	1,194	690	75	1.37
Saarland	14	6	4	0.86	28	16	7	1.33	42	22	11	1.10	38	4	10	0.12	122	48	7	0.65
Berlin	158	112	40	2.43	284	186	71	1.90	314	218	79	2.27	294	192	74	1.88	1,050	708	66	2.07
Brandenburg	24	16	6	2.00	54	24	14	0.80	72	42	18	1.40	106	38	27	0.56	256	120	16	0.88
Mecklenburg-Western Pomerania	32	20	8	1.67	40	24	10	1.50	48	20	12	0.71	42	14	11	0.50	162	78	10	0.93
Saxony	42	26	11	1.63	82	56	21	2.15	82	58	21	2.42	60	24	15	0.67	266	164	17	1.61
Saxony-Anhalt	60	38	15	1.73	44	22	11	1.00	48	22	12	0.85	24	20	6	5.00	176	102	11	1.38
Thuringia	52	22	13	0.73	38	22	10	1.38	32	20	8	1.67	28	8	7	0.40	150	72	9	0.92
Total	1,860	1,110	465	1.48	2,476	1,440	619	1.39	2,790	1,628	698	1.40	2,940	1,642	735	1.27	10,066	5,818	630	1.37

Source: Federal Statistical Office of Germany (1996-2012)

Interpretation: North Rhine-Westphalia, 2009–2012: In the four-year block from 2009 to 2012 for the federal state North Rhine-Westphalia, the data shows 716 individuals living in SSCs in total; this represents a yearly average of 179 individuals living in SSCs (716/4 = 179). Of the 716 people living in SSCs, 400 were male (i.e., 316 were female, which means that males living in SSCs outnumbered females by a ratio of 1.27:1 (400/(716-400=316)=1.27).

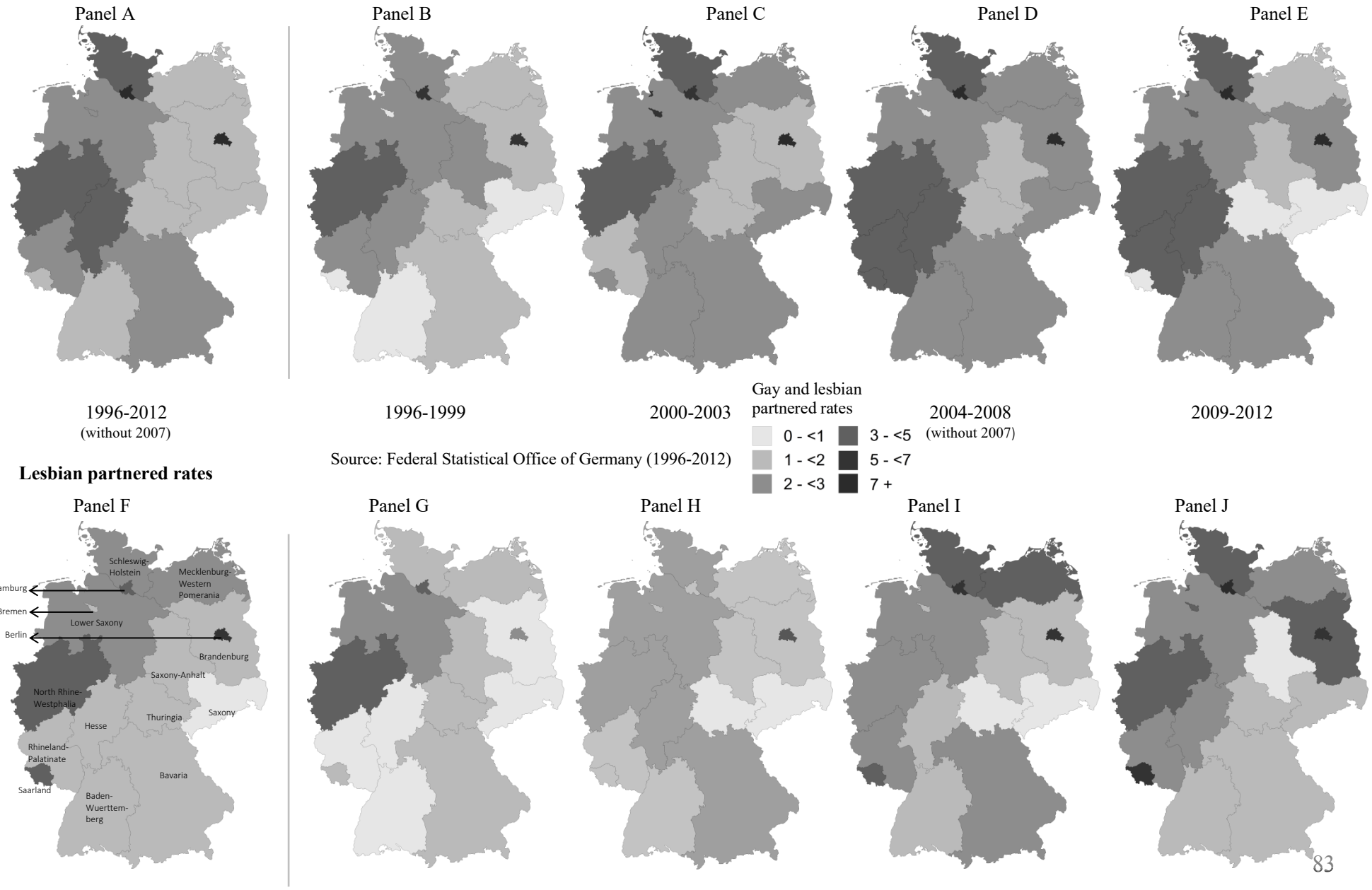
3.4.2 SEGREGATION PATTERNS IN GERMANY AS A WHOLE

While Section 3.4.1 presented an overview of the absolute numbers in which SSCs are distributed throughout Germany by region, this section focuses on relative numbers by plotting gay and lesbian partnered rates on choropleth maps to visualize their prevalence relative to all couples (see Figure 3.1): The gay partnered rate (for males) and lesbian partnered rate (for females) indicates the number of male and female individuals living in SSCs, respectively, for every 1,000 males and females living in partnerships of any kind (including OSCs and SSCs, referred to collectively as "couples"). The maps plotting gay partnered rates are generally darker than the ones plotting the lesbian partnered rates,[39] indicating that males in SSCs generally outnumber females; for both map sets, it is evident that the partnered rates of both gays and lesbians increase over time. The maps clarify that the city-states of Hamburg and Berlin are home to the highest gay partnered rates. Lowest gay partnered rates are found in almost all Eastern federal states, as well as often in Bremen, Saarland and, at many points in time, Baden-Württemberg. However, the gay partnered rates for Saarland and Bremen must be interpreted with caution, as they often involve small numbers of males living in an SSC (sometimes, this value is 0). The highest lesbian partnered rates can be found in the city-states Hamburg and Berlin, as well as in North Rhine-Westphalia, whereas the lowest are found in the Eastern federal states and, often, in the city-state Bremen. The smallest absolute numbers of lesbian individuals living in SSCs usually occurred in Saarland and Bremen, which is why these lesbian partnered rates must be interpreted with caution, considering their relatively high degree of fluctuation.

Assuming that the number of males and females living in OSCs remains relatively stable throughout this period, the aforementioned increase in the gay and lesbian partnered rates can mean two things: more individuals are entering into SSCs, and/or this minority group is becoming more statistically visible over. It is currently unclear which of these explanations is more applicable.

[39] For values corresponding to Figure 3.1, see Tables 3.1 and 3.2 in Appendix B.

Figure 3.1: Gay and lesbian partnered rates in Germany, by 16-/four-year cluster, by federal state; Panels A–J (Panel F including locations of federal states)



The state-wide analyses are expanded by introducing the municipal size class (MSC) variable. Even though this is not a geographical variable and its grouping is relatively broad (populations < 20,000 [low]; ≥ 20,000 < 500,000 [medium]; ≥ 500,000 [high]), knowing the sizes of MSCs within each state provides a more detailed view of the distribution patterns of SSCs.

Table 3.3 below shows the gay and lesbian partnered rates categorized by state and MSC.[40] This information produces more accurate results; for example, in Hesse, the highest SSC shares live in cities in the highest MSC, which implies that these people live in the city of Frankfurt (population 730,000), which is the only city in the "high" MSC in this state. Furthermore, in Bavaria, which is home to two cities in the high MSC category, the highest shares of SSCs can be identified as living in those two cities alone: Munich (population 1,450,000) and Nuremberg (population 530,000).

Table 3.3: Gay and lesbian partnered rates, by MSC and federal state (averages from 1996, 2001, 2006, 2011)

	Gay partnered rates			Lesbian partnered rates		
	Small	Medium	High	Small	Medium	High
Schleswig-Holstein	2.04	3.37		1.19	3.09	-
Hamburg			6.89			4.81
Lower Saxony	2.70	2.89	5.04	2.07	2.89	3.61
Bremen			2.14			1.61
North Rhine-Westphalia	2.19	3.15	8.66	0.82	3.15	3.46
Hesse	2.43	3.10	10.75	0.88	1.81	5.12
Rhineland-Palatinate	2.70	3.25		2.04	1.75	
Baden-Württemberg	1.25	1.84	6.95	0.91	1.48	1.27
Bavaria	1.15	2.47	6.84	0.84	2.37	4.65
Saarland	-[a]	2.50		3.02	4.36	
Berlin			11.18			4.85
Brandenburg	2.08	2.13		1.51	3.34	
Mecklenburg-Western Pomerania	1.79	2.21		2.09	2.76	
Saxony	0.39	1.81	2.57[b]	0.91	0.82	
Saxony-Anhalt	2.02	1.80		0.68	1.80	
Thuringia	0.42	2.50		0.63	1.88	

Source: Federal Statistical Office of Germany (1996-2012); [a] For the small MSC in Saarland the data did not show any male living in an SSC; [b] for these values only the number of OSCs for 2006 was used as both cities (Leipzig, Dresden), which from that point on have had populations above 500,000 (i.e., high MSC group) had a population below 500,000 in earlier years before; Empty fields mean that this MSC does not apply to this federal state (e.g., Berlin is only one MSC with a population higher than 500,000).

[40] See corresponding values of the calculations in Table 3.3 in Appendix B.

The table shows that gay and lesbian partnered rates are clearly higher within the high MSC. This justifies the decision to analyze Berlin specifically (Sections 3.5 and 3.6), because this city has the highest same-sex partnered rate for males and the second-highest for females.

3.5 Data and Method: Berlin

Berlin is Germany's largest city, with a population of around 3.645 million as of 2020.[41] Figure 3.1 shows that Berlin is home to Germany's highest SSC rates (both male and female), which is why detailed geographical analyses are undertaken for this city in the following sections.

The Berlin-specific analysis is based on data from a single year: 2011, in which the latest German full census was conducted, providing a 100% sample of the German population (including but not limited to Berlin). This dataset bears a few significant differences to the dataset used to conduct the Germany-wide analyses in Sections 3.3 and 3.4: Firstly, the dataset is limited to a single year, covering a 100% sample of the German population; secondly the analyses focus on individuals living in civil unions (a legal institution which in Germany is available exclusively to SSCs) as opposed to domestic partnerships of any kind (including informal/non-binding relationships); thirdly, the analyses use the aggregated data provided by the Statistical Office Berlin-Brandenburg instead of individual data. Data is available for different levels of area units (geographical aggregates) within the city, with the largest of these being the entire municipality of Berlin, followed by the district level ($n = 12$). The districts are further subdivided into so-called "lifeworld-oriented areas" (LOA),[42] which were defined by the Senate of Berlin in 2006 to provide a new spatial framework for planning, prognosis and monitoring of the city's sociodemographic development. The objective was to foster homogeneity within these subdivisions, while also facilitating comparative analysis amongst the individual planning areas. Criteria for defining the individual LOAs included uniformity of building types, the formation of social environments and the inclusion of main streets and natural barriers; furthermore, the LOAs were designed to be limited in terms of population size and envisioned to be authentic sociodemographic communities rather than randomly divided statistical units. This new division structure provides a basis for directing public resources in ways that are more targeted and socially fair, with a greater focus on the lifeworlds of Berlin residents (Senate Department for Urban Development and Housing Berlin, 2020). The highest hierarchy level among the LOAs are

[41] As the analysis of the distribution of SSCs is based on the 2011 census data: the population of Berlin in 2011 was around 3.2 million.
[42] German: lebensweltlich orientierte Räume

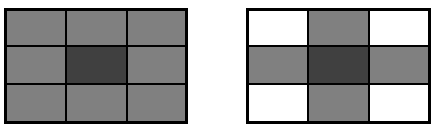
prognostic areas (n = 60), followed by district regions (n = 138) and then planning areas (n = 447).[43]

The analyses below refer to the absolute numbers of individuals living in civil unions in Berlin, as well as male and female civil union rates (the number of individuals living in civil unions out of 1,000 individuals living in any legal unions: either civil unions, in the case of SSCs, or married couples, in the case of OSCs; referred to collectively as "unions"). These analyses are conducted on the various geographically aggregated levels and plotted on choropleth maps. Furthermore, on the prognostic-area level, logistic regression methods are applied to determine which predictors influence the likelihood of a prognostic area having a high civil union rate.

The availability of detailed geographical information makes the dataset conducive to the application of a spatial regression model. The first step in the spatial regression methodology is to run an ordinary least squares (OLS) regression, using civil union share as the metric (continuous) variable to check for spatial dependence, after which a spatial model (lag or error model) must be chosen. For spatial regression models, conducting a weights matrix beforehand is indispensable. Of the various options for doing this, the literature primarily uses weight matrices based on contiguity or distance. Based on the theoretical background, this analysis of Berlin involves adjacent areas with increased civil union shares, and, thus, short distances, both of which could have an impact on the presence of spatial dependence. However, regression results clearly show that, based on contiguity, there are various strong influences on predictors for civil union share, while this is not the case for models using a weight matrix based on distance.

Then there was the choice between rook and queen contiguity, of which the latter was ultimately used. This means that not only areas that share a border but also areas that share a vertex are defined as adjacent (Figure 3.1). This constitutes a somewhat different view of contiguity, as areas surrounding an area possibly do not share a border and could also be seen as being only a short distance away. The spatial regression models were applied on the prognostic-area level (n = 60).

Figure 3.1: Queen (left) versus rook (right) contiguity



[43] This was the case for the levels used in this thesis; starting in 2019, one further planning area was added.

This level of geographical detail was chosen, because one level higher, the district level (n = 12) would have been overly broad, whereas one level lower, the district region level (n = 138) would have been too detailed for regression, as various cells would have been empty. Spatial regression is conducted here using individual predictor variables.

First an OLS regression is run using GeoDa, along with regression diagnostics. Diagnostics include checks for heteroscedasticity, spatial dependence and the lag or error model, among others. If spatial dependence exists, and the diagnostics indicate to run either a lag or an error model, then taking theoretical considerations into account, the next step is to run either a lag or an error model. Theoretically, a lag model seems to be more plausible, as it means that a value of the dependent variable of an area's civil union share is partially also shaped by the civil union shares in neighboring areas. These spatial lag or error models take the chosen weights matrix (queen contiguity) into account. Using these tools, the spatial regression model shows whether and to what extent spatial effects exist and how much one can control for them to improve the model fit.

3.6 RESULTS: BERLIN

Because Berlin is home to the highest rate of SSCs in Germany, both male and female (see Table 3.3), it was selected as the topic of statistical analyses designed to provide detailed geographical findings with regard to the distribution and segregation patterns among this minority group.

3.6.1 REGIONAL DISTRIBUTION OF INDIVIDUALS IN CIVIL UNIONS WITHIN BERLIN

According to the 2011 German full census data, the 12 districts of Berlin are home to 3,550 civil unions (i.e., 7,100 individuals), of which two-thirds are male. While female civil unions in Berlin are distributed relatively evenly among the 12 districts, more than half (50.5%) of all male civil unions live in three central districts (Mitte, Tempelhof-Schöneberg, Charlottenburg-Wilmersdorf) (see Table 3.4).

Table 3.4: Male/female civil union counts and partnered rates in comparison with opposite-sex marriages in Berlin, by district, 2011

District	Males		Number of opposite-sex marriages	Females	
	Counts in civil union	Civil union partnered rate		Counts in civil union	Civil union partnered rate
Mitte	648	15.76	40,460	152	3.74
Friedrichshain-Kreuzberg	458	17.55	25,634	236	9.12
Pankow	610	11.74	51,332	336	6.50
Charlottenburg-Wilmersdorf	942	20.35	45,344	246	5.40
Spandau	114	2.88	39,433	114	2.88
Steglitz-Zehlendorf	280	5.44	51,211	250	4.86
Tempelhof-Schöneberg	850	15.98	52,354	280	5.32
Neukölln	246	5.23	46,814	192	4.08
Treptow-Köpenick	196	4.48	43,600	142	3.25
Marzahn-Hellersdorf	132	2.87	45,841	100	2.18
Lichtenberg	244	5.76	42,138	126	2.98
Reinickendorf	114	2.61	43,575	92	2.11
Total	4,834	9.08	527,736	2,266	4.28

Source: Statistical Office Berlin-Brandenburg (2017)

Interpretation: In the district Charlottenburg, there are 942 gay men living in civil unions, the male civil union rate is 20.35 (20.35 = 942/(942+45,344)*1,000); the number of opposite-sex marriages equals the number of individuals of one gender within these marriages).

The analyses are not performed for all of Berlin's LOAs (see Section 3.5), as some cells would have been empty. In light of these descriptive results for the district level, further spatial analyses were undertaken for all geographic levels, while logistic and spatial regression were applied only to the prognostic areas.

3.6.2 SEGREGATION PATTERNS IN BERLIN

Panels A–D in Figure 3.2 show the male civil union rates by area, starting at the district level (Panel A) and gradually displaying smaller geographical subdivisions. The entire map is shown for all levels, although as the level of geographical detail increases, the number of areas with no values also rises.

Berlin's highest male civil union rates are found in four districts: Mitte (Mi) (15.76); Friedrichshain-Kreuzberg (FK) (17.55); Charlottenburg-Wilmersdorf (CW) (20.35); and Tempelhof-Schöneberg (TS) (15.98). Even though these four districts combined are home to a relatively high number of male civil unions, zooming in to the prognostic-area level (Panel B) reveals that these high male civil union rates are caused by the presence of very high rates in specific prognostic areas within the district, where other prognostic areas in the same district may have only low rates. On the prognostic-area level in Mi, the highest male civil union rate is 29.42; in FK, 28.28; CW, 27.82; and TS, 64.80. On the district-region level (Panel C), the highest value for Mi is 48.51; for FK, 32.86; CW, 45.37; and for TS it remains 64.80 (same as the full district rate, as the territory of the district region is concurrent with the territory of the full district in this case). Lastly, zooming in on the planning-area level, the most detailed of the maps (Panel D) shows that the highest male civil union rates on this level for each district are: Mi, 61.26; FK, 34.78; CW, 58.82; and TS, 90.49.[44] At this level of detail, a larger number of values are missing (planning areas appear in white on the map), because cells were left empty for privacy protection reasons, as only five or fewer male civil unions live in these areas.

The same procedure was applied to analyze female civil union rates (Panels E–H in Figure 3.2), with the highest rates being found to live in the districts Friedrichshain-Kreuzberg (FK) (9.12) and Pankow (Pa) (6.50) (Panel E). Zooming in to the more detailed geographical levels, a relatively diverse distribution of shares becomes visible. On the prognostic-area level (Panel F), the highest female civil union rate for FK is 14.96; for Pa, 10.79. On the district-region level (Panel G) these values rise to 15.34 (FK) and 14.93 (Pa), ultimately reaching 33.41 (FK) and 20.04 (Pa) on the planning-area level (Panel H).

The visualizations reveal a number of areas in Berlin in which male civil unions are very numerous as well as strongly concentrated. These high numbers allow for a detailed geographical analysis of segregation patterns among this group. Male civil unions are concentrated primarily within specific prognostic areas of four districts (Mi, FK, CW, TS). Specific smaller geographical divisions within these prognostic areas almost always contain the highest male civil union rates, showing that the data allows for precise spatial enumeration of this subpopulation, which attests to the high quality of the dataset. The male civil union rates maps (Panels A–D) are generally darker than the maps on females (Panels E–H), signifying that male civil unions considerably outnumber female civil unions in Berlin. No single district shows a clear concentration of female civil unions. Also, the data on female civil unions is notably sparser; more cells are empty than is the case for males. As such, the data suggests that female civil unions in Berlin are less visible than males from a statistical point of view. This presents obstacles for reaching clear conclusions

[44] All male and female civil union rates and all data for their calculations for each geographical level below the district level (Table 3.4) are provided in Tables 3.4, 3.5 and 3.6 in Appendix B.

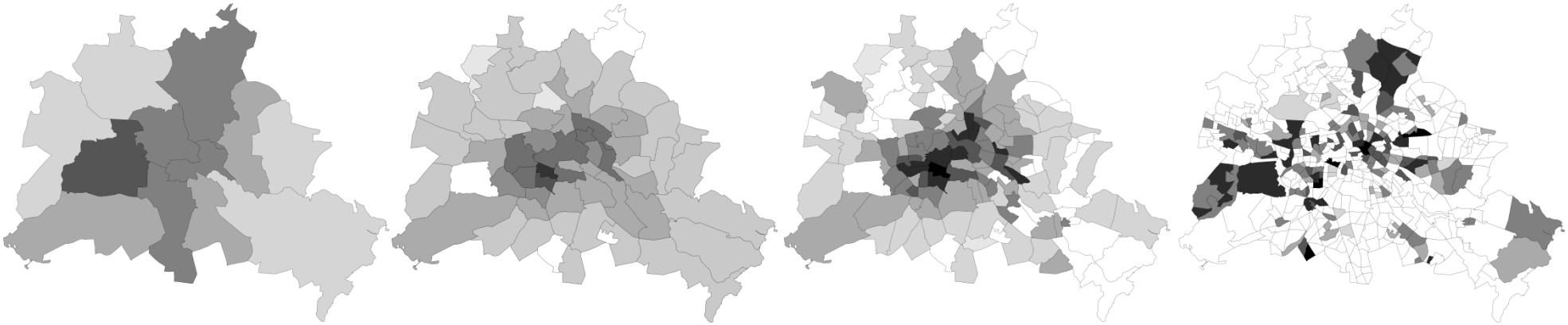
on segregation patterns among female civil unions compared with male; i.e., spatial preference cannot be unequivocally identified. This is consistent with other studies, which have noted that spatial segregation is far likelier to occur among male SSCs than female (e.g., Gates & Ost, 2004; Ghaziani, 2014).

Figure 3.2: Male/female civil union rates, city-state of Berlin, 2011; Panels A–H (Panel E including the location of Berlin districts; Panel F including prognostic-area IDs; cf. Tables 3.4, 3.5 and 3.6 in Appendix B)

Male civil union rates

District level (*n* = 12) | Prognostic-area level (*n* = 60) | District-region level (*n* = 138) | Planning-area level (*n* = 447)

Panel A | Panel B | Panel C | Panel D



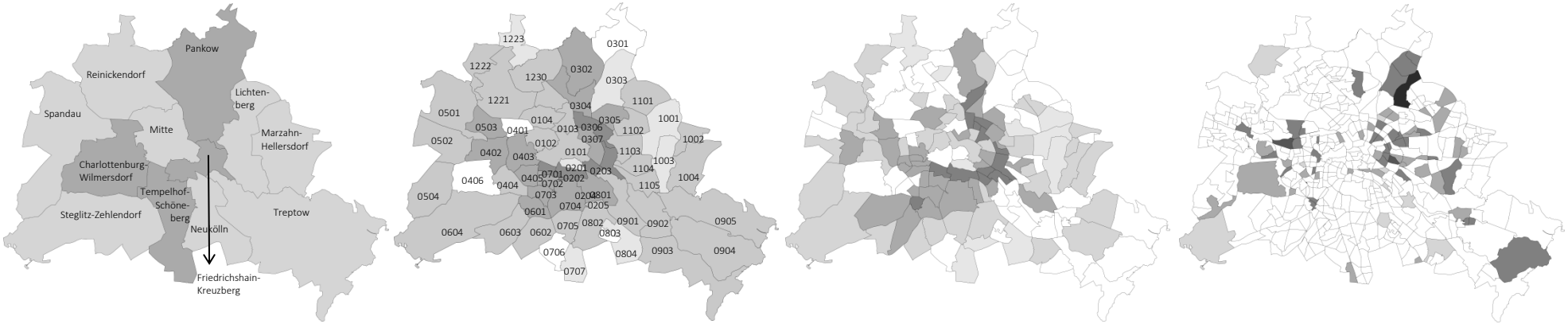
Civil union rates

0 - <2
2 - <5
5 - <10
10 - <20
20 - <30
30 - <50
50 +
No Data

Source: Statistical Office Berlin-Brandenburg (2017)

Female civil union rates

Panel E | Panel F | Panel G | Panel H



3.6.3 LOGISTIC REGRESSION MODELS

In considering how and the extent to which neighborhood (contextual) characteristics influence civil union share, following plausibility and preliminary analyses, found no linear association between civil union share and various characteristics of an area that are measurable based on the available data; e.g., population density, population size, religiosity, migrant share. Consequently, logistic regression was undertaken, and done so on the prognostic-area level ($n = 60$), which offers an adequate number of contexts (≙ 60) with very few empty cells; the more detailed levels would have contained many more empty cells, resulting in less precise statistical results.

When performing logistic regression, the dependent variable civil union share was dichotomized into low share and high share. The predictors used are *population density*; *area size (km²)*; *high-amenity location share*; *population*; and *migrant population*. *Population density* is measured in 1,000 people per km². The variable *high-amenity location share* is derived from information issued by the Berlin Senate Department for Urban Development and Housing (2019) which distinguishes between low-, medium- and high-quality residential area, based on characteristics such as building types, proximity to commercial centers and availability of greenery; by these standards, a *high-amenity location area* in this analysis refers to an area of dense construction that is near to a commercial center as well as abundant parks and greenery, and is calculated as the share of residents within a prognostic area who live in such locations. The dataset does not allow for an analysis of other potentially relevant predictors, such as educational level, election results, or mean age. The predictor variables used were categorized into broad classes to generally improve the precision of the analyses, and because this was necessary to yield conclusive results, as the groups within the performed models require a certain sample size.

One challenge was to identify a cut-off point for distinguishing between high and low civil union shares for both males and females, as their distributions vary significantly in general, as well as in relation to the contextual predictors. For males, the cut-off point for analyzing "concentration" versus "no concentration" is a value of 10. The cut-off point of 10 means that the high share group contains ≥ 10 males/females in a civil union relative to 1,000 males/females in unions (civil unions [SSC] + marriages [OSCs]); accordingly, a low share group means a share of < 10. When this cut-off point is applied to female civil unions, there are almost no cases in the high share group; therefore, for females, the cut-off point between "concentration" and "no concentration" is 6. Analogously, the cut-off point of 6 means a high share group of ≥ 6 males/females in a civil union relative to 1,000 males/females in unions; accordingly, the low share group means a share of < 6. For the sake of completeness and to enable comparison, both genders are included in both models (cut-off points 10 as well as 6) (see Table 3.5).

Table 3.5: Logistic regression models results on influences on low/high civil union share, by gender, prognostic-area level, models with inclusion of individual variables, odds ratios

Independent variable: Male/female civil union rates (cut-off point 10: low (< 10, ref)/ high (≥ 10); cut-off point 6: low (< 6, ref)/ high (≥ 6))

Predictor	Category	Cut-off point < 10/ ≥ 10		Cut-off point < 6/ ≥ 6	
		Male	Female	Male	Female
Population density	< 6,000/ km² (ref)		empty		empty
	≥ 6,000/ km²	14.3846***	new ref	17.5000***	49.0000***
	Prob > Chi²	0.0002	-	0.0000	0,.0000
	Log likelihood	-24.2762	-12.2818	-29.8829	-20.8701
Area size (km²)	< 8 km² (ref)				
	≥ 8 < 16 km²	0.2222**	empty	0.2857*	0.0789***
	≥ 16 km²	empty	empty	0.0504***	empty
	Prob > Chi²	0.0314	-	0.0003	0.0004
	Log likelihood	-22.9077	-10.6352	-33.2381	-20.2200
high-amenity location share	No high-amenity location (ref)				
	< 15%	-1.7692	0.5111	0.6198	1.4000
	≥ 15%	4.8788**	0.4510	2.7273	2.1000
	Prob > Chi²	0.0991	0.7341	0.0956	0.5728
	Log likelihood	-29.0480	-16.9010	-39.1075	-33.1830
Population	< 40,000 (ref)	empty	empty		empty
	≥ 40,000 < 80,000	0.9333	1.1613	4.7500**	1.2174
	≥ 80,000	new ref	new ref	6.0000	new ref
	Prob > Chi²	0.9301	0.8980	0.0456	0.7986
	Log likelihood	-27.0481	-15.6892	-38.3676	-28.6106
Migrant population	< 20,000 (ref)				
	≥ 20,000	4.1786**	6.000*	6.2549**	2.0000
	Prob > Chi²	0.0367	0.0645	0.0053	0.3030
	Log likelihood	-29.1780	-15.5010	-37.5754	-33.2096

***p < 0.01; **p < 0.05; *p < 0.1; Source: Statistical Office Berlin-Brandenburg (2017)

Interpretation: The likelihood of a high male civil union rate (cut-off point = 10) is 388% higher in a prognostic area with a high-amenity location share of more than 15%, than in a prognostic area with no high-amenity locations at all.

Logistic regression models reveal that when specific categories occur within certain predictor variables (see Table 3.5), they influence the likelihood of a high civil union share being present in an area (based on the prognostic-area level). Typically, the strength of this influence varies

between males and females, usually being stronger for males. As expected, the results show various empty categories and consequently sometimes a change of reference group. Also, a small number of values are very high, indicating a very unequal distribution of groups (possibly only one civil union, in one instance). When the cut-off point for the dependent variable civil union share is set to 10, most categories in the female civil union analysis are empty, which precludes a comparison between the two genders. For males, the predictor category of *high population density* has a strong influence. The odds ratio of 14.3846 indicates that the likelihood that an area with a high gay partnered rate has a high population density (≥ 6,000 people per km^2) is more than 13 times higher (14.3846 - 1) than this likelihood is for an area with low population density (< 6,000 people per km^2). Significant results were also found for the predictors area size; *high-amenity location share*; and *migrant population*: for example, a smaller area size increases the likelihood of a high civil union share. In this regard, it should be noted that a slightly increased negative correlation exists between area size and population density.[45] It is plausible that a population lives densely when the area is smaller. Furthermore, it is much more likely in areas with a high male civil union share for a higher share of residents living in an area showing a high-amenity location share. This likelihood increases by 388 % (4.8788 - 1) compared to areas with no high-amenity location.

When analyzing the regression results using a civil union rate of 6 as the cut-off point for the independent variables, some changes become evident: for male civil unions, population density again strongly predicts areas showing high male civil union rates (increasing likelihood by around 1,700% compared to the reference group). Area size also significantly decreased the likelihood of having high partnered rates of both male and female civil unions. This is consistent with the findings on population density, which indicate that population density declines as area size increases. Furthermore, the predictor of migrant population also influences the size of the civil union rate: a higher migrant population is associated with a high male civil union rate, but has no effect on female civil union rates.

3.6.4 SPATIAL REGRESSION MODELS

As visualized in map form (cf. Figure 3.2), the descriptive results point to the existence of a spatial association between various neighborhoods' civil union shares as the dependent variable and various predictors. The spatial regression models were performed on the prognostic-area level (*n* = 60), which was selected because one geographical level lower, the district level (n=12), was

[45] See correlation matrix of predictors in Table 3.7 in Appendix B.

deemed overly broad (insufficient distinction between the districts) and the next-higher geographical level, the district-region level (n=138), was deemed too detailed for regression (increasing number of empty cells). Based on the number of areas and the need to produce results suitable for valid interpretation, spatial regression was only conducted using individual predictor variables.

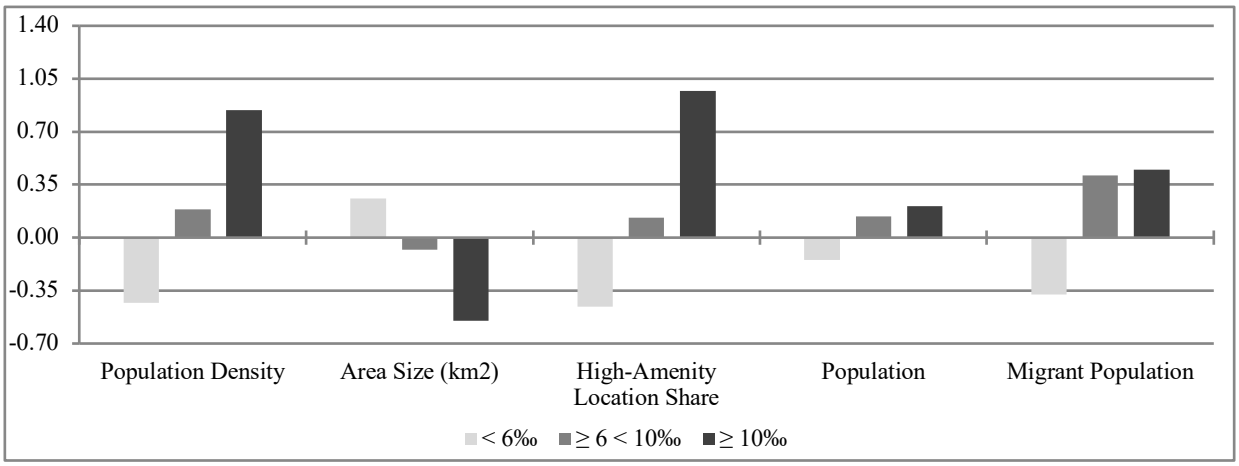
With very few exceptions, running an OLS regression (dependent variable used as continuous variable) within the spatial model reveals spatial dependence for the individual predictors used. Based on the outcome of the regression diagnostics, along with theoretical considerations, the choice was made to run the lag model (using the dependent variable as binary). The weights matrix, based on queen contiguity order 1, describing that solely the adjacent areas are taken into account[46] is implemented into the spatial lag models. Performing the lag models in each case, clearly increased the R^2 value that shows the fraction of the variance explained by the model (see Tables 3.8 and 3.9 in Appendix B). In addition, with very few exceptions, the value of the log likelihood increases, meaning that the model fit improves. For the predictor variables *high-amenity location share*; *population*; and *migrant population*, heteroskedasticity also disappeared for both males and females. Only for females, heteroskedasticity disappeared after performing a lag model for the predictor *area size (km^2).*

Despite revealing significant results, the analysis also indicated that not all of the chosen variables represent ideal characteristics for determining civil unions' spatial choices. Figure 3.3 provides an overview of characteristics of prognostic areas with either low, medium or high civil union rates (divided by gender). The results reflect deviance from the average value measured from the single average values of each single contextual variable for the low-, medium- and high-rates groups.

[46] Order 2 means that areas adjacent to the adjacent areas of the particular area are also considered.

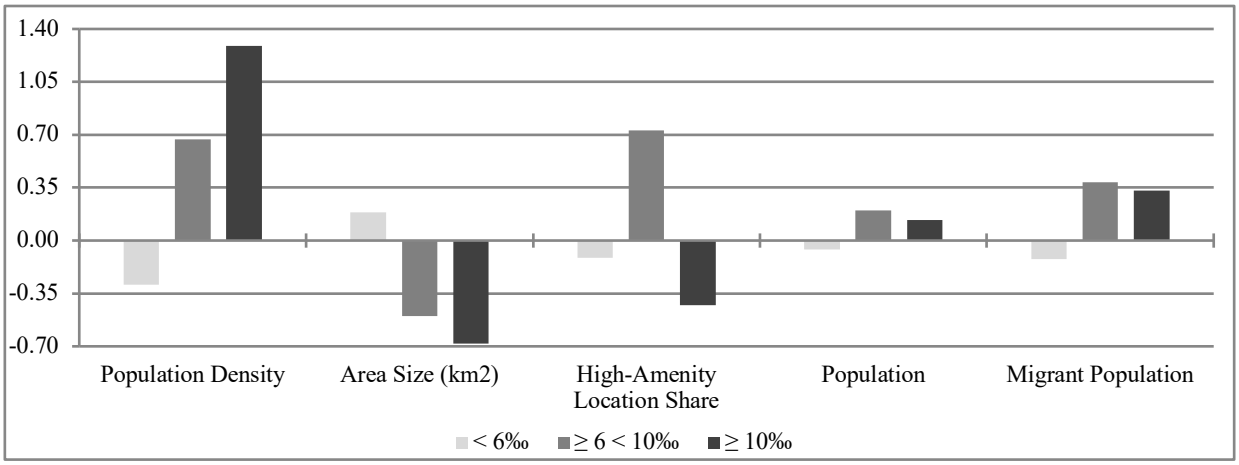
Figure 3.3: Deviation of male (Panel A)/female (Panel B) civil union rate (< 6‰; ≥ 6 < 10‰; ≥ 10‰) from average, selected characteristics, Berlin[47]

Panel A: Males



Source: Statistical Office Berlin-Brandenburg (2017)

Panel B: Females



Source: Statistical Office Berlin-Brandenburg (2017)

For both male and female civil unions, in areas with the highest civil union shares, population density is significantly above average (0% = average; for areas with the highest male civil union shares, population density deviation is around 80% above average; for female, 130%). Above-average migrant population is also typical for areas with higher civil union shares. Furthermore, in areas with an at least moderate civil union share (for males and/or females), the share of residents living in a high-amenity location significantly increases. Ultimately, the figures reveal a characteristic contextual profile for areas with high civil union shares, but it must also be taken

[47] See corresponding estimates in Tables 3.10 and 3.11 in Appendix B.

into consideration that other areas exist within Berlin which match this profile but may be home to no civil unions.

3.7 CONCLUSION

The Germany-wide and Berlin-specific analyses presented above differ in terms of the data sources and methodological approaches used. For the nationwide analysis (Sections 3.3 and 3.4), the 70% scientific use files from the annual German microcensus (collecting individual data on 1% of the population) was used, representing a dataset that encompasses 0.7% of all Germans; the analysis used these files for the years 1996 through 2012, with the exception of 2007. The nationwide analysis focuses on all SSCs, not just those who have formed civil unions. For the Berlin-specific analysis, the data source is the 2011 German full census dataset. This analysis focuses on SSCs who are living in civil unions. The data for Berlin was provided in aggregated form. The nationwide analysis captures the development of the German SSC population over a longer period of time, but on a relatively general level, whereas the Berlin analysis is limited to a fixed point in time, but contains a greater level of geographical detail.

Nationwide spatial analysis of SSCs in Germany

Because the nationwide analysis was conducted on the state level, there were only a low number of contexts involved (i.e., 16 federal states). This number was too small to perform a multilevel analysis to predict contextual characteristics that make SSCs more likely to settle in one state as opposed to another. Nevertheless, the analysis provides an overview of spatial segregation patterns among SSCs (both male and female) in Germany, along with their development over the course of the 17-year period reviewed, revealing that both male and female SSCs are likeliest to live in urban areas (i.e., high municipal size class) as opposed to rural areas. While German male SSCs tend to live in clusters of relatively high concentrations, this characteristic is observed less among females, as choropleth mapping reveals (see Figure 3.1).

In terms of education levels, the German dataset records that individuals living in SSCs are far more likely to be in the highest education category. This perceived difference may be attributable to the particularities of capturing information on SSCs through a process of self-disclosure, as used in the microcensus: it is conceivable that more highly educated individuals living in SSCs are aware of the advantages of statistical availability and the need for accurate enumeration of minority groups, whereas other members of the SSC population may be reluctant to "come out" to a census-taker. Another possible explanation is that individuals living in SSCs are in fact (at

least somewhat) likelier to be more highly educated, as they are also likelier than OSCs to be childless, meaning they can devote longer portions of their adult lives to their own education.

Spatial analysis of civil unions in Berlin

The analysis of Berlin reveals that spatial segregation exists among both male and female civil unions, and to a greater extent among males. Even when zooming in on highly specific geographical aggregates, some areas still show high civil union shares present.

For the analysis of Berlin, both logistic and spatial regression models were applied. Various predictors demonstrate a significant influence on the likelihood of a high civil union share being present in an area. For example, population density is a strong predictor that an area will have a high civil union share, at least for males. Meanwhile, migrant population significantly positively influences a high civil union share, whereas area size has a significant negative influence; their effects on male civil union share are always stronger. In addition, spatial dependence was proven to exist for many predictors.

Both the nationwide and Berlin-specific analyses reveal the extent of spatial distribution among SSCs/civil unions in terms of locational preferences, along with differences between males and females; in the case of the nationwide analysis, changes in these conditions over time are also made visible. The absolute difference between the numbers of male and female SSCs throughout Germany becomes even clearer when zooming in on the city-state of Berlin, where more than two-thirds of civil unions in 2011 were male couples.

Distribution across the various levels of geographical detail are relatively even among female SSCs, whereas for males, specific areas are home to very high civil union shares, once again confirming that male SSCs tend more heavily towards concentration than females. The logistic regression models reveal the influence of specific variables on the likelihood that an area has a high civil union share. Furthermore, spatial dependence was found to exist between adjacent areas in Berlin, for which the spatial regression models at least partially controlled. Finally, a graphical overview was created to show typical characteristics of areas with high civil union shares; these include elevated population density, migrant population and high-amenity location share. The groups of males and females in the low/medium/high civil union share groups were unequal, both when compared with each other, as well as when compared between the two genders (males: 32/15/13; females: 45/10/5), and similar contextual characteristics can be also found in areas where no civil unions live. It is also important to note that individuals living in SSCs/ civil unions very often show a greater degree of heterogeneity than their heterosexual peers.

Discussion

This chapter provides a detailed overview on the regional distribution and spatial segregation of SSCs in Germany. Studies have questioned whether such spatial segregation may be diminishing among SSCs (e.g., Spring, 2013). This shift might be attributable to two main causes, which warrant further research: First, as societal acceptance of LGTBIQ* people increases and people of sexual minorities face fewer minority stresses in some regions, is it possible that spatially segregated "gay neighborhoods" will decline in significance, as SSCs and single LGBTIQ* individuals feel less of a need for creating a safe distance between themselves and the heteronormative world? Secondly, this chapter confirmed that high male civil union shares are likelier to be found in areas that offer high-amenity location; this is consistent with other studies that have linked SSC spatial segregation with high-amenity areas (Black et al., 2002). To what extent does this contribute to the influx of non-gay newcomers and tourists to traditional gay neighborhoods, and how does this reshape SSC concentrations? Greater understanding of these topics will provide greater understanding of the lifeworlds and locational choices of people living in SSCs and help fill the knowledge gap that the analyses in this chapter attempt to address, in part, for Germany and Berlin.

ENUMERATION OF SAME-SEX COUPLES: CONCLUSION

The three parts of this thesis shed light on the various methodological approaches and inherent challenges in conducting statistical analysis with regard to same-sex couples (SSCs). Despite gradual improvements in the quality of data in recent decades, reliable data sources remain relatively scarce, considering that only a small fraction of countries around the world offer official statistics on the SSCs amongst their populations or regard them (from a sociodemographic perspective) as one of many possible family forms that comprise a population. The first conclusion of this thesis is that analyzing the approaches that various countries take to enumerate their SSCs reveals a gradual improvement in the statistical visibility of this minority group on the whole. Secondly, the analysis reveals that gay men and lesbians differ, not just in terms of biological gender, but also in terms of the lifeworlds they inhabit, considering the significant disparities in their spatial patterns and locational choices, as well as the degree to which they have achieved statistical visibility. Thirdly, SSCs' spatial patterns are likely influenced by proximity to other SSCs as well as specific neighborhood characteristics.

FINDINGS

CHAPTER 1: STATISTICAL VISIBILITY OF SAME-SEX COUPLES IN CENSUSES, REGISTERS AND SURVEYS

Although various sources of data collected by governmental and semigovernmental institutions can be used to enumerate SSCs in many countries, censuses offer the largest sample sizes; meanwhile, surveys and population registers can also be used in some cases. High-quality datasets for enumerating SSCs exist only in a limited number of countries, primarily located in Europe and the Americas. These data sources can be broadly divided into two categories: those which directly identify SSCs through explicit questioning, and those which researchers can use to indirectly identify individuals living in SSCs through a process of inference based on their combined answers to questions about their gender and relationship status (normally with regard to the head of the household). Among those data sources that directly identify SSCs, there are differences depending on the level of equality that the jurisdiction affords SSCs; e.g., if same-sex marriage is legal within the jurisdiction, then a census respondent may have the option to self-

identify as a partner in a same-sex marriage, as in Canada. This suggests a link between statistical visibility, legal recognition and the degree to which official data capturing methods have evolved to reflect the sociodemographic reality of a diverse population that encompasses more than just traditional family forms. The latter category of data sources (involving indirect identification by inference) poses a higher risk of data errors (e.g. gender miscoding). Among this category, there is also a distinction in data collection methods: in some cases, the respondent only has the option to disclose whether they are in a relationship with the head of the household; in other cases, the respondent may disclose that they are in a relationship with another member of the household, other than the head. In the first case, because only relationships with heads of households are captured, many other relationships fall outside the scope of statistical visibility. As a result, this method is likely to undercount the number of SSCs.

On the whole, quantitative data sources in many countries are increasingly conducive to enumerating SSCs; however, even in countries where collecting data on SSCs has become the norm, there is still much space for improvement to ensure a basis for accurate statistical analysis with regard to this group; to say nothing of the need for improvements in countries that currently afford neither legal recognition nor statistical visibility to SSCs or LGBTIQ* people in general.

CHAPTER 2: SPATIAL SEGREGATION OF SAME-SEX COUPLES: THE EXAMPLE OF BRAZIL

Microdata from the 10% Brazilian Census (2010) records almost 135,000 individuals living in SSCs (46% male, 54% female), also providing precise geographical information, which is suitable for conducting a spatial segregation analysis. This analysis reveals that, of Brazil's five regions, the South East region is home to more than half (52,6%) of the country's SSC population; this region includes the major cities of Rio de Janeiro and São Paulo, which together account for 20% of SSCs in Brazil, thus allowing for intracity analyses of drivers behind spatial concentration patterns. Calculating the dissimilarity index for the level of segregation reveals that male SSCs are always more segregated than female SSCs with regard to the various geographical aggregates considered; the conclusion of these intracity analyses is that while spatial segregation is strong among male SSCs, it is much less pronounced among female SSCs. Even though lesbians outnumber gay men in Brazil on the whole, when zooming in on smaller (more urban) geographical aggregates, male SSCs are found to be more prevalent in terms of concentration. Another finding is that there are significant differences in the distribution of male SSCs in Brazil compared to female SSCs; although female SSCs are found in far more municipalities than male SSCs (to the order of 1,100 to 800), in Brazilian municipalities where male SSCs do live, they are found in much higher numbers than female SSCs. Thus, for Brazil it can be concluded that higher geographical resolution is clearly positively correlated with higher concentration of

individuals living in SSCs. Examining Rio de Janeiro spatially demonstrates that male SSCs primarily concentrate in the eastern subdistricts (such as Copacabana), whereas in São Paulo, the concentration is primarily in central subdistricts and also characterized by a higher rate of male SSCs than female. Although contextual determinants that influence these spatial patterns of concentration could not be unequivocally identified, it was possible to construct a representative profile for subdistricts in which high gay/lesbian partnered rates are present. However, the same profile could equally apply to subdistricts that are not inhabited by SSCs. These findings may suggest the decision of SSCs to reside in a specific subdistrict may not be influenced by specific contextual characteristics, but could simply reflect the desire of people to live among like-minded people.

CHAPTER 3: SAME-SEX COUPLES IN GERMANY AND BERLIN: WHERE AND HOW ARE THEY CONCENTRATED?

The data analysis in the first part of Chapter 3 (Sections 3.3 and 3.4) found that, in Germany on the whole, the number of SSCs increased significantly: from 465 each year on average during the first four-year period considered (1996–1999) to an annual average of 735 in the final period (2009–2012). This perceived growth is probably less indicative of any actual increase in the number of SSCs than it is attributable to an increasing willingness on the part of German SSCs to disclose their sexual identities through official data collection channels (the annual microcensus, in this case), as societal attitudes towards LGBTIQ* people in the country gradually become more liberal. German SSCs concentrate in major cities, especially the two city-states of Berlin and Hamburg and federal states that are home to cities in higher municipal size classes; furthermore, male SSCs in Germany are always more heavily concentrated in terms of spatial segregation than female SSCs are. Sections 3.5 and 3.6 of Chapter 3 focus on the prevalence of civil unions in Berlin, concluding that the city's male civil unions are more heavily segregated than female civil unions. Analyzing the city with a high level of geographical detail reveals significant concentration patterns among male civil unions, consistent with the existence of "gayborhoods," as observed in the literature (Ghaziani, 2014). These strong segregation patterns characterize a small number of Berlin's districts. The census data used to analyze Berlin also revealed a strong gender-imbalance within the total civil union subgroup: two-thirds, male; one-third, female. Applying logistic regression models confirmed that the population density of an area significantly positively influences the likelihood that in that area a high civil union rate is present. Moreover, spatial regression models in total also revealed spatial dependence between adjacent areas; among male civil unions this effect was relatively strong, whereas for female civil unions spatial distribution was relatively equal.

LIMITATIONS AND PROSPECTS

Although the data sources consulted in this thesis offer various opportunities for enumerating SSCs, assessing their level of statistical visibility and examining their spatial segregation patterns, they also pose numerous limitations for researchers. Firstly, data on SSCs is prone to errors that occur when respondents intentionally or accidentally miscode their own gender. Intentional gender miscoding may be understood as a result of internalized homophobia or reluctance to "come out" through an official channel, such as a census, in connection with the respondent's perceived lack of social acceptance of their homosexuality.

Secondly, this thesis analyzes couples, not singles. Despite the need for research on SSCs, quantitative research on spatial segregation among single LGBTIQ* people would contribute to scientific understanding of how locational choices are shaped among this minority group, and the extent to which differences exist between singles and couples. Studying singles poses challenges, because direct information about sexual orientation is rare in official data sources, to say nothing of the inherent difficulties in defining sexual identity for the purposes of comparative research.

Thirdly, official data sources count only SSCs who cohabitate. Because individuals in SSCs tend towards greater geographical mobility (Anacker & Morrow-Jones, 2005) and are more likely to be childless, it is likely that a significant number of them do not share a single household, which results in their being undercounted in official datasets.

Fourthly, the contextual-level analyses with generated variables is based on an inductive approach, as little is known about the spatial preferences of SSCs up to now. Only very few of these variables reduced the variance of the models.

Fifthly, even though augmented with a variable to measure municipality size, the geographical detail for the regional analyses of the entire country of Germany is limited, consisting only of 16 geographical aggregates (the German federal states).

Future research on spatial segregation among single LGBTIQ* people would be valuable in its own right, as well as within the context of comparative analysis alongside data on SSCs. Are residential patterns different between these two groups? Assuming that singles may be motivated by a desire to start a relationship, they may be attracted to living in an area where LGBTIQ*-focused establishments exist, offering them venues for socializing and meeting potential partners.

DISCUSSION

Because quantitative data sources serve as the basis for a wide range of sociodemographic investigations, SSCs benefit from inclusion and visibility within these sources, which has increased over the past three decades in some countries. Statistical data, in combination with geographical information, can be used to analyze spatial segregation patterns among SSCs, as the chapters of this thesis demonstrate. As of 2020, however, the countries which collect data on SSCs and provide researchers with a basis for understanding this minority group, represent a small fraction of the world's nations.

One of the three main data sources used in this thesis was microdata from Brazil's latest 10% census (2010). This dataset is a valuable resource to researchers working on the topic of SSCs, because it offers a large sample of around 2,000,000 Brazilians, and its questionnaire allows respondents to specifically indicate that they are in an SSC. This presents major advantages in terms of accurately capturing data, because it eliminates the need for SSCs to select an option that does not accurately reflect their relationship status, and it reduces the risk of errors associated with indirect identification of SSCs. The progressive stance towards SSCs taken by the Brazilian Institute for Geography and Statistics (the governmental agency responsible for developing and executing the Brazilian census) stands in contrast with the sociopolitical climate of Brazil as a whole, in which LGBTIQ* people are regularly the target of acts of violence and incendiary political rhetoric (McCoy, 2019). Nevertheless, the phrasing of the census questions can be interpreted as a sign of growing inclusiveness; this extends even further in the provisional 2020 version of the Brazilian status (see Figure 1.11), which gives SSCs the option of specifying they live with a same-sex spouse, thus reflecting the reality of modern Brazil, in which, since 2013, SSCs now have equal access to the legal institution of marriage. In addition to the relatively high degree of visibility that Brazilian census data affords SSCs, the geographical information included makes this dataset highly conducive to analyzing spatial segregation patterns of SSCs with a level of precision that extends to the subdistrict level of cities (as demonstrated in the intracity analyses of Rio de Janeiro and São Paulo in Chapter 2).

The second of the three main data sources consulted in this thesis were the scientific use files (SUF) for the annual German microcensuses (1996–2012, except 2007). These data sources presented various differences compared with the Brazilian data. First, the SUF data used in this work allowed for conducting a study that spanned 16 years, revealing changes in statistical visibility (i.e., sample size) and spatial patterns among German SSCs. Because the level of geographical data in the microdata is limited to the state level, applying the municipal size class helped distinguish between municipalities of various sizes (small, medium, high) within some

states. The analysis did not include a spatial regression model, due to the limited amount of geographical detail available in the dataset. One advantage of the German microcensus is that it contains data on SSCs dating back to 1996; however, a disadvantage is that the dataset only identifies SSCs indirectly, based on their responses to questions about their gender and relationship to the head of the household (whose gender is also disclosed). This increases the risk of errors due to gender miscoding. Nevertheless, the microcensus questioning has also adapted to the lifeworlds of SSCs, having expanded in 2006 to include direct reference to the legal institution of civil unions, although SSCs who do not live in civil unions must still be identified indirectly. Another advantage of the microcensus data is that it contains information on the age and education level of German SSCs.

The analysis of spatial patterns among SSCs living in civil unions in Berlin was based on the third and last of the main data sources used in this thesis: data extracted for Berlin from the latest German full census (2011), which also presents advantages and disadvantages compared with the other sources. This dataset provides data for a single year, with a high level of geographical detail; the analysis focused not on SSCs in general, but specifically on civil unions, which are directly identified in the dataset. At the time of preparing the analysis presented in Sections 3.5 and 3.6 for Berlin, data on married opposite-sex couples (OSCs) in comparison with civil unions (see Table 3.4) was provided by the Statistical Office Berlin-Brandenburg in aggregated form only. However, due to data protection concerns related to the low number of cases in some cells, the Berlin Statistical Office did not release scientific use files of the census data for inclusion in this research; the same applied for geographical regions in which the number of civil unions was five or less: no data was provided in those cases. Despite these challenges, which posed limitations for drawing comparisons between Berlin and the rest of Germany, the dataset was a useful resource due to the extensive geographical detail it contains, down to the so-called "planning area" level (n = 447), which revealed that, even based solely on the prevalence of civil unions (i.e., a very small subgroup within the larger group of SSCs), there are "gayborhoods" in Berlin at the highest level of geographical resolution, as well as "lesbianhoods," though to a lesser extent. The extensive geographical detail in the dataset then also made spatial regression analysis possible and reliable.

In light of the differences between these three datasets (each presenting advantages and disadvantages), the Brazilian dataset was found to be the most useful for analyzing the statistical visibility and spatial segregation patterns of SSCs, because its questionnaire explicitly references SSCs, which allows them to be directly enumerated. However, one shortcoming of the Brazilian data and the German full census data is that they, unlike the German microcensus data, do not allow for an analysis spanning multiple years. Typically, census data covers a relatively large sample size, even for minority groups such as SSCs/civil unions, and contains information on

topics like labor, health and other sociodemographic factors. However, census data is often insufficient for researching specific aspects, because the questioning used to collect this data is sometimes overly general, and by applying further filters to the dataset (such as age limits, employment status or gender), the sample size of SSCs gradually dwindles to the point of unavailability or statistical insignificance (as seen in the Berlin data regarding education). Datasets from largescale surveys can be used to supplement census data in this regard, because they focus on only one specific topic (such as employment). Ultimately, census data allows for fairly accurate estimates for the number of SSCs, along with a relatively detailed geographical analysis, although they are less suited for answering questions related to more specific aspects of a minority group's sociodemographic profile.

Underlying the analyses undertaken in this thesis were three central principles:

1. *Visibility of SSCs in quantitative data sources is increasing, and this is associated with societal progress within the respective country.*

The number of SSCs identified in data sources generally increased over time. As the literature suggests, this can only be verified based on the period between the early 1990s and the present, as farther-reaching historical data is lacking (Gates, 2015). The analysis presented in Chapter 1 shows that statistical visibility of SSCs is confined largely to industrialized countries in Europe and the Americas, with few exceptions. In contrast, such statistical visibility scarcely exists for SSCs living in most countries in Africa and Asia. In the case of Africa, the World Value Survey has revealed widespread societal disapproval of homosexuality in many countries. Meanwhile, those countries that do offer statistical visibility to SSCs are also likelier to afford them a degree of legal protection. Further qualitative and quantitative research on this topic is required to examine and understand the relationship between a country's prevailing sociopolitical attitudes towards homosexuality and the ways in which they collect statistical information on gay men and lesbians through official channels, such as census questionnaires.

Chapter 2 shows that SSCs in Brazil are afforded a high degree of statistical visibility because they are referenced explicitly in census questionnaires; furthermore, Brazil has enacted progressive legislation (including granting SSCs the rights to marry and adopt). Nevertheless, the high incidence of hate crimes committed against LGBTIQ* people in Brazil suggests that the connection between statistical visibility and societal acceptance is not always linear. In Germany (see Chapter 3), the annual microcensus has collected data on SSCs since 1996, and even data collected before that year can be used theoretically to enumerate SSCs (Lengerer, 2019). It is the only dataset that records information on a significant number of German SSCs. German legislation has become increasingly progressive with regard to granting equal rights and

protections to LGBTIQ* people, having instituted civil unions for SSCs in 2001, followed by the legalization of marriage in 2017. Whether these sociopolitical advances for German SSCs will result in greater statistical visibility will be made clear by the approach that the upcoming 2021 German full census takes towards enumerating this minority group.

2. *SSCs tend to live in clusters, and spatial segregation patterns amongst them differ between males and females.*

The analyses in the chapters dedicated to Brazil and Germany revealed clear segregation patterns amongst SSCs, as well as significant differences in these patterns between male and female SSCs: Males tend to concentrate in specific geographical aggregates at a far greater rate than females. Specifically, the analyses show that male SSCs concentrate heavily in urban areas, whereas females prefer rural areas and other settings outside of traditional "gay districts." While some have objected to the implicitly gendered/masculine coding of terms like "gay district" or, to borrow a term from Ghaziani (2014), "gayborhood," from a statistical perspective, these areas with high concentrations of SSCs do primarily tend to be inhabited by males. Though this thesis does not quantitatively explore reasons behind this difference between male and female SSCs, there are various factors that may play a role. One such reason is the greater likelihood of female SSCs to have children, which may shift their priorities towards domestic life and away from socializing and nightlife. In some cultures, raising children may also be associated with a stronger desire to live outside of highly urbanized settings, which may account, at least in part, for this proven difference in spatial concentration, although extensive quantitative and qualitative research should be dedicated to creating greater clarity on this topic.

Another difference in statistical datasets between male and female SSCs is that males generally (but not always) outnumber females. While it is possible that this is simply an accurate representation of reality, it may also point to a difference in the behavior with regard to the way gay men and lesbians respond to census-takers' questions. The extent to which response behavior deviates from the truth (among either group) is unclear, although it is conceivable that lesbians do not feel greater minority stress within a society than gay males and, in the case of lesbian parents, may even feel more integrated into heteronormative societal norms, at least to some extent. It is also conceivable that this relatively higher level of perceived integration may also prompt some lesbian parents to feel that they are already adequately visible within society, which detracts from their sense of urgency to "come out" in the census. This thesis has identified many significant differences between gay men and lesbians in terms of how and where they prefer to life; future research should explore these differences at greater length, with a focus on lesbians in particular, as they have been significantly underrepresented in studies on spatial segregation

patterns, as others have pointed out, also with these studies being conducted two decades ago already (e.g., Parker, 1999; Green, 1999).

Many studies have shown that LGBTIQ* people establish communities to create a safe territory. These communities can function as a substitute for biological families; for example, among LGBTIQ* people who have been rejected by their biological families (Green, 1999). Other authors discuss the ties between SSCs and their parents (e.g., Fischer, 2020). Based on data collected by the Germany Family Panel (PAIRFAM)[48] survey, which includes responses from 7,500 interviews, Hank and Salzburger (2015) find no significant difference in the quality of relationships between parents and their children who are in OSCs compared with their children who are in SSCs, whereas Fischer (2020), using a national sample of SSCs (around 400 couples) and OSCs (around 250 couples) in the Netherlands, found that both men and women living in SSCs have weaker relationships with their parents than men and women living in OSCs.

The analysis in this thesis also contributes to the discussion on the continued existence of "gay neighborhoods" (even if this term, as the analysis shows, is generally far less applicable to lesbians than it is to gay men). Traditional "gay districts" are currently undergoing significant sociodemographic changes in many cities around the world. Whereas these neighborhoods once served as safe havens for people of sexual minorities, enabling them to escape from the minority stresses and discrimination of broader society, they increasingly attract influx and tourism from the heterosexual majority, prompting Ghaziani (2014), for example, to herald the rise of a "post-gay" era in which people of sexual minorities are increasingly assimilated into and embraced by heteronormative society. Critical discussions have centered around the extent to which this assimilation process is desirable (taken as a sign of increasing equality) and whether LGBTIQ* spatial segregation in a "post-gay" world should be understood largely as a form of voluntary segregation rather than as a response to minority stresses. Others have focused on problematic aspects of this shift, arguing that gay neighborhoods still serve a vital purpose in protecting LGBTIQ* people, and that a rise in non-gay presence within these neighborhoods disrupts this sense of safety and community, and exposes LGBTIQ* people to minority stresses (Hayslett & Kane, 2011). One question that warrants further research is whether such "gayborhoods" actually cease to exist, or rather their communities relocate to other parts of a city, as Ghaziani (2014) observed of the Boystown district of Chicago. Further research should contribute to quantifying the sociodemographic shift currently perceived to be taking place within many traditional gay districts and assessing the relevance of spatial segregation for people of sexual minorities. It should be considered that, in addition to presenting advantages to LGBTIQ* people, spatial segregation also poses threats, as the prevalence of LGBTIQ* people in an area can be linked to

[48] Panel for the Analysis of Intimate Relationships and Family Dynamics

a higher incidence of hate crimes and violence committed against these people (Grießbach-Baerns & Stipp, 2018).

3. *Despite improvements in enumerating SSCs, there is still a gap in knowledge about their lifeworlds.*

This thesis has shown that data sources for enumerating SSCs continue to evolve over time, not only in terms of how this group is counted, but also with regard to the level of insight these sources offer into the everyday lives of SSCs. This requires collecting information on every sociodemographic topic as it relates to SSCs, including, but not limited to labor, health and beliefs, so that underlying causes for both disparities and commonalities with the lifeworlds of OSCs can be more fully understood. Researchers have already called for innovative approaches to identifying SSCs; this thesis, for example, has proposed using an online tool called Answer the Public to gauge the prevalence of SSC-related online search terms within a specific country or region (see Section 1.4). The Socioeconomic Panel (SOEP) survey, conducted by the German Institute for Economic Research until 2021 has been expanded to include an additional sample of around 1,000 lesbian, gay and bisexual households (SOEP-LGB), of which 200 to 300 include children. This sample will provide answers to questions regarding labor, the quality of child development and the distribution of paid labor and unpaid labor within these families (German Institute for Economic Research, 2020). Results of this project will contribute to a fuller view of the lifeworlds of gay, lesbian and bisexual households.

Nevertheless, there are still substantial gaps to be filled within the body of knowledge relating to SSCs. In light of the scarcity of quantitative data sources, qualitative research plays a role in filling this gap. This thesis originally included findings from 15 qualitative interviews among male SSCs in Berlin, which included lines of questioning related to the nature of the relationship, the couples' lifeworlds, residential and neighborhood choices, potential minority stresses and labor force participation. Participants were also provided with many options to narrate beyond the scope of specific questions. Qualitative information-gathering methods like this offer members of a minority group to self-disclose valuable information about their lived experiences which would otherwise remain overlooked through official data-collection channels, thus perpetuating statistical invisibility and underrepresentation of subgroups within quantitative datasets. The interactive format of personal interviews also creates an immersive research experience which at times reveal subtleties that cause the researcher to overwrite initial assumptions. Ultimately, the sample size in this case was deemed too small for the qualitative interviews to be included within the scope of what is, above all, a quantitative study; to draw reliable conclusions, the sample would need to have been expanded to include an adequate

number of representatives of numerous sociodemographic categories (e.g., gender, location, age, duration of partnership, income), Although the findings of the interviews are not incorporated into this thesis, they served as an insightful background for understanding how factual, quantitative information reflects the lived realities of non-traditional families. The interviews also illuminated the complexity of the narratives of the lives of SSCs with regard to discrimination, expressed, for example, in an unwillingness to display affection in public. Findings like these suggest that there continues to be a need for "gay spaces" in public life, although the extent to which this need motivates actual patterns of spatial segregation cannot be definitively stated. Preliminary findings from the qualitative interviews indicated that locational choices among the SSCs were motivated by factors such as proximity to work, public transport and housing characteristics rather than direct access to gay-focused nightlife.

While the pace with which LGBTIQ* people have achieved greater societal acceptance varies considerably by country, this thesis concludes that a theoretical link between their legal recognition and statistical visibility exists. Though the process of a minority group gaining equality and legal protection is gradual, the expansion of statistical visibility for this non-traditional family form in the official datasets cited in this thesis suggest that progress has been made, at least in some countries. Nevertheless, even in European countries, which generally extend a relatively high degree of legal protection to LGBTIQ* people, the path to greater acceptance and visibility is not a linear one, as evidenced, for example, by the establishment of "LGBT-free" [*sic*] zones in Poland in mid-2020 (Morris, 2020). Yet, despite setbacks in progress, there have also been advances elsewhere, as when Costa Rica legalized same-sex marriage in May of 2020 (Corrales, 2020). In the United States, where many states still deny antidiscrimination protection to people of sexual minorities, President-Elect Joe Biden has signaled that his administration will prioritize enacting the Equality Act within his first 100 days in office; this federal-level legislation would ban discrimination (such as employment and housing discrimination) on the basis of sexual orientation and gender identity (Segal, 2020). One overarching consideration for any investigation into the statistical visibility of a minority group must be the extent to which filling gaps in the landscape of quantitative research contributes to improving the sociopolitical and legal framework that impacts the everyday lives of people who are marginalized. In the case of LGBTIQ* people, even if official data collection instruments, such as census questionnaires, provide them with channels for (direct or indirect) self-disclosure and opportunities for promoting their own visibility, their own perceptions of reality are likely to influence their response behavior. This underscores the findings from many of the qualitative interviews conducted in preparing for this thesis which indicate that, even within tolerant societies such as Berlin, further advances must be made before this subgroup truly feels at home and dares to be seen in a heteronormative world.

REFERENCES

Acevedo-Garcia, D., & Lochner, K. A. (2003). Residential segregation and health. In I. Kawachi & L. F. Berkman (Eds.), *Neighborhoods and health* (pp. 265-287). Oxford University Press.

Ahmed, A. M., Andersson, L., & Hammarstedt, M. (2008). Are lesbians discriminated against in the rental housing market? Evidence from a correspondence testing experiment. *Journal of Housing Economics, 17*, 234-238.

Alisch M. (2018). Sozialräumliche Segregation: Ursachen und Folgen [Sociospatial segregation: Causes and effects]. In E. U. Huster, J. Boeckh, and H. Mogge-Grotjahn (Eds.), *Handbuch Armut und soziale Ausgrenzung* [*Handbook of poverty and social marginalization*] (pp. 503-522). Springer.

Anacker, K. B., & Morrow-Jones, H. A. (2005). Neighborhood factors associated with same-sex households in U.S. cities. *Urban Geography, 26*(5), 385-409.

Andersson, G., Noack, T., Seierstad, A., & Weedon-Fekjær, H. (2006). The demographics of same-sex marriages in Norway and Sweden. *Demography 43*(1), 79-98.

Answer the Public. (2020). *Discover what people are asking about.* Answer the Public. https://answerthepublic.com

Badgett, M. V., Durso, L. E., & Schneebaum, A. (2013, June). *New patterns of poverty in the lesbian, gay, and bisexual community*. UCLA School of Law, Williams Institute. https://williamsinstitute.law.ucla.edu/publications/lgb-patterns-of-poverty/

Bailey, R. W. (1999). *Gay politics, urban politics: Identity and economics in the urban setting*. Columbia University Press.

Banens, M., & Le Penven, E. (2016). Sex miscoding in the census and its effects on the enumeration of same-sex couples. *Population*, 2016(1), 135-148.

Baumle, A. K., & Compton, D. L. (2020). Heterogeneity in census identification of parent-child relationships within same-sex households. In D. Farris and A. Bourque (Eds.), *International handbook on the demography of marriage and the family* (pp. 123-138). Springer.

Baumle, A. K., Compton, D. L., & Poston Jr., D. L. (2009). *Same-sex partners. The social demography of sexual orientation*. State University of New York Press.

Belgium passes gay adoption law. (2006, April 21). http://news.bbc.co.uk/2/hi/europe/4929604.stm

Benecke, M. (2010). *Rechtsvergleich der europäischen Systeme zum Antidiskriminierungsrecht* [*Comparison of European systems of antidiscrimination law*]. German Federal Antidiscrimination Agency. http://www.antidiskriminierungsstelle.de/SharedDocs/Downloads/DE/publikationen/Expertisen/Expertise_Rechtsvergleich_europ_Systeme_zum_AntidiskrRecht.pdf?__blob=publicationFile

Black, D. A., Gates, G. J., Sanders, S. G., & Taylor, L. J. (2000). Demographics of the gay and lesbian population in the United States: Evidence from available systematic data sources. *Demography*, *37*(2), 139-154.

Black, D. A., Gates, G. J., Sanders, S., & Taylor, L. (2002). Why do gay men live in San Francisco? *Journal of Urban Economics 51*(1), 54-76.

Black, D. A., Makar, H. R., Sanders, S. G., & Taylor, L. J. (1998). *The effects of sexual orientation on earnings* (Working paper). Carnegie Mellon University.

Boertien, D., & Vignoli, D. (2019). Legalizing same-sex marriage matters for the subjective well-being of individuals in same-sex unions. *Demography*, *56*(6), 2109-2121.

Braun, S. (2011). *Queer Berlin: The rainbow connection*. DW Magazine. https://www.dw.com/en/queer-berlin-the-rainbow-connection/a-14873445

Brazilian Institute for Geography and Statistics. (2011). *Evolução da divisão territorial do Brasil 1872-2010* [*Evolution of the territorial division of Brazil: 1872-2010*]. Brazilian Institute for Geography and Statistics (IGBE).

Brazilian Institute for Geography and Statistics. (2013a). *Censo demográfico 2010 [2010 demographic census*]. Brazilian Institute for Geography and Statistics (IGBE). https://biblioteca.ibge.gov.br/visualizacao/periodicos/552/cd_2010_agsn_if.pdf

Brazilian Institute for Geography and Statistics. (2013b). *Pesquisa nacional de saúde 2013: Questionário dos moradores do domicílio* [*National Health Survey 2013: Questionnaire for household residents*]. Brazilian Institute for Geography and Statistics (IGBE).

Brown, C., Contreras, D., & Schmidt, L. (2019). Sexual orientation and labor force participation: Findings from Chile and Uruguay. *Feminist Economics*, *25*(2), 90-115.

Buchanan, W. (2007, February 25). SF's Castro district faces an identity crisis: As straights move in, some fear loss of area's character. *San Francisco Chronicle*. http://www.sfgate. com

Carpenter, C. S. (2008). Sexual orientation, work, and income in Canada. *Canadian Journal of Economics/Revue canadienne d'économique*, *41*(4), 1239-1261.

Carrara, S. (2012). Discrimination, policies, and sexual rights in Brazil. *Cadernos de saude publica*, 28*(1)*, 184-189.

Castells, M. (1983). *The City and the grassroots*. University of California Press.

Cochran, S. D., & Mays, V. M. (2008). Prevalence of primary mental health morbidity and suicide symptoms among gay and bisexual men. In R. J. Wolitski, R. Stall, & R. O. Valdiserri (Eds.), *Unequal opportunity: Health disparities affecting gay and bisexual men in the United States* (pp. 97-120). Oxford University Press. DOI: 10.1093/acprof:oso/9780195301533.003.0004

Corrales, J. (2020, June 5). Same-sex marriage in conservative Costa Rica was not a miracle. *The New York Times.* http://www.newyorktimes.com

Cortina, C. (2016). Demographics of same-sex couples in Spain. *Revista Española de Investigaciones Sociológicas*, *153*, 3-22.

Cortina, C., & Festy, P. (2014). *Identification of same-sex couples and families in censuses, registers and surveys* (Families and Societies Working Paper Series, No. 8).

Cortina, C., Laplante, B., Fostik, A., & Castro Martin, T. (2013, August). *Same-sex marriages and partnerships in two pioneer countries, Canada and Spain* (Paper presentation). International Union for the Scientific Study of Population (IUSSP) Conference, Busan, Republic of Korea.

Crouch, S.R., Waters, E., McNair, R., Power, J., & Davis, E. (2012). ACHESS: The Australian study of child health in same-sex families: Background research, design and methodology. *BMC Public Health 12*(646). https://doi.org/10.1186/1471-2458-12-646

De Freitas, M. E. (2017). Managing Diversity in Brazil: Perspectives from Different National Contexts. In M. F. Özbilgin & J. Chanlat (Eds.), *Management and diversity: Perspectives from different national contexts* (pp. 113-157). Emerald Publishing. DOI: 10.1108/S2051-233320160000003006

Dorbritz, J., Weinmann, J., & Estatico, S. (2018). *Lebensformen in Deutschland auf der Basis des Zensus 2011: Eine altersspezifische Analyse* [*Ways of life in Germany based on the*

2011 census: An age-specific analysis]. (BiB Working Paper, 1-2018). Wiesbaden: Bundesinstitut für Bevölkerungsforschung (BIB).

Eggen, B. (2009). *Gleichgeschlechtliche Lebensgemeinschaften mit und ohne Kinder: Eine Expertise auf der Basis des Mikrozensus 2006* [*Same-sex domestic partnerships with or without children: Expertise based on the 2006 microcensus*] (ifb-Materialien, 1-2009). Staatsinstitut für Familienforschung an der Universität Bamberg.

Equaldex. (2020). *Status of LGBT laws by country*. https://www.equaldex.com

Federal Statistical Office of Germany. (2012). *Haushalte und Familien: Gleichgeschlechtlichen Paare (darunter: gleichgeschlechtliche Ehepaare und eingetragene Lebenspartnerschaften)* [*Households and families: Same-sex couples (including same-sex married couples and civil unions*]. Federal Statistical Office of Germany. https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Haushalte-Familien/Tabellen/3-4-gleichgeschlechtliche-lebensgemeinschaften.html

Federal Statistical Office of Germany. (2015). *Bildungsfinanzbericht 2015* [*Financial report on education: 2015*]. Federal Statistical Office. https://www.statistischebibliothek.de/mir/servlets/MCRFileNodeServlet/DEHeft_derivate_00029095/Bildungsfinanzbericht1023206157004.pdf;jsessionid=8773AD52C856A6736865859B8A2C98CE

Festy, P. (2007). Enumerating same-sex couples in censuses and population registers. *Demographic Research*, *17*(12), 339-368.

Fischer, M. M. (2016). *Identifying same-sex couples in cross-national survey data: A comparison of same-sex couples' demographic and socio-economic traits in six European countries.* DANS symposium publications, 8, 50-79.

Fischer, M. M., & Kalmijn, M. (2020). Do adult men and women in same-sex relationships have weaker ties to their parents? *Journal of Family Psychology*. Advance online publication. https://doi.org/10.1037/fam0000696

Florida, R. (2002). *The rise of the creative class and how it's transforming work, leisure, community and everyday life*. Basic Books.

Florida, R., & Gates, G. J. (2002). Technology and tolerance: Diversity and high-tech growth. *The Brookings Review 20*(1), 32-35.

Fritsch, M., & Stuetzer, M. (2009). The geography of creative people in Germany. *International Journal of Foresight and Innovation Policy, 5*(1/2/3), 7-23.

Gates, G. J. (2010). *Same-sex couples in US Census Bureau data: Who gets counted and why* (Online Working Paper Series, PWP-CCPR-2010-014). California Center for Population Research.

Gates, G. J. (2015). *Comparing LGBT rankings by metro area: 1990 to 2014*. https://williamsinstitute.law.ucla.edu/publications/lgbt-rankings-metro-areas/

Gates, G. J., & Ost, J. (2004). *The gay and lesbian atlas*. Urban Institute Press.

Gates, G. J., & Steinberger, M. D. (2009). *Same-sex unmarried partner couples in the American Community Survey: The role of misreporting, miscoding and misallocation.* Annual Meetings of the Population Association of America. Available at http://economics-files.pomona.edu/steinberger/research/gates_steinberger_acs_miscode_may2010.pdf

German Federal and State Statistical Offices. (2019). *Statistisches Jahrbuch 2017* [*Statistical yearbook 2017*]. German Federal and State Statistical Offices. https://www.statistischebibliothek.de/mir/receive/DEAusgabe_mods_00004431

German Federal and State Statistical Offices. (2020). *Fläche und Bevölkerung nach Ländern* [*Land area and population by state*]. German Federal and State Statistical Offices. https://www.statistikportal.de/de/bevoelkerung/flaeche-und-bevoelkerung

German Institute for Economic Research. (2020). *Ergänzung der Dateninfrastruktur des SOEP um eine Stichprobe von Lesben, Schwulen und Bisexuellen (SOEP-LGB)* [*Expansion of the data infrastructure of the SOEP to include a sample of lesbians, gays and bisexuals (SOEP-LGB)*]. German Institute for Economic Research (DIW Berlin). https://www.diw.de/de/diw_01.c.598451.de/projekte/ergaenzung_der_dateninfrastruktur_des _soep_um_eine_stichprobe_von_lesben__schwulen_und_bisexuellen__soep-lgb.html

German Institute of Urban Affairs. (2006). *Zukunft von Stadt und Region (Band III): Beiträge zum Forschungsverbund "Stadt 2030": Dimensionen städtischer Identität* [*The future of the city and region (volume III): Contributions to the research association "City 2030": Dimensions of urban development*]. Verlag für Sozialwissenschaften.

GESIS Leibniz Institute for the Social Sciences. (2020). *MISSY: Metadata for official statistics*. https://www.gesis.org/missy/metadata/MZ/

Federal Statistical Office of Germany. (1996-2012). *Microcensus data* (Scientific use files). Federal Statistical Office of Germany.

Ghaziani, A. (2014). *There goes the gayborhood?* Princeton University Press.

Glebe, G. (2002). Innerstädtische Segregation in deutschen Großstädten [Innercity segregation in German major cities]. In *Nationalatlas: Band 5: Dörfer und Städte* [*National atlas: Volume 5: Villages and cities*] (pp. 142-143). Spektrum Akademischer Verlag.

Globo. (2018). *74% dos brasileiros acham que a homossexualidade deve ser aceita por toda a sociedade, diz Datafolha* [*74% of Brazilians think that homosexuality should be accepted by all of society, says Datafolha*]. https://g1.globo.com/politica/noticia/2018/10/27/74-dos-brasileiros-acham-que-a-homossexualidade-deve-ser-aceita-por-toda-a-sociedade-diz-datafolha.ghtml

Goldani, A. M., Esteve, A., & Turu, A. (2013, August). *Coming out in the 2010 census: Same-sex couples in Brazil and Uruguay* (Paper presentation). International Union for the Scientific Study of Population (IUSSP) Conference, Busan, Republic of Korea.

Gorman-Murray, A., & Brennan-Horley, C. (2010a). The geography of same-sex families in Australia: Implications for regulatory regimes. *Law in Context, 28*(1), 43-64.

Gorman-Murray, A., Brennan-Horley, C., McLean, K., Waitt, G., & Gibson, C. (2010b). Mapping same-sex couple family households in Australia. *Journal of Maps*, *6*(1), 382-392.

Green, J. N. (1999). *Beyond Carnival: Male homosexuality in twentieth-century Brazil*. University of Chicago Press.

Grießbach-Baerns, A., & Stipp, S. (2018). *Straftaten gegen Lesben, Schwule, Bisexuelle, trans- und intergeschlechtliche Menschen (LSBTI)* [*Criminal acts against lesbians, gays, bisexuals, trans- and intersex people (LSBTI)*]. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjClJrTh_jsAhVdBWMBHV3mCpIQFjADegQIBBAC&url=https%3A%2F%2Fwww.berlin.de%2Fpolizei%2F_assets%2Faufgaben%2Fpraevention%2Fstraftaten_lsbti.pdf&usg=AOvVaw1P8vC5Hva1T2oyksfnnQgG

Hank, K., & Salzburger, V. (2015). Gay and lesbian adults' relationship with parents in Germany. *Journal of Marriage and Family, 77*(4), 866-876.

Häußermann, H. (2012). Wohnen und Quartier: Ursachen sozialräumlicher Segregation [Housing and district: Causes of sociospatial segregation]. In E. U. Huster, J. Boeckh, and H. Mogge-Grotjahn (Eds.), *Handbuch Armut und soziale Ausgrenzung* [*Handbook of poverty and social marginalization*] (pp. 383-396). Springer.

Hayslett, K. L., & Kane, M. D. (2011). “Out” in Columbus: A geospatial analysis of the neighborhood-level distribution of gay and lesbian households. *City & Community 10*(2), 131-156.

Heath, L. (2004). *Operationally defining sexual orientation: Towards the development of a fundamental measure of adolescent sexual responsiveness variations* [Unpublished doctoral dissertation]. Rhodes University.

Humpert, S. (2015). Size and structure of same-sex couples in Germany. *International Economics Letters, 4*(1), 35-42.

Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E., & Puranen, E. (2014). *World Values Survey: Round six: Country-pooled datafile version*. World Values Survey. www.worldvaluessurvey.org/WVSDocumentationWV6.jsp.

Integrated Public Use Microdata Series International (2020). *Sample Information.* Integrated Public Use Microdata Series (IPUMS) International. https://international.ipums.org/international-action/sample_details#uy [Last access: 21.08.2020]

Jacinto, P., Frio, G., Uhr, D., & Uhr, J. (2017). Offer of work and sexual orientation: Evidence of Brazil. *The Empirical Economics Letters, 16*(7), 663

Jepsen, L., & Jepsen, C. (1999). *An empirical analysis of same-sex and opposite-sex couples: Do “likes” still like “likes” in the '90s?* (IPR Working Papers, No, 99-5). Institute for Policy Resarch at Northwestern University.

Johnston, R. J., & Sidaway, J. D. (2004). *Geography and geographers: Anglo-American human geography since 1945*. Arnold.

Johnston, R. J., Gregory, D., Pratt, G., & Watts, M. (2000). *The dictionary of human geography*. Blackwell.

Kinsey, A. C, Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Saunders.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Saunders.

Knopp, L. (1997). Gentrification and gay neighborhood formation in New Orleans: A case study. In A. Gluckman & B. Reed (Eds.), *Homo economics* (pp. 45-63). Routledge.

Kolk, M., & Andersson, G. (2018). Two decades of same-sex marriage in Sweden: A demographic account of developments in marriage, childbearing and divorce. *Demography* 57**,** 147–169. https://doi.org/10.1007/s13524-019-00847-6

Kreider, R. M. & Lofquist, D. A. (2015). *Matching Survey Data with Administrative Records to Evaluate Reports of Same-Sex Married Couple Households* (Working paper). United States Census Bureau. https://www.census.gov/library/working-papers/2015/demo/SEHSD-WP2014-36.html

Kridahl, L., & Kolk, M. (2018). Retirement coordination in opposite-sex and same-sex married couples: Evidence from Swedish registers. *Advances in Life Course Research*, *38*, 22-36. https://doi.org/10.1016/j.alcr.2018.10.003

Kroh, M., Kühne, S., Kipp, C., & Richter, D. (2017). Income, social support networks, life satisfaction: Lesbians, gays, and bisexuals in Germany. *DIW Economic Bulletin, 33-35*, 335-345.

Küpper, B., Klocke, U., & Hoffmann, L. (2017). *Einstellungen gegenüber lesbischen, schwulen und bisexuellen Menschen in Deutschland: Ergebnisse einer bevölkerungsrepräsentativen Umfrage* [*Attitiudes towards lesbian, gay and bisexual people in Germany: Findings from a survey of a representative sample of the population*]. German Federal Antidiscrimination Agency. https://www.antidiskriminierungsstelle.de/SharedDocs/Downloads/DE/publikationen/Umfragen/Umfrage_Einstellungen_geg_lesb_schwulen_und_bisex_Menschen_DE.pdf?__blob=publicationFile&v=2

Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. University of Chicago Press.

Lengerer, A. (2019). Mikrozensus Tools: *Identifikation verschieden- und gleichgeschlechtlicher Partnerschaften in den Scientific Use Files 1973 bis 2014* [*Identification of opposite-sex and same-sex partnerships in the scientific use files, 1973 to 2014*] (GESIS Papers, 2019/09). GESIS – Leibniz Institute for the Social Sciences. https://doi.org/10.21241/ssoar.63307

Lengerer, A., & Bohr, J. (2019). Gleichgeschlechtliche Partnerschaften in Deutschland: Verbreitung, Entwicklung und soziale Unterschiede [Same-sex partnerships in Germany: Distribution, development and social differences]. *Informationsdienst Soziale Indikatoren*, *2019*(62), 7-12.

Lengerer, A., & Klein, T. (2007). Der langfristige Wandel partnerschaftlicher Lebensformen im Spiegel des Mikrozensus [The long-term change in partnership-based family forms as reflected in the microcensus]. *Wirtschaft und Statistik*, *4/2007*, 433-447.

Lieb, S., Friedman, S., Zeni, M., Chitwood, D., Liberti, T., Gates, G. J., Maddox, L., & Kuper, T. (2003). *An HIV prevalence-based model for estimating risk populations of men who have sex with men and injection drug users. Journal of Urban Health: Bulletin of the New York Academy of Medicine, 81*(3), 401-415. https://doi.org/10.1093/jurban/jth126

Lodola, Germán, & Corral, M. (2010). *Support for Same-Sex Marriage in Latin America* (Latin America Public Opinion Project, Americas Barometer Insights, 2010, No. 44). Vanderbilt University.

Massey, D. S., & Denton, N. A. (1988). The dimensions of residential segregation. *Social Forces, 67*(2), 281-315.

McCoy, T. (2019, July 22). 'Anyone could be a threat': In Bolsonaro's Brazil, LGBT people take personal defense into their own hands. *The Washington Post*. http://www.washingtonpost.com

Melbourne Institute. (2020). *HILDA Survey*. https://melbourneinstitute.unimelb.edu.au/hilda

Mendos, R. M. (2019, December). *State-sponsored homophobia report*: *Global legislation overview update.* International Lesbian, Gay, Bisexual, Trans and Intersex Association (ILGA) World. https://ilga.org/state-sponsored-homophobia-report-2019-global-legislation-overview

Morales, D. X. (2018). Residential segregation of same-sex partnered households in the U.S.: New evidence from U.S. census 2010 *International Journal of Sociology and Social Policy*, *38*(11/12), 973-981. DOI: 10.1108/IJSSP-04-2018-0054

Moreira, A. J. (2012). We are family! Legal recognition of same-sex unions in Brazil. *The American Journal of Comparative Law, 60*(4), 1003-1042. DOI http://dx.doi.org/10.5131/AJCL.2012.0006

Morris, L. (2020, October 28). Poland's 'LGBT-free zones' energize some activists, prompt others to leave. *The Washington Post*. http://www.washingtonpost.com

New Zealand Ministry of Health. (2020). *New Zealand health survey*. https://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/surveys/new-zealand-health-survey#about

Nikel, David (2020, January 2). *LGBT equality: Gay rights in Norway.* Life in Norway. https://www.lifeinnorway.net/norway-gay-rights/

Oanda. (2019). *Currency Converter: Historical Exchange Rates*. http://www.oanda.com/lang/de/currency/converter

Orvis, S., & Drogus, C. A. (2017). *Introducing Comparative Politics: Concepts and Cases in Context (4th Ed.)*. CQ Press.

Parker, R. (1999). *Beneath the Equator: Cultures of desire, male homosexuality, and emerging gay communities in Brazil*. Routledge.

Pereira, Roger. (2010, August 27). 'Agora me sinto um cidadão', diz gay autorizado a adotar ['Now I feel like a citizen', says gay authorized to adopt]. Terra. http://noticias.terra.com.br/brasil/agora-me-sinto-um-cidadao-diz-gay-autorizado-a-adotar,ac4b4bc92690b310VgnCLD200000bbcceb0aRCRD.html

Perlesz, A., Power, J., Brown, R., McNair, R., Schofield, M., Pitts, M., Barrett, A., & Bickerdike, A. (2010). Organising work and home in same-sex parented families: Findings from the Work Love Play study. *Australian and New Zealand journal of family therapy*, *31*(4), 374-391.

Pichardo, J. I. (2011). We are family (or not): Social and legal recognition of same-sex relationships and lesbian and gay families in Spain. *Sexualities*, *14*(5), 544–561.

Pride Legal. (2020*). Denmark LGBT laws.* https://pridelegal.com/denmark-lgbt-laws/

Püschel, F. P. (2019). Same-sex marriage in the Brazilian Supreme Court: Legal reasoning and the risk of a regressive turn. *Novos estudos CEBRAP*, *38*(3), 653-665.

Qu, L., Knight, K., & Higgins, D. (2016). *Same-sex couple families in Australia* (Fact sheets). Australian Institute of Family Studies.

Régnier-Loilier, A. (2018). Are the generations and gender surveys well suited for studying same-sex couples? *European Journal of Population*, 34(4), 567-578. DOI: 10.1007/s10680-017-9440-6

Rohter, L. (2004, March 6). World briefing: Americas: Brazil: State to allow same-sex unions. *The New York Times*. https://www.nytimes.com

Rupp, M. (2009). *Die Lebenssituation von Kindern in gleichgeschlechtlichen Lebensgemeinschaften* [*The living situation of children in same-sex domestic partnerships*]. Bundesanzeiger Verlag.

Rushbrook, D. (2002). Cities, queer space, and the cosmopolitan tourist. *GLQ: A Journal of Lesbian and Gay Studies, 8*(1–2), 183–206. DOI: 10.1215/10642684-8-1-2-183

Segal, M. (2020). Biden pledges support to LGBTQ community. *Philadelphia Gay News*. https://epgn.com

Senate Department for Urban Development and Housing. (2019). *Erläuterungen zum Mietspiegel: Die Wohnlagen* [*Explanatory notes on the rent cap: Residential area types*]. Senate Department for Urban Development and Housing. https://www.stadtentwicklung.berlin.de/wohnen/mietspiegel/de/wohnlagen.shtml

Senate Department for Urban Development and Housing**.** (2019). *Lebensweltlich orientierte Räume (LOR) in Berlin* [*Lifeworld-oriented areas (LOAs) in Berlin*]. https://www.stadtentwicklung.berlin.de/ planen/basisdaten_stadtentwicklung/lor/

Spring, A. L. (2013). Declining segregation of same-sex partners: Evidence from Census 2000 and 2010. *Population Research and Policy Review, 32*(5). DOI: 10.1007/s11113-013-9280-y.

Statistical Office of Berlin-Brandenburg. (2011). *Aggregated 2010 census data for Berlin* (Unpublished raw data). Statistical Office of Berlin-Brandenburg.

Statistics Canada. (2012). *Families reference guide, 2011 census* (Cat. No. 98-312-X20111005). Statistics Canada. https://www12.statcan.gc.ca/census-recensement/2011/ref/guides/98-312-x/98-312-x2011005-eng.cfm

Statistics Canada. (2016). *Longitudinal administrative data directory* (Cat. No. 12-585-X). Statistics Canada. https://www150.statcan.gc.ca/n1/en/catalogue/12-585-X

Statistics Canada. (2019*). Data products, 2016 census*. Statistics Canada. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/index-eng.cfm

Statistics New Zealand. (2010). *Characteristics of same-sex couples in New Zealand*. Statistics New Zealand. http://infoshare.stats.govt.nz/browse_for_stats/people_and_communities/marriages-civil-unions-and-divorces/same-sex-couples-in-nz.aspx#gsc.tab=0

Statistics New Zealand. (2018). *2018 Census: Design of forms*. Statistics New Zealand. https://www.stats.govt.nz/assets/Reports/2018-census-design-of-forms/2018-Census-Design-of-forms.pdf

Stauder, J. (2002). Neue Typisierungen von Haushalten und Lebensformen für den Mikrozensus [New types of households and familiy forms for the microcensus]. *Statistische Analysen und Studien Nordrhein-Westfalen, 5*, 17-34.

Suchy, S. (2007). *Familienform und Erziehungsleistung: Gleichgeschlechtliche Elternschaft* [*Family form and childrearing performance: Same-sex parenting*]. GRIN Verlag.

Sweden legalises gay adoption. (2002, June 6). http://news.bbc.co.uk/2/hi/europe/2028938.stm

Szwarcwald, C. L., Malta, D. C., Pereira, C. A., Vieira, M. L. F. P., Conde, W. L., Borges de Souza, Jr., P. R., Damacena, G. N., Azevedo, L. O., Azevedo e Silva, G., Filha, M. M. T., de Souza Lopes, C., Romero, D. E., da Silva de Almeida, W., & Monteiro, C. A. (2014). Pesquisa Nacional de Saude no Brasil: concepcao e metodologia de aplicacao [National Health Survey in Brazil: Design and methodology of application]. *Ciência e Saúde Coletiva, 19*(2), 333-342. DOI: http://dx.doi.org/10.1590/1413-81232014192.14072012

Trabut, L., Lelièvre, É., & Bailly, E. (2015). Famille et recensement font-ils bon ménage? [Family and census: Are they a good mix?]. *Population, 70*(3), 603-629.

United Nations. (2020). *About UN Membership*. United Nations. https://www.un.org/en/sections/member-states/about-un-membership/index.html

United States Census Bureau. (2020). *Surveys and programs contributing to same-sex couples.* United States Census Bureau. https://www.census.gov/topics/families/same-sex-couples/surveys-programs.html

Valentine, G. (2001). *Social geographies: Space and society*. Pearson.

Waite, S., & Denier, N. (2016). Self-employment among same-sex and opposite-sex couples in Canada. *Canadian Review of Sociology/Revue canadienne de sociologie*, *53*(2), pp. 143-175. DOI: https://doi.org/10.1111/cars.12232

Waite, S., & Denier, N. (2019). A research note on Canada's LGBT data landscape: Where we are and what the future holds. *Canadian Review of Sociology/Revue Canadienne de Sociologie 56*(1), 93–117.

Waitt, G., & Gorman-Murray, A. (2011). "It's about time you came out": Sexualities, mobility and home. *Antipode 43*(4), 1380-1403. DOI: https://doi.org/10.1111/j.1467-8330.2011.00876.x

Whitton, S. W. (2015). Relationship education with same-sex couples. In J. Ponzetti, Jr. (Ed.), *Evidence-based approaches to relationship and marriage education* (pp. 295-310). Routledge.

Wimark, T., & Östh, J. (2014). The city as a single gay male magnet? Gay and lesbian geographical concentration in Sweden. *Population, Space and Place (2014)*, 739-752. DOI: https://doi.org/10.1002/psp.1825

Zensus2011. (2020). *Der registergestützte Zensus im Überblick* [*Overview of the register-supplemented census*]. Zensus2011. https://www.zensus2011.de/DE/Zensus2011/Methode/Methode_node.html

Software:

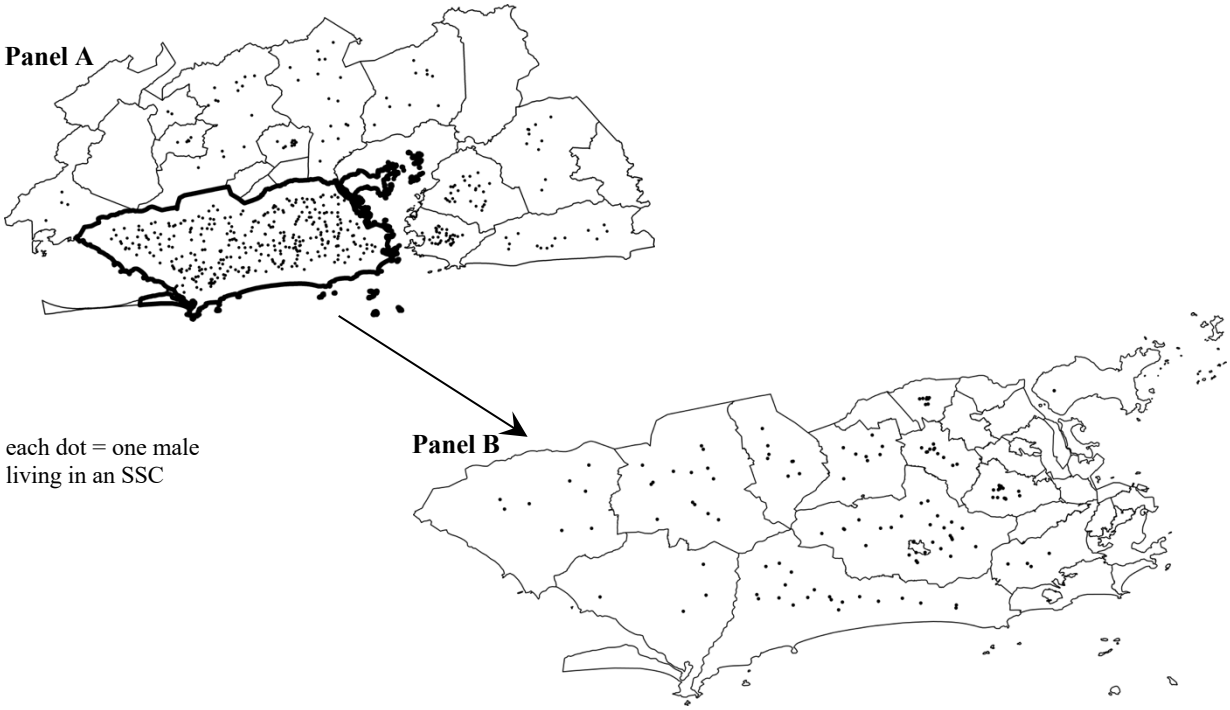
Microsoft Excel was used to generate descriptive estimations and prepare tables. Statistical programming was performed using SAS®, SPSS® and Stata®. Mapping was created using Mapviewer, and spatial regression models were run using GeoDa.

APPENDIX A: SAME-SEX COUPLES IN BRAZIL

Figure 2.1: Spatial distribution of male SSCs in the Rio de Janeiro metropolitan region (Panels A and C) and municipality (Panels B and D)

Absolute distribution

Metropolitan region, by municipality (19) Municipality, by subdistrict (33)



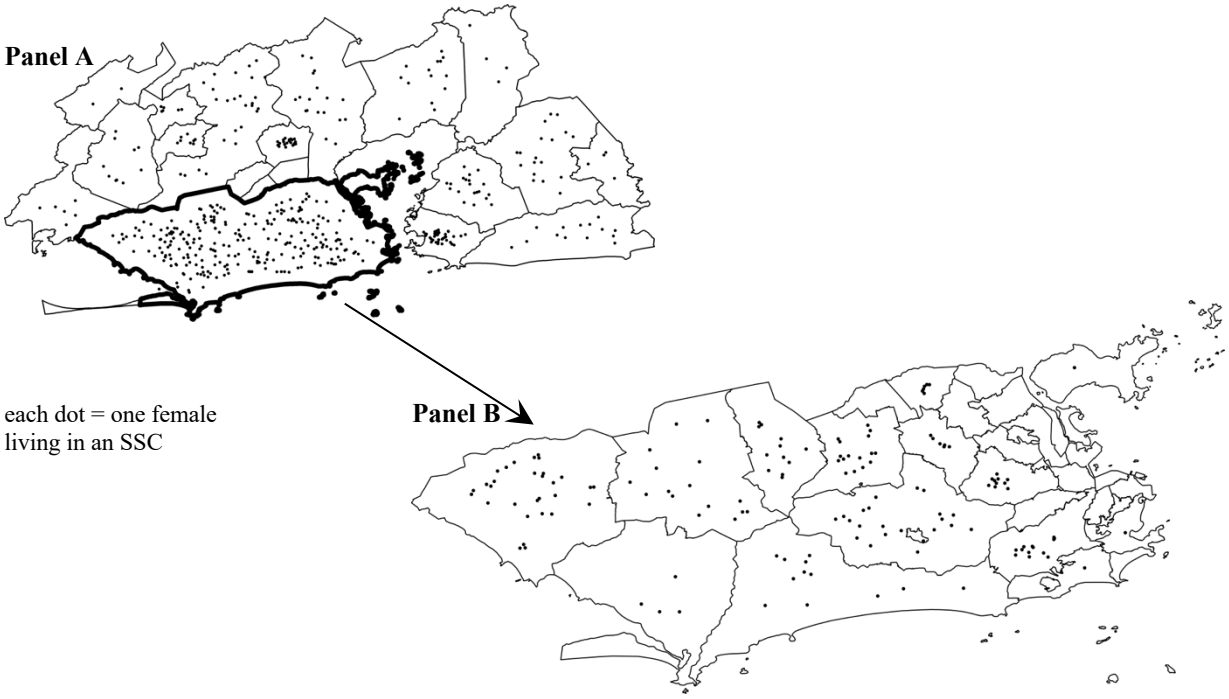
Relative distribution, gay partnered rates

Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

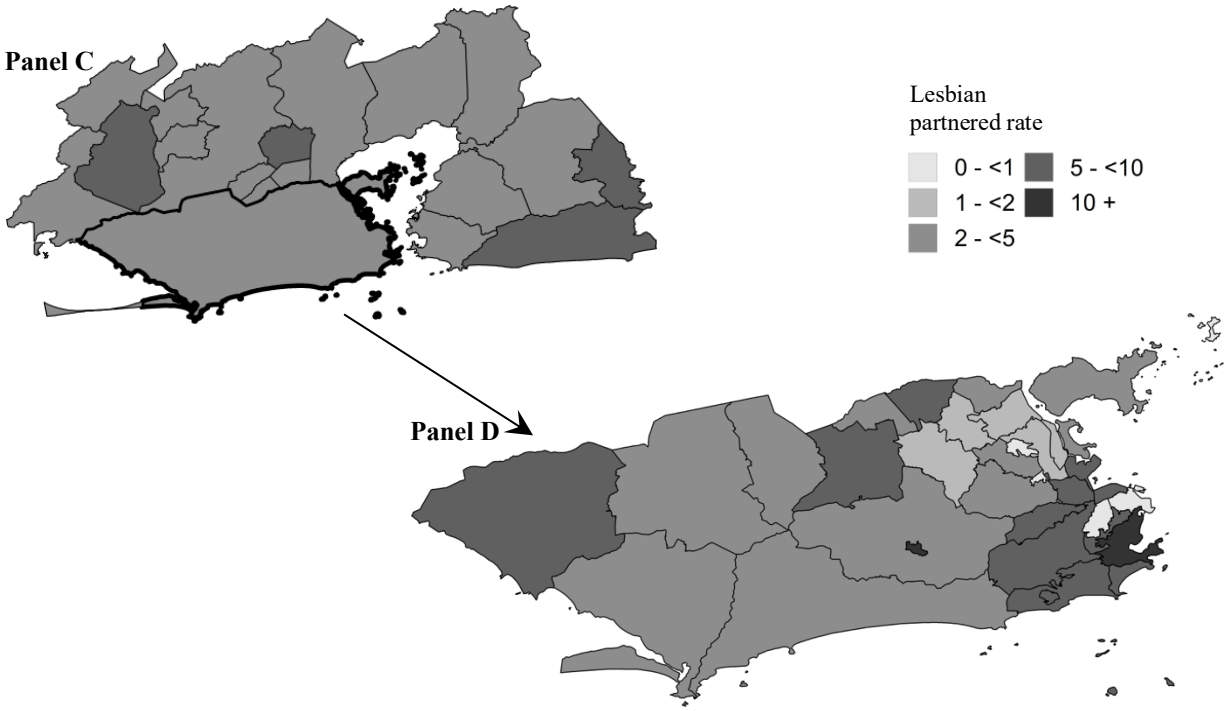
Figure 2.2: Spatial distribution of female SSCs in the Rio de Janeiro metropolitan region (Panels A and C) and municipality (Panels B and D)

Absolute distribution

Metropolitan region, by municipality (19) Municipality, by subdistrict (33)



Relative distribution, lesbian partnered rates



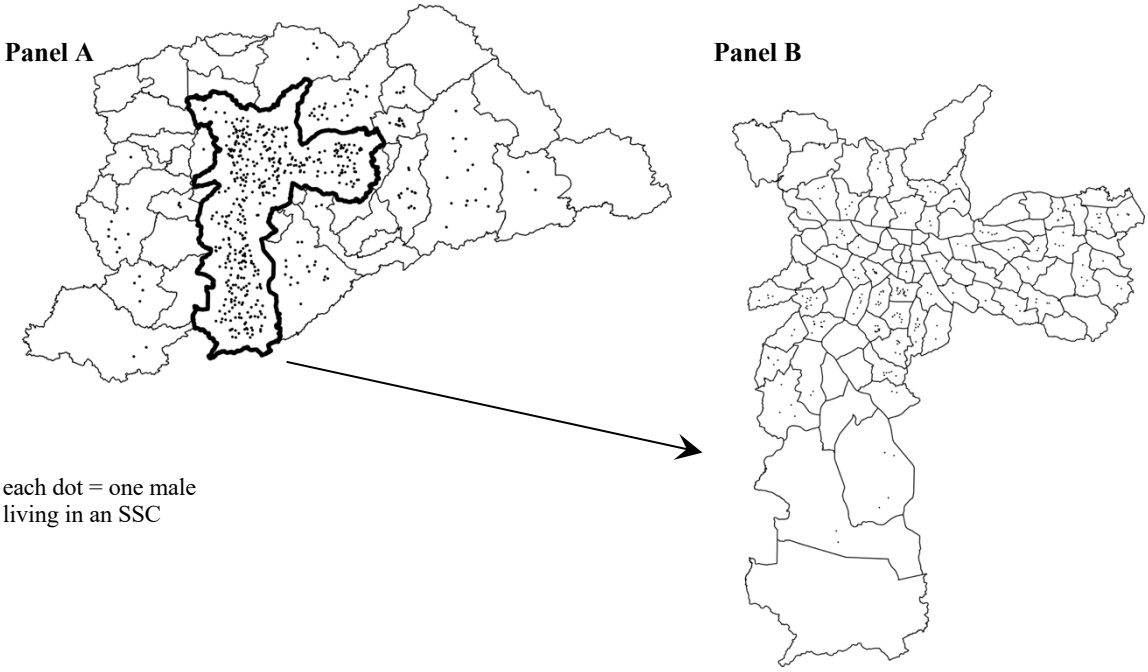
Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

Figure 2.3: Spatial distribution of male SSCs in the São Paulo metropolitan region (Panels A and C) and municipality (Panels B and D)

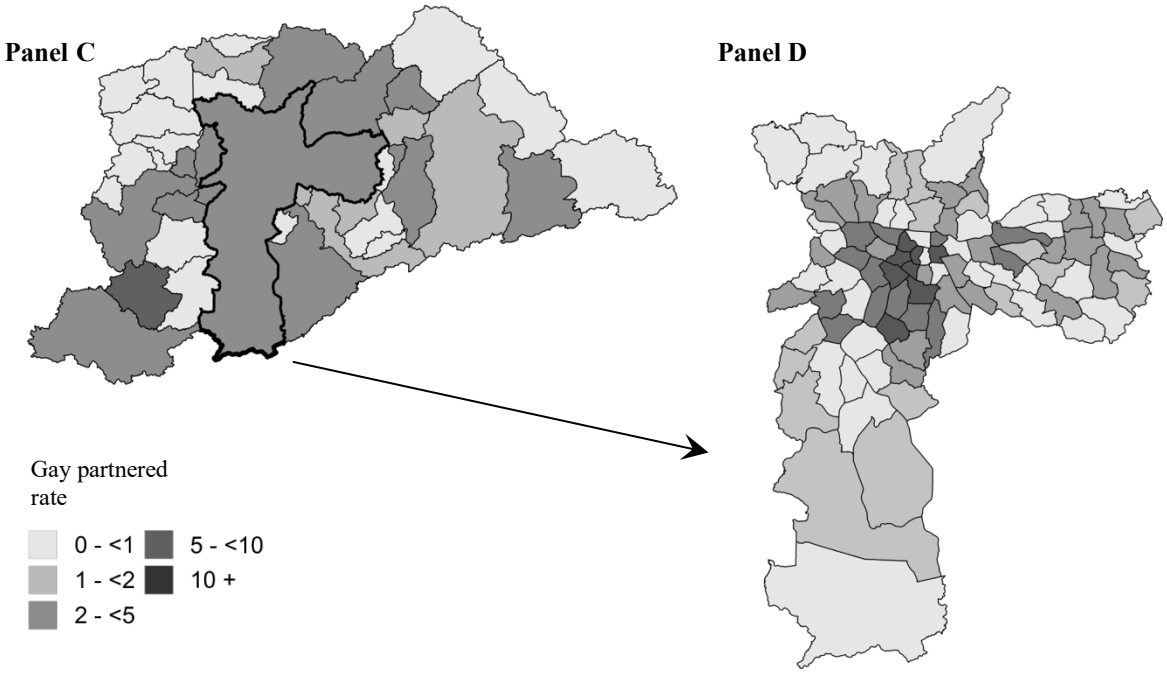
Absolute distribution

Metropolitan region, by municipality (39)

Municipality, by subdistrict (96)



Relative distribution, gay partnered rates



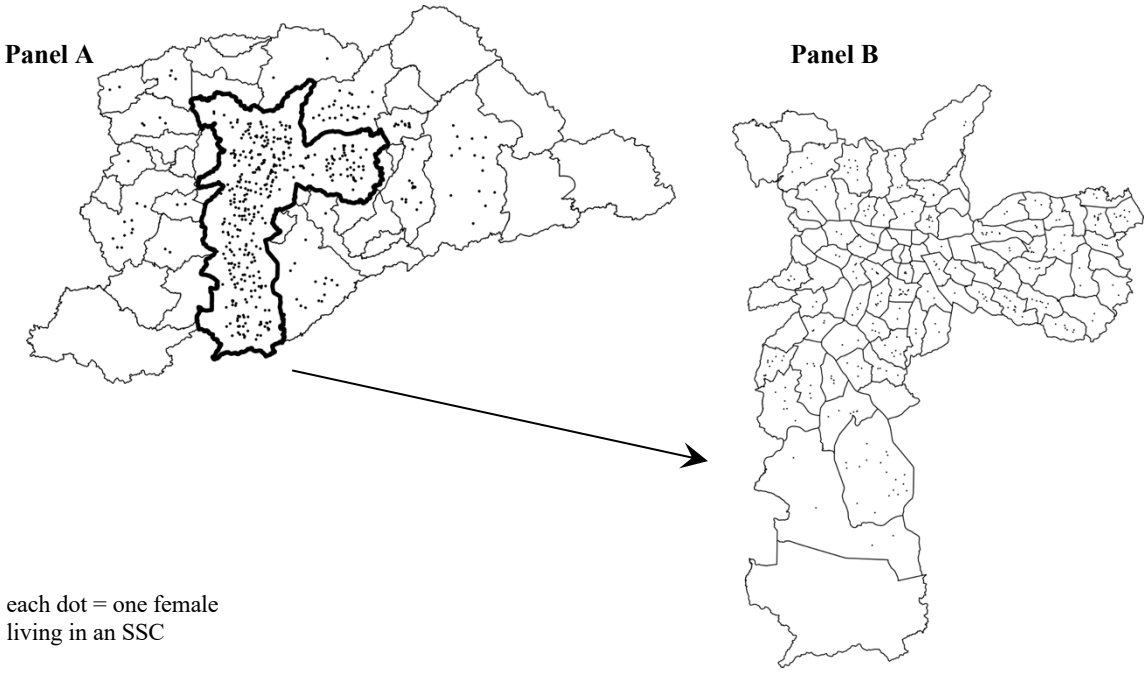
Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

Figure 2.4: Spatial distribution of female SSCs in the São Paulo metropolitan region (Panels A and C) and municipality (Panels B and D)

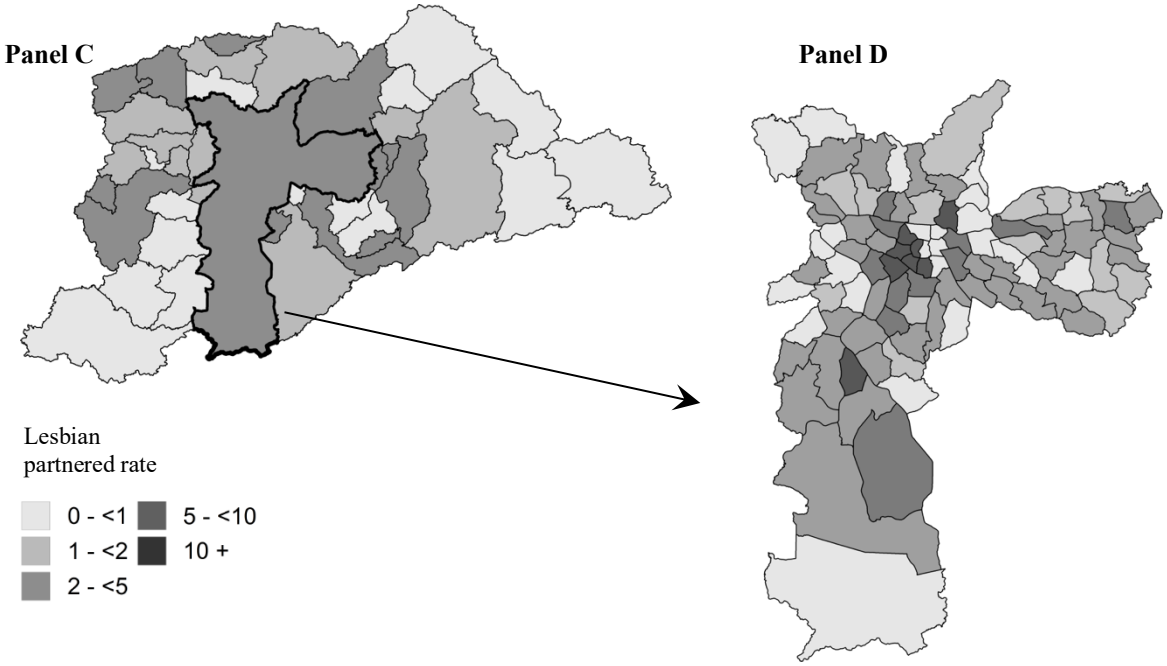
Absolute distribution

Metropolitan region, by municipality (39)

Municipality, by subdistrict (96)



Relative distribution, lesbian partnered rates



Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

Table 2.1: Individual and contextual characteristics of the study sample

	Rio de Janeiro				São Paulo			
	Male		Female		Male		Female	
	SSC	OSC	SSC	OSC	SSC	OSC	SSC	OSC
Individual variables: Distributions							(except Income, all values in column are %)	
Age group								
Under 30	22.7	11.4	23.4	17.1	26.7	11.4	34.8	18.2
30–39	31.7	23.6	38.6	26.0	35.4	29.3	33.4	30.3
40–49	27.7	23.4	24.3	23.2	27.3	23.8	22.8	22.5
50+	17.9	41.5	13.6	33.7	10.6	35.5	9.0	28.9
Education								
Less than Primary	11.0	28.7	9.5	28.0	10.4	35.8	17.9	31.7
Primary compl.[1]	7.2	16.9	13.2	18.5	8.6	19.2	13.0	19.8
Secondary compl.	42.6	33.4	46.1	33.4	32.9	25.4	39.4	30.4
Tertiary compl.	39.2	20.9	31.2	20.1	48.0	19.6	29.6	18.1
Religion								
Catholic	30.4	53.2	27.9	51.6	41.0	63.1	42.7	58.9
Evangelical	12.4	24.5	12.2	30.8	11.5	22.5	10.9	29.0
Spiritualists	16.8	5.4	18.4	6.8	13.7	4.0	18.4	5.1
Afro-Brazilian	14.7	1.1	13.9	1.2	7.6	0.5	8.1	0.6
Other	0.3	0.9	2.1	0.8	1.5	0.7	2.2	0.7
No religion	25.4	14.9	25.6	8.7	24.7	9.2	17.7	5.7
Income								
Brazilian Reals[2]	4,120	2,730	3,192	1,847	5,234	2,959	2,422	1,984

Ethnicity								
White	62.3	52.5	58.0	54.0	75.4	61.4	69.6	62.7
Black	10.0	11.7	13.1	10.1	3.4	6.6	10.0	4.9
Brown	26.5	35.0	28.1	34.9	19.9	29.5	18.9	28.7
Others	1.2	0.8	0.8	1.0	1.3	2.5	1.5	3.7
Foreign-born								
Yes	37.2	31.0	22.5	31.0	50.5	45.3	35.0	45.3
No	62.8	69.0	77.5	69.0	49.5	54.7	65.0	54.7
Contextual variables: Averages								
Percentile	25%	50%	75%	25%	50%	75%		
Whites Share	34.2	46.8	71.9	44.8	65.1	83.9		
Mean Income[2]	838	1,333	3,730	1,006	1,835	5,162		
Catholics Share	44.5	52.3	61.5	51.1	60.1	68.2		
Mean Age[2]	31.0	34.6	39.7	29.3	34.4	39.5		
Single HH[3] Share	3.9	5.7	13.1	2.6	4.6	12.1		
Population Density	68.3	223.9	601.7	129.4	280.1	515.3		
Income Inequality[4]	3.1	5.9	14.8	4.0	7.3	15.6		
Renter Share	13.2	21.3	31.6	14.0	22.0	37.8		

Source: 2010 Brazilian census, Brazilian Institute for Geography and Statistics (2013a)
[1] compl. = completed; [2] values in these rows are means, not %; [3] HH = household; [4] values in this row are ratios, not %

Table 2.2: Deviation of gay partnered rates (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average, Rio de Janeiro
(lines in the middle of the table show the limits of the three groups)

Subdistrict ID	Gay partnered rate	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
526		51.13	1,344.96	63.24	37.43	7.48	196.60	5.45	29.39
532		46.78	1,479.25	57.26	34.15	4.55	133.96	5.88	20.76
535		30.04	869.76	44.53	27.67	3.84	270.12	2.75	16.60
538		25.65	975.33	49.46	28.73	4.90	286.07	3.14	11.63
536	1.58	38.98	929.61	51.90	28.50	4.82	307.57	2.94	27.29
539	1.68	40.40	1,207.38	50.85	31.79	4.68	128.09	4.31	16.94
522	2.10	36.76	1,280.33	41.22	31.98	11.91	77.98	4.90	13.07
513	2.33	72.86	3,863.92	60.81	38.38	6.47	51.66	16.01	20.56
524	2.37	32.45	1,080.46	36.77	29.88	4.46	23.35	3.92	9.30
523	2.65	40.42	1,438.98	40.32	32.15	3.94	40.80	5.88	13.29
525	2.98	56.02	2,314.06	53.57	33.82	4.90	56.17	10.00	20.55
512	3.07	38.81	1,346.70	50.63	32.42	14.37	108.21	4.90	25.77
531	3.33	39.85	1,145.30	46.92	29.67	3.75	8.07	3.92	11.99
537	3.49	41.67	1,500.35	48.20	32.34	4.59	49.75	5.88	15.23
520	3.52	43.90	1,492.48	51.82	33.96	5.07	137.78	5.88	22.40
527	3.82	39.51	1,353.42	43.50	32.83	4.51	128.80	4.90	16.65
517	3.90	56.08	2,247.79	56.98	36.06	5.45	152.80	9.80	22.14
506	4.51	45.02	984.97	66.67	30.87	6.26	65.56	3.48	27.36
516	5.01	48.45	1,589.75	53.75	33.22	3.76	147.06	5.88	20.11
521	5.09	52.39	2,124.83	55.09	32.53	5.04	48.18	9.80	24.83
519	5.30	51.56	1,757.77	51.47	35.31	4.05	153.96	7.84	18.70
508	5.84	43.96	1,529.95	55.02	33.10	6.18	151.95	6.86	27.56
530	6.15	35.05	1,193.95	42.24	30.78	4.11	125.31	3.92	13.96

533	6.19	37.44	858.17	58.80	26.82	6.39	501.55	2.78	33.21
529	6.50	73.34	6,139.44	61.69	34.92	7.86	18.97	25.00	23.34
515	8.07	48.66	1,516.76	56.39	32.82	3.79	150.48	5.88	22.73
511	9.79	82.17	7,911.63	63.91	39.96	10.28	82.48	25.71	18.98
514	10.36	68.63	3,226.44	54.74	37.11	6.65	165.14	14.36	20.96
528	10.61	52.87	2,026.56	50.00	33.32	9.76	88.84	9.12	30.53
534	11.27	31.86	841.85	37.25	28.71	3.80	427.59	2.94	21.75
509	20.82	78.99	5,228.85	58.60	39.22	12.17	178.92	15.74	30.23
510	30.63	78.72	4,948.10	60.45	40.77	13.73	361.66	17.00	31.76
507	35.71	59.43	2,085.14	62.16	39.24	27.03	83.71	8.04	47.90
Total average		49.09	2,116.19	52.61	33.35	6.99	148.76	8.03	22.05
Average low group (< 4‰)		43.02	1,521.77	49.88	32.46	5.87	126.93	5.91	18.45
Average medium group (≥ 4 < 8‰)		48.40	2,022.35	55.59	32.19	5.46	151.57	8.20	23.64
Average high group (≥ 8‰)		62.66	3,473.17	55.44	36.39	10.90	192.35	12.35	28.11

Deviance from average for each group of gay partnered rates:

	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
low (< 4‰)	-0.12	-0.28	-0.05	-0.03	-0.16	-0.15	-0.26	-0.16
medium (≥ 4 < 8‰)	-0.01	-0.04	0.06	-0.04	-0.22	0.02	0.02	0.07
high (≥ 8‰)	0.28	0.64	0.05	0.09	0.56	**0.29**	0.54	0.28

Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics

Interpretation: The value of 0.29 in column “Population Density” means that population density in subdistricts in Rio de Janeiro with a high gay partnered rate compared to the overall average of population density is increased by 29% (29=(192.35*100/148.76)-100.

Table 2.3: Deviation of lesbian partnered rates (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average, Rio de Janeiro
(lines in the middle of the table show the limits of the three groups)

Subdistrict ID	Lesbian partnered rate	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
507	0.00	58.84	1,488.02	66.04	43.32	22.31	202.46	5.88	44.34
508	0.00	46.48	1,133.44	55.82	37.01	5.58	399.22	4.20	26.66
526	0.00	56.75	1,092.16	63.49	42.60	9.47	393.20	5.00	32.35
534	0.00	31.73	632.26	39.13	29.46	3.03	1,289.66	2.58	18.98
535	0.00	34.35	654.58	43.04	29.72	2.28	770.12	2.86	15.21
519	1.06	52.49	1,292.60	53.04	39.51	6.34	399.02	7.00	20.28
516	1.26	50.42	1,092.25	53.76	36.95	5.28	380.67	4.00	20.08
515	1.35	50.21	1,164.73	55.15	36.59	5.30	417.64	5.00	22.13
536	1.58	39.65	690.94	52.27	29.97	3.47	879.11	2.50	25.72
520	1.76	47.30	1,065.25	51.86	37.95	6.31	370.69	5.71	22.53
527	2.55	41.08	949.24	42.46	35.55	4.73	345.09	6.67	15.77
517	2.79	57.17	1,624.34	57.00	40.07	7.06	404.36	6.86	22.37
525	2.98	58.58	1,565.52	53.31	37.56	5.83	149.15	7.00	19.74
523	3.03	43.17	975.96	39.35	34.56	4.40	111.39	6.67	12.78
522	3.15	38.92	891.09	41.91	34.92	5.70	202.07	5.22	14.08
531	3.33	40.90	803.53	45.20	31.07	3.22	23.00	6.25	13.21
539	3.36	40.92	920.32	51.95	35.56	5.43	342.23	4.25	17.96
529	3.91	74.87	3,903.73	61.39	36.24	5.49	48.18	18.04	23.31
521	4.01	54.07	1,517.25	52.94	35.45	5.63	131.34	7.00	23.17
532	4.78	47.02	1,071.77	53.75	37.21	5.74	370.82	4.59	20.39
528	5.33	52.44	1,488.07	50.50	35.84	9.07	246.88	6.86	29.20
514	5.78	70.20	2,389.92	55.56	41.83	10.10	435.74	10.20	20.53
512	6.12	40.16	1,036.11	51.82	35.50	7.31	295.82	4.25	27.09
530	6.15	36.38	833.42	40.68	33.29	4.53	362.00	3.75	14.13
533	6.19	36.24	706.66	55.57	27.70	3.47	1,503.88	2.04	29.69
537	6.96	43.36	1,030.09	45.59	36.17	5.44	132.45	5.60	15.31

511	7.36	83.32	4,652.15	66.05	43.42	12.37	197.25	19.96	18.62
510	7.47	78.81	3,143.76	64.24	46.57	18.75	963.18	13.73	30.47
513	8.12	75.08	2,881.03	61.56	43.39	10.58	134.67	11.76	20.87
524	8.82	35.01	783.47	35.74	32.27	3.91	66.29	5.79	9.52
506	8.99	44.04	683.45	66.91	33.76	6.20	170.54	2.75	24.57
509	10.52	79.77	3,639.19	62.51	44.21	17.20	471.67	15.69	29.11
538	20.34	26.33	761.72	47.84	32.08	3.43	815.57	3.25	11.36
Total average		50.49	1,471.46	52.65	36.58	7.12	406.83	6.76	21.56
Average low group (< 4‰)		47.99	1,218.89	51.45	36.03	6.18	395.96	5.87	21.53
Average medium group (≥ 4 < 8‰)		54.20	1,786.92	53.67	37.30	8.24	463.93	7.80	22.86
Average high group (≥ 8‰)		52.04	1,749.77	54.91	37.14	8.26	331.75	7.85	19.09

Deviance from average for each group of lesbian partnered rates:

	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
low (< 4‰)	-0.050	-0.172	-0.023	-0.015	-0.132	-0.027	-0.131	-0.001
medium (≥ 4 < 8‰)	0.073	0.214	0.019	0.020	0.157	0.140	0.153	0.060
high (≥ 8‰)	0.031	0.189	0.043	0.015	0.161	-0.185	0.161	-0.115

Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

Table 2.4: Deviation of gay partnered rates (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average, São Paulo
(lines in the middle of the table show the limits of the three groups)

Subdistrict ID	Gay partnered rate	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
100		84.08	2,723.61	64.92	37.66	3.79	268.78	10.00	26.93
300		47.11	1,229.69	60.70	27.92	3.50	48.07	4.40	22.39
400		69.93	1,822.76	57.73	34.54	3.20	329.87	6.86	21.27
800		66.84	2,837.69	62.45	33.23	9.99	181.15	11.10	39.62
900		50.66	1,916.17	50.79	32.46	5.98	202.12	9.80	51.45
1100		46.28	1,154.34	53.55	28.21	2.69	310.11	3.92	21.96
1200		76.71	4,354.44	62.58	37.12	8.53	93.77	14.29	23.81
1400		72.60	3,346.13	59.29	34.32	6.45	218.10	13.33	37.28
1600		75.97	3,888.67	65.61	34.66	4.03	172.96	12.86	16.92
1800		60.54	1,558.91	54.43	31.38	2.58	235.69	5.88	20.59
2100		67.24	2,501.77	65.42	34.20	4.09	277.73	10.28	31.58
2300		50.78	1,181.64	39.24	28.32	1.95	266.40	4.90	48.50
2800		54.75	1,424.36	55.12	30.29	3.08	293.51	5.88	22.03
3300		47.29	1,056.66	55.51	28.28	2.55	168.04	3.92	15.88
4000		71.29	2,276.06	69.92	35.85	3.59	273.57	6.67	26.07
4200		50.55	1,337.15	53.32	28.83	2.07	173.54	4.90	14.91
4400		43.56	1,050.48	51.20	29.43	3.06	371.50	4.00	17.34
5000		64.94	2,075.60	60.24	33.34	4.53	292.77	8.33	27.83
5200		48.69	884.28	59.29	31.03	6.41	4.15	15.00	3.72
5400		79.72	11,239.25	70.76	35.96	6.36	92.41	42.43	12.20
5700		59.00	1,364.01	57.94	28.96	3.46	101.52	4.98	16.69
6100		47.55	1,164.56	53.74	28.28	2.42	89.03	3.92	15.86
6400		82.10	1,320.01	80.18	35.38	1.52	772.41	1.88	8.95
6700		62.48	2,970.45	60.51	32.19	4.18	306.37	11.67	19.04
7100		87.76	6,632.79	61.51	38.09	6.20	100.78	18.75	20.33

7500		50.31	1,126.25	55.63	28.26	2.34	276.71	3.92	15.32
7800		61.50	1,750.99	61.85	29.07	9.33	297.41	5.83	44.41
7900		74.36	4,811.45	67.69	36.96	3.72	71.89	11.76	18.49
8100		59.67	1,605.95	55.97	30.88	2.93	86.88	5.88	23.08
8500		77.57	2,552.20	60.22	35.39	3.25	287.78	10.00	26.64
8800		77.50	5,955.42	66.96	33.52	13.86	148.87	15.00	17.71
8900		58.77	1,596.92	62.75	31.38	3.54	241.17	5.88	42.39
9600		65.18	1,402.63	67.46	25.48	1.57	756.42	3.92	8.60
7600	0.72	56.26	1,211.97	53.81	31.21	2.74	515.68	4.05	17.96
4600	0.79	47.85	1,302.76	66.62	29.72	3.64	260.81	4.90	22.85
6800	0.85	64.90	1,992.47	62.52	31.69	2.84	403.63	6.67	23.65
1700	1.03	33.10	1,627.95	76.35	34.29	1.96	627.58	4.17	47.96
2500	1.07	42.49	1,031.85	48.39	26.98	2.95	357.24	3.33	7.99
3000	1.22	36.03	1,106.58	66.09	30.16	18.66	110.30	3.14	15.60
7200	1.43	71.47	1,989.38	59.51	34.45	3.38	354.15	7.71	22.07
4300	1.48	36.83	986.25	62.73	27.68	3.48	194.50	2.97	21.91
5800	1.49	44.14	1,176.84	64.09	29.31	2.61	189.98	3.92	17.90
1300	1.56	53.55	1,485.15	52.73	30.06	2.70	254.09	5.88	22.35
2400	1.59	41.40	2,140.74	64.44	31.97	2.06	435.01	5.00	12.72
5500	1.65	38.13	971.31	56.70	27.70	3.48	22.18	3.00	12.13
1900	1.65	43.27	1,274.91	60.80	28.56	3.36	476.41	4.31	20.51
9200	1.78	63.87	1,582.16	62.92	33.34	3.18	392.10	5.88	34.02
5100	1.88	73.06	2,777.83	63.19	34.47	3.80	198.80	10.00	23.68
7000	1.90	82.95	4,550.40	64.75	38.18	5.03	189.38	14.29	21.88
3600	1.96	42.65	1,086.95	50.83	28.66	2.86	460.28	3.92	16.08
9100	1.99	71.09	2,075.54	59.31	34.41	3.91	280.43	8.82	25.45
9300	2.04	78.33	2,730.76	65.52	36.31	6.38	247.93	10.00	27.89
8000	2.10	84.99	4,498.78	64.75	37.17	5.17	254.59	12.50	21.44
3400	2.10	82.34	1,967.20	79.61	37.17	3.67	341.54	5.33	20.36
3100	2.11	47.29	1,120.47	48.51	28.93	4.23	282.19	4.00	19.57
500	2.13	58.89	1,524.30	56.07	33.06	3.75	393.58	5.88	20.89

3700	2.13	52.11	1,464.37	53.83	31.05	2.80	344.08	5.88	17.01
7400	2.41	50.77	1,282.20	56.12	31.58	3.68	261.57	4.90	23.21
3900	2.44	62.32	1,601.62	57.54	31.44	4.12	309.98	5.77	23.97
9500	2.48	65.61	2,220.16	58.49	33.46	4.42	205.14	9.80	22.46
6300	2.52	66.54	2,098.65	55.99	32.75	3.85	228.87	9.09	23.83
7300	2.58	59.75	1,436.55	51.91	31.16	2.78	312.66	5.10	21.05
2200	2.61	45.01	1,648.94	62.72	30.17	3.41	521.33	4.93	24.63
5300	2.72	86.07	3,858.78	67.22	36.44	9.52	223.25	14.29	25.27
3800	2.91	46.80	2,062.25	51.08	32.92	3.30	481.56	8.20	20.24
2900	2.93	68.50	2,063.17	60.29	33.47	3.46	322.03	9.08	26.24
8700	3.02	47.76	1,301.67	53.43	29.15	2.70	430.03	4.40	20.44
4900	3.40	63.80	4,073.57	60.00	35.80	12.20	425.47	14.29	40.67
4700	3.42	26.76	1,027.04	75.18	27.53	1.75	396.55	3.33	6.09
6000	3.51	89.44	6,716.12	62.44	36.98	7.30	400.36	15.00	22.60
4100	4.03	58.79	2,750.19	57.45	32.74	3.51	168.05	10.83	15.01
8600	4.16	75.02	2,544.69	70.68	35.34	2.98	162.28	8.68	30.69
6500	4.42	47.40	1,518.78	59.50	29.62	3.29	207.43	5.88	18.67
8400	4.45	47.55	1,212.39	48.60	29.45	3.33	383.81	3.92	18.26
8200	4.63	78.25	2,537.66	62.66	36.52	4.67	238.92	8.33	28.41
2000	5.01	74.77	2,735.01	62.15	35.74	3.64	251.96	9.17	24.06
5900	5.11	72.26	2,000.58	62.24	35.65	3.90	263.50	7.50	24.61
7700	6.35	76.01	4,915.19	62.52	37.70	8.00	323.99	12.50	23.05
3500	6.63	92.05	8,436.56	65.51	38.86	13.69	201.35	18.00	23.59
8300	6.76	52.60	4,849.37	67.63	27.88	5.28	299.78	29.41	18.28
6200	7.08	86.23	8,017.41	58.70	37.87	11.00	180.85	18.75	29.92
2700	7.31	64.98	3,023.05	62.67	34.98	3.19	227.46	11.67	29.79
5600	7.52	60.22	1,786.28	65.67	32.12	6.07	304.56	7.84	53.71
600	8.23	78.20	5,010.28	53.98	34.40	10.10	111.15	16.06	26.97
4800	9.30	86.93	5,002.71	67.33	39.35	6.27	138.06	17.10	24.74
3200	9.32	91.35	10,636.55	66.87	38.50	10.80	203.72	13.33	21.92
200	9.55	87.68	8,377.83	68.13	39.31	5.50	127.30	16.00	19.71

9400	9.81	64.45	3,713.23	68.38	33.01	4.10	250.95	16.67	20.88
1500	12.29	82.86	7,132.78	61.80	37.98	7.09	170.08	18.75	15.79
9000	13.66	80.76	7,482.04	63.26	37.60	8.70	328.12	15.00	24.49
1000	14.93	62.31	1,845.48	64.44	31.31	8.94	204.35	6.58	48.51
4500	34.57	90.97	9,041.20	63.08	39.83	17.10	314.47	16.67	24.77
6900	39.83	86.92	7,143.45	72.99	37.43	10.22	884.10	10.00	64.56
700	59.90	73.00	4,374.36	57.69	35.20	17.52	610.25	14.29	44.63
2600	59.91	87.25	7,759.81	56.01	39.29	21.86	327.76	15.00	33.09
6600	112.31	67.74	2,375.77	54.21	35.62	21.74	620.00	8.33	50.79
Total average		64.02	2,972.95	60.89	33.06	5.52	285.64	9.29	24.51
Average low group (< 4‰)		60.28	2,274.01	60.30	32.15	4.40	284.52	7.94	22.78
Average medium group (≥ 4 < 8‰)		68.16	3,563.63	62.00	34.19	5.58	247.23	11.73	26.00
Average high group (≥ 8‰)		80.03	6,145.81	62.94	36.83	11.53	330.02	14.14	32.37

Deviance from average for each group of gay partnered rates:

	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
low (< 4‰)	-0.058	-0.235	-0.010	-0.028	-0.203	-0.004	-0.145	-0.071
medium (≥ 4 < 8‰)	0.065	0.199	0.018	0.034	0.011	-0.134	0.263	0.061
high (≥ 8‰)	0.250	1.067	0.034	0.114	1.089	0.155	0.522	0.321

Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

Table 2.5: Deviation of lesbian partnered rates (< 4‰, ≥ 4 < 8‰, ≥ 8‰) from their average, São Paulo
(lines in the middle of the table show the limits of the three groups)

Subdistrict ID	Lesbian partnered rate	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
300		50.56	878.52	57.50	28.83	1.95	51.22	3.75	23.68
400		70.60	1,263.52	51.24	37.14	4.67	351.32	6.15	21.57
900		52.15	1,549.17	54.42	34.25	5.32	210.08	6.00	48.93
1000		65.55	1,306.37	60.70	32.49	6.98	204.66	6.00	47.87
1200		78.45	3,154.68	60.62	41.31	10.75	111.14	11.67	19.98
1300		55.96	1,081.64	50.37	32.44	3.18	282.05	5.67	22.24
1400		75.14	2,388.33	60.35	38.77	8.81	248.56	9.56	33.62
1700		41.42	1,233.28	69.30	39.38	2.82	563.61	5.00	36.17
2000		76.92	1,862.19	58.97	39.83	5.64	293.61	8.00	23.60
3900		62.86	1,125.06	53.90	34.15	3.82	349.47	4.40	22.61
4100		61.79	1,868.51	54.07	33.61	6.01	210.19	8.40	17.43
5200		53.99	545.98	59.13	30.84	2.35	4.02	18.15	5.68
5400		79.83	4,625.00	68.52	38.51	5.99	104.64	22.75	10.78
5600		67.67	1,327.82	62.77	36.76	9.35	329.88	5.46	47.34
5700		57.86	1,108.07	51.50	31.95	3.68	105.78	5.00	14.77
5800		46.28	884.01	61.62	31.18	3.33	201.16	3.75	18.75
6100		49.03	857.79	52.55	30.66	2.31	91.14	3.33	16.07
6500		51.48	1,099.91	57.46	31.80	4.54	222.40	7.14	18.80
7800		56.37	1,254.92	63.20	32.04	9.65	288.60	4.45	43.63
8000		86.07	3,527.44	63.69	40.86	7.89	303.99	11.76	19.63
8800		81.89	4,273.55	69.20	37.42	7.98	155.50	17.61	17.01
8900		63.02	1,310.34	58.94	34.64	4.34	260.84	5.00	39.48
9200		65.82	1,151.94	58.37	36.67	4.66	454.89	4.40	32.90
6800	0.85	67.36	1,385.50	60.46	34.45	4.63	460.09	6.00	22.19
2500	1.07	44.25	785.46	45.89	29.11	2.91	382.79	4.17	7.73

8100	1.12	58.77	1,146.91	55.94	32.92	4.29	92.11	4.00	22.92
6300	1.26	68.05	1,500.97	54.79	35.56	4.96	258.20	6.00	23.03
2900	1.47	69.06	1,480.51	59.30	36.91	4.68	361.99	5.92	26.35
8700	1.51	49.89	896.94	50.89	31.72	3.36	458.26	5.33	21.05
3300	1.59	49.65	751.25	49.48	30.11	2.44	172.68	4.00	14.68
7700	1.60	77.65	3,329.44	63.62	41.57	10.48	388.25	10.94	22.14
1800	1.62	62.57	1,123.42	53.14	34.46	4.39	265.87	4.40	22.07
4400	1.67	46.97	804.81	46.56	31.09	2.90	396.28	4.64	16.79
4700	1.71	23.43	686.60	77.66	26.71	1.87	508.47	4.29	5.31
2200	1.74	48.68	1,360.31	59.93	32.76	3.46	580.06	5.00	23.71
7000	1.90	81.39	2,579.16	62.16	42.03	13.99	235.75	12.00	22.77
2800	1.92	56.38	1,086.90	51.32	32.20	2.95	318.51	5.50	23.02
9400	1.98	66.32	2,362.90	65.69	35.84	4.22	282.94	10.00	18.54
9100	1.99	72.63	1,589.09	56.23	37.45	5.09	325.41	5.88	25.09
9300	2.04	80.67	1,756.15	63.61	40.25	8.24	290.08	7.28	26.99
3400	2.10	82.38	1,512.48	78.36	33.81	5.30	376.72	5.00	18.77
3100	2.11	48.43	841.73	44.78	30.74	3.87	307.38	4.29	17.86
3700	2.13	52.58	1,065.08	52.02	32.83	3.16	376.31	4.58	15.74
4300	2.22	38.78	756.84	60.83	29.27	2.61	206.33	3.00	21.66
8500	2.26	78.81	1,650.52	57.12	38.58	6.50	333.79	7.00	24.58
4200	2.29	52.27	956.76	52.14	30.90	2.67	184.97	3.65	14.12
4600	2.38	50.62	999.11	62.58	31.91	3.83	282.52	4.03	22.00
7400	2.41	54.93	1,051.59	53.53	34.75	3.68	279.87	5.00	20.83
9500	2.48	69.06	1,552.40	57.71	35.64	4.75	221.35	6.94	23.07
7100	2.74	86.78	3,485.72	62.67	40.96	8.23	121.21	13.33	20.26
2100	2.82	67.37	1,650.51	63.19	38.35	5.88	321.48	7.00	31.64
3800	2.91	72.39	1,332.74	42.98	30.02	3.69	631.72	7.50	16.78
4800	3.12	86.95	3,097.66	68.87	42.86	9.58	171.07	14.12	22.16
2400	3.18	33.22	939.62	71.29	28.16	1.77	565.63	2.94	10.55
5500	3.29	40.67	756.39	55.37	29.10	2.54	23.12	4.00	11.93
2300	3.33	68.49	1,082.92	38.83	32.81	2.25	281.67	5.00	47.18

8300	3.39	53.16	3,022.14	66.98	29.26	3.26	305.48	16.00	15.04
1100	3.44	48.34	839.74	50.68	30.16	2.70	339.54	4.17	22.36
6700	3.48	65.71	1,991.84	58.38	34.32	4.15	325.72	9.80	18.59
6000	3.51	89.47	4,254.19	64.64	41.16	11.82	486.56	13.57	19.52
7600	3.60	58.34	892.91	50.34	32.78	3.47	566.72	4.29	18.22
2700	3.67	67.15	2,083.38	62.22	38.61	4.94	251.08	10.00	27.41
5100	3.75	74.89	2,050.87	60.94	36.93	4.74	225.54	8.24	22.34
7300	3.86	61.67	1,168.62	49.26	33.76	3.84	318.09	4.46	20.27
3600	3.92	43.85	811.34	48.47	30.73	2.92	495.56	5.00	16.43
9600	3.98	64.65	1,330.29	65.18	25.64	1.70	792.63	4.00	8.93
1600	4.01	76.94	2,650.50	61.47	37.41	5.56	209.65	9.30	16.96
1900	4.11	46.50	934.24	57.97	30.67	3.38	521.70	4.25	21.05
4000	4.15	71.20	1,463.64	67.09	39.67	5.50	291.77	5.33	25.64
500	4.24	60.24	1,196.10	52.00	36.96	4.64	442.36	5.21	18.45
7200	4.27	73.36	1,376.57	56.75	37.26	5.31	396.96	6.00	22.74
7500	4.42	50.56	808.07	51.28	29.46	2.21	287.88	5.00	15.70
3500	4.43	90.52	4,697.96	66.32	42.41	16.49	241.38	13.33	20.45
6400	4.56	74.05	1,217.96	70.40	42.16	3.04	608.62	5.00	13.26
8200	4.63	78.63	1,842.78	61.34	41.04	7.50	276.29	8.00	28.60
200	4.80	86.69	4,254.38	69.83	43.41	10.48	157.47	1.43	16.20
100	4.94	84.55	2,226.37	61.26	40.56	6.39	313.79	10.00	26.09
800	5.24	73.96	1,915.14	61.30	38.13	6.14	204.44	9.91	38.01
5300	5.43	88.43	2,712.27	64.96	40.43	8.73	254.07	9.17	26.38
3000	5.46	43.11	822.83	60.39	29.77	2.91	102.26	3.85	18.32
5000	5.57	64.70	1,450.68	59.18	35.70	4.35	338.27	5.88	26.15
1500	6.18	85.24	4,059.49	63.64	41.88	10.21	200.13	19.61	14.24
5900	6.80	74.89	1,501.73	60.15	38.65	6.30	300.59	5.88	23.38
3200	7.01	90.66	6,032.68	67.97	41.77	15.14	244.42	15.55	20.57
6200	7.08	85.07	4,034.60	63.36	44.27	17.92	207.93	16.67	26.50
8400	7.40	48.19	892.01	47.13	31.90	3.32	414.52	4.29	18.01
600	8.23	83.14	3,165.37	57.57	40.72	15.13	134.62	11.67	23.81

9000	8.58	81.68	4,455.39	64.32	42.90	15.85	417.77	14.29	22.63
4900	10.14	67.82	3,036.93	58.73	39.89	18.04	501.86	13.73	35.88
7900	10.53	76.63	2,428.05	65.12	40.10	4.50	79.26	7.87	19.42
6900	11.71	48.99	6,456.84	32.90	37.46	10.40	950.76	12.50	60.51
4500	12.63	89.53	5,460.57	65.77	43.84	19.15	390.42	17.14	23.53
8600	16.43	77.52	1,796.56	68.70	39.17	7.38	200.47	8.00	31.67
2600	23.92	86.32	3,837.02	59.02	42.37	21.92	410.15	11.46	27.40
700	24.18	72.95	2,909.44	60.44	38.64	18.80	704.51	11.67	40.51
6600	28.37	67.21	1,697.48	56.33	37.88	19.34	632.20	6.86	43.61
Total average		65.47	1,945.99	58.82	35.74	6.47	316.72	7.76	23.34
Average low group (< 4‰)		61.90	1,598.21	58.10	34.31	4.92	302.55	7.06	22.35
Average medium group (≥ 4 < 8‰)		72.37	2,304.50	61.19	38.18	7.28	300.72	8.18	21.84
Average high group (≥ 8‰)		75.18	3,524.37	58.89	40.30	15.05	442.20	11.52	32.90

Deviance from average for each group of lesbian partnered rates:

	White Share	Mean Income	Catholic Share	Mean Age	Single Household Share	Population Density	Income Inequality	Renter Share
low (< 4‰)	-0.055	-0.179	-0.012	-0.040	-0.240	-0.045	-0.090	-0.042
medium (≥ 4 < 8‰)	0.105	0.184	0.040	0.068	0.124	-0.051	0.055	-0.064
high (≥ 8‰)	0.148	0.811	0.001	0.128	1.326	0.396	0.484	0.409

Source: 2010 Brazilian census microdata, Brazilian Institute for Geography and Statistics (2013a)

APPENDIX B: SAME-SEX COUPLES IN GERMANY AND BERLIN

Table 3.1: Gay partnered rates, Germany, by 16-/four-year cluster, federal state

Males	1996–1999				2000–2003				2004–2008 (without 2007)				2009–2012				1996–2012 (without 2007)			
	N male	N OSCs[a]	GPR[b]	SG[c]	N male	N OSCs	GPR	SG	N male	N OSCs	GPR	SG	N male	N OSCs	GPR	SG	N male	N OSCs	GPR	SG
Schleswig-Holstein	34	16,963	2.00	5.72	72	17,190	4.17	8.11	62	17,760	3.48	6.18	70	17,348	4.02	6.77	238	69,260	3.42	6.82
Hamburg	56	9,071	6.14	17.54	50	8,847	5.62	10.93	72	8,709	8.20	14.56	110	8,427	12.89	21.69	288	35,053	8.15	16.22
Lower Saxony	118	46,374	2.54	7.25	118	46,707	2.52	4.90	112	44,975	2.48	4.41	118	48,482	2.43	4.09	466	186,538	2.49	4.96
Bremen	0	3,848	0.00	0.00	16	3,263	4.88	9.49	2	3,413	0.59	1.04	14	3,221	4.33	7.29	32	13,745	2.32	4.62
North Rhine-Westphalia	334	107,940	3.08	8.82	398	105,349	3.76	7.31	464	104,919	4.40	7.82	400	103,122	3.86	6.50	1596	421,329	3.77	7.51
Hesse	84	37,468	2.24	6.39	72	36,468	1.97	3.83	142	37,841	3.74	6.64	180	37,684	4.75	8.00	478	149,460	3.19	6.35
Rhineland-Palatinate	58	25,822	2.24	6.41	48	25,541	1.88	3.65	82	24,521	3.33	5.92	80	24,592	3.24	5.46	268	100,475	2.66	5.30
Baden-Württemberg	50	62,357	0.80	2.29	130	60,869	2.13	4.14	124	63,009	1.96	3.49	166	63,656	2.60	4.38	470	249,891	1.88	3.74
Bavaria	134	74,662	1.79	5.12	186	74,885	2.48	4.82	166	77,185	2.15	3.81	204	77,759	2.62	4.41	690	304,490	2.26	4.50
Saarland	6	6,383	0.94	2.68	16	6,248	2.55	4.96	22	6,021	3.64	6.46	4	6,045	0.66	1.11	48	24,696	1.94	3.86
Berlin	112	18,486	6.02	17.21	186	16,947	10.86	21.11	218	16,597	12.97	23.02	192	16,411	11.56	19.47	708	68,440	10.24	20.38
Brandenburg	16	16,930	0.94	2.70	24	16,722	1.43	2.78	42	16,214	2.58	4.59	38	16,675	2.27	3.83	120	66,540	1.80	3.58
Mecklenburg-Western Pomerania	20	10,607	1.88	5.38	24	9,947	2.41	4.69	20	9,693	2.06	3.66	14	9,439	1.48	2.49	78	39,686	1.96	3.90
Saxony	26	29,583	0.88	2.51	56	28,703	2.00	3.89	58	28,027	2.07	3.67	24	27,098	0.88	1.49	164	113,411	1.44	2.87
Saxony-Anhalt	38	17,749	2.14	6.11	22	16,742	1.31	2.55	22	16,414	1.34	2.38	20	15,675	1.27	2.15	102	66,579	1.53	3.05
Thuringia	22	16,222	1.35	3.87	22	14,985	1.47	2.86	20	14,832	1.35	2.39	8	15,312	0.52	0.88	72	61,349	1.17	2.33
Total	1,108	500,465	34.99	100.00	1,440	489,413	51.44	100.00	1,628	490,130	56.33	100.00	1,642	490,946	59.40	100.00	5,818	1,970,942	50.24	100.00

Source: Federal Statistical Office of Germany (1996-2012); [a] This is the number of OSCs, the number of individuals living in an OSC is double. [b] GPR = Gay partnered rate; [c] SG = Share in Germany

Interpretation: In Berlin, in the period from 2000–2003, microcensus data show that there were 186 males living in SSCs (not scaled to entire population). The gay partnered rate is 10.86 (10.86 = 186/(186+16.947)*1000). Compared to all German states, Berlin has the highest SSC share: 21.11% (21.11 = 10.86/51.39*100).

Table 3.2: Lesbian partnered rates, Germany, 16-/four-year cluster, by federal state

women	1996–1999				2000–2003				2004–2008 (without 2007)				2009–2012				1996–2012 (without 2007)			
	N lesbians	N OSCs	LPR	SG	N lesbians	N OSCs	LPR	SG	N lesbians	N OSCs	LPR	SG	N lesbians	N OSCs	LPR	SG	N lesbians	N OSCs	LPR[a]	SG
Schleswig-Holstein	20	16,963	1.18	5.41	44	17,190	2.55	8.10	54	17,760	3.03	7.57	60	17,348	3.45	6.71	178	69,260	2.56	7.13
Hamburg	28	9,071	3.08	14.14	18	8,847	2.03	6.44	46	8,709	5.25	13.12	60	8,427	7.07	13.76	152	35,053	4.32	12.00
Lower Saxony	84	46,374	1.81	8.31	94	46,707	2.01	6.37	116	44,975	2.57	6.42	138	48,482	2.84	5.52	432	186,538	2.31	6.42
Bremen	2	3,848	0.52	2.39	2	3,263	0.61	1.94	4	3,413	1.17	2.92	14	3,221	4.33	8.42	22	13,745	1.60	4.44
North Rhine-Westphalia	310	107,940	2.86	13.16	310	105,349	2.93	9.31	312	104,919	2.96	7.40	316	103,122	3.05	5.94	1,248	421,329	2.95	8.21
Hesse	36	37,468	0.96	4.41	80	36,468	2.19	6.95	66	37,841	1.74	4.35	110	37,684	2.91	5.66	292	149,460	1.95	5.42
Rhineland-Palatinate	22	25,822	0.85	3.91	40	25,541	1.56	4.96	62	24,521	2.52	6.30	64	24,592	2.60	5.05	188	100,475	1.87	5.19
Baden-Württemberg	36	62,357	0.58	2.65	78	60,869	1.28	4.06	110	63,009	1.74	4.35	118	63,656	1.85	3.60	342	249,891	1.37	3.80
Bavaria	72	74,662	0.96	4.43	150	74,885	2.00	6.34	156	77,185	2.02	5.04	126	77,759	1.62	3.15	504	304,490	1.65	4.59
Saarland	8	6,383	1.25	5.75	12	6,248	1.92	6.08	20	6,021	3.31	8.27	34	6,045	5.59	10.88	74	24,696	2.99	8.31
Berlin	46	18,486	2.48	11.41	98	16,947	5.75	18.24	96	16,597	5.75	14.36	102	16,411	6.18	12.02	342	68,440	4.97	13.82
Brandenburg	8	16,930	0.47	2.17	30	16,722	1.79	5.68	30	16,214	1.85	4.61	68	16,675	4.06	7.90	136	66,540	2.04	5.67
Mecklenburg-Western Pomerania	12	10,607	1.13	5.19	16	9,947	1.61	5.10	28	9,693	2.88	7.19	28	9,439	2.96	5.76	84	39,686	2.11	5.87
Saxony	16	29,583	0.54	2.48	26	28,703	0.91	2.87	24	28,027	0.86	2.14	36	27,098	1.33	2.58	102	113,411	0.90	2.50
Saxony-Anhalt	22	17,749	1.24	5.69	22	16,742	1.31	4.16	26	16,414	1.58	3.95	4	15,675	0.26	0.50	74	66,579	1.11	3.09
Thuringia	30	16,222	1.85	8.48	16	14,985	1.07	3.38	12	14,832	0.81	2.02	20	15,312	1.30	2.54	78	61,349	1.27	3.53
Total	752	500,465	21.76	100.00	1,036	489,413	31.52	100.00	1,162	490,130	40.05	100.00	1,298	490,946	51.39	100.00	4,248	1,970,942	35.97	100.00

Source: Federal Statistical Office of Germany (1996-2012); [a] LPR = Lesbian partnered rate

Table 3.3: Number of OSCs, male/female individuals in SSCs for the years 1996, 2001, 2006, 2011 and averages, gay/lesbian partnered rates, by federal state, MSC

		OSCs					Male individuals in SSCs					Female individuals in SSCs						
Federal State	MSC	**1996**	**2001**	**2006**	**2011**	**average**	**1996**	**2001**	**2006**	**2011**	**average**	**1996**	**2001**	**2006**	**2011**	**average**	**GPR[a]**	**LPR[b]**
Schleswig-Holstein	low	2,991	3,009	2,952	2,797	2,937.25	2	6	6	10	6	0	2	2	10	3.5	2.04	1.19
	medium	1,800	1,844	1,760	1,692	1,774	4	6	10	4	6	4	0	16	2	5.5	3.37	3.09
Hamburg	high	2,564	2,551	2,288	2,116	2,379.75	20	10	12	24	16.5	12	6	12	16	11.5	6.89	4.81
	low	5,319	5,803	5,472	5,582	5,544	16	10	16	18	15	14	10	10	12	11.5	2.70	2.07
Lower Saxony	medium	5,827	5,948	5,872	5,851	5,874.5	10	24	14	20	17	16	12	18	22	17	2.89	2.89
	high	736	718	650	658	690.38	4	6	2	2	3.5	2	0	6	2	2.5	5.04	3.61
Bremen	high	1,074	904	911	842	932.75	0	4	0	4	2	0	0	2	4	1.5	2.14	1.61
	low	3,841	3,743	3,561	3,421	3641.5	8	6	12	6	8	0	2	4	6	3	2.19	0.82
North Rhine-Westphalia	medium	19,336	19,819	18,774	18,586	19,128.75	44	68	68	62	60.5	72	62	42	66	60.5	3.15	3.15
	high	5,029	4,805	4,394	3,631	4,464.75	28	46	44	38	39	12	22	16	12	15.5	8.66	3.46
	low	5,295	5,174	5,172	4,889	5,132.375	6	10	20	14	12.5	2	0	4	12	4.5	2.43	0.88
Hesse	medium	3,846	3,884	3,890	3,805	3,856.25	8	6	16	18	12	2	8	6	12	7	3.10	1.81
	high	859	934	855	850	874.38	8	0	12	18	9.5	0	8	8	2	4.5	10.75	5.12
Rhineland-Palatinate	low	4,637	4,721	4,422	4,288	4,517	15	6	14	14	12.25	5	8	12	12	9.25	2.70	2.04
	medium	2,103	2,106	1,910	1,866	1,996.25	2	4	12	8	6.5	2	4	2	6	3.5	3.25	1.75
	low	9,010	8,919	8,803	8,404	8,784	6	12	20	6	11	2	8	10	12	8	1.25	0.91
Baden-Württemberg	medium	6,789	6,684	6,930	6,672	6,768.75	4	14	16	16	12.5	4	6	14	16	10	1.84	1.48
	high	848	758	753	784	785.75	4	2	6	10	5.5	0	2	2	0	1	6.95	1.27
	low	13,154	13,261	13,222	12,674	13,077.75	18	16	12	14	15	4	16	14	10	11	1.15	0.84
Bavaria	medium	5,119	5,296	5,282	4,477	5,043.5	8	12	12	18	12.5	6	18	10	14	12	2.47	2.37
	high	1,868	1,872	1,856	2,541	2,034.25	8	14	10	24	14	4	16	10	8	9.5	6.84	4.65

Saarland	low	852	850	766	832	825	0	0	0	0	0	0	2	2	6	2.5	0.00	3.02
	medium	899	823	792	680	798.38	0	0	8	0	2	2	2	6	4	3.5	2.50	4.36
Berlin	high	5,144	4,502	4,207	4,192	4,511.25	30	50	66	58	51	18	24	18	28	22	11.18	4.85
Brandenburg	low	2,645	2,813	2,561	2,548	2,641.75	4	4	6	8	5.5	2	4	2	8	4	2.08	1.51
	medium	1,684	1,548	1,673	1,667	1,643	2	0	4	8	3.5	0	4	4	14	5.5	2.13	3.34
Mecklenburg-Western Pomerania	low	1,790	1,637	1,656	1,606	1,672.25	4	2	2	4	3	2	0	4	8	3.5	1.79	2.09
	medium	1,114	884	829	785	903	2	4	2	0	2	2	2	2	4	2.5	2.21	2.76
Saxony	low	4,057	3,959	3,753	3,648	3,854.25	0	0	4	2	1.5	2	6	0	6	3.5	0.39	0.91
	medium	3,674	3,443	3,335	1,660	3,027.88	0	10	10	2	5.5	0	2	8	0	2.5	1.81	0.82
	high	0	0	0	1,553	388.25				4	1				0	0	2.57	0.00
Saxony-Anhalt	low	2,496	2,440	2,383	1,894	2,303.25	4	6	6	2	4.5	2	4	0	0	1.5	1.95	0.65
	medium	2,182	1,864	1,816	2,108	1,992.5	4	0	4	6	3.5	2	2	8	2	3.5	1.75	1.75
Thuringia	low	2,504	2,447	2,285	2,325	2,390.25	2	2	0	0	1	0	4	2	0	1.5	0.42	0.63
	medium	1,852	1,533	1,479	1,518	1,595.5	4	4	6	2	4	2	4	0	6	3	2.50	1.88

Source: Federal Statistical Office of Germany (1996-2012); [a]GPR = Gay partnered rate, [b]LPR = Lesbian partnered rate

Example: Baden-Württemberg low GPR: 1.25 = 11/(11+8,784)*1000

Table 3.4: Numbers of males/females in civil union, male/female civil union rates and number of opposite-sex marriages in Berlin, by prognostic area and gender, 2011

District	Prognostic area	N Gays	Male civil union rate	N Lesbians	Female civil union rate	N OSC marriages
01 Mitte	01 Zentrum	346	29.42	54	4.71	11,416
	02 Moabit	166	18.20	36	4.00	8,955
	03 Gesundbrunnen	62	6.74	20	2.19	9,132
	04 Wedding	74	6.71	42	3.82	10,957
02 Friedrichshain-Kreuzberg	01 Kreuzberg Nord	48	9.26	10	1.94	5,133
	02 Kreuzberg Süd	136	22.88	72	12.25	5,807
	03 Kreuzberg Ost	38	8.36	48	10.54	4,506
	04 Friedrichshain West	98	17.68	34	6.20	5,446
	05 Friedrichshain Ost	138	28.28	72	14.96	4,742
03 Pankow	01 Buch					2,185
	02 Nördliches Pankow	40	4.90	42	5.14	8,126
	03 Nördliches Weißensee	28	3.85	10	1.38	7,247
	04 Südliches Pankow	106	8.59	80	6.50	12,231
	05 Südliches Weißensee	58	8.92	40	6.17	6,445
	06 Nördlicher Prenzlauer Berg	220	22.56	104	10.79	9,532
	07 Südlicher Prenzlauer Berg	154	26.92	52	9.26	5,566
04 Charlottenburg-Wilmersdorf	01 Charlottenburg-Wilmersdorf 1	10	3.55			2,805
	02 Charlottenburg-Wilmersdorf 2	66	9.82	34	5.08	6,653
	03 Charlottenburg-Wilmersdorf 3	426	23.95	100	5.73	17,359
	04 Charlottenburg-Wilmersdorf 4	144	17.31	36	4.38	8,176
	05 Charlottenburg-Wilmersdorf 5	296	27.82	68	6.53	10,342
	06 Charlottenburg-Wilmersdorf 6					9
05 Spandau	01 SPA 1	46	2.95	38	2.44	15,550
	02 SPA 2	42	2.75	42	2.75	15,247
	03 SPA 3	12	2.77	22	5.06	4,322
	04 SPA 4	14	3.23	12	2.77	4,314
06 Steglitz-Zehlendorf	01 Region A	80	7.35	98	8.99	10,806
	02 Region B	50	3.66	38	2.78	13,610
	03 Region C	68	4.77	58	4.07	14,196
	04 Region D	82	6.47	56	4.43	12,599
07 Tempelhof-Schöneberg	01 Schöneberg Nord	398	64.80	64	11.02	5,744
	02 Schöneberg Süd	184	30.72	46	7.86	5,805

	03 Friedenau	130	18.53	60	8.64	6,884
	04 Tempelhof	72	8.21	58	6.62	8,698
	05 Mariendorf	24	2.72	26	2.94	8,811
	06 Marienfelde					6,050
	07 Lichtenrade	34	3.27	18	1.73	10,362
08 Neukölln	01 Neukölln	162	9.73	130	7.82	16,487
	02 Britz/Buckow	32	2.64	34	2.81	12,076
	03 Gropiusstadt					6,926
	04 Buckow Nord/Rudow	44	3.87	22	1.94	11,325
09 Treptow-Köpenick	01 Treptow-Köpenick 1	62	6.67	38	4.10	9,227
	02 Treptow-Köpenick 2	46	6.07	30	3.96	7,537
	03 Treptow-Köpenick 3	32	3.22	24	2.42	9,892
	04 Treptow-Köpenick 4	18	2.45	20	2.73	7,314
	05 Treptow-Köpenick 5	38	3.93	30	3.11	9,630
10 Marzahn-Hellersdorf	01 Marzahn	50	2.74	24	1.31	18,227
	02 Hellersdorf	28	2.67	36	3.43	10,453
	03 Biesdorf	22	3.82	10	1.74	5,734
	04 Kaulsdorf/Mahlsdorf	32	2.79	30	2.62	11,427
11 Lichtenberg	01 Hohen-Schönhausen Nord	32	3.23	30	3.03	9,868
	02 Hohen-Schönhausen Süd	44	5.52	16	2.01	7,930
	03 Lichtenberg Nord	78	7.92	28	2.86	9,768
	04 Lichtenberg Mitte	50	4.93	30	2.96	10,098
	05 Lichtenberg Süd	40	8.86	22	4.89	4,474
12 Reinickendorf	10 Reinickendorf Ost	12	1.71	18	2.57	6,989
	21 Tegel	22	2.86	16	2.08	7,668
	22 Heiligensee/Konradshöhe	10	1.82	12	2.19	5,473
	23 Frohnau/Hermsdorf	28	3.71	14	1.86	7,517
	30 Waidmannslust	42	2.63	32	2.01	15,928
	Total[a]	4,814	9.04	2,236	4.22	527,736

Source: Statistical Office Berlin-Brandenburg (2017); [a] Sums in a column can differ to those in Table 3.4 as in this geographical detail some cells are empty because of a confidentiality procedure (no cases/too few cases/values uncertain), i.e., it is likely they are not all empty and as such overall cases by district (no empty cells) outnumber sums of smaller geographical aggregates.

Table 3.5: Numbers of males/females in civil union, male/female civil union rates and number of opposite-sex marriages in Berlin, by district region, 2011

District	Prognostic area	District region	N Gays	Male civil union rate	N Lesbians	Female civil union rate	N OSC marriages
01 Mitte	01 Zentrum	11 Tiergarten Süd	78	48.51			1,530
		12 Regierungsviertel	48	31.70			1,466
		13 Alexanderplatz	148	22.67	28	4.37	6,301
		14 Brunnenstraße Süd	72	31.16	20	8.85	2,239
	02 Moabit	21 Moabit West	78	16.23	20	4.21	4,728
		22 Moabit Ost	88	19.93	16	3.68	4,328
	03 Gesundbrunnen	31 Osloer Straße	24	5.76	14	3.37	4,142
		32 Brunnenstraße Nord	38	7.50			5,031
	04 Wedding	41 Parkviertel	58	10.70	30	5.56	5,363
		42 Wedding Zentrum	16	2.82	12	2.12	5,652
02 Friedrichs-hain-Kreuzberg	01 Kreuzberg Nord	01 Südliche Friedrichstadt	48	9.21	10	1.93	5,162
	02 Kreuzberg Süd	02 Tempelhofer Vorstadt	136	22.49	72	12.03	5,911
	03 Kreuzberg Ost	03 Nördliche Luisenstadt	20	8.37	16	6.71	2,369
		04 Südliche Luisenstadt	18	8.19	32	14.47	2,180
	04 Friedrichshain West	05 Karl-Marx-Allee Nord	52	18.15	14	4.95	2,813
		07 Karl-Marx-Allee Süd	46	16.76	20	7.36	2,699
	05 Friedrichshain Ost	06 Frankfurter Allee Nord	60	32.86	24	13.41	1,766
		08 Frankfurter Allee Süd FK	78	24.69	48	15.34	3,081
03 Pankow	01 Buch	01 Buch					2,191
	02 Nördliches Pankow	02 Blankenfelde/Niederschönhausen	32	7.03	26	5.72	4,523
		03 Buchholz			16	4.37	3,644
	03 Nördliches Weißensee	04 Karow					3,938
		07 Blankenburg/Heinersdorf/Märchenland	24	7.16			3,328
	04 Südliches Pankow	05 Schönholz/Wilhelmsruh/Rosenthal	20	5.58			3,564
		06 Pankow Zentrum	30	6.50	48	10.36	4,586
		08 Pankow Süd	56	13.24	24	5.72	4,174
		09 Weißensee	38	9.27	32	7.82	4,060

	05 Südliches Weißensee	10 Weißensee Ost	20	8.15			2,434
	06 Nördlicher Prenzlauer Berg	11 Prenzlauer Berg Nordwest	76	36.96	30	14.93	1,980
		12 Prenzlauer Berg Nord	56	21.40	32	12.34	2,561
		13 Helmholtzplatz	54	31.27	22	12.98	1,673
		14 Prenzlauer Berg Ost	34	9.68	20	5.71	3,480
	07 Südlicher Prenzlauer Berg	15 Prenzlauer Berg Südwest	96	38.37	12	4.96	2,406
		16 Prenzlauer Berg Süd	58	17.46	40	12.11	3,263
04 Charlotten-burg-Wilmers-dorf	01 Charlottenburg-Wilmersdorf 1	01 Charlottenburg Nord	10	3.54			2,814
	02 Charlottenburg-Wilmersdorf 2	02 Heerstraße	22	9.06	12	4.96	2,407
		03 Westend	44	10.14	22	5.09	4,296
	03 Charlottenburg-Wilmersdorf 3	04 Schloss Charlottenburg	26	9.03	12	4.19	2,854
		05 Mierendorffplatz	30	16.81			1,755
		06 Otto-Suhr-Allee	66	18.91	18	5.23	3,424
		07 Neue Kantstraße	64	20.25	20	6.42	3,096
		08 Kantstraße	74	28.82	16	6.37	2,494
		09 Kurfürstendamm	94	45.37	14	7.03	1,978
		10 Halensee	72	34.40	12	5.90	2,021
	04 Charlottenburg-Wilmersdorf 4	11 Grunewald	58	18.96			3,001
		12 Schmargendorf	26	10.73			2,397
		13 Wiesbadener Straße	60	20.49	24	8.30	2,868
	05 Charlottenburg-Wilmersdorf 5	14 Düsseldorfer Straße	144	34.28	32	7.83	4,057
		15 Barstraße	18	9.88			1,804
		16 Volkspark Wilmersdorf	134	27.93	28	5.97	4,663
	06 Charlottenburg-Wilmersdorf 6	17 Forst Grunewald					9
05 Spandau	01 SPA 1	01 Hakenfelde	26	6.31	14	3.41	4,095
		02 Falkenhagener Feld	10	1.42			7,033
		03 Spandau Mitte	10	2.24	20	4.46	4,464
	02 SPA 2	04 Brunsbütteler Damm					4,842
		05 Heerstraße Nord	12	2.38	12	2.38	5,029
		06 Wilhelmstadt	22	4.04	28	5.14	5,418
	03 SPA 3	07 Haselhorst			12	4.99	2,393
		08 Siemensstadt			10	5.11	1,946
	04 SPA 4	09 Gatow/Kladow	14	3.23	12	2.77	4,327
	01 Region A	01 Schloßstraße	28	8.37	38	11.33	3,317

06 Steglitz-Zehlendorf		02 Albrechtstraße	52	6.82	60	7.86	7,578
	02 Region B	03 Lankwitz	22	3.14	14	2.00	6,981
		04 Ostpreußendamm	28	4.18	24	3.58	6,673
	03 Region C	05 Teltower Damm	28	4.69	14	2.35	5,943
		06 Drakestraße	40	4.79	44	5.26	8,316
	04 Region D	07 Zehlendorf Südwest	40	8.06	14	2.84	4,921
		08 Zehlendorf Nord	42	5.39	42	5.39	7,747
07 Tempelhof-Schöneberg	01 Schöneberg Nord	01 Schöneberg Nord	398	62.45	64	10.60	5,744
	02 Schöneberg Süd	02 Schöneberg Süd	184	30.14	46	7.71	5,805
	03 Friedenau	03 Friedenau	130	18.29	60	8.52	6,884
	04 Tempelhof	04 Tempelhof	72	8.15	58	6.58	8,698
	05 Mariendorf	05 Mariendorf	24	2.71	26	2.93	8,811
	06 Marienfelde	06 Marienfelde					6,050
	07 Lichtenrade	07 Lichtenrade	34	3.26	18	1.73	10,362
08 Neukölln	01 Neukölln	01 Schillerpromenade	20	6.64	26	8.61	2,994
		02 Neuköllner Mitte/Zentrum	34	8.64	16	4.09	3,899
		03 Reuterstraße	56	15.25	52	14.18	3,615
		04 Rixdorf	42	10.43	34	8.46	3,984
		05 Köllnische Heide	10	4.65			2,141
	02 Britz/Buckow	06 Britz	22	3.35	24	3.65	6,544
		07 Buckow	10	1.79	10	1.79	5,565
	03 Gropiusstadt	08 Gropiusstadt					6,933
	04 Buckow Nord/Rudow	09 Buckow Nord					1,718
		10 Rudow	42	4.43	18	1.90	9,440
09 Treptow-Köpenick	01 Treptow- Köpenick 1	01 Alt Treptow			20	16.49	1,193
		02 Plänterwald	16	9.38			1,690
		03 Baumschulenweg	32	10.97			2,886
		04 Johannisthal					3,508
	02 Treptow- Köpenick 2	05 Oberschöneweide	10	4.87	12	5.84	2,044
		06 Niederschöneweide					1,650
		07 Adlershof	22	8.74			2,494
		08 Kölln. Vorstadt/Spindlersf.	10	7.16			1,387
	03 Treptow-Köpenick 3	09 Altglienicke	12	2.39	16	3.18	5,016
		10 Bohnsdorf	14	5.09			2,739
		11 Grünau					980

		12 Schmöckw./Karolinenh./Rauchfangswerder					995
	04 Treptow-Köpenick 4	13 Köpenick-Süd			10	2.88	2,685
		14 Allende-Viertel					1,086
		15 Altstadt-Kietz	10	11.85			834
		16 Müggelheim					1,653
	05 Treptow-Köpenick 5	17 Friedrichshagen	14	4.00	10	2.86	3,485
		18 Rahnsdorf/Hessenwinkel	10	4.71			2,113
		19 Dammvorstadt					1,457
		20 Köpenick-Nord					2,609
10 Marzahn-Hellersdorf	01 Marzahn	01 Marzahn Nord					3,369
		02 Marzahn Mitte	22	2.87	10	1.31	7,644
		03 Marzahn Süd	22	3.02	10	1.38	7,251
	02 Hellersdorf	04 Hellersdorf Nord	18	4.40	12	2.94	4,074
		05 Hellersdorf Ost					2,076
		06 Hellersdorf Süd			18	4.80	3,735
	03 Biesdorf	07 Biesdorf	22	3.81	10	1.74	5,750
	04 Kaulsdorf/Mahlsdorf	08 Kaulsdorf			10	2.16	4,614
		09 Mahlsdorf	26	3.78	20	2.91	6,844
11 Lichtenberg	01 Hohen-Schönhausen Nord	01 Malchow, Wartenberg und Falkenberg					1,021
		02 Neu-Hohenschönhausen Nord	14	3.34	10	2.39	4,180
		03 Neu-Hohenschönhausen Süd	12	2.55	16	3.39	4,698
	02 Hohen-Schönhausen Süd	04 Alt-Hohenschönhausen Nord	10	3.48			2,862
		05 Alt-Hohenschönhausen Süd	34	6.63	10	1.96	5,098
	03 Lichtenberg Nord	06 Fennpfuhl	40	7.28	16	2.92	5,458
		07 Alt-Lichtenberg	28	10.67	10	3.84	2,596
		08 Frankfurter Allee Süd	10	5.63			1,767
	04 Lichtenberg Mitte	09 Neu-Lichtenberg	34	9.92	20	5.86	3,392
		10 Friedrichsfelde Nord					2,194
		11 Friedrichsfelde Süd			10	2.19	4,552
	05 Lichtenberg Süd	12 Rummelsburger Bucht	24	38.03			607
		13 Karlshorst	16	4.09	18	4.60	3,898

12 Reinicken-dorf	10 Reinickendorf Ost	31 Ost 1 - Reginhardstr.			14	4.13	3,373
		32 Ost 2 - Alt-Reinickendorf					3,631
	21 Tegel	41 West 1 Tegel-Süd/Flughafensee					2,385
		44 West 4 Auguste-Viktoria-Allee	12	3.26	12	3.26	3,666
		45 West 5 Tegeler Forst					1,636
	22 Heiligensee/Konrads-höhe	42 West 2 Heiligensee/Konradshöhe	10	1.82	12	2.18	5,484
	23 Frohnau/Hermsdorf	11 Nord 1 Frohnau/Hermsdorf	28	3.70	14	1.85	7,538
	30 Waidmannslust	12 Nord 2 Waidmannslust/Wittenau/Lübars	16	2.88			5,549
		21 MV 1 - Märkisches Virtel	24	3.83	12	1.92	6,237
		22 MV 2 - Rollbergesiedlung					1,356
		43 West 3 - Borsigwalde/Freie Scholle					1,983
		Total[a]	4,666	8.76	2.030	3.83	527,736

Source: Statistical Office Berlin-Brandenburg (2017); [a]Sums in a column can differ to those in Table 3.4 as in this geographical detail some cells are empty because of a confidentiality procedure (no cases, too few cases, values uncertain), i.e., likely they are not all empty and as such overall cases by district (no empty cells) outnumber sums of smaller geographical aggregates.

Table 3.6: Numbers of males/females in civil union, male/female civil union rates and numbers of opposite-sex marriages in Berlin, by planning area and gender, 2011

District	Prognostic area	District region	Planning area	N Gays	Male civil union rate	N Lesbians	Female civil union rate	N OSC marriages
01 Mitte	01 Zentrum	11 Tiergarten Süd	01 Stülerstraße	38	94.29			365
			02 Großer Tiergarten					21
			03 Lützowstraße	32	53.69			564
			04 Körnerstraße					400
			05 Nördlicher Landwehrkanal					138
		12 Regierungsviertel	01 Wilhelmstraße	10	26.18			372
			02 Unter den Linden Nord					63
			03 Unter den Linden Süd					111
			04 Leipziger Straße	34	36.56			896
		13 Alexanderplatz	01 Charitéviertel	34	61.26			521
			02 Oranienburger Straße	32	27.92			1,114
			03 Alexanderplatzviertel	24	23.30			1,006
			04 Karl-Marx-Allee	16	10.68			1,482
			05 Heine-Viertel West	18	16.93			1,045
			06 Heine-Viertel Ost	24	20.89	10	8.81	1,125
		14 Brunnenstraße Süd	01 Invalidenstraße	42	32.61			1,246
			02 Arkonaplatz	30	30.71	14	14.57	947
	02 Moabit	21 Moabit West	01 Huttenkiez					263
			02 Beusselkiez					537
			03 Westhafen					23
			04 Emdener Straße	28	14.71			1,875
			05 Zwinglistraße					494
			06 Elberfelder Straße	32	21.07	10	6.68	1,487
		22 Moabit Ost	01 Stephankiez	26	25.49			994
			02 Heidestraße					196
			03 Lübecker Straße					841
			04 Thomasiusstraße	20	28.57			680
			05 Zillesiedlung					486
			06 Lüneburger Straße	10	26.04			374

			07 Hansaviertel	20	27.59			705
	03 Gesundbrunnen	31 Osloer Straße	01 Soldiner Straße	16	5.89			2,702
			02 Gesundbrunnen					1,421
		32 Brunnenstraße Nord	01 Brunnenstraße					2,050
			02 Humboldthain Süd	16	11.12			1,423
			03 Humboldthain Nordwest	16	10.31			1,536
	04 Wedding	41 Parkviertel	01 Rehberge	26	10.63	18	7.39	2,419
			02 Schillerpark	20	9.38	10	4.71	2,112
			03 Westliche Müllerstraße	12	15.00			788
		42 Wedding Zentrum	01 Reinickendorfer Straße					2,654
			02 Sparrplatz					1,432
			03 Leopoldplatz			12	7.67	1,552
02 Friedrichs-hain-Kreuzberg	01 Kreuzberg Nord	01 Südliche Friedrichstadt	01 Askanischer Platz	18	26.24			668
			02 Mehringplatz	20	11.64			1,698
			03 Moritzplatz					2,133
			04 Wassertorplatz					634
	02 Kreuzberg Süd	02 Tempelhofer Vorstadt	01 Gleisdreieck/Entwicklungsgebiet					37
			02 Rathaus Yorckstraße	14	22.58	10	16.23	606
			03 Viktoriapark	26	24.88	10	9.72	1,019
			04 Urbanstraße	22	19.71	12	10.85	1,094
			05 Chamissokiez	36	25.53	16	11.51	1,374
			06 Graefekiez	36	21.02	24	14.11	1,677
	03 Kreuzberg Ost	03 Nördliche Luisenstadt	01 Oranienplatz					1,056
			02 Lausitzer Platz	12	9.18	12	9.18	1,295
		04 Südliche Luisenstadt	01 Reichenberger Straße	10	8.13	26	20.87	1,220
			02 Wrangelkiez					935
	04 Friedrichshain West	05 Karl-Marx-Allee Nord	01 Barnimkiez					938
			02 Friedenstraße					843
			03 Richard-Sorge-Viertel	36	34.78			999
		07 Karl-Marx-Allee Süd	01 Andreasviertel	18	11.34			1,570
			02 Weberwiese	28	25.69	16	14.84	1,062

			03 Wriezener Bahnhof/Entwicklungsgebiet					34
	05 Friedrichshain Ost	06 Frankfurter Allee Nord	01 Hausburgviertel	18	33.90			513
			02 Samariterviertel	42	33.52	22	17.84	1,211
		08 Frankfurter Allee Süd FK	01 Traveplatz	20	18.42	14	12.96	1,066
			02 Boxhagener Platz	40	36.04	14	12.92	1,070
			03 Stralauer Kiez	12	24.54			477
			04 Stralauer Halbinsel			14	33.41	405
03 Pankow	01 Buch	01 Buch	01 Bucher Forst					519
			02 Buch					1,656
			04 Lietzengraben					10
	02 Nördliches Pankow	02 Blankenfelde/Niederschönhausen	03 Blankenfelde					463
			09 Niederschönhausen	26	11.29	14	6.11	2,276
			10 Herthaplatz			10	5.67	1,755
		03 Buchholz	07 Buchholz			16	4.39	3,632
	03 Nördliches Weißensee	04 Karow	05 Karow Nord					1,842
			06 Alt-Karow					2,090
		07 Blankenburg/Heinersdorf/Märchenland	11 Blankenburg	18	11.62			1,531
			15 Heinersdorf					1,475
			16 Märchenland					309
	04 Südliches Pankow	05 Schönholz/Wilhelmsruh/Rosenthal	08 Rosenthal	10	9.91			999
			12 Wilhelmsruh	10	5.17			1,924
			13 Schönholz					627
		06 Pankow Zentrum	14 Pankow Zentrum	30	6.55	48	10.45	4,547
		08 Pankow Süd	18 Pankow Süd	56	13.37	24	5.77	4,134
	05 Südliches Weißensee	09 Weißensee	19 Gustav-Adolf-Straße					712
			20 Weißer See			12	12.67	935
			23 Weißenseer Spitze	12	14.04			843
			24 Behaimstraße	14	25.32			539
			25 Komponistenviertel Weißensee					996
		10 Weißensee Ost	17 Rennbahnstraße					634
			21 Buschallee	10	9.78			1,012
			22 Hansastraße					774
			26 Arnimplatz	38	31.30	20	16.72	1,176

	06 Nördlicher Prenzlauer Berg	11 Prenzlauer Berg Nordwest	31 Falkplatz	38	48.16	10	13.14	751
		12 Prenzlauer Berg Nord	27 Humannplatz	42	30.93	24	17.91	1,316
			28 Erich-Weinert-Straße	14	11.52			1,201
		13 Helmholtzplatz	32 Helmholtzplatz	54	31.97	22	13.28	1,635
		14 Prenzlauer Berg Ost	29 Greifswalder Straße					1,812
			30 Volkspark Prenzlauer Berg					520
			34 Anton-Saefkow-Park	16	31.68	10	20.04	489
			35 Conrad-Blenkle-Straße					362
			41 Eldenaer Straße					270
	07 Südlicher Prenzlauer Berg	15 Prenzlauer Berg Südwest	36 Teutoburger Platz	40	42.28			906
			37 Kollwitzplatz	56	37.28	12	8.23	1,446
		16 Prenzlauer Berg Süd	33 Thälmannplatz					362
			38 winsstraße	32	19.91	18	11.30	1,575
			39 Bötzowstraße	24	18.45	20	15.42	1,277
04 Charlotten-burg-Wilmers-dorf	01 Charlottenburg-Wilmersdorf 1	01 Charlottenburg Nord	01 Jungfernheide					1,438
			02 Plötzensee					136
			03 Paul-Hertz-Siedlung					1,231
	02 Charlottenburg-Wilmersdorf 2	02 Heerstraße	04 Olympiagelände					26
			05 Siedlung Ruhleben					260
			06 Angerburger Allee	10	19.12			513
			07 Flatowallee	10	20.92			468
			08 Kranzallee					594
			09 Eichkamp					529
		03 Westend	10 Park Ruhwald					54
			11 Reichsstraße	20	8.09	10	4.06	2,453
			12 Branitzer Platz					816
			13 Königin-Elisabeth-Straße	14	14.68			940
			14 Messegelände					–
	03 Charlottenburg-Wilmersdorf 3	04 Schloss Charlottenburg	15 Schloßgarten					175
			16 Klausenerplatz					1,267
			17 Schloßstraße	18	12.76	10	7.13	1,393
		05 Mierendorffplatz	18 Tegeler Weg	20	18.05			1,088

		19 Kaiserin-Augusta-Allee	10	15.20			648
	06 Otto-Suhr-Allee	20 Alt-Lietzow	24	20.13			1,168
		21 Spreestadt					342
		22 Richard-Wagner-Straße	22	17.04	12	9.37	1,269
		23 Ernst-Reuter-Platz	16	25.85			603
	07 Neue Kantstraße	24 Lietzensee	14	15.28	12	13.13	902
		25 Amtsgerichtsplatz	28	18.86			1,457
		26 Droysenstraße	22	30.68			695
	08 Kantstraße	27 Karl-August-Platz	42	30.55	10	7.45	1,333
		28 Savignyplatz	32	27.87			1,116
	09 Kurfürstendamm	29 Hindemithplatz	24	30.46			764
		30 George-Grosz-Platz	46	58.82			736
		31 Breitscheidplatz	24	53.57			424
	10 Halensee	32 Halensee	72	35.10	12	6.03	1,979
04 Charlottenburg-Wilmersdorf 4	11 Grunewald	33 Güterbahnhof Grunewald					7
		34 Bismarckallee	24	31.33			742
		35 Hundekehle					533
		36 Hagenplatz	12	21.86			537
		37 Flinsberger Platz	18	15.40			1,151
	12 Schmargendorf	38 Kissinger Straße	14	14.18			973
		39 Stadion Wilmersdorf					9
		40 Messelpark					312
		41 Breite Straße	12	10.93			1,086
	13 Wiesbadener Straße	42 Schlangenbader Straße	20	32.84			589
		43 Binger Straße	10	17.04			577
		44 Rüdesheimer Platz	30	17.75	16	9.55	1,660
05 Charlottenburg-Wilmersdorf 5	14 Düsseldorfer Straße	45 Eisenzahnstraße	24	30.97			751
		46 Preußenpark	56	37.09			1,454
		47 Ludwigkirchplatz	18	27.19	10	15.29	644
		48 Schaperstraße	46	39.45	14	12.35	1,120
	15 Barstraße	49 Rathaus Wilmersdorf					538
		50 Leon-Jessel-Platz	12	17.02			693

			51 Brabanter Platz					560
		16 Volkspark Wilmersdorf	52 Nikolsburger Platz	44	31.98			1,332
			53 Prager Platz	38	38.50		6.28	949
			54 Wilhelmsaue	22	53.14		15.08	392
			55 Babelsberger Straße	22	23.63		6.56	909
			56 Hildegardstraße					1,000
	06 Charlottenburg-Wilmersdorf 6	17 Forst Grunewald	57 Forst Grunewald					9
05 Spandau	01 SPA 1	01 Hakenfelde	01 Hakenfelde Nord	16	9.62		4.83	1,648
			02 Goltzstraße					987
			03 Amorbacher Weg					1,440
		02 Falkenhagener Feld	04 Griesingerstraße					477
			05 An der Tränke					449
			06 Gütersloher Weg					1,900
			07 Darbystraße					2,030
			08 Germersheimer Platz					922
			09 An der Kappe					1,249
		03 Spandau Mitte	10 Eckschanze					487
			11 Eiswerder					746
			12 Kurstraße					723
			13 Ackerstraße					819
			14 Carl-Schurz-Straße					1,611
			39 Freiheit					63
	02 SPA 2	04 Brunsbütteler Damm	15 Isenburger Weg					964
			16 Am Heideberg					368
			17 Staakener Straße					1,294
			18 Spandauer Straße					747
			19 Magistratsweg					1,269
			20 Werkstraße					194
		05 Heerstraße Nord	21 Döberitzer Weg					549
			22 Pillnitzer W eg					1,079
			23 Maulbeerallee					1,995
			24 Weinmeisterhornweg					1,394
		06 Wilhelmstadt	25 Borkumer Straße					1,156
			26 Adamstraße			10	4.47	2,225

			27 Tiefwerder					581
			28 Graetschelsteig					417
			29 Börnicker Straße					1,014
	03 SPA 3	07 Haselhorst	30 Zitadellenweg					641
			31 Gartenfelder Straße					1,742
		08 Siemensstadt	2 Rohrdamm					1,832
			33 Motardstraße					107
	04 SPA 4	09 Gatow/Kladow	34 Alt-Gatow					834
			35 Groß-Glienicker Weg					65
			36 Jägerallee					2,034
			37 Kladower Damm					483
			38 Kafkastraße					898
06 Steglitz-Zehlendorf	01 Region A	01 Schloßstraße	01 Fichtenberg					1,210
			02 Schloßstraße	14	11.51	24	19.58	1,202
			03 Markelstraße	12	13.57	10	11.34	872
		02 Albrechtstraße	04 Munsterdamm					1,083
			05 Südende	10	6.69	16	10.66	1,485
			06 Stadtpark					1,080
			07 Mittelstraße					1,098
			08 Bergstraße	10	10.83			913
			09 Feuerbachstraße			12	9.91	1,199
			10 Bismarckstraße					664
	02 Region B	03 Lankwitz	01 Alt-Lankwitz					938
			02 Komponistenviertel Lankwitz					948
			03 Lankwitz Kirche					1,042
			04 Kaiser-Wilhelm-Straße					941
			05 Gemeindepark Lankwitz					1,712
			06 Lankwitz Süd					1,382
		04 Ostpreußendamm	07 Thermometersiedlung					824
			08 Lichterfelde Süd	10	8.09			1,226
			09 Königsberger Straße					1,406
			10 Oberhofer Platz					1,384
			11 Schütte-Lanz-Straße			10	5.50	1,807

	03 Region C	05 Teltower Damm	01 Berlepschstraße					1,180
			02 Zehlendorf Süd					729
			03 Zehlendorf Mitte			10	5.53	1,799
			04 Teltower Damm	10	4.50			2,214
		06 Drakestraße	05 Botanischer Garten	12	10.31	14	12.01	1,152
			06 Hindenburgdamm					761
			07 Goerzwerke					521
			08 Schweizer Viertel					2,364
			09 Augustaplatz			12	6.10	1,954
			10 Lichterfelde West					1,522
	04 Region D	07 Zehlendorf Südwest	01 Wannsee	14	7.46			1,863
			02 Düppel					1,163
			03 Nikolassee	18	9.54			1,868
		08 Zehlendorf Nord	04 Krumme Lanke					1,551
			05 Fischerhüttenstraße					979
			06 Fischtal			12	9.08	1,310
			07 Zehlendorf Eiche					915
			08 Hüttenweg					743
			09 Thielallee					939
			10 Dahlem	14	10.92	10	7.82	1,268
07 Tempelhof-Schöneberg	01 Schöneberg Nord	01 Schöneberg Nord	01 Wittenbergplatz/Viktoria-Luise-Platz	118	90.49	10	8.36	1,186
			02 Nollendorfplatz	172	90.01	20	11.37	1,739
			03 Barbarossaplatz	52	40.50	16	12.82	1,232
			04 Dennewitzplatz	56	34.08	18	11.21	1,587
	02 Schöneberg Süd	02 Schöneberg Süd	01 Bayerischer Platz	62	39.19	16	10.42	1,520
			02 Volkspark (Rudolf-Wilde-Park)	26	22.43	10	8.75	1,133
			03 Kaiser-Wilhelm-Platz	52	25.44	14	6.98	1,992
			04 Schöneberger Insel	44	36.54			1,160
	03 Friedenau	03 Friedenau	01 Friedenau	68	18.15	34	9.16	3,679
			02 Ceciliengärten	30	20.28	20	13.61	1,449
			03 Grazer Platz	32	17.90			1,756
	04 Tempelhof	04 Tempelhof	01 Neu-Tempelhof	20	7.69	20	7.69	2,580
			02 Lindenhofsiedlung					278

			03 Manteuffelstraße	26	8.05	26	8.05	3,203
			04 Marienhöhe					867
			05 Rathaus Tempelhof	10	6.73			1,475
			06 Germaniagarten					295
	05 Mariendorf	05 Mariendorf	01 Rathausstraße					2,491
			02 Fritz-W erner-Straße					1,099
			03 Eisenacher Straße					1,475
			04 Imbrosweg					1,047
			05 Hundsteinweg			10	4.59	2,170
			06 Birnhornweg					529
	06 Marienfelde	06 Marienfelde	01 Marienfelder Allee Nordwest					1,696
			02 Kirchstraße					1,037
			03 Marienfelde Nordost					608
			04 Marienfelde Süd					2,709
	07 Lichtenrade	07 Lichtenrade	01 Kettinger Straße/Schillerstraße				2.72	2,201
			02 Alt-Lichten-rade/Töpchiner Weg					2,176
			03 John-Locke-Straße					1,496
			04 Nahariyastraße				4.01	1,491
			05 Franziusweg/Rohrbachstraße	10	6.27		3.77	1,584
			06 Horstwalder Straße/Paplitzer Straße					719
			07 Wittelsbacherstraße					695
08 Neukölln	01 Neukölln	01 Schillerpromenade	15 Hasenheide					88
			16 Wissmannstraße					348
			17 Schillerpromenade	10	7.39	18	13.22	1,344
			18 Silbersteinstraße					1,191
		02 Neuköllner Mitte/Zentrum	11 Flughafenstraße	16	17.56			895
			12 Rollberg					1,095
			13 Körnerpark	10	8.79			1,128
			14 Glasower Straße					756
		03 Reuterstraße	01 Reuterkiez	50	20.70	40	16.63	2,366
			02 Bouchéstraße					448

		03 Donaustraße					747
	04 Rixdorf	04 Rixdorf	26	11.32	14	6.13	2,271
		05 Hertzbergplatz	10	11.27	16	17.92	877
		06 Treptower Straße Nord					745
		07 Gewerbegebiet Ederstraße					53
	05 Köllnische Heide	08 Weiße Siedlung					843
		09 Schulenburgpark	10	7.94			1,250
		10 Gewerbegebiet Köllnische Heide					42
02 Britz/Buckow	06 Britz	19 Buschkrugallee Nord					1,414
		20 Tempelhofer Weg					1,272
		21 Mohriner Allee Nord					558
		22 Parchimer Allee			12	5.32	2,242
		23 Ortolanweg					228
		24 Britzer Garten					175
		25 Handwerker-Siedlung					632
	07 Buckow	26 Buckow West					1,631
		27 Buckow Mitte					2,378
		28 Buckow Ost					1,546
03 Gropiusstadt	08 Gropiusstadt	29 Gropiusstadt Nord					2,344
		30 Gropiusstadt Süd					1,448
		31 Gropiusstadt Ost					3,134
04 Buckow Nord/Rudow	09 Buckow Nord	32 Goldhähnchenweg					576
		33 Vogelviertel Süd					802
		34 Vogelviertel Nord					537
	10 Rudow	35 Blumenviertel					1,846
		36 Zittauer Straße					1,642
		37 Alt-Rudow					2,044
		38 Waßmannsdorfer Chaussee	12	7.82			1,522
		39 Frauenviertel	10	16.37			601
		40 Waltersdorfer Chaussee Ost					1,755
	01 Alt-Treptow	01 Elsenstraße			20	16.75	1,174

			02 Am Treptower Park Nord					5
	01 Treptow-Köpenick 1	02 Plänterwald	01 Am Treptower Park Süd	10	14.45			682
			02 Köpenicker Landstraße					997
		03 Baumschulenweg	01 Baumschulenstraße	28	12.83			2,154
			02 Späthsfelde					714
		04 Johannisthal	01 Johannisthal West					1,655
			02 Johannisthal Ost					1,846
	02 Treptow-Köpenick 2	05 Oberschöneweide	01 Oberschöneweide West					498
			02 Oberschöneweide Ost					1,535
		06 Niederschöneweide	01 Schnellerstraße					848
			02 Oberspree					797
		07 Adlershof	01 Adlershof West					29
			02 Adlershof Ost	22	8.90			2,450
		08 Köllnische Vorstadt/Spindlersfeld	01 Spindlersfeld					426
			02 Köllnische Vorstadt					954
09 Treptow-Köpenick	03 Treptow-Köpenick 3	09 Altglienicke	01 Dorf Altglienicke					2,730
			02 Wohngebiet II					788
			03 Kölner Viertel					1,484
		10 Bohnsdorf	01 Bohnsdorf	14	5.10			2,729
		11 Grünau	01 Grünau					1,168
		12 Schmöckwitz/Karolinenhof/Rauchfangswerder	01 Karolinenhof					439
			02 Schmöckwitz/Rauchfangswerder					554
	04 Treptow-Köpenick 4	13 Köpenick Süd	01 Kietzer Feld/Nachtheide			10	3.32	3,006
			02 Wendenschloß					448
		14 Allende-Viertel	01 Allende I					1,045
			02 Allende II					339
		15 Altstadt Kietz	01 Altstadt Kietz	10	11.96			826
		16 Müggelheim	01 Müggelheim					1,650
	05 Treptow-Köpenick 5	17 Friedrichshagen	01 Hirschgarten					735
			02 Bölschestraße	10	3.64			2,738

		18 Rahnsdorf/Hessenwinkel	01 Rahnsdorf/Hessenwinkel	10	4.73			2,105
		19 Dammvorstadt	01 Dammvorstadt					1,449
		20 Köpenick Nord	01 Köpenick Nord					2,603
10 Marzahn-Hellersdorf	01 Marzahn	01 Marzahn Nord	01 Marzahn West	12	4.19			791
			02 Havemannstraße					2,573
		02 Marzahn Mitte	03 Gewerbegebiet Bitterfelder Straße					
			04 Wuhletalstraße					1,633
			05 Marzahn Ost					1,104
			06 Ringkolonnaden					2,854
			07 Marzahner Promenade					2,037
		03 Marzahn Süd	08 Marzahner Chaussee	12	4.49			410
			09 Springpfuhl					2,661
			10 Alt-Marzahn					3,577
			11 Landsberger Tor					587
	02 Hellersdorf	04 Hellersdorf Nord	12 Alte Hellersdorfer Straße					790
			13 Gut Hellersdorf					1,826
			14 Helle Mitte					260
			15 Hellersdorfer Promenade					611
			16 Böhlener Straße					572
		05 Hellersdorf Ost	17 Adele-Sandrock-Straße					1,549
			18 Schleipfuhl					656
			19 Boulevard Kastanienallee					467
		06 Hellersdorf Süd	20 Kaulsdorf Nord II					431
			21 Gelbes Viertel					663
			22 Kaulsdorf Nord I			10	6.85	1,449
			23 Rotes Viertel					1,179
	03 Biesdorf	07 Biesdorf	24 Oberfeldstraße					1,884
			25 Buckower Ring					980

			26 Alt-Biesdorf					602
			27 Biesdorf Süd	14	6.13			2,268
	04 Kaulsdorf/Mahlsdorf	08 Kaulsdorf	28 Kaulsdorf Nord					1,807
			29 Alt-Kaulsdorf					843
			30 Kaulsdorf Süd					1,956
		09 Mahlsdorf	31 Mahlsdorf Nord	10	4.37			2,280
			32 Alt-Mahlsdorf	12	12.45			952
			33 Mahlsdorf Süd			16	4.44	3,589
11 Lichtenberg	01 Hohenschönhausen-Nord	01 Malchow, Wartenberg und Falkenberg	01 Dorf Malchow					82
			02 Dorf Wartenberg					635
			03 Dorf Falkenberg					299
		02 Neu-Hohenschönhausen Nord	04 Falkenberg Ost					1,315
			05 Falkenberg West					1,047
			06 Wartenberg Süd					980
			07 Wartenberg Nord					826
		03 Neu-Hohenschönhausen Süd	08 Zingster Straße Ost			10	4.77	2,085
			09 Zingster Straße West					1,514
			10 Mühlengrund					1,085
	02 Hohenschönhausen-Süd	04 Alt-Hohenschönhausen Nord	12 Hauptstraße					1,724
			11 Malchower Weg					1,130
		05 Alt-Hohenschönhausen Süd	13 Orankesee					733
			14 Große-Leege-Straße					1,007
			15 Landsberger Allee	14	5.60			2,484
			16 Weiße Taube					852
	03 Lichtenberg Nord	06 Fennpfuhl	17 Hohenschönhausener Straße					1,008
			18 Fennpfuhl West	18	6.48			2,760
			19 Fennpfuhl Ost	18	10.71			1,662
		07 Alt-Lichtenberg	20 Herzbergstraße					217
			21 Rüdigerstraße	28	11.73			2,360
		08 Frankfurter Allee Süd	24 Frankfurter Allee Süd	10	5.65			1,761
	04 Lichtenberg Mitte	09 Neu-Lichtenberg	25 Victoriastadt					278
			26 Weitlingstraße	32	10.26	16	5.16	3,087
			22 Rosenfelder Ring					857

		10 Friedrichsfelde Nord	23 Gensinger Straße					940
			27 Tierpark					393
		11 Friedrichsfelde Süd	28 Sewanstraße			10	2.20	4,543
	05 Lichtenberg Süd	12 Rummelsburger Bucht	29 Rummelsburg	24	38.90			593
		13 Karlshorst	30 Karlshorst West					1,024
			31 Karlshorst Nord			10	5.32	1,869
			32 Karlshorst Süd	10	10.02			988
12 Reinicken-dorf	10 Reinickendorf Ost	31 Ost 1 - Reginhardstr.	15 Breitkopfbecken					972
			16 Hausotterplatz					1,204
			17 Letteplatz					1,187
		32 Ost 2 - Alt-Reinickendorf	18 Teichstraße					1,794
			19 Schäfersee					1,131
			20 Humboldtstraße					701
	21 Tegel	41 West 1 - Tegel-Süd/Flughafensee	25 Waldidyll/Flug-hafensee					1,201
			26 Tegel Süd					1,181
		44 West 4 - Auguste-Viktoria-Allee	21 Reinickes Hof					341
			22 Klixstraße					1,060
			23 Mellerbogen					988
			24 Scharnweberstraße					1,265
		45 West 5 - Tegel/Tegeler Forst	27 Alt-Tegel					1,617
			28 Tegeler Forst					15
	22 Heiligensee/Konradshöhe	42 West 2 - Heiligensee/Konrads-höhe	29 Konradshöhe/Tegelort					1,390
			30 Heiligensee					4,083
	23 Frohnau/Hermsdorf	11 Nord 1 - Frohnau/Hermsdorf	01 Hermsdorf	16	4.38			3,636
			02 Frohnau	12	3.08			3,881
	30 Waidmannslust	12 Nord 2 - Waidmannslust/Wittenau/Lübars	03 Wittenau Süd	10	4.49			2,216
			04 Wittenau Nord					1,309
			05 Waidmannslust					932
			06 Lübars					1,080
		21 MV 1 - Märkisches Viertel	07 Schorfheidestraße					673
			08 Märkisches Zentrum	10	4.10			2,427
			09 Treuenbrietzener Straße					1,597

	10 Dannenwalder Weg					1,522
22 MV 2 - Rollbergsiedlung	11 Lübarser Straße					700
	12 Rollbergesiedlung					852
43 West 3 - Borsigwalde/Freie Scholle	13 Borsigwalde					949
	14 Ziekowstraße/Freie Scholle					1,671
	Total[a]	3,852	7.25	1,186	2.24	527,736

Source: Statistical Office Berlin-Brandenburg (2017); [a]Sums in a column can differ to those in Table 3.4 as in this geographical detail some cells are empty because of a confidentiality procedure (no cases, too few cases, values uncertain), i.e., likely they are not all empty and as such overall cases by district (no empty cells) outnumber sums of smaller geographical aggregates.

Table 3.7: Correlation matrix independent variables logistic regression

Correlation matrix	Population Density	Area Size (km^2)	High-Amenity Location Share	Population	Migrant Population
Population Density	1.0000				
Area Size ($km^{2)}$	-0.7506	1.0000			
High-Amenity Location Share	-0.1247	0.0066	1.0000		
Population	0.4318	0.0336	0.0265	1.0000	
Migrant Population	0.5271	-0.3106	-0.0619	0.6190	1.0000

Source: Statistical Office Berlin-Brandenburg (2017)

Table 3.8: Spatial regression results for Berlin, by prognostic area (n=60), males

Queen Contiguity Order 1	Diagnostics Spatial Dependence		Ordinary Least Squares	lag-models			error-models		
Contextual Predictors			Baseline model	Baseline model	rho	R^2 lag/Δ to OLS (%)	Baseline model	lambda	R^2 error/Δ to OLS (%)
Population Density	LM lag***	RLM lag***	-0.216	-1.728	0.669***	65/+20	4.245	0.742***	63/+18
	LM error**	RLM error	0.002***	0.001***			0.001***		
Area Size (km^2)	LM lag***	RLM lag***	15.771***	3.292**	0.819***	63/+46	9.282	0.839***	62/+46
	LM error***	RLM error	-0.372***	-0.113			-0.053		
High-Amenity Location Share	LM lag***	RLM lag	7.944***	0.580	0.827***	63/+53	7.787	0.834***	63/+52
	LM error***	RLM error	0.127**	0.054			0.050		
Evangelist Share	LM lag***	RLM lag	12.910***	2.052	0.845***	62/+60	9.243	0.846***	62/+60
	LM error***	RLM error	-0.149	-0.039			-0.035		
Migrant Population	LM lag***	RLM lag***	6.836***	0.919	0.838***	62/+55	8.848	0.853***	62/+55
	LM error***	RLM error*	0.000**	0.000			0.000		
Population	LM lag***	RLM lag***	6.415*	0.523	0.844***	62/+ 60	8.677	0.848***	62/+60
	LM error***	RLM error**	0.000	0.000			0.000		

***p < 0.01; **p < 0.05; *p < 0.1; Source: Statistical Office Berlin-Brandenburg (2017)

Table 3.9: Spatial regression results for Berlin, by prognostic area (n=60), females

Queen Contiguity Order 1	Diagnostics Spatial Dependence		OLS	lag-models			error-models		
Contextual Predictors			Baseline model	Baseline model	rho	R^2 lag/Δ to OLS (%)	Baseline model	lambda	R^2 error/Δ to OLS (%)
Population Density	LM lag***	RLM lag***	1.756***	1.118	0.213	51/+2	1.808***	0.239	50/+2
	LM error**	RLM error	0.000***	0.000***			0.000***		
Area Size (km^2)	LM lag***	RLM lag***	6.239***	3.218***	0.509***	34/+14	5.373***	0.523***	32/+12
	LM error***	RLM error	-0.102***	-0.066**			-0.059*		
High-Amenity Location Share	LM lag***	RLM lag	4.376***	1.669**	0.584***	31/+27	4.272***	0.586***	31/+27
	LM error***	RLM error	0.018	0.011			0.011		
Evangelist Share	LM lag***	RLM lag	5.352***	2.118**	0.592***	30/+29	4.826***	0.590***	30/+29
	LM error***	RLM error	-0.035	-0.016			-0.020		
Migrant Population	LM lag***	RLM lag***	3.913***	1.589**	0.568***	31/+25	4.275***	0.581***	30/+26
	LM error***	RLM error*	0.000*	0.000			0.000		
Population	LM lag***	RLM lag***	3.412***	1.027	0.583***	31/+28	3.891***	0.588***	31/+28
	LM error***	RLM error**	0.000	0.000			0.000		

***p < 0.01; **p < 0.05; *p < 0.1; Source: Statistical Office Berlin-Brandenburg (2017)

Table 3.10: Deviation of male civil union rates (< 6‰, ≥ 6 < 10‰, ≥ 10‰) from their average, Berlin (lines in the middle of the table show the limits of the three groups)

Area ID	Prognostic area	MCVR[a]	Population Density	Area Size (km^2)	High-Amenity Location Share	Popu-lation	Migrant Population
0301	01 Buch		560.76	22.94	0.00	12,864	848
0406	06 Charlottenburg-Wilmersdorf 6		3.96	18.44	20.55	73	10
0706	06 Marienfelde		3,320.62	9.13	0.00	30,328	9,467
0803	03 Gropiusstadt		13,571.32	2.66	0.00	36,045	15,047
1210	10 Reinickendorf Ost	1.71	6,704.43	7.56	0.00	50,710	17,317
1222	22 Heiligensee/Konradshöhe	1.82	1,827.30	12.87	2.10	23,526	2.,408
0904	04 Treptow-Köpenick 4	2.45	790.97	44.43	5.50	35,140	1,801
1230	30 Waidmannslust	2.63	4,278.74	20.67	0.00	88,430	22,049
0802	02 Britz/Buckow	2.64	3,949.10	17.12	0.00	67,601	18,297
1002	02 Hellersdorf	2.67	9,239.75	8.10	0.56	74,847	7,709
0705	05 Mariendorf	2.72	5,324.51	9.38	0.00	49,927	13,627
1001	01 Marzahn	2.74	5,316.31	19.52	0.00	103,768	16,666
0502	02 SPA 2	2.75	3,614.90	23.05	2.52	83,321	20,243
0503	03 SPA 3	2.77	2,457.72	10.38	0.00	25,523	9,765
1004	04 Kaulsdorf/Mahlsdorf	2.79	2,101.38	21.71	13.02	45,629	2,089
1221	21 Tegel	2.86	1,438.97	34.31	10.99	49,377	14,752
0501	01 SPA 1	2.95	2,806.04	33.52	0.00	94,057	26,786
0903	03 Treptow-Köpenick 3	3.22	1,148.92	40.65	4.43	46,707	3,628
0504	04 SPA 4	3.23	712.82	24.89	8.15	17,744	2,197
1101	01 Hohenschönhausen Nord	3.23	3,448.79	16.66	0.00	57,446	8,260
0707	07 Lichtenrade	3.27	4,924.42	10.05	0.01	49,489	8,941
0401	01 Charlottenburg-Wilmersdorf 1	3.55	3,092.47	5.79	0.02	17,916	6,854
0602	02 Region B	3.66	5,083.24	14.92	16.23	75,860	17,117
1223	23 Frohnau/Hermsdorf	3.71	2,358.43	13.86	78.27	32,684	3,391
1003	03 Biesdorf	3.82	2,007.48	12.45	0.00	24,988	2,475
0303	03 Nördliches Weißensee	3.85	1,483.16	22.23	0.00	32,965	1,973
0804	04 Buckow Nord/Rudow	3.87	3,808.74	13.43	0.00	51,170	10,338
0905	05 Treptow-Köpenick 5	3.93	1,042.16	46.22	19.19	48,166	2,266
0603	03 Region C	4.77	4,268.92	18.34	60.41	78,282	16,801
0302	02 Nördliches Pankow	4.90	1,597.02	26.14	38.93	41,752	3,601
1104	04 Lichtenberg Mitte	4.93	8,732.28	7.59	0.00	66,272	10,094
1102	02 Hohenschönhausen Süd	5.52	4,568.29	9.33	3.14	42,609	5,101
0902	02 Treptow-Köpenick 2	6.07	2,769.35	19.65	0.00	54,421	4,776
0604	04 Region D	6.47	1,074.07	62.46	93.11	67,086	14,432
0901	01 Treptow-Köpenick 1	6.67	3,421.16	16.68	0.00	57,053	6,293
0104	04 Wedding	6.71	9,702.23	9.60	0.00	93,187	47,082
0103	03 Gesundbrunnen	6.74	12,159.70	5.75	0.00	69,892	40,758
0601	01 Region A	7.35	10,681.57	6.78	32.11	72,464	19,348
1103	03 Lichtenberg Nord	7.92	6,743.82	9.55	0.00	64,417	12,611

0704	04 Tempelhof	8.21	4,31372	13.73	8.69	59,247	18,915
0203	03 Kreuzberg Ost	8.36	17,481.05	2.76	0.00	48,252	24,540
0304	04 Südliches Pankow	8.59	6,297.47	12.84	21.03	80,869	7,405
1105	05 Lichtenberg Süd	8.86	2,844.05	8.98	23.05	25,536	2,477
0305	05 Südliches Weißensee	8.92	6,008.76	7.94	5.60	47,693	4,170
0201	01 Kreuzberg Nord	9.26	13,235.49	2.94	0.00	38,872	25,762
0801	01 Neukölln	9.73	13,540.97	11.70	0.00	158,429	82,187
0402	02 Charlottenburg-Wilmersdorf 2	9.82	2,831.46	13.60	92.57	38,501	10,045
0404	04 Charlottenburg-Wilmersdorf 4	17.31	5,478.39	9.06	78.88	49,607	13,286
0204	04 Friedrichshain West	17.68	9,849.14	4.57	0.00	45,023	9,233
0102	02 Moabit	18.20	9,270.64	8.25	9.90	76,449	33,993
0703	03 Friedenau	18.53	9,672.84	4.59	69.29	44,425	12,866
0306	06 Nördlicher Prenzlauer Berg	22.56	11,832.26	7.97	0.00	94,329	15,653
0202	02 Kreuzberg Süd	22.88	12,917.65	4.68	0.00	60,408	23,159
0403	03 Charlottenburg-Wilmersdorf 3	23.95	11,023.95	12.16	52.12	134,024	53,692
0307	07 Südlicher Prenzlauer Berg	26.92	18,033.55	3.02	14.18	54,549	12,353
0405	05 Charlottenburg-Wilmersdorf 5	27.82	13,291.59	5.63	91.83	74,790	25,927
0205	05 Friedrichshain Ost	28.28	13,563.83	5.37	1.14	72,806	14,186
0101	01 Zentrum	29.42	5,908.50	15.85	15.06	93,624	30,544
0702	02 Schöneberg Süd	30.72	14,325.87	3.35	38.90	47,966	17,571
0701	01 Schöneberg Nord	64.80	16,846.46	2.85	45.61	47,979	23,006
		Total average	6,345.06	14.84	16.28	57,119	15,136
		Average low group (< 6‰)	3,612.00	18.70	8.88	48,601	9,435
		Average medium group (≥ 6 < 10‰)	7,540.32	13.66	18.41	65,061	21,387
		Average high group (≥ 10‰)	11,693.44	6.72	32.07	68,921	21,959

[a] MCVR = Male civil union rate

Deviance from average for each group of male civil union rates:

Male Civil Union Rate	Population Density	Area Size (km^2)	High-Amenity Location Share	Population	Migrant Population
low (< 6‰)	-0.43	0.26	-0.45	-0.15	-0.38
medium (≥ 6 < 10‰)	0.19	-0.08	0.13	0.14	0.41
high (≥ 10‰)	**0.84**	-0.55	0.97	0.21	0.45

Source: Statistical Office Berlin-Brandenburg (2017)

Interpretation: The value of 0.84 in column "Population Density" means that population density in prognostic areas with a high male civil union rate compared to the overall average of population density is increased by 84% (84=(11,693.44*100/6,345.06)-100).

Table 3.11: Deviation of female civil union rates (< 6‰, ≥ 6 < 10‰, ≥ 10‰) from their average, Berlin
(lines in the middle of the table show the limits of the three groups)

Area ID	Prognostic area	FCVR[a]	Population Density	Area Size (km^2)	High-Amenity Location Share	Popu-lation	Migrant Population
0301	01 Buch		560.76	22.94	0.00	12,864	848
0401	01 Charlottenburg-Wilmersdorf 1		3,092.47	5.79	0.02	17,916	6,854
0406	06 Charlottenburg-Wilmersdorf 6		3.96	18.44	20.55	73	10
0706	06 Marienfelde		3,320.62	9.13	0.00	30,328	9,467
0803	03 Gropiusstadt		13,571.32	2.66	0.00	36,045	15,047
1001	01 Marzahn	1.31	5,316.31	19.52	0.00	103,768	16,666
0303	03 Nördliches Weißensee	1.38	1,483.16	22.23	0.00	32,965	1,973
0707	07 Lichtenrade	1.73	4,924.42	10.05	0.01	49,489	8,941
1003	03 Biesdorf	1.74	2,007.48	12.45	0.00	24,988	2,475
1223	23 Frohnau/Hermsdorf	1.86	2,358.43	13.86	78.27	32,684	3,391
0201	01 Kreuzberg Nord	1.94	13,235.49	2.94	0.00	38,872	25,762
0804	04 Buckow Nord/Rudow	1.94	3,808.74	13.43	0.00	51,170	10,338
1102	02 Hohen-Schönhausen Süd	2.01	4,568.29	9.33	3.14	42,609	5,101
1230	30 Waidmannslust	2.01	4,278.74	20.67	0.00	88,430	22,049
1221	21 Tegel	2.08	1,438.97	34.31	10.99	49,377	14,752
0103	03 Gesundbrunnen	2.19	12,159.70	5.75	0.00	69,892	40,758
1222	22 Heiligensee/Konradshöhe	2.19	1,827.30	12.87	2.10	23,526	2,408
0903	03 Treptow-Köpenick 3	2.42	1,148.92	40.65	4.43	46,707	3,628
0501	01 SPA 1	2.44	2,806.04	33.52	0.00	94,057	26,786
1210	10 Reinickendorf Ost	2.57	6,704.43	7.56	0.00	50,710	17,317
1004	04 Kaulsdorf/Mahlsdorf	2.62	2,101.38	21.71	13.02	45,629	2,089
0904	04 Treptow-Köpenick 4	2.73	790.97	44.43	5.50	35,140	1,801
0502	02 SPA 2	2.75	3,614.90	23.05	2.52	83,321	20,243
0504	04 SPA 4	2.77	712.82	24.89	8.15	17,744	2,197
0602	02 Region B	2.78	5,083.24	14.92	16.23	75,860	17,117
0802	02 Britz/Buckow	2.81	3,949.10	17.12	0.00	67,601	18,297
1103	03 Lichtenberg Nord	2.86	6,743.82	9.55	0.00	64,417	12,611
0705	05 Mariendorf	2.94	5,324.51	9.38	0.00	49,927	13,627
1104	04 Lichtenberg Mitte	2.96	8,732.28	7.59	0.00	66,272	10,094
1101	01 Hohen-Schönhausen Nord	3.03	3,448.79	16.66	0.00	57,446	8,260
0905	05 Treptow-Köpenick 5	3.11	1,042.16	46.22	19.19	48,166	2,266
1002	02 Hellersdorf	3.43	9,239.75	8.10	0.56	74,847	7,709
0104	04 Wedding	3.82	9,702.23	9.60	0.00	93,187	47,082
0902	02 Treptow-Köpenick 2	3.96	2,769.35	19.65	0.00	54,421	4,776
0102	02 Moabit	4.00	9,270.64	8.25	9.90	76,449	33,993
0603	03 Region C	4.07	4,268.92	18.34	60.41	78,282	16,801
0901	01 Treptow-Köpenick 1	4.10	3,421.16	16.68	0.00	57,053	6,293
0404	04 Charlottenburg-Wilmersdorf 4	4.38	5,478.39	9.06	78.88	49,607	13,286

0604	04 Region D	4.43	1,074.07	62.46	93.11	67,086	14,432	[a]
0101	01 Zentrum	4.71	5,908.50	15.85	15.06	93,624	30,544	
1105	05 Lichtenberg Süd	4.89	2,844.05	8.98	23.05	25,536	2,477	
0503	03 SPA 3	5.06	2,457.72	10.38	0.00	25,523	9,765	
0402	02 Charlottenburg-Wilmersdorf 2	5.08	2,831.46	13.60	92.57	38,501	10,045	
0302	02 Nördliches Pankow	5.14	1,597.02	26.14	38.93	41,752	3,601	
0403	03 Charlottenburg-Wilmersdorf 3	5.73	11,023.95	12.16	52.12	134,024	53,692	
0305	05 Südliches Weißensee	6.17	6,008.76	7.94	5.60	47,693	4,170	
0204	04 Friedrichshain West	6.20	9,849.14	4.57	0.00	45,023	9,233	
0304	04 Südliches Pankow	6.50	6,297.47	12.84	21.03	80,869	7,405	
0405	05 Charlottenburg-Wilmersdorf 5	6.53	13,291.59	5.63	91.83	74,790	25,927	
0704	04 Tempelhof	6.62	4,313.72	13.73	8.69	59,247	18,915	
0801	01 Neukölln	7.82	13,540.97	11.70	0.00	158,429	82,187	
0702	02 Schöneberg Süd	7.86	14,325.87	3.35	38.90	47,966	17,571	
0703	03 Friedenau	8.64	9,672.84	4.59	69.29	44,425	12,866	
0601	01 Region A	8.99	10,681.57	6.78	32.11	72,464	19,348	
0307	07 Südlicher Prenzlauer Berg	9.26	18,033.55	3.02	14.18	54,549	12,353	
0203	03 Kreuzberg Ost	10.54	17,481.05	2.76	0.00	48,252	24,540	
0306	06 Nördlicher Prenzlauer Berg	10.79	11,832.26	7.97	0.00	94,329	15,653	
0701	01 Schöneberg Nord	11.02	16,846.46	2.85	45.61	47,979	23,006	
0202	02 Kreuzberg Süd	12.25	12,917.65	4.68	0.00	60,408	23,159	
0205	05 Friedrichshain Ost	14.96	13,563.83	5.37	1.14	72,806	14,186	
		Total average	6,345.06	14.84	16.28	57,119	15,136	
		Average low group (< 6‰)	4,489.93	17.62	14.42	53,731	13,282	
		Average medium group (≥ 6 < 10‰)	10,601.55	7.42	28.16	68,546	20,998	
		Average high group (≥ 10‰)	14,528.25	4.72	9.35	64,755	20,109	

FCVR = Female civil union rate

Deviance from average for each group of female civil union rates:

Female Civil Union Rate	Population Density	Area Size (km^2)	High-Amenity Location Share	Population	Migrant Population
low (< 6‰)	-0.29	0.19	-0.11	-0.06	-0.12
medium (≥ 6 < 10‰)	0.67	0.50	0.73	0.20	0.39
high (≥ 10‰)	1.29	-0.68	-0.43	0.13	0.33

Source: Statistical Office Berlin-Brandenburg (2017)